

BENHIL

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Operating Instructions
with data for the
Identification of Spare Parts
for the
Filling and Wrapping Machine

Type "8304"

Please note!

DIRECTIONS for quick and correct procurement of spare parts.

- 1.0 In every spares order the type of the machine and the serial number are to be indicated. Furthermore, the following data for identifying the spare should be given:
- 1.1 the quantity required
 - 1.2 the denomination
 - 1.3 the figure number
 - 1.4 the part number

Example:

One handwheel for shaft 8304/1 part 47

- 1.5 In case of doubt the part required should be described as exactly as possible, stating its main dimensions. Parts of irregular shape are to be laid upon a sheet of paper, and all contours should be pencilled. The sketch is to be attached to the order. As "Benhil" machines are continuously improved as to quality and design in accordance with customers' requirements, we would be interested to know, if the replacement was caused by wear and tear or negligence, in order to perfect the operating safety and reliability of our products from experience.

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GENERAL INSTRUCTIONS

If the machine is erected by a BENHIL fitter, please note that it is not only his duty to erect the machine and to put it into operation; it is of still greater importance that your operators will be familiarized thoroughly with the attendance of the machine. Appoint one man with some technical know-how to be responsible and nominate a deputy for him, so that you will always have an expert well acquainted with the automatic machine available, even in cases of illness or relief.

Please allow the BENHIL fitter to stay a few days after the completion of the erection for supervising closely the running of the machine and the performance of your operators. Before he leaves, the best thing to do will be to make sure for yourself through official acceptance that the machine runs perfectly and, first and foremost, that your operators have become fully conversant with the attendance, lubrication, cleaning, change-over to another size etc.

2.0 OPERATING INSTRUCTIONS (see list of illustrations at the end of these instructions)

2.1 UNCASING AND ERECTION OF THE MACHINE

All parts are to be unpacked carefully: the machine is to be examined as to damages occurred in transit. Following packing instructions, the machine is despatched as being partly dismantled. The completeness of the consignment should be checked, guided by these instructions. In case any parts should be missing, please inform BENHIL at once.

Shifting the machine to its place may be facilitated by putting round bars and such like under the screwed-on deals. Please hold fast only to firm parts, like machine frame etc. Do not sling ropes round levers, shafts and similar protruding parts, but likewise only round the firm machine frame. Determine a proper place for tables showing fitting instructions, tools, spare parts and accessories as well as size parts.

2.2 FITTING THE MOTOR

If the machine is despatched without motor, or if the motor has to be replaced, before fitting the cone belt pulley or variable speed pulley is to be mounted on the motor shaft. The motor plate should be put into foremost position, and the motor is to be fastened on it temporarily by means of screw-clamps. Then check the sense of rotation of the motor and lay the cone belt on. Now the motor with disc is adjusted according to the pulley to be found in the machine, it is fastened, and the motor plate is set, so that the cone belt is tensioned well. Finally, the motor plate is secured by the two lock nuts, in order to prevent loosening.

The motor output is:

$N = 3 \text{ H.P. } 2.2 \text{ kW}$ at 1500 rpm idle-running speed.

Only a completely water proof dairy type motor may be used. Before starting, check, if the motor has been connected in the correct sense of rotation, furthermore, if the voltage indicated on the motor is identical with the local service voltage.

2.3 MOUNTING THE COLLATING AND STACKING DEVICE "TYPE 8534"

The aforesaid device is despatched separately and should be fastened by screws on site at the fastening gibs fig. 8304/1 part 44 provided for this purpose. The necessary screws, tapered pins and tools are supplied with the machine.

2.4 ELECTRICAL CONNECTION

The machine should be connected by an electrician according to the attached wiring and terminal diagrams. It is to be made sure, that voltage and frequency on the motor type plate are identical with local connection data. Mind the sense of rotation of the motor. The electrical control of the machine is realized via the control unit fig. 8304/1, parts 35 to 40 by means of its actuating mechanisms (see paragraph 2.7).

2.5 CLEANING

All bright parts of the machine are to be cleaned thoroughly with anti-corrosive agents.

2.6 DRIVE

The drive of the machine is effected by a completely water proof dairy-type motor which may be switched on and off at the switch cabinet fig. 8304/1 part 32. The power transmission from the motor to the main driving shaft is done by means of the cone belt included in the consignment.

2.7 CONTROL DEVICES

For the attendance of the machine only the control unit fig. 8304/1 parts 35 to 40 is used which consists of the following parts:

Fig. 8304/1 part 35

Control unit XB2 - SA 145-25 TE

Fig. 8304/1 part 36

Machine I XB2 - MA 21 TE

Fig. 8304/1 part 37

O Feeler I XB2 - MDM TE

Fig. 8304/1 part 38

Network XB2 - MV 104 TE

with lamp BA 15d 24 V

Fig. 8304/1 part 39

Handwheel-Operation XB2 - MD 11 TE

Fig. 8304/1 part 40

O Machine KB2 - MC 41 TE

2.8 LUBRICATION

Before every starting the machine should be lubricated carefully. Those points which are not protected by a guard cover should be considered particularly. For lubricating the safety devices of the machine are to be removed. In order to ensure a good distribution of the lubricants, the machine should be put into motion by turning the handwheel in the direction of the arrow during lubrication. All lubricants should be of suitable characteristics. Roller forks, slide blocks, cell guides at the rotary table as well as all oil-holes and oil chamfers marked in red are lubricated with high-quality slide bearing oil having a viscosity of 4 - 7 Engler numbers (at 50° C). The grease nipples likewise marked in red receive a grease lubrication with the aid of the grease gun supplied by us. The grease should be pressed, until it will penetrate at the bearing ends.

Oil change in the oil pan

The oil change is to be carried out after every 1500 hours of operation, but after 6 months at the latest.



Table of lubricants for
Type 8304

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Lubricant	Grade of viscosity	Characteristics	Lubricating point and quantity	Lubricating frequency
Lubricating oil CLM 68 Denomination as per DIN 51 502	kinemat. viscosity 68 + 4 cSt/50° C 95 E/50° C <i>TURBO T100</i> <i>168</i>	non-ageing corrosion inhibit. high-press.resist. water repellent	Oil pan 36 l	oil change after 1500 hours of operation, but after 3 months at the latest
Lubricating oil CL 36 Denomination as per DIN 51 502	kinemat. viscosity 36 + 4 cSt/50° C 4.5° E/50° C <i>T6NNA 168</i>	non-ageing good sliding qual. high-press.resist.	guides, joints and oil-holes marked in red = 0.3 l	every 10 operating hours
Flushing oil F 2 Denomination as per DIN 51 502	kinemat. viscosity below 8 cSt/20° C abt. 1.4° E/20° C <i>300 Oil</i>		Oil pan 20 l	for flushing and cleaning in case of oil change
Flow grease 000 a Ca. saponified Denomination as per DIN 51 502	Fulling penetration 445 to 475/25° C service temperature below -20° C drupp. point abt. 85° C	corrosion inhibit. pressure resist. water repellent <i>Semi Fluid EP grease</i>	Housing of auger worm = 7 l	as needed
Roller bearing grease K 3 m Li-saponified Denomination as per DIN 51 502	Fulling penetr. 220 to 250/25° C serv. temperature -20 to 120° C	non-ageing corrosion inhibit. pressure resist. water repellent <i>Alumina R3</i>	all roller bearings not connected with central lubrication	as needed
Slide bearing grease M2a Ca. saponified Den. as per DIN 51 502	Fulling penetr. 265 to 295/25° C serv. temperature below -20° C	non-ageing corrosion inhibit. pressure resist. water repellent <i>Alumina EP2</i>	Tapered grease nipples bare toothed wheels = 200 grs Dosing parts tube of 100 grs	every 10 operating hours every 100 operating hours when fitting the dosing parts for products poor in fat
High-temp. Grease Klüber Lubrication UVN-1LB-dämpfbar	Fulling penetr. 200/25° C Serv. temperature -5 to 130° C	inodorous, insipid heat and cold resistant		

3.0 TEST RUN AND CHECK OF MOTIONS

If the necessary fitting work has been completed, also as far as the customer is concerned, the switch at the switch cabinet should be turned from 0 to I, so that the control voltage will be there, in other words, all functions may be checked now, one after the other, via control unit fig. 8304/1 parts 36 to 40.

3.1 SIZE CHANGE FOR WRAPPER WITH CONTINUOUS PRINTING

- 3.1.1 Change the wrapper reel on the unwinding axle, i.e. insert the prepared additional unwinding axle.
- 3.1.2 Regulate the new wrapper reel on the centre of the wrapper fold apparatus by turning the adjusting screw fig. 8304/5 part 16.
- 3.1.3 Threading the wrapper foil web according to the sketch at the end of the instructions.
- 3.1.4 Setting the lever for the motion of the feed mechanism.
- 3.1.5 Adjusting the two lateral wrapper guides (by hand sheet blank below centre of plunger) fig. 8304/2 part 25 beside the wrapper bag plunger to the new wrapper width and transferring the wrapper stops fig. 8304/2 part 1 in respect of the wrapper length.
- 3.1.6 Lowering the foil stripper at the fold box fig. 8304/3 part 50 in such a way, that with wrapper bag pushed into the rotary table the lower edge of the stripper will be abt. 1 mm above the edge of the wrapper bag.
- 3.1.7 Adjusting the desired new packet weight by turning the hand wheel fig. 8304/1 part 48.

- 3.1. 8 Adjusting the cell lifting motion to the new packet height. By loosening the hexagon nut at the bolt fig. 8304/4 part 48 in the lever slit and by adjusting the point of application so far, that the cell bottom will be at a distance of abt. 4 mm to the cutter and the lower edge of the mouth-piece, respectively.
- 3.1. 9 Regulating at the filling station by lowering or raising the wrapper bag blankholder at the flowing-out nozzle, in accordance with the new wrapper bag height.
- 3.1.10 Adjusting the cell bottom height at the folding and pressing stations by regulating the cell bottom sliding rail by turning the star handle fig. 8304/6 part 51 on the side of the fold apparatus above the machine handwheel, until the upper edge of the product co-incides with the table height. After the described conversion the machine should first be turned by hand, watching all functions.

3.2 SIZE CHANGE FOR WRAPPER WITH PANEL PRINT AND REGISTER HOLES

- 3.2.1 Adjusting the lateral limit guides at the wrapper running plate. (Plate with slit for register finger and stop at the fold box).
- 3.2.2 Adjusting the register finger by shifting part fig. 8304/ , so that the cone of the register finger can drop in freely after completed feed.
- 3.2.3 Adjusting the wrapper feed by slackening the two fillister

head screws at the feed segment fig. 8304/ and by turning the central part. Re-tighten screws well after adjustment.

- 3.2.4 For the rest, the same adjustment as has been described under paragraphs 3.1.1 to 3.1.10.

3.3 CLEANING THE FILLING UNIT

All parts may be cleaned with hot water or steam; avoid detergents which affect metallic and rubber parts.

- 3.3.1 Before packaging butter - not required in case of packaging other products - :

Rinse worm, cutter, outer rough mouthpiece hot and brush on (prepare) a hot solution of P3 tin-proof etc. at a ratio of 1 : 10 (e.g. 1/4 kg of P3 z in 2-1/2 litre of water). This lye may be used several times. Let dry at least 10 minutes, rinse cold. Avoid touching prepared surfaces by hand. Never prepare inside of funnel, dosing housing, dosing cylinder, piston, filling cock and mouthpiece.

3.4 FITTING THE DOSING PARTS

In the reverse order of dismantling these parts are to be greased with the product to be packed or with some other suitable lubricant before the beginning of the production and to be fitted into the machine. All gaskets are to be examined as to damages and to be replaced in case of necessity.

3.5 CHECKING THE PLANT AFTER EVERY CLEANING

During and after fitting all cleaned parts the detachable connections should be checked as to their firm fit. Do not tighten the screws exceedingly, as a screw that has come off may cause big damage and even a standstill of the plant.

3.6 BACK SUCTION (FILLING DEVICE)

The back suction prevents the subsequent quilling of the product in the mouthpiece. The control is realized by the cam fig. 8304/4 part 44.

3.7 WEIGHT ADJUSTMENT

The weight adjustment is effected by turning the handwheel according to the indicating arrow + or - as per fig. 8304/1 part 48.

3.8 WRAPPER FEELER

The wrapper feeler fig. 8304/3 part 48 operates on a voltage of 24 volts against ground. If there is no wrapper in the cell, the contact pin feels against ground and causes the main relay in the control unit to drop. The machine will stop instantly.

3.9 EJECTION STATION

The cell bottom moves on a gib, lifts the packet to the ejection station out of the cell, whence the packet is pushed off. The ejector pushes the packet from the lifted

cell bottom over a slide plate on to the belt.

4.0 TREATMENT OF THE WRAPPING MATERIAL

The wrapping material should be stored in a cool room on lath grids. Too damp as well as too dry wrappers may cause disturbances. In case of necessity, too dry wrappers should be brought into a damp room and too damp wrappers into a dry room for a while. As a moisture correction takes some days for tightly wound reels, the greatest care should be taken in respect of storage. During storage and transport please ensure, that the faces of the reels are not damaged by shocks.

4.1 ADJUSTMENT OF KNIVES

(See sheet with sketches at the end of these instructions)

4.2 INSTRUCTIONS FOR THE ADJUSTMENT OF THE PHOTO-ELECTRIC REGISTERING OF THE WRAPPER

The wrappers to be handled on this machine, being provided with panel printing, bear scanning marks. Normally, the colour of the scanning marks is the same as that of the print on the wrapper. First and foremost, it should be ensured that the scanning marks have sufficient contrast against the bottom print. A contrast of different touches of colour being well discernible by the human eye does not prove that the photo-electric eye likewise perceives the contrast. The human eye regards all colours as contrasting.

The photo-electric eye, in a certain sense, is colour-blind. It perceives only the difference between light and darkness. Therefore, in order to be able to ascertain the contrast, a test with the photo-electric cell and its setting scale is necessary. This test is run as follows:

The scanning mark of the wrapper is placed over the light source of the photo-electric cell at a distance of 10 mm. Then the setting scale of the photo-electric cell is turned, until the red lamp will go out.

A number, e.g. 60, is read off on the scale of the photo-electric cell. Now instead of the scanning mark the bottom print of the wrapper is placed over the light source of the photo-electric cell, and the setting scale is turned again, until the red lamp goes out. Here, too, you will find a certain value. Suppose this is 20. Now these two values, let us say 60 and 20, are added. The result is 80. This sum must be divided by 2. You get 40, and the photo-electric cell is set to 40. After that, the adjustment work at the scanning head is finished. In case of normal wrappers with red or blue scanning marks attention should also be paid to the denomination of the type of the proper photocell lamp. For blue scanning marks photo-electric cell type 90 AV is used. For red scanning marks - type 92 CV. These operations having been done and a readable contrast having appeared on the scale, the adjustment of the wrapper feed may start.

The wrapper control is ensured by means of a cam-driven toothed segment. The toothed segment transmits the length of the stroke on to a gear wheel which is fixed to an electro-magnetic clutch. The load transmission from the gear wheel to the feed rollers is effected by this clutch. The electric control of the photo-electric cell as well as of the electro-magnetic clutch is realized by limit switches which are controlled by means of cams mounted on a shaft running synchronous with the speed of the machine. In order to guarantee the mechanism to be free from play, the centre of rotation of the toothed segment is provided with an eccentric bolt allowing a free-from-play adjustment to the gear wheel. The connection between cam lever and toothed segment is realized by a connecting rod. The stroke adjustment of the feed elements is done at the centre of rotation of the connecting rod of the toothed segment. The correction of the wrapper is effectuated during the feed operation, that means, during the last phase of motion. For this purpose, the phase of motion of the cam has been designed as deviating from the sine curve. It has a slow speed over the last 6 mm, i.e., the course of motion has been extended considerably. The adjustment is done as follows:

The light source of the scanning head is covered, so that no registering is possible. For the sake of better illustration it is necessary to assume a certain wrapper length, say 120 mm. The rotating motion of the feed is engendered mechanically via a cam, as has been mentioned before, but the driving is done by the electro-magnetic

clutch. Now to be able to feed without photo-electric registering, a limit switch must engage the clutch by closing the contact and disengage after completion of the feed, i.e. the limit switch must be controlled by the cam in such a way, that the contact is closed shortly before the beginning of the mechanical feed by the cam and broken shortly after the completion of the mechanical feed. This adjustment having been made, the stroke as controlled by the cam will reach its full length. Now the cut-to-size length is adjusted to 120 mm at the stroke motion of the segment. Afterwards the machine is put into operation, and the wrapper sheets are checked as to whether their length is always 120 mm. Maximum differences of 1 mm are admissible. If this tolerance is kept, the mechanism is alright, and the stroke is adjusted to 122 mm, i.e., 2 mm more than the normal cut-to-size length. In no event more than 2 mm should be adjusted, as otherwise the acceleration of the feed during the scanning operation will be too great, causing inaccuracy of the cut-to-size length. Now the photo-electric cell is adjusted in the running direction of the wrapper, so that the distance between the light source and the transverse cutter knife will be equal to two or three wrapper sheets. Next the machine is crank operated by hand, until the wrapper will be abt. 10 mm before the end of the feed. In this position of the machine the second cam for the second limit switch is adjusted in such a way, that the contact of the limit switch is closed. The closing of this contact means, that the photo-electric cell is ready to scan the scanning mark and thus

to disengage the clutch. After the cover of the light source of the scanning head has been removed, the photo-electric cell should scan the wrapper unobjectionably. Finally, we would remark that the limit switch having been described first takes over the function of engaging the clutch, so that the second limit switch having been connected in addition will be without function, which makes its putting out of circuit meaningless.

4.3 ADDITIONAL OPERATING AND MAINTENANCE INSTRUCTIONS
FOR CERTAIN UNITS AT THE END OF THIS MANUAL

- 4.3.1 Ortlinghaus clutch
- 4.3.2 Simplatroll clutch
- 4.3.3 Simplabelt disc
- 4.3.4 Free-wheel (Auger)
- 4.3.5 Scanning head (Photo-electric cell)

4.4 STRUCTURE OF THE ELECTRICAL CONTROL CONSISTING
OF THE FOLLOWING PARTS:

Fig. 8304/10 part 1

Cable Ölflex sy 3 x 1.5

Fig. 8304/10 parts 2 - 3 - 4

0 - Motor XB2 - MC 41 TE

Fig. 8304/10 parts 5 - 6

Elek - Standard housing FX

1999 - 172 - 010, Ref.-No. 03EK31

Fig. 8304/10 parts 7 - 12 and 14 - 16
Automatic cut-out (depending on tension)

Fig. 8304/10 part 13
Selenium rectifier B 50/40 - 5
Messrs. Semicron

Fig. 8304/10 part 17
Screwing Pg 16

Fig. 8304/10 part 18
Cable clamp

Fig. 8304/10 part 19
Check clutch XB2 - MD 11 TE

Fig. 8304/10 part 20
Motor I XB2 MA 21 TE

Fig. 8304/10 parts 21 and 22
Control relay St0a 33 24 V
Frequency indication

Fig. 8304/10 part 23
Motor protection relay
Voltage indication

Fig. 8304/10 part 24
Air break contactor DL10 24 V
Frequency indication

Fig. 8304/10 part 25

Control transformer 150VVA secondary 24 V

100 VA/30 V 50 VA

Voltage indication

Fig. 8304/10 parts 26 - 29

Connecting terminals are included in the consignment of the transformer.

4.5.5 PARTS OF THE PHOTO-ELECTRIC CELL

Fig. 8304/5 part 9

Switch amplifier NU 1 without switches O and I

without switches light and dark

220 V/48 - 62 cy, Messrs. Sick

Fig. 8304/5 part 3

Scanning head NT 10. Light throwing lamp No. 70351

belongs to part 3, Messrs. Sick

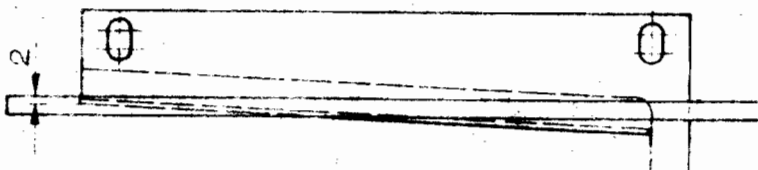
Fig. 8304/5 part 36

Cast-iron branch box T - box Ig 16



Adjustment of knives
 Messereinstellung
 Positions des Couteaux

Upper knife DIN 470/5
 Obermesser DIN 470/5
 Couteau supérieur 470/5

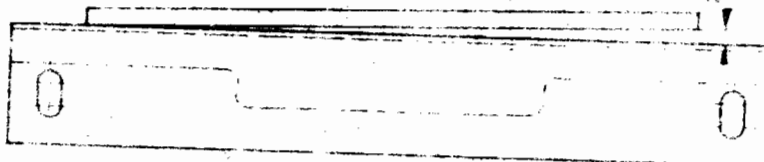


Position of upper knife after cutting
 Stellung des Obermessers nach dem Schnitt
 Position du couteau après la coupe

Inclined position of lower knife,
 after upper knife has cut.

Schrägstellung des Untermessers,
 wenn Obermesser geschnitten hat.

Position oblique du couteau inférieur après
 la coupe du couteau supérieur



Lower knife DIN 471/5
 Untermesser DIN 471/5
 Couteau inférieur DIN 471/5

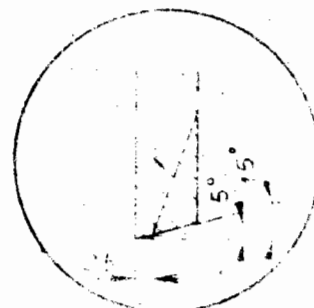
Sketches of grinding, scale 2 : 1

Schleifbilder, Maßstab 2 : 1

Croquis pour l'affûtage Echelle: 2 : 1



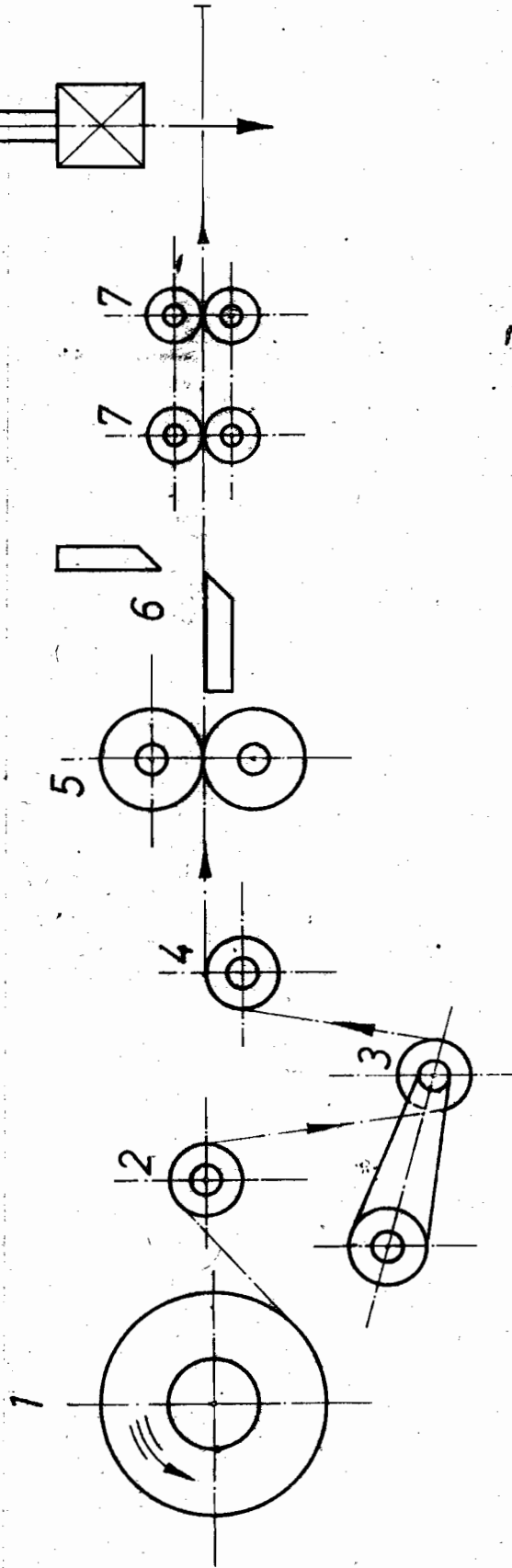
Upper knife
 Obermesser
 Couteau supérieur



Lower knife
 Untermesser
 -Couteau inférieur

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Schéma über Einwicklerverlauf bzw. Einführen der Einwicklerfolie.
 Schéma sur sens de marche du papier resp. introduction du papier.
 Sketch showing threading-in and running of wrapper web.



- 1 Einwicklerrolle
- 2 Umlenkrolle
- 3 Vorabwicklung
- 4 Umlenkachse
- 5 Hauptvorzug
- 6 Abschneidemesser
- 7 Beschleunigerrollen
- 8 Hüllenstempel

- 1 Bobine de papier
- 2 Axe de renvoi
- 3 Pré-déroulement
- 4 Axe de renvoi
- 5 Avancement principal
- 6 Couteaux de découpe
- 7 Rouleaux d'accélération
- 8 Pinçon d'enveloppe

- 1 Wrapper reel
- 2 Deflection pulley
- 3 Pre-unwinding
- 4 Deflection axle
- 5 Main feed rollers
- 6 Cutter knives
- 7 Accelerating rolls
- 8 Wrapper bag plunger



Timing Diagram

Type 3304

Ref. No.	Phase of motion	adjustment from° to°	Correction from° to°
03 AA 216	indexing	0° 200°	
2304-410-010 03 FG 65 03 ADU 146.2	main feed - photo-electric cell - segmental feed	70°	
03 AD 770	main feed - brake braking opening	175° 340° 340° 175°	
03 AD 210 03 AD 210 a	knives down up	310° 10° 10° 70°	
03 AD 582	draw-forth dev. forward back	65° 140° 160° 220°	
03 Ac 32 03 Ac 33.1	wrapper bag plun- down ger up	130° 290° 290° 50	
03 Ac 31	pre-folders down up	100° 130° 130° 160°	
03 AD 7	wrapper bag feel- down er up	165° 255° 255° 35°	
03 FB 26	dosing piston press out suck back sucking pre-press	230° 320° 320° 335° 40° 145° 145° 180°	
	cutter begins closed opens	325° 335° 335° 205° 205° 225°	
2304.404-180	cutter forw.beg. half-cycle rest back rest	320° 335° 320° 335°	
03 AFU 250.1	rotary cylind. suck f. funnel turn b. nozzle turn to funnel	55° 150° 150° 230° 325° 60°	
03 Af 355	suck-back pis- press out ton at filling suck back cock		
= basic m/c			
	=size		

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Timing diagram

Type 3304

Ref. No.	Phase of motion	Adjustment from to	Correction from to
3304-407-120	press-on dev. heated down up	200° 280° 280° 360°	
3304-407-130	pneum. control open close	230° 315° 315° 230°	
03 AK 64.2 03 FH 37.2	2nd intrud. folder outside table forward back	210° 270° 270° 335°	
03 AK 67.2 03 FH 36.2	1st intrud. folder inside centre table forward back	180° 260° 290° 350°	
03 FH 35 03 FGG 50.1	longitudinal folder forward	165° 255°	
03 AKU 86	press-on plunger down up down up	175° 235° 235° 275° 275° 305° 305° 15°	
03 AM 8	ejector forward back	165° 315° 315° 165°	
3304-400-130	ejector forward back	170° 35° 35° 135°	
	stirring device	5° 150°	
	perforating device punch back	310° 10° 10° 70°	
3304-408-010	embossing device emboss back	310° 10° 10° 70°	
03 FGG 95.1 03 AK 66	longitudinal folder turn back	235° 295° 40° 135°	
03 AD 59.1	accel. feed berins lifted	5° 155° 155° 5°	
03 FGG 84 03 BE 6.1 03 BE 7.1	lifting the cell up down	165° 250° 250° 35°	

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Order No.: 7 - 304 - - 1000
 Code word:
 Accepted: Date:..... Name:

= basic m/c size



Mounting and maintenance instructions for Simplabelt variable speed drive 1:3

Part of guarantee conditions.

Maschinenfabrik Hans Lenze KG
4923 Bösingfeld / Lippe
Germany

Do not adjust the drive while stationary!

A. Maintenance Instructions.

Make sure that at weekly machinery cleaning the drive is filled with grease through the grease nipple (3). A permanent grease film has to be maintained on the serrations.

PERIODIC GREASING:

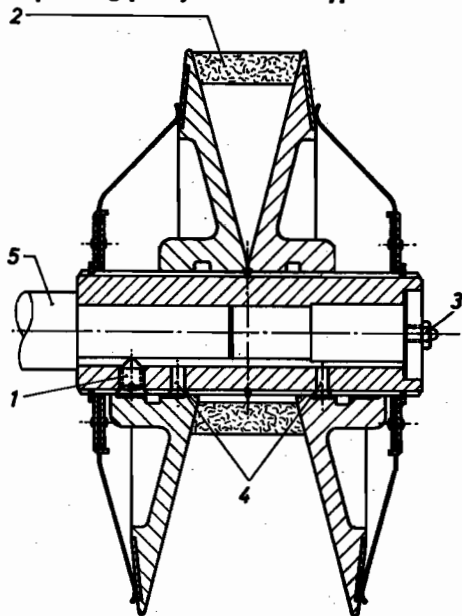
8 - hour day - once weekly	and more often when
16 - hour day - twice weekly	operating under warm,
24 - hour day - three times weekly	dusty, or humid conditions.

B. The belt running faces of the expanding pulley are treated with Molykote. It is not necessary to remove the grease before putting into operation.

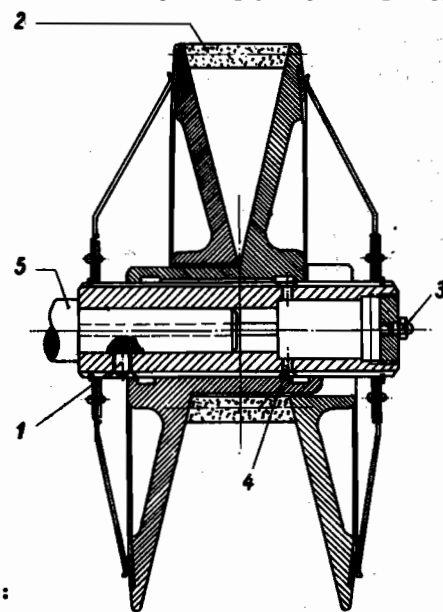
C. Mounting.

- I. The finished bored expanding pulley has to be fixed tightly on to the motor shaft (5) and secured against axial movement by a grub screw (1) for which the shaft has to be point drilled. The grub screw must not project above bottoms of the serrations of the sleeve in order to avoid interference of the sliding parts. The key on the motor shaft should be secured against axial displacement.
- II. The adjustment of tilting or sliding base must be set so that the belt (2) does not run over the pulleys rim and also cannot touch the serrated sleeve and thus overstrain.
- III. Expanding pulley and driven pulley have to be set exactly in line.
- IV. Should the expanding pulley have to be dismantled make sure that it is reassembled in the very same way as it was before. Make especially sure that the markings 0-0 and 1-1 on the externally serrated sleeve and on the internally serrated hubs - after assembly - are lying upon each other at their front faces.





Expanding pulley - standard type



Expanding pulley - finger type



As lubricants
we recommend:

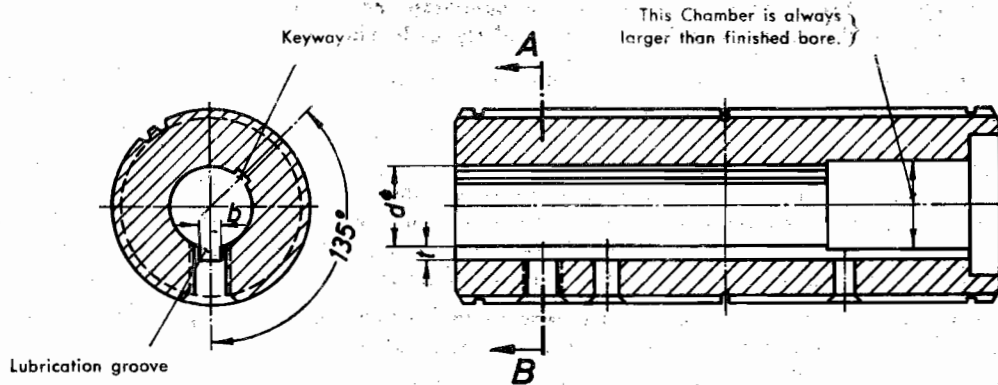
			
BP ENERGREASE RBB 2 or BP ENERGREASE LS 2	ANDOK B or BEACON 2	MOBILGREASE BRB No. 3 or MOBILUX Grease No. 2	SHELL Nerita Grease 2 or SHELL Alvania Grease 2

Instruction for finish boring and providing of grease grooves

When the Simplabelt expanding pulley of standard type is supplied with prebored sleeve make sure that after finish boring the grease groove – apart from the keyway – is in accordance with the drawing, otherwise the greasing of the expanding pulley is not certain.

The expanding pulleys of finger type have no grease grooves. Instead the sleeve is furnished with radial holes leading to each finger of the pulley halves.

Section A-B



Dimensions	00	0	10	20	30	40	50	60	70
t	2	2,5	3	3	3	4	5	—	—
b	3	3	4	5	6	6	6	—	—
d. dia									
std.	8-10	8-12	14-19	16-24	18-28	20-32	25-45	30-45	30-45
max *)	12	14	20	25	29	35	48	48	48

*) For max. bore keyway has to be of shallow type and in accordance with DIN 6885 Sheet 3.

Lubricants listed overleaf are the products of:

BP BENZIN UND PETROLEUM AKTIENGESELLSCHAFT, Hamburg

BP Companies all over the world

DEUTSCHE SHELL AKTIENGESELLSCHAFT, Hamburg

SHELL Companies all over the world

ESSO A.G., Hamburg

ESSO Companies all over the world

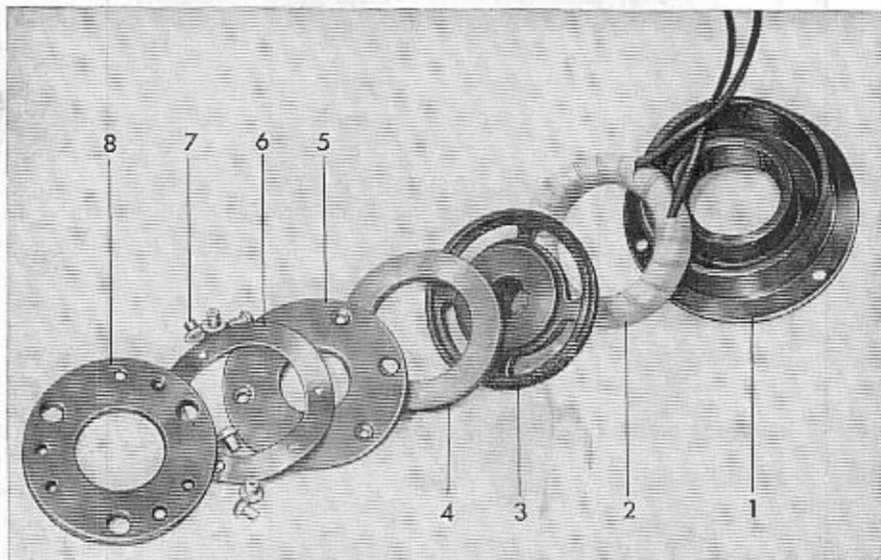
MOBIL OIL A.G., Hamburg

MOBIL OIL Companies all over the world



Simplatroll

Instructions for Mounting and Maintenance of Simplatroll Electromagnetic Clutches and Brakes

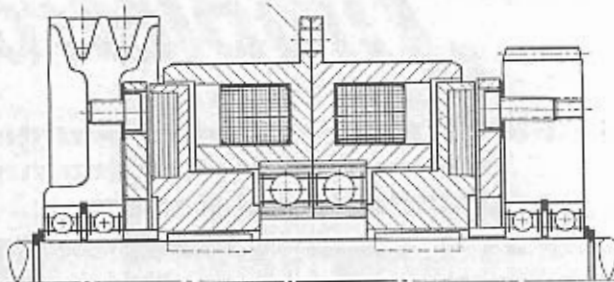


Parts

1. Magnet Body This should be secured to the machine frame or centred by means of a ball race.
2. Coil The coil produces the magnetic field and is powered from a D.C. supply. Standard voltage is 24 volts, if the voltage is non-standard the nominal value is indicated on the magnet body between the coil leads or terminals. The coil is continuously rated and insulated to Class B.
3. Rotor This must be firmly attached to the shaft in such a way as to prevent axial play and rotation relative to the shaft. In the case of brakes it is replaced by a friction disc already fitted to the magnet body.
4. Friction Lining The lining has a high wear resistance. It is sensitive to oil and grease.
5. Armature Disc This moves axially. Its special surface treatment gives it extremely high wear resistance.
6. Steel Spring The spring is pre-stressed and is the connecting link between the armature disc and the section to be coupled. It transmits torque without backlash; it also allows the clutch movement and withdraws the armature disc when the current is switched off.
7. Connecting Rivets
8. Adapter Flange The flange is fitted to the section being coupled.

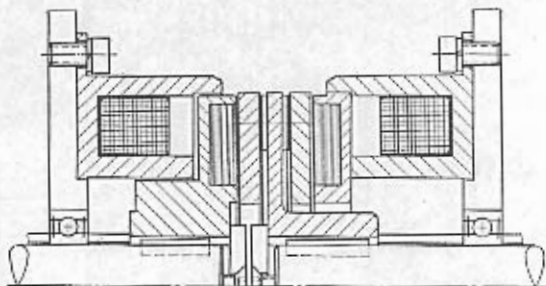
Typical Assemblies

Do not clamp – allow axial float (the only torque here is that due to bearing friction).



Two clutches arranged for reversing rotation.

For the bearings of the V-belt pulley and gearwheel only sealed ball bearings type 2 RS must be used. The twin clutch assembly is fitted between circlips to eliminate axial play.

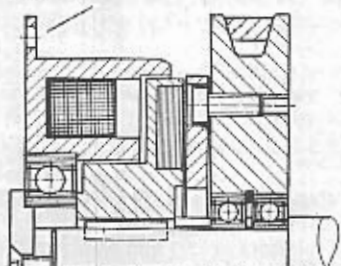


Combination of clutch and brake for coupling two shaft extensions.

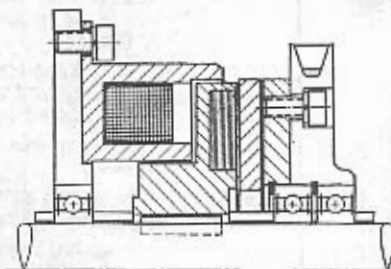
It comprises a Simplatroll clutch type 415 F and brake type 417 F with armature V.

When using a type V armature attention must be paid to the alignment of the shafts being coupled: maximum shaft misalignment is 0.03 mm for sizes 30 to 60 and 0.05 mm for sizes 80 to 260. The shafts must run true

Do not clamp - allow axial float (the only torque here is that due to bearing friction).

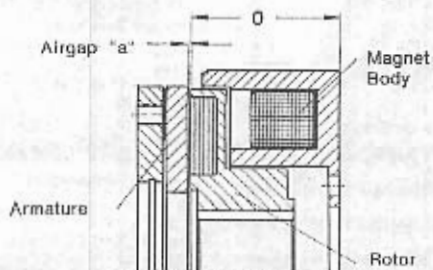


Simplatroll clutch for engaging and disengaging Simplabelt speed control unit. Armature disc must be properly centred.



Simptroll clutch with V-belt drive. Important: magnet body must be properly centred to the shaft.

Fitting



Airgap:

Size	30	45	60	80	100	120	150	200	260
"a" new	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,5	0,8
"a" max.	0,5	0,6	0,6	0,7	0,7	0,8	0,9	1,2	2,0
dimension O	16,6	24	28	35,3	43,9	45,9	56,9	64	81

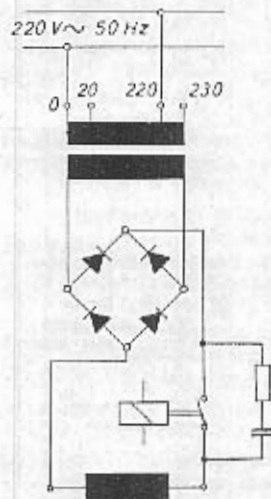
Attention must be paid to the following:

1. The airgap must be correctly set when the parts are new.
2. The gap must be re-adjusted when the maximum value has been reached (checking is necessary only at long intervals).
3. Keep the friction surfaces free of oil and grease (with a greasy lining the torque may be reduced by as much as 70 %).
4. Make sure drawing assembly with dimension O is as shown in the table. In the case of brakes and of clutches type 415L dimension O is determined in manufacture.
5. Make sure that the magnet body is concentric with the rotor.

Switching

Simplatroll Electromagnetic Clutches and Brakes can be switched either on the D. C. or the A. C. side of the circuit.

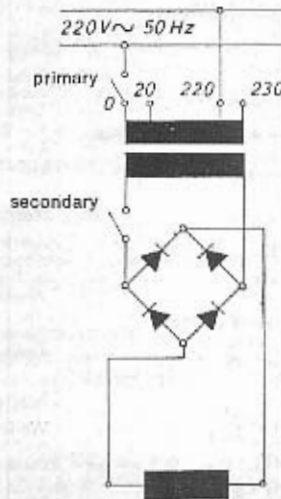
a) D. C. Switching



Clutch or Brake Coil.

To avoid overlapping, with a combination of a clutch and a brake or two clutches it is essential to switch on the D. C. side.

b) A. C. Switching



Clutch or Brake Coil.

If the coil is switched on the A.C. side, disengagement time is considerably increased.

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BM 4.028 e

2. V. 70. MH

1. Description.

The external discs (8), material friction metal "Konstant" for wet or dry-running, or (8a) material friction lining "Ortex" for dry run only, are engaged in lugs of the housing (10) free movable in axial direction. The "Sinus" internal discs (7) are sliding on the toothed clutch support (1). The magnet-body (2) is mounted secured against torsion and axial displacement. The magnet coil (3) is rigidly cast into the magnet-body. The coil ends are earthed to the magnet-body mass respectively to the slip ring (4) which is insulated against earth by means of insulating ring (5). The slip ring (6) is connected to mass.

When a direct current voltage of 24 volts is applied to the slip rings, the magnet-coil is energized, and a magnetic flux is generated which can be circuited over outer pole surface of the magnet-body, the armature disc (9) and the inner pole surface of the magnet-body. Thus, an attractive power is exerted to the armature disc which presses together the discs by the pressure plate (12) and the thrust bolts (13 and 15) which are situated in the magnet-body, and effects the non-positive connection between external body and clutch support.

The adjusting nut (16) with a fine thread is mounted on the clutch support and serves as a tightening nut. Due to the slots provided in the outer housing, the air gap between the magnet-body and the armature disc can simultaneously be adjusted by turning the nut.

When breaking the circuit, the magnetic field is destroyed. The thrust bolts, charged by the pressure springs (14) cause a sudden return motion of the armature disc along the centering nut (11) whereby the discs are released. The "Sinus" internal discs (i. e. discs with an undulatory curvature in peripheral direction) provided for friction "Steel/Konstant" only act as springs and separate simultaneously the disc packet. Since the external discs and the "Sinus" internal discs are, when the circuit is broken, merely in slight touch with another at a few points, the idling moment of the clutch is kept at a low rate.

If the circuit is closed, the external discs as well as the "Sinus" internal discs are positioned perfectly plane-parallel against one another, so that, under utilisation of the whole disc-surface, a uniform wear of the rubbing surfaces is ensured.

The clutch size may be found out as to the following values:

outer diameter of sliprings (4 and 6)	mm	85	100	110	128	154	200	245	295
corresponds to series 06-size		07	11	15	23	31	43	51	59

2. Spare Parts.

When placing orders for spare parts, please state the factory number indicated on the outer housing or on the disc support. In order to avoid wrong supplies, orders placed for spare parts should more-over be in writing or by cable.

3. Accessories.

3. 1) Rectifiers.

3. 1. 1) The rectifiers are normally equipped for a connection to 220 V, 50 cycles, single-phase alternating current. The transformer of this set is provided with 3 primary taps marked: 0-200; 0-220; 0-242; i. e. 220 V ± 10%. On delivery implements are put in the circuit of 220 V network-supply, if not strictly otherwise required. On deviations of voltage of 220 V, the equipment may be commuted. In this case, attention is especially to be drawn, that alternating current supplied, **does not exceed more than 10%** of the nominal value marked on the connecting plug.

The safety of equipment is by one fuse in primary alternating current supply and one fuse in direct current supply. Particulars of fuses see reverse side.

3. 1. 2) No-load Voltage.

A rectifier under no-load condition has no-load voltage of about 28 V which is reduced to approx. 25 V at full load. When several clutches operate simultaneously, it is necessary to select the rectifiers sufficient for the total value of all individual currents added together (clutches plus protective resistances).

3. 1. 3) Service Conditions.

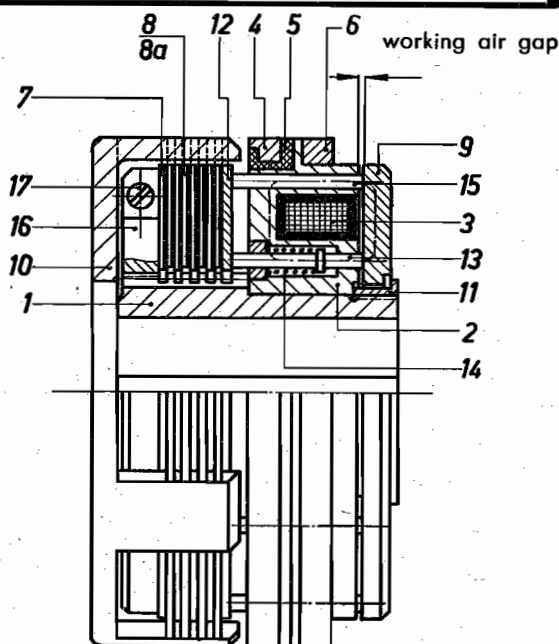
The units of these series are solely constructed for wall mounting. Only in this position is a sufficient passage of cooling air ensured with a consequent reliability of operation. These units are to be installed in rooms of a maximum temperature of 35° C, which should be dry and free from any active chemical gases and vapours. The units should never be mounted above central heating radiators.

3. 1. 4) Starting.

After connection to the alternating current main circuit, the units are ready for operation.

3. 1. 5) Maintenance.

In order to avoid possible accumulation of dust, it is advisable to blow occasionally through the unit. Otherwise, no further maintenance is required.



3. 1. 6) Troubles.

1. Unit fails to supply power:
 - a) Absence of current in network.
 - b) Interruption in the distributing system or in the D. C. circuit wires.
 - c) The fuses of the unit have no contact, or they have blown.
2. Unit fails to yield full capacity:
 - a) The circuit has under-voltage.
 - b) Wrong connection at the terminals or at alternating current: the 220 V network has been connected to the star-delta transformer.

size of clutch	Rectifier		Circuit	Direct Current fuse	Protective Resistance	
07 11	5057-24-0,8	0,8 A	T 0,25/250 B	F 0,8/250 G	5058-150-0,25	0,25 A
15 23	5057-24-1,8	1,8 A	T 0,5/250 B	F 2 /250 G		
31 43	5057-24-3,2	3,2 A	T 0,8/250 B	F 4 /250 G	5058-70-0,45	0,45 A
51 59	5057-24-5	5 A	T 1 /250 B	F 5 /250 G	5058-40-0,7	0,7 A

3. 2) Protective Resistances.

It is in all cases recommended to install protective resistances in accordance with the appended wiring diagrams in order to protect the magnet coils against detrimental high induction voltages. (Particulars see page 4).

3. 3) Current Supply Lines.

Since the clutches are adapted for dry running as well as for oil operation service, our type 5056-001 is most suitable for dry running and type 5056-002 for operation under oil.

The permissible circumferential speed of the slip rings is approx. 20 m/sec., depending on the existing working conditions. In case of higher peripheral speeds and if the directions of rotation are alternating, it is to recommend to install two current supply lines 5056-001 or 5056-002 for each slip ring.

The dimensions of the current supply lines to be installed must be considered because otherwise sparks caused by worn brushes in consequence of too low sliding pressure may destroy the slip rings. (See illustration on page 4.)

4. Assembly

Ortlinghaus Electro-Magnetic multi-disc clutches of series 06 are available.

4. 1) As dry running clutches for open mounting, with disc mating steel to friction lining "Ortex", or steel to metal friction lining "Konstant".

4. 2) As wet running clutches for mounting into gears, with disc mating steel to metal friction lining "Konstant".

When our Ortlinghaus electro-magnet clutches of the design series 06 are to be utilised as a duplex clutch arrangement, 2 single clutches are placed against each other, and a 2-3 mm wide intermediate ring is located between the clutches. On assembling the following has to be considered:

The bearings have to be placed to the clutches as close as possible. The separate shafts in case of shaft clutches must interlock with each other within the clutch.

With separate shafts these must be in exact alignment and should only be permitted to have the slightest possible play in axial direction. The disc support must be firmly connected with the shaft and secured against axial displacement.

Utmost care must be taken on assembly to ensure minimum eccentricity and vibration.

Vertical installation of the clutches requires internal oiling. In case of unfavourable working conditions (high rotation speeds), it may also be required to provide for an internal oiling for the purpose of carrying off frictional heat. We shall at all times be pleased to assist you with suitable suggestions regarding your problems.

5. Adjustment and Re-adjustment of Clutch

5. 1) a) Loosen of hexagon screw 17 of adjusting nut by turning it to the left.
 b) Adjust air gap by turning adjusting nut either to the left or to the right.
 c) After adjustment, hexagon screw of adjusting nut has to be retightened by a forced turn to the right. Thus, the adjusting nut is clamped fast to the support and is secured against any torsion during operation.

5. 2) A right hand turn of the adjusting nut in direction of arrow: $M_d \rightarrow$ results in a smaller torque and a larger working air gap.

5. 3) A left hand turn of the adjusting nut in direction of arrow: $\leftarrow M_d$ results in a larger torque and a smaller working air gap. In any case a small remaining air gap is required. The armature disc must never strike against the casing of the magnet when the circuit is closed.

The size of working air gap can be measured in the following manner: Engage the clutch and measure the gap between magnet-housing and armature disc with a non-magnetic feeler gauge. A makeshift way of measuring is by means of layers of paper of a known width. A non-magnetic feeler gauge is supplyable, with charge, on demand.

5. 4) Compensation of the Frictional Wear.

The working air gap is constantly reduced by the frictional wear of the disc packet. The torque of the clutch becomes larger by growing frictional wear, until finally the working air gap decreases to 0, i. e. the armature disc touches the magnet housing.

In order to re-adjust the original working air gap, the adjusting nut must be re-adjusted by turning it to the right in direction of the arrow: $M_d \rightarrow$.

The approximate values of the working air gaps at the respective nominal clutch torques are as follows:

Sizes of clutch: 07 = 0,2 mm 11 = 0,2 mm 15 = 0,2 mm 23 = 0,2 mm
 31 = 0,25 mm 43 = 0,3 mm 51 = 0,3 mm 59 = 0,3 mm

6. Lubrication of Clutch.

Clutches with dry running disc (sec. 4.1) must not be lubricated, it is only necessary to apply some grease of a high consistency of the centering nut (11), e. g. Shell Alvania Grease 2.

- 6. 1)** Clutches with disc mating steel to metal friction lining "Konstant". For average speeds a thin fluid oil with a viscosity of about 2—3 E/50° C is required (i. e. Shell Tellus Oil 27).
At extremely high and low speeds an oil with a lower viscosity of about 1,5—2 E/50° C is more suitable (i. e. Shell Tellus Oil 15).
Generally, oil spray lubrication will be sufficient. Excessive lubrication of slip rings must be avoided as this will unfavourably affect the contact conditions at the current supply lines. If using dipping lubrication, maximum dipping must not exceed 1/10 of diameter.

7. Working Data.

- 7. 1)** The clutches are rated for a 100% duty cycle.
7. 2) Depending on mounting conditions, the permanent temperature will rise up to approx. 80° C.
7. 3) For transmission of torques a D. C. voltage of 24 V + 10% is necessary.
7. 4) The clutches are adapted dry running for high speed engagements, as it is, for instance, required for the control of copying operations in the field of machine tool engineering.
Where engagement frequency and accuracy of the engagement are not required to be too high, the rectifiers can be operated on alternating current in order to increase the service life of the switchgear.
But where the requirements to be met are high, it is indispensable to work on direct current. However, in these cases a breaking spark appears at the contacts of the control elements when they are disconnected, on account of which the contacts of the switches will be destroyed in the long run. It is therefore strongly recommended to install arc eliminating condensers which must be connected parallel to the switching points.

Size of condensers:

Size of Clutch	07	11	15	23	31	43	51	59
Condenser μF	2	2	2	2	2	4	4	4
Type	5055—2					5055—4		

If several switches are connected to the D. C. circuit of the clutch, the transition resistances of the switching contacts might sum up to such an extent that a considerable drop of voltage is caused at the magnet coil. The reduction of clutch capacity can be so considerable, that the exact function of the clutch is not guaranteed anymore. In such cases it is recommended to choose a higher voltage and to connect an intermediate resistance to the clutch to obtain a voltage of 24 V + 10% at the slip rings.

The arrangement of the clutches, protective resistances and arc eliminating condensers may be taken from the wiring diagrams.

8. Faulty Installation and Errors on Maintenance and their Elimination.

8. 1) The clutch does not pull through and slips.

Clutch adjustment is insufficient (the working air gap is too large) and needs readjustment, as described in § 5.3, or conversely the working air gap is too small (the armature disc touches the magnet housing, thus ceasing to apply the necessary pressure to the discs). Remedy: Turn adjusting nut, as described under 5.4.

Check if voltage of 24 V required is existent.

Oil used is too viscous or lubrication excessive.

8. 2) Clutch engages in idling gear.

Clutch must be readjusted (see § 8.1) (working air gap is too large). Check if any voltage is remaining at the slip rings, due to faulty switching elements or insulations. The oil used is too thick, it must be replaced by an oil with a lower viscosity; or otherwise lubrication is too much. When clutch is disengaged, discs must allow to be freely moved.

8. 3) Heating up of Clutch.

Check if there is any increase of temperature beyond the normal one of 80° C, when clutch is in idling gear or under load.

a) Under load: Clutch adjustment is insufficient. Readjustment see § 5. With shaft clutches it might happen that shafts are not correctly in alignment.

b) In idling gear: It must first be ascertained where the heating up is located. Check if lubrication of bearings (roller or journal bearings) is insufficient or excessive.

8. 4) Clutch fails to engage.

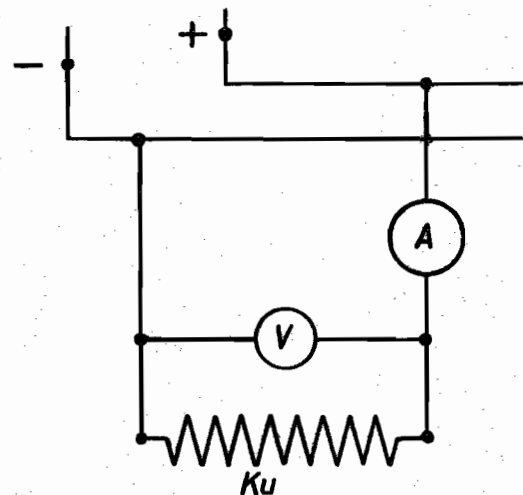
Check the correct supply:

a) if the tension of 24 V + 10% required, is available at slip rings.

b) if the brush is sliding along the slip ring, and if the brush is worn out, replace it and clean the slip rings.

c) if the coil is short-circuited. Connect an ammeter to ensure the existence of the following current intensity rates:

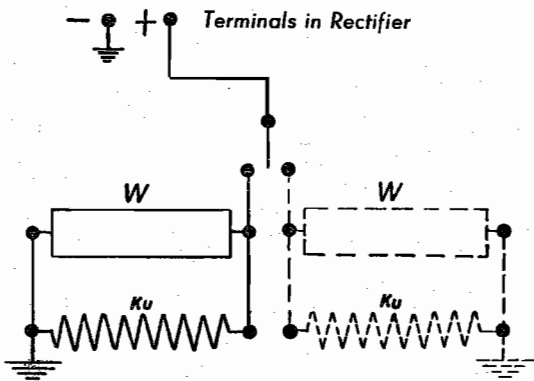
Size of Clutch	07	11	15	23	31	43	51	59	
at 20° C	0,62	0,63	1,01	1,12	2,12	2,38	3,6	4,38	Amp.
at 80° C	0,5	0,51	0,82	0,91	1,67	1,93	2,92	3,55	Amp.



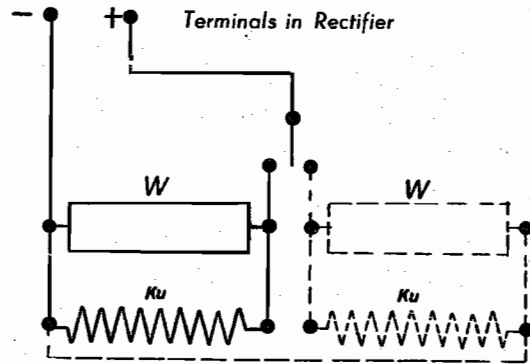
Test wiring diagram

Wiring Diagrams for Elektro-Magnetic Clutches Service Voltage: 24 Volts

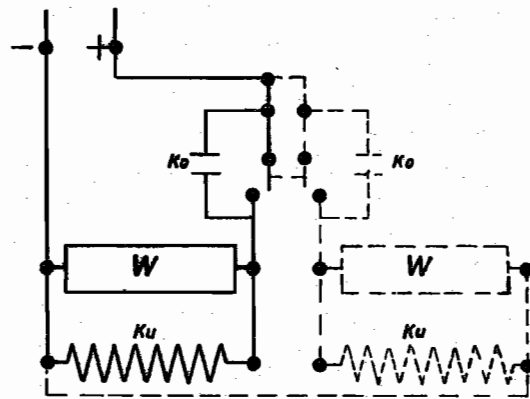
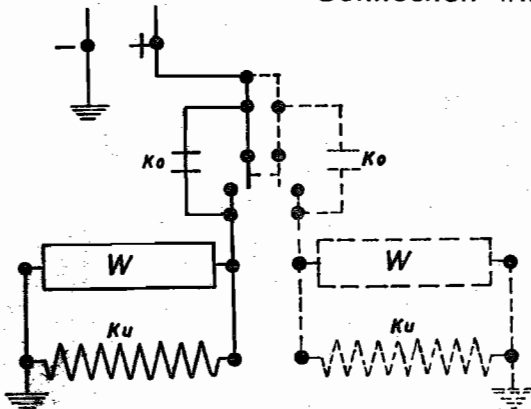
Negative connection over machine body



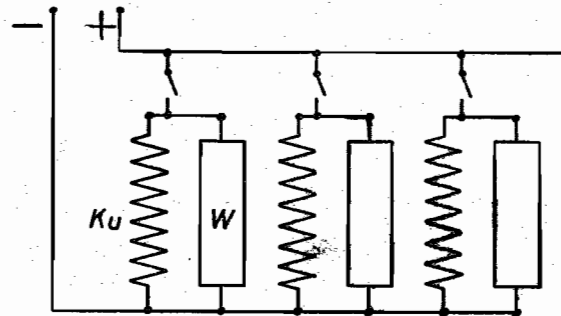
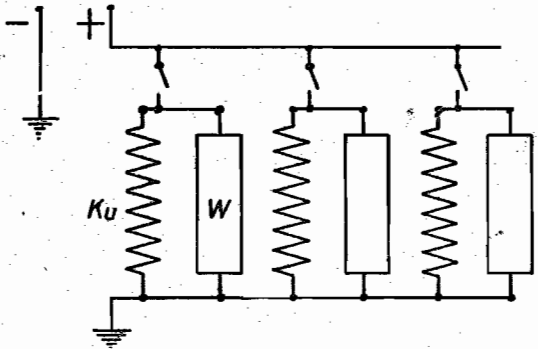
Negative connection over 2nd brush sliding along mass slip ring 6



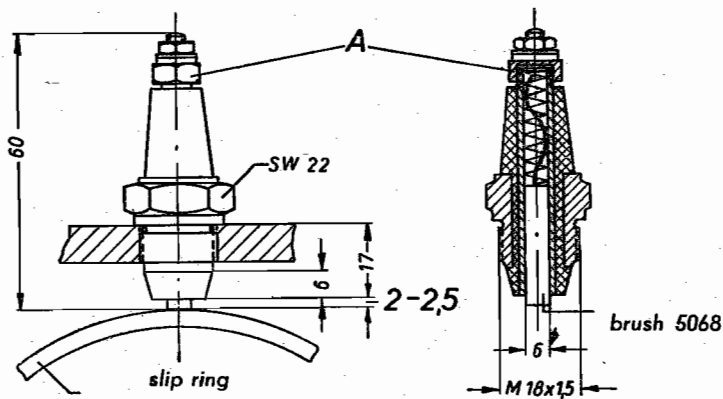
Connection with Arc Eliminating Condenser



Several Clutches connected to One Rectifier



— single Clutches - - - - - double Clutches
 Ko = Condenser; Ku = Clutch; W = Resistance



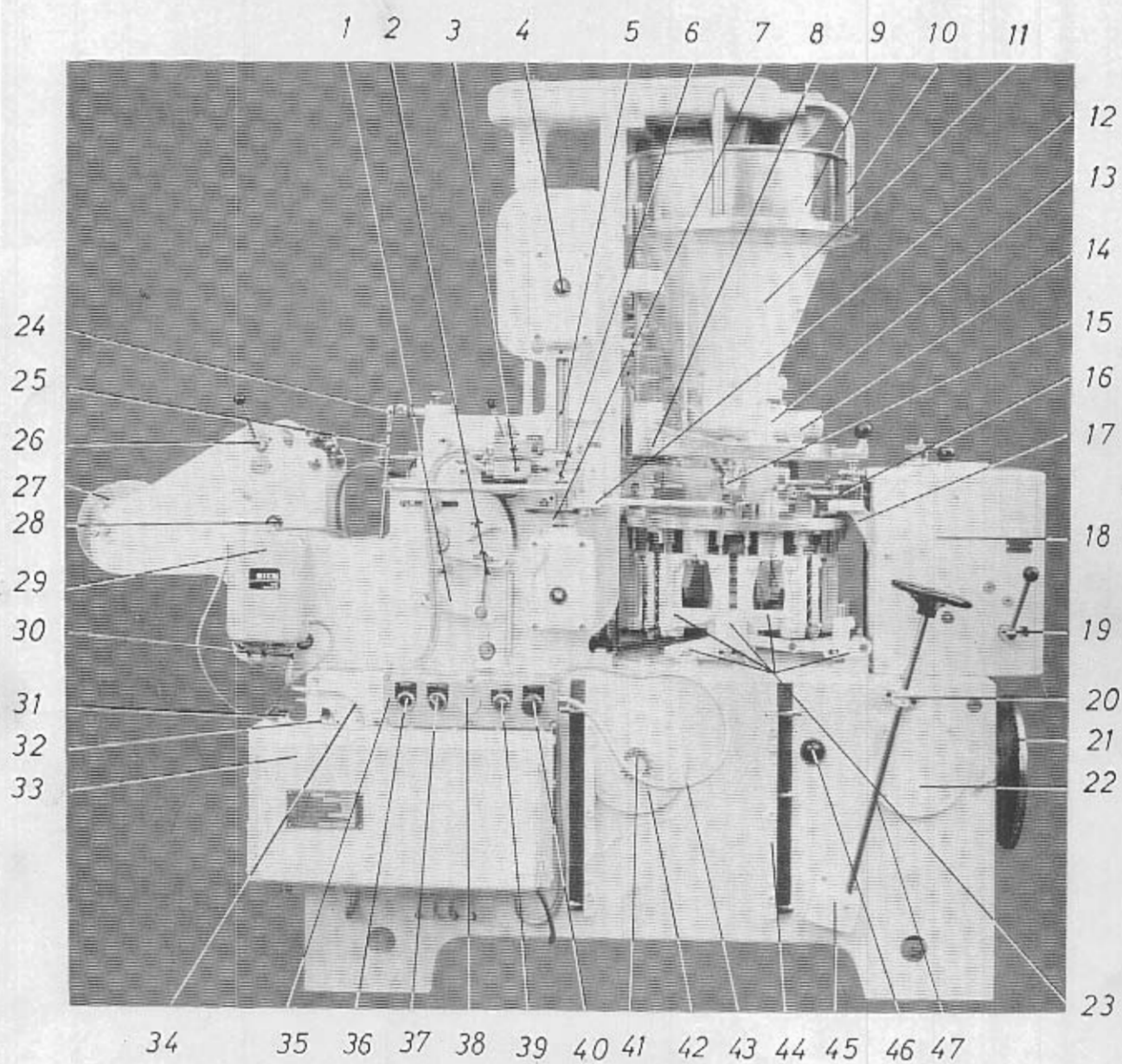
Current Supply Line 5056

Brushes 5068-001 for dry running and 5068-002 for running in oil are available for replacement. After loosening nut A, brush can be removed and replaced by a new one.

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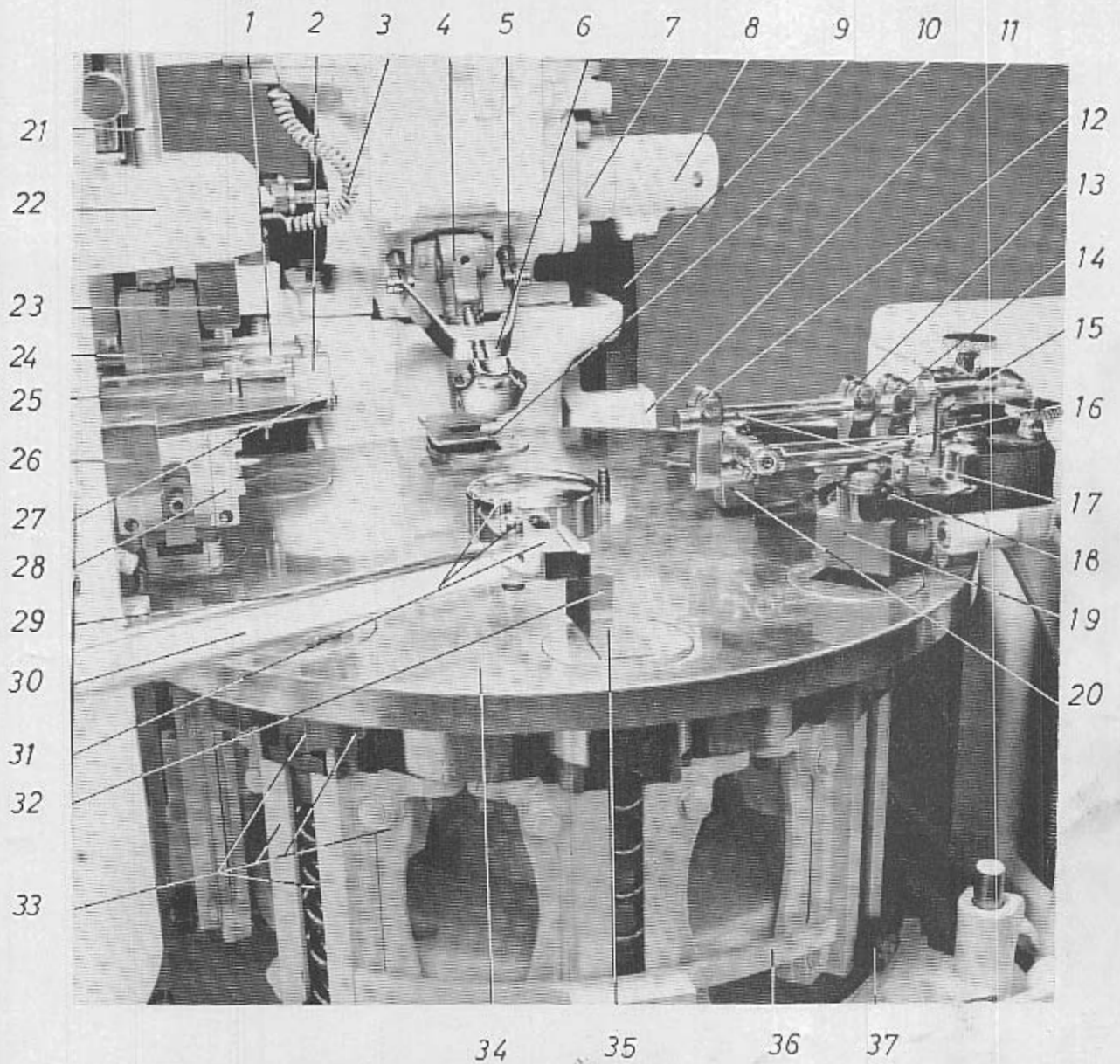
Telephone: Wermelskirchen 331 · Telex: 8513311 · Telegrams: Ortlinghauswerk Wermelskirchen

Fig. 8304 / 1



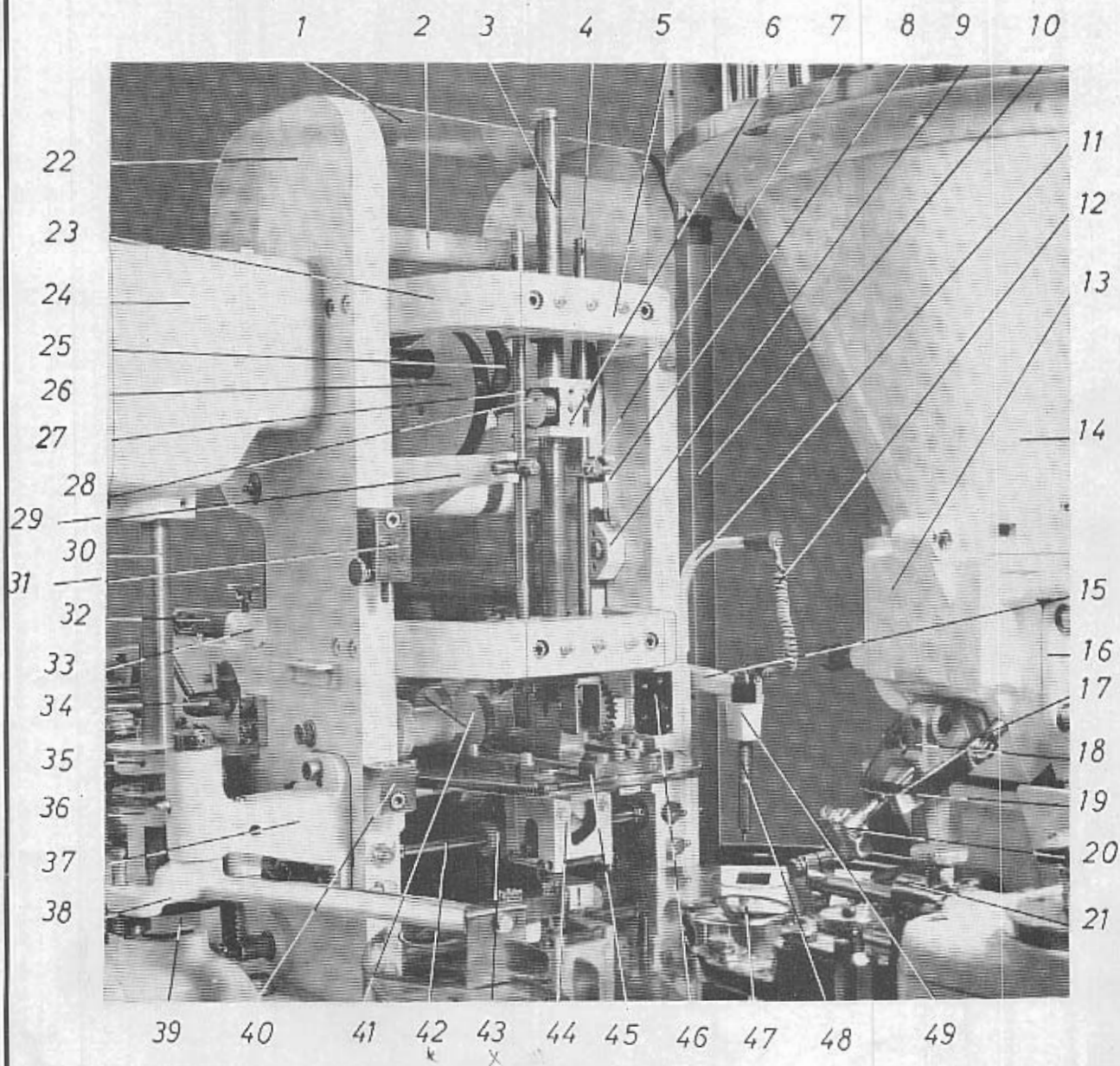
Part	Denomination	Part	Denomination
1	lever	35	control device
2	toothed segment	36	push button
3	limit switch	37	push button
4	bevel gear case	38	blind plug
5	shaft	39	push button
6	cam for limit switch	40	push button
7	pusher cam	41	bevel wheel drive shaft for collating and stacking device
8	frame with glass plate		
9	funnel extension	42	flange bearing
10	support for gear	43	feed line
11	funnel	44	fastening gib for collating and stacking device
12	pusher lever		
13	flange bearing	45	housing for helical gear wheels
14	toothed segment	46	oil level glass
15	mouth plate	47	shaft for speed adjustment
16	cover folder		
17	lever		
18	housing for closing fold		
19	lever		
20	bearing		
21	handwheel		
22	bearing flange		
23	guide for cell and cell bottom		
24	ball joint		
25	connecting rod		
26	feed roller		
27	guide for wrapper reel		
28	rubber buffer		
29	control device		
30	feed line		
31	push button		
32	rotary switch		
33	control box		
34	feed line		

Fig. 8304 / 2



Part	Denomination	Part	Denomination
1	lateral guide	35	cell bottom
2	wrapper stop	36	guide plate
3	cable for wrapper feeler	37	roll for guide bar
4	filling cock		
5	bolt		
6	tensioning bow		
7	flange bearing		
8	toothed segment		
9	rack		
10	wrapper bag blankholder		
11	guide for rack		
12	stop		
13	stop		
14	stop		
15	guide angle		
16	folding shaft		
17	guide bar		
18	slewing bow		
19	press-on plunger		
20	folding lever with initial folder		
21	guide bar		
22	guide bearing		
23	pre-folder		
24	wrapper bag plunger		
25	fold box plate		
26	stop		
27	wrapper stop		
28	fold box		
29	lever for pusher		
30	lever for pusher		
31	pusher		
32	pusher angle		
33	guide for cell	cell bottom	
34	rotary table		

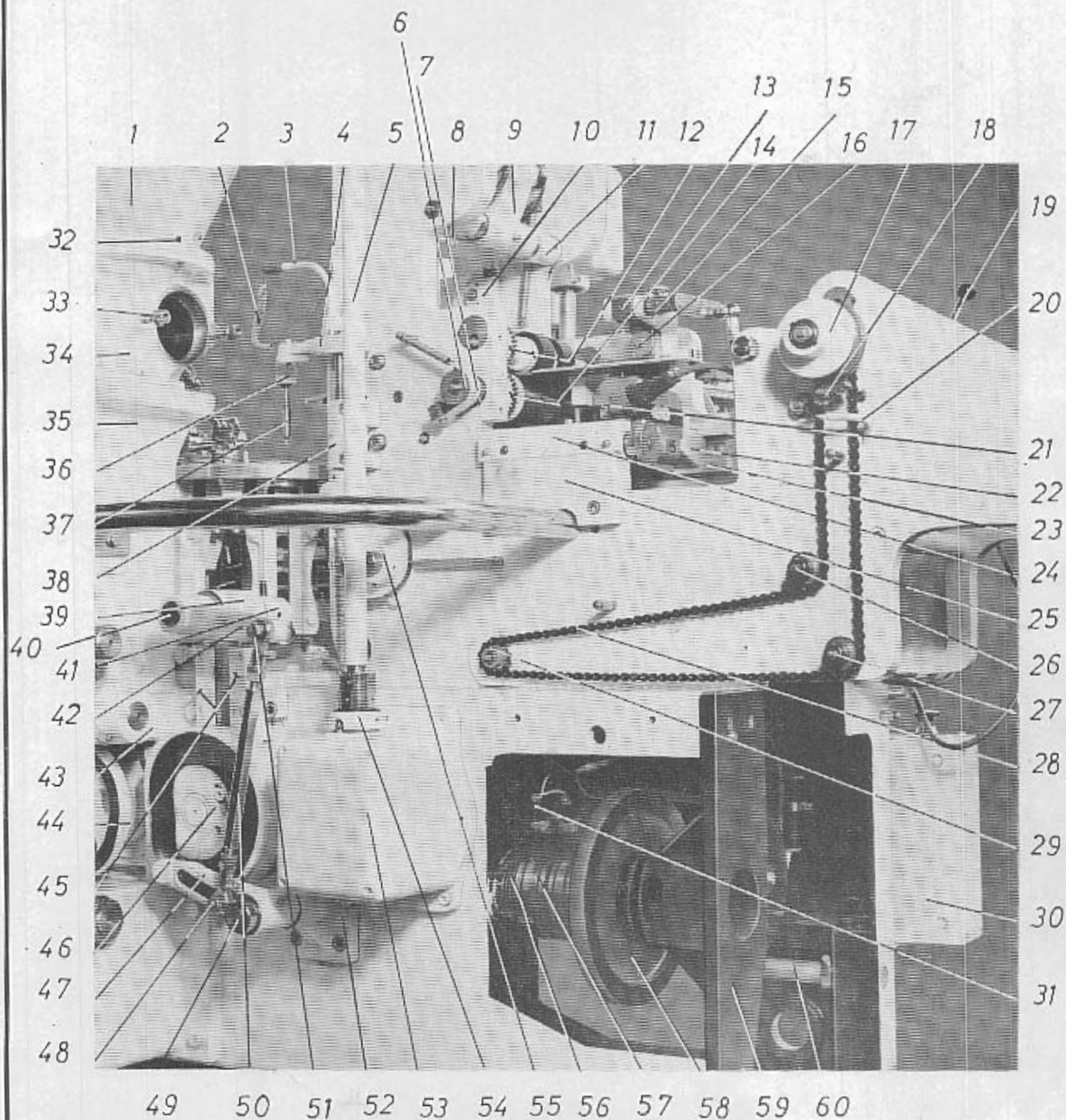
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Part	Denomination	Part	Denomination
1	cover plate	34	lever
2	axle	35	cam
3	wrapper bag plunger, compl.	36	cam
4	bar	37	bearing
5	guide bearing	38	pusher lever
6	slide block	39	cam for pusher
7	bolt	40	stop
8	lever	41	accelerating roller
9	fork guide	42	axle
10	vertical shaft	43	advance lever
11	cable tube	44	fold box
12	cable	45	wrapper stop
13	dosing housing	46	limit switch
14	funnel	47	nut
15	feeler lever	48	wrapper feeler
16	flange bearing	49	support
17	support		
18	filling cock		
19	tensioning bow		
20	star handle		
21	support		
22	frame wall		
23	bridge		
24	bevel gear box		
25	cam		
26	cam		
27	bar		
28	lever for wrapper bag plunger		
29	lever for pre-folder		
30	vertical shaft		
31	stop		
32	lever		
33	perforating stand		

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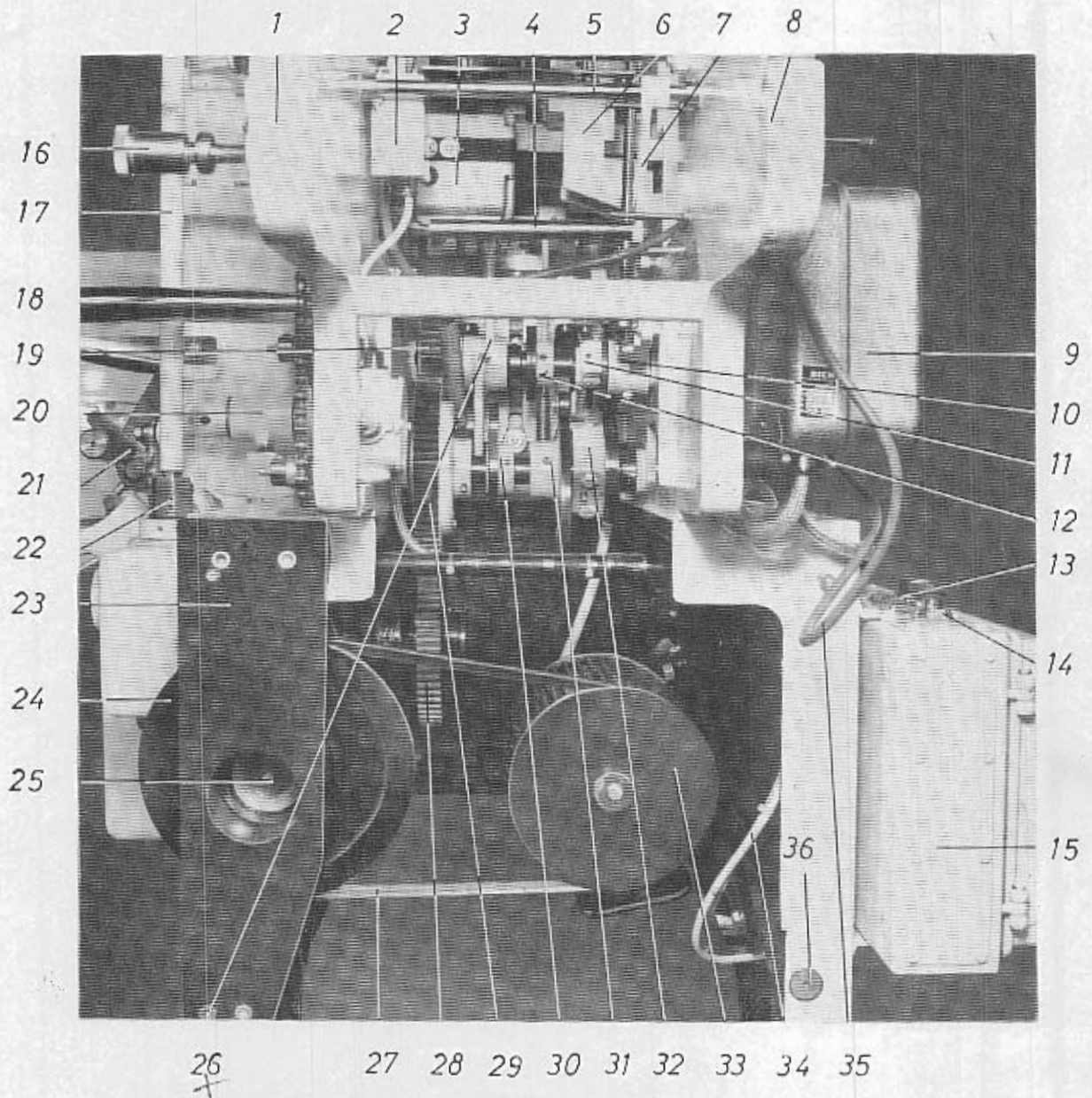
Fig. 8304 / 4



Part	Denomination	Part	Denomination
1	funnel	34	dosing housing
2	cable	35	housing
3	cable guide	36	support
4	feeler lever	37	feeler
5	vertical shaft	38	bearing
6	brake disc	39	lever
7	brake band	40	axle
8	spring eye	41	lever
9	lever for wrapper bag plunger	42	lever
10	fork guide	43	lever
11	lever for pre-folder	44	grooved cam
12	upper feed roller	45	valve guide
13	perforation	46	grooved cam
14	lower feed roller	47	roller lever
15	lever for perforation	48	set bolt
16	bolt	49	bolt
17	electromagnetic clutch	50	connecting rod
18	carbon brush	51	bolt
19	lever	52	bearing
20	cable	53	bevel wheel housing
21	scanning head for photo-electric eye	54	ring
22	type holder	55	cam
23	guide gib	56	electromagnetic brake
24 } 25 }	scanning head adjustment	57	electromagnetic clutch
		58	cone belt pulley
26	chain wheel	59	auxiliary bearing
27	chain wheel	60	axle
28	roller chain		
29	chain wheel		
30	control box		
31	carbon brushes		
33	hexagon nut		

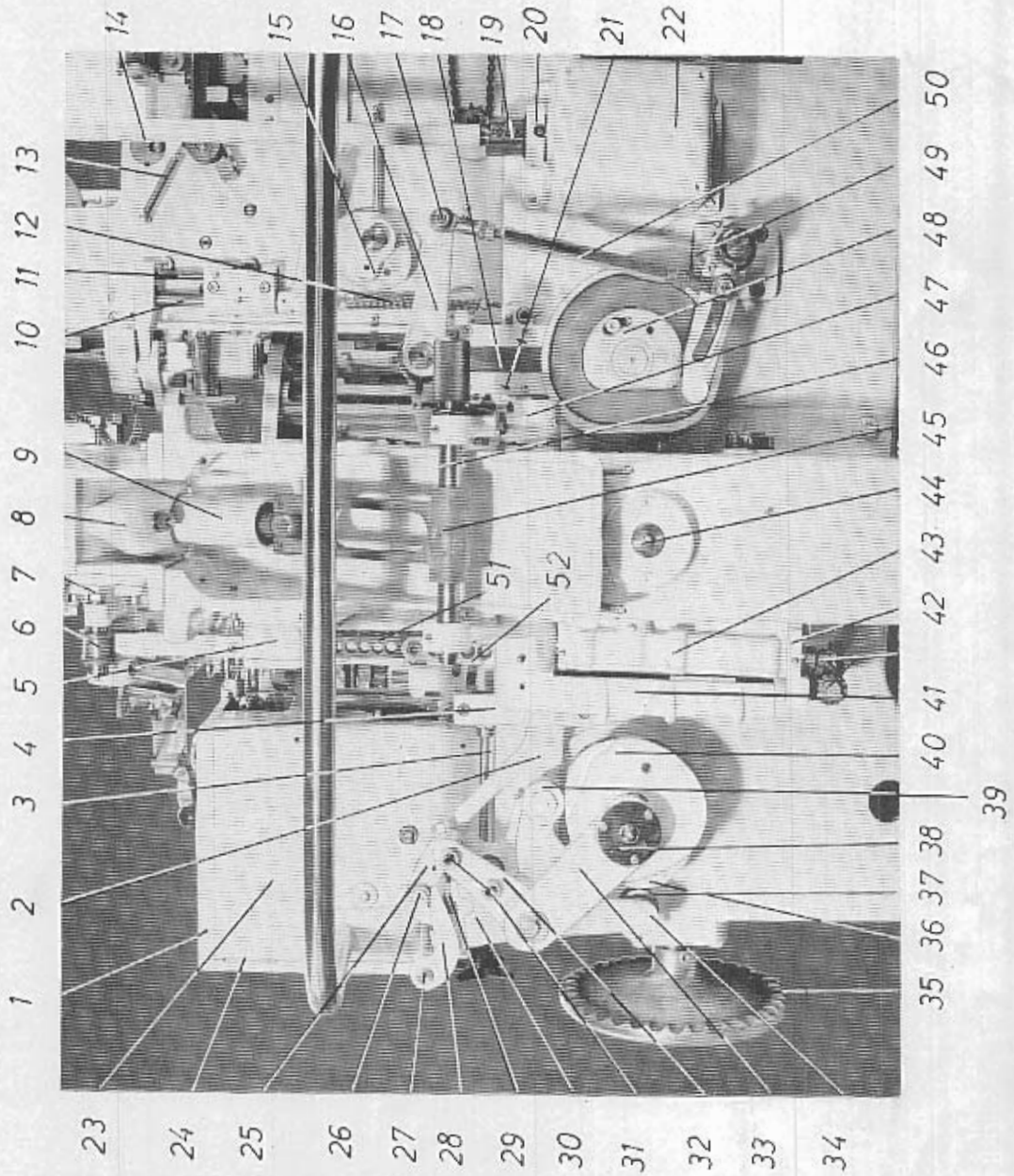
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Fig. 8304 / 5



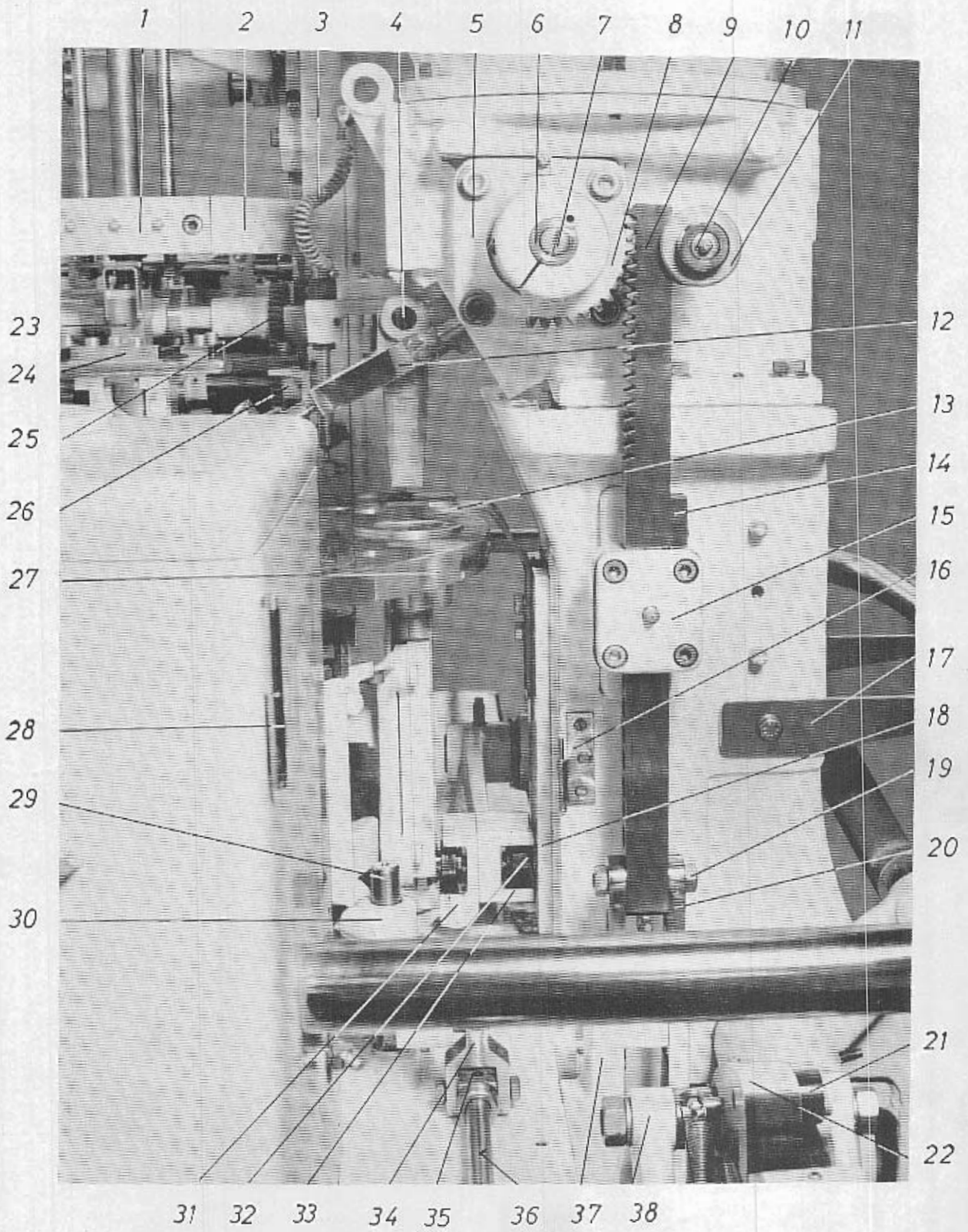
Part	Denomination	Part	Denomination
1	left frame wall	35	cable
2	quicksilver switch	36	axle
3	scanning head for photo-electric cell		
4	shaft		
5	shaft		
6	perforating stand		
7	lever for pendulum		
8	right frame wall		
9	control device Sick		
10	lever for perforation		
11	lever		
12	cam (accelerating rolls - lifting)		
13	rotary switch		
14	push-button		
15	control box		
16	adjusting spindle		
17	vertical shaft		
18	protective bow		
19	toothed wheel		
20	lever		
21	catch		
22	clutch		
23	auxiliary bearing		
24	cone belt pulley		
25	main driving shaft		
26	lever		
27	cone belt		
28	toothed wheel		
29	intermediary gear		
30	cam		
31	cam		
32	cam		
33	cone belt pulley		
34	cable		

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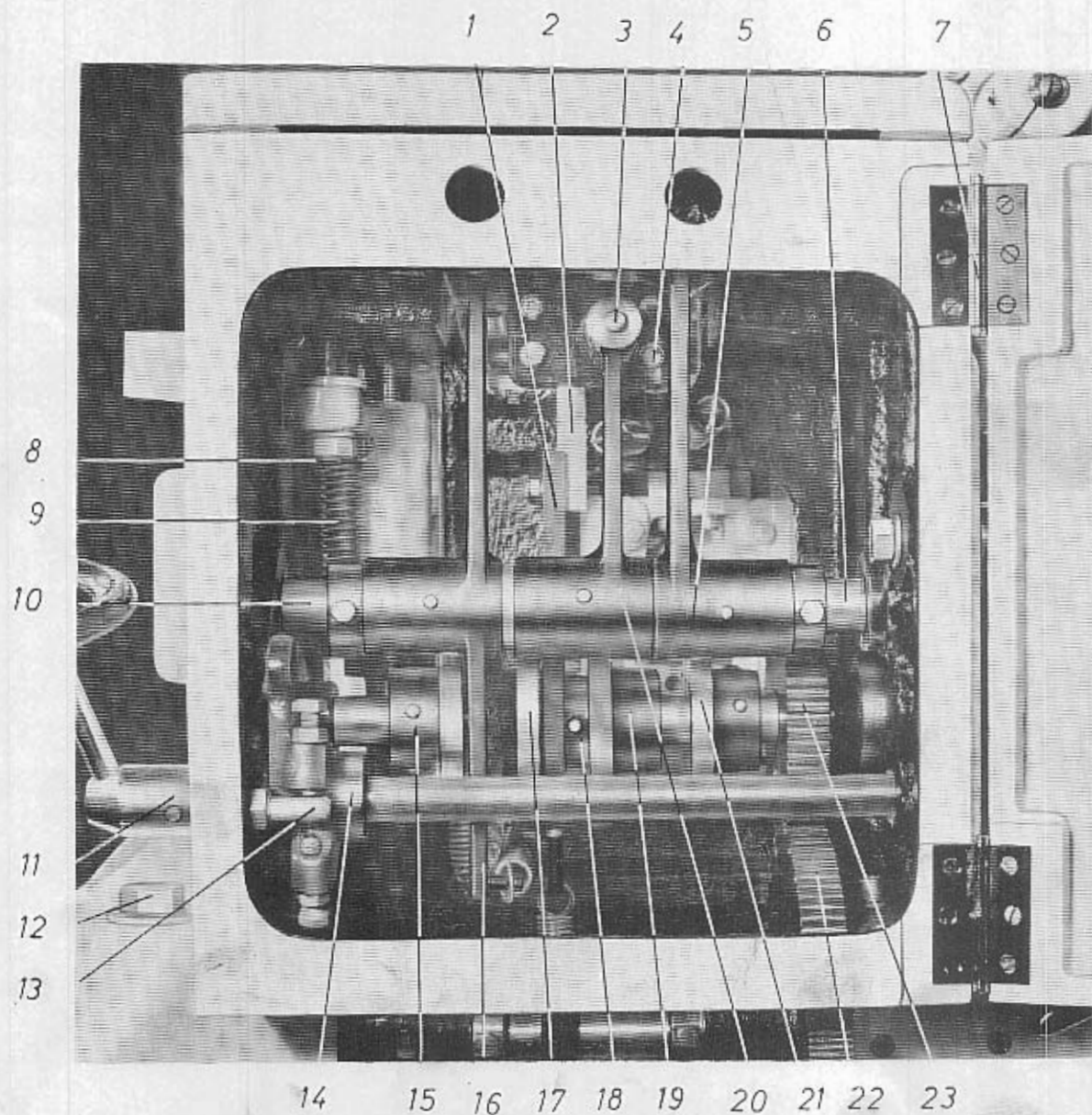


Part	Denomination	Part	Denomination
1	cover	35	handwheel
2	roll lever	36	cam
3	axle	37	cam roll
4	bearing	38	support
5	bearing	39	cam roll
6	roll	40	cam
7	bolt	41	piston lever
8	tensioning bow	42	bearing
9	piston bush	43	slotted lever
10	axle	44	shaft
11	axle	45	connecting rod
12	tension spring	46	axle
13	tension spring	47	piston lever
14	shaft	48	grooved cam
15	cam	49	bearing
16	lever	50	connecting rod
17	bolt	51	bearing flange
18	guide		
19	clutch		
20	distance ring		
21	guide bearing		
22	bevel wheel housing		
23	housing		
24	hinge		
25	ratchet		
26	bolt and roll		
27	bolt		
28	lever		
29	catch tooth		
30	lever		
31	bolt		
32	lever		
33	bearing		
34	roll lever		

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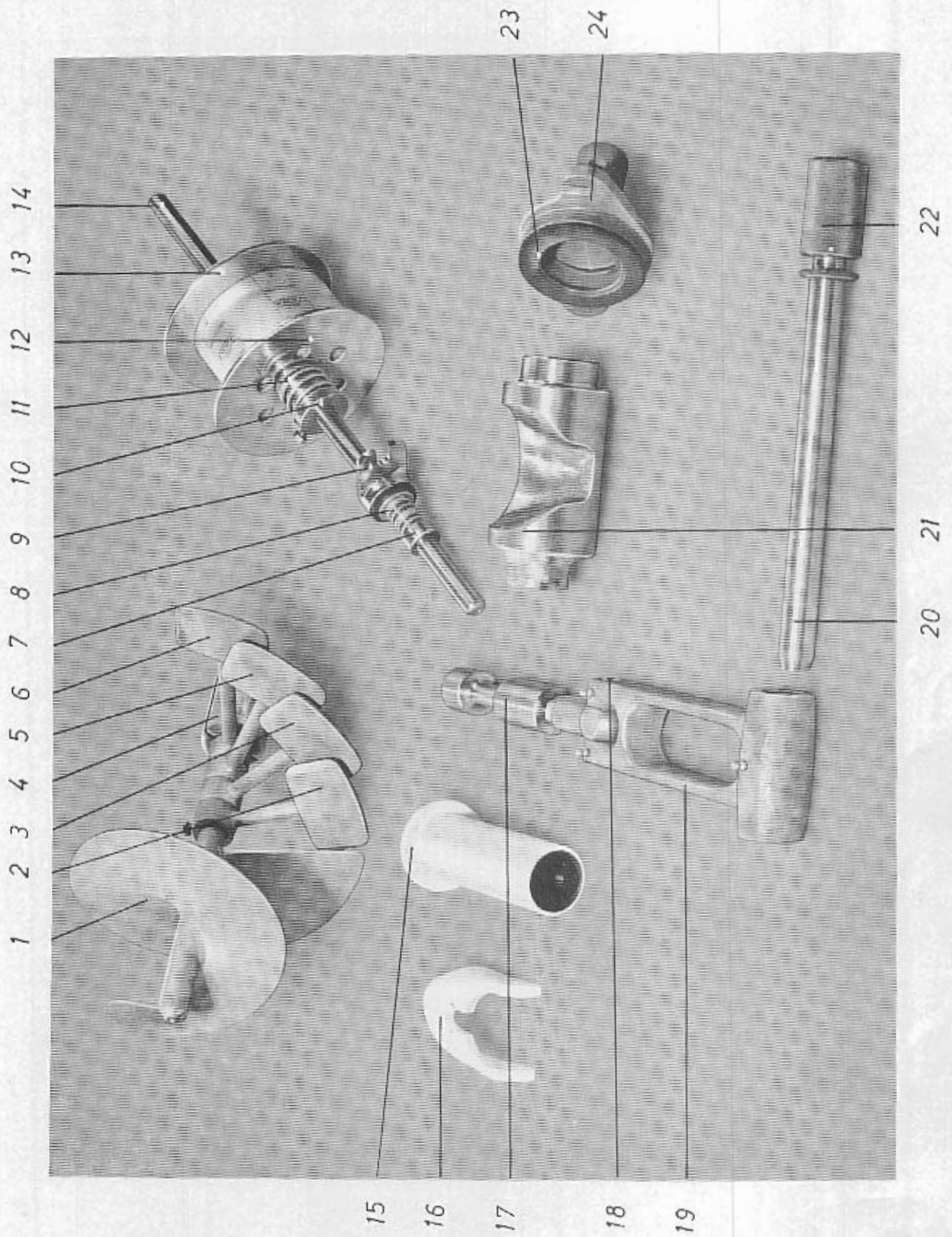
Part	Denomination	Part	Denomination
1	bearing	34	lever
2	bearing arm	35	bolt
3	cable	36	connecting rod
4	bolt	37	connecting rod
5	bearing flange	38	lever
6	bolt		
7	fixing screw		
8	toothed segment		
9	rack		
10	bolt		
11	roll		
12	tensioning bow		
13	wrapper bag blankholder		
14	stop		
15	bearing		
16	hinge		
17	support for protective bow		
18	gib		
19	bolt		
20	connecting rod		
21	roll		
22	ratchet		
23	wrapper bag plunger		
24	stop		
25	toothed wheel		
26	toothed wheel		
27	rotary table		
28	hinge		
29	bolt		
30	guide plate		
31	lever for cell lifting device		
32	roll		
33	lever for cell lifting device		



Part	Denomination
1	fork
2	bar
3	folding bar
4	screw
5	lever
6	axle
7	hinge
8	lever
9	pressure spring
10	axle
11	lever
12	screw
13	bolt
14	lever
15	cam
16	lever
17	cam
18	cam
19	cam
20	lever
21	cam
22	toothed wheel
23	toothed wheel

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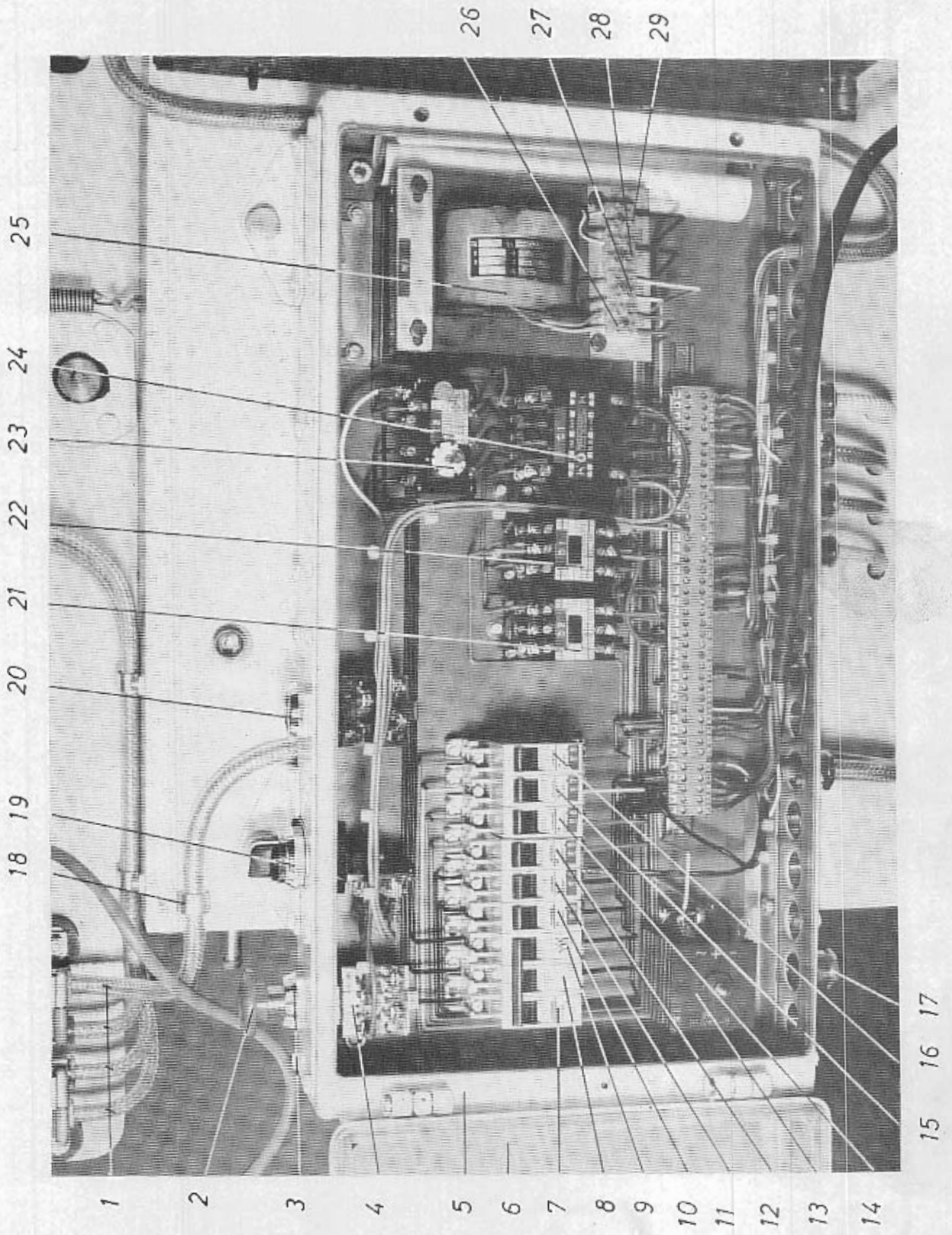
Fig. 8304 / 9



Part	Denomination
1	feed worm
2	blade
3	blade
4	valve sleeve
5	blade
6	blade
7	set ring
8	pressure spring
9	lever
10	set ring
11	pressure spring
12	disc
13	disc
14	axle
15	piston bush
16	tensioning bow
17	dosing piston
18	piston bolt
19	connecting rod
20	bolt
21	rotary cylinder
22	handle
23	ring
24	cover

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Fig. 8304 / 10



Part	Denomination
1	cable
2	push-button
5	control box
6	cover
7)	automatic cut-out
8)	
9)	
10)	automatic cut-out
11)	
12)	
13	selenium rectifier
14)	automatic cut-out
15)	
16)	
19	rotary switch
20	push-button
21	control relay
22	control relay
23	motor protection relay
24	motor relay
25	control transformer
26)	connecting terminals
27)	
28)	
29)	

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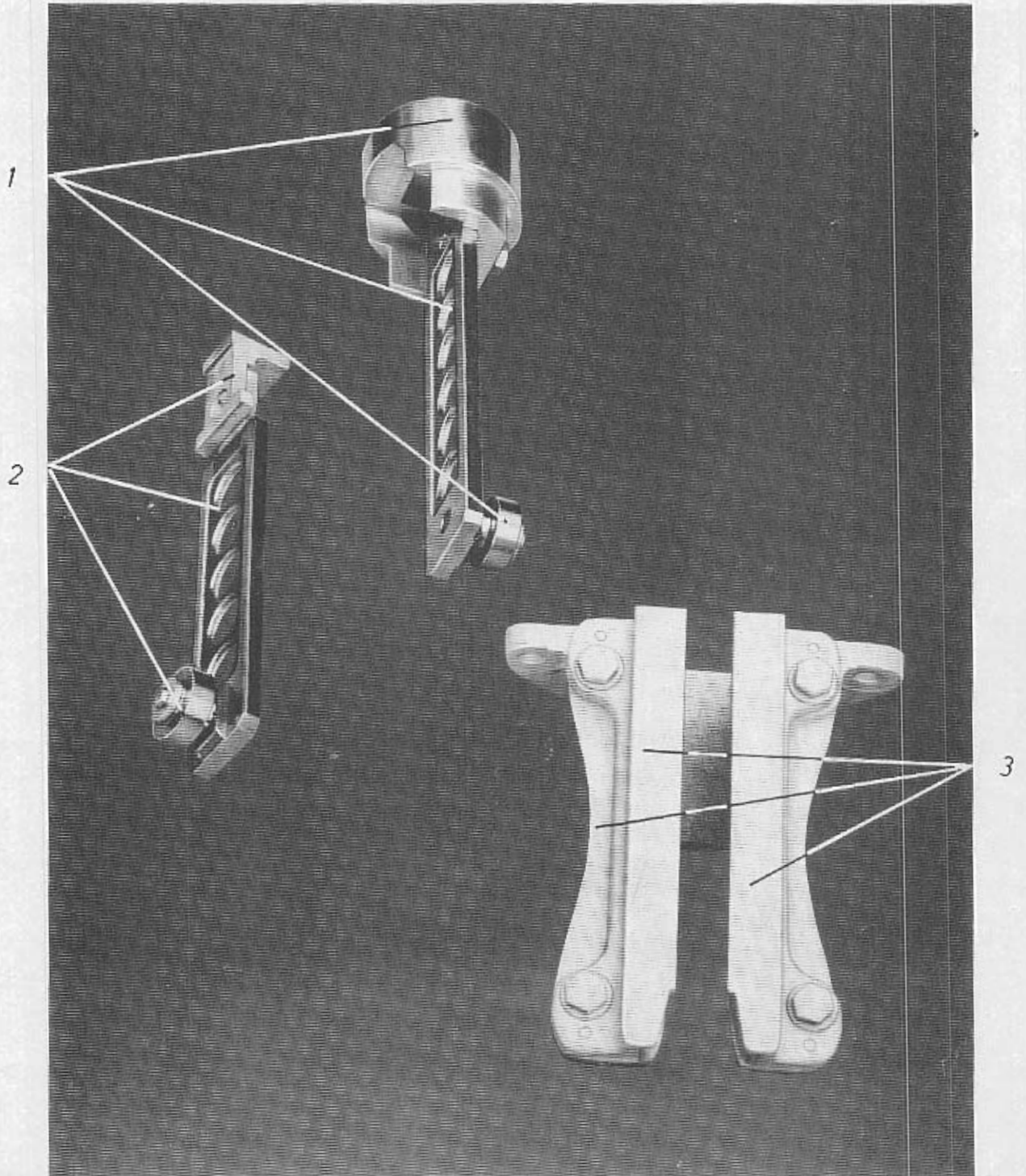


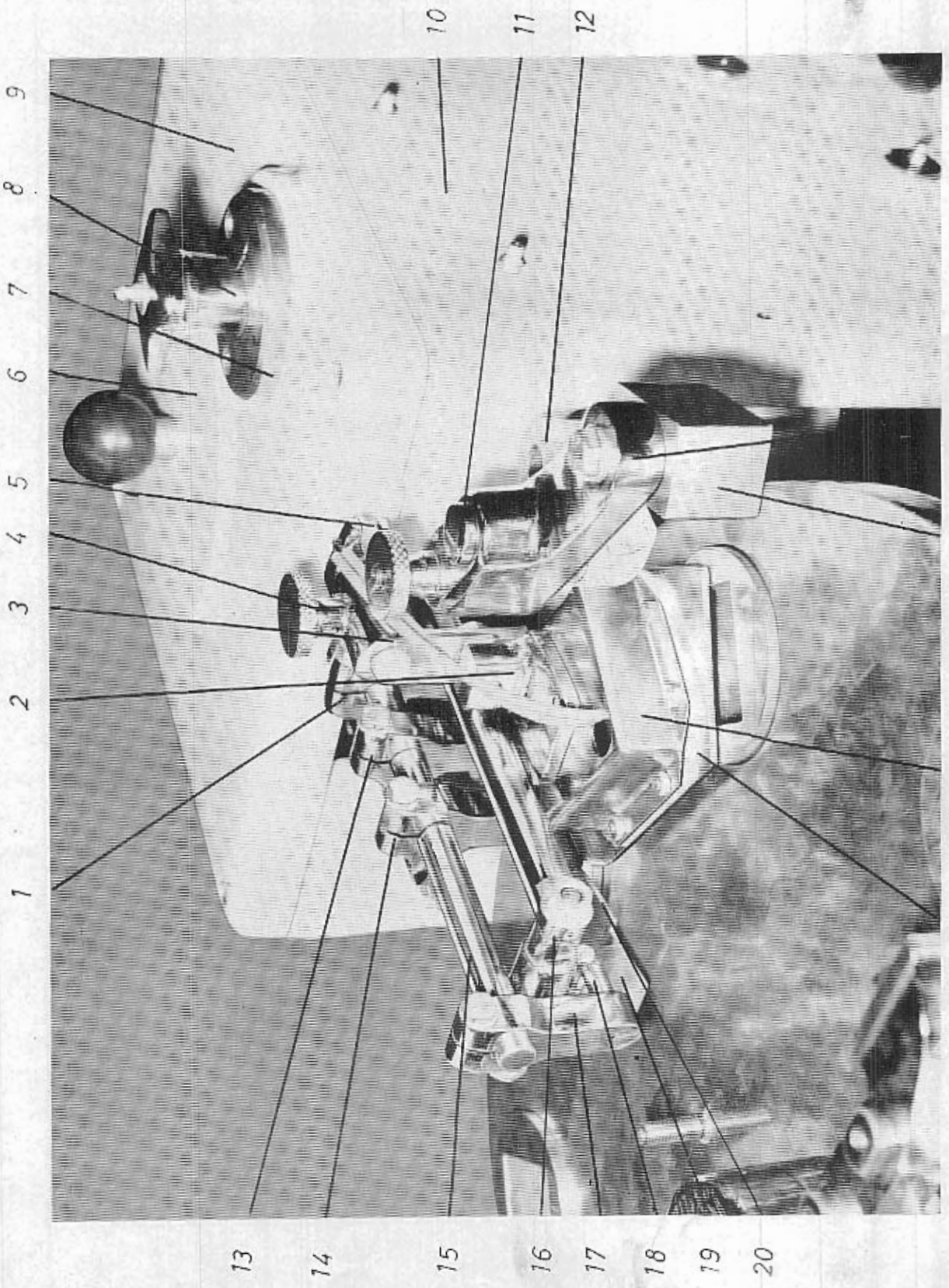


Fig. 8304/11

Part	Denomination
1	cell, complete
2	cell bottom, complete
3	guide, complete

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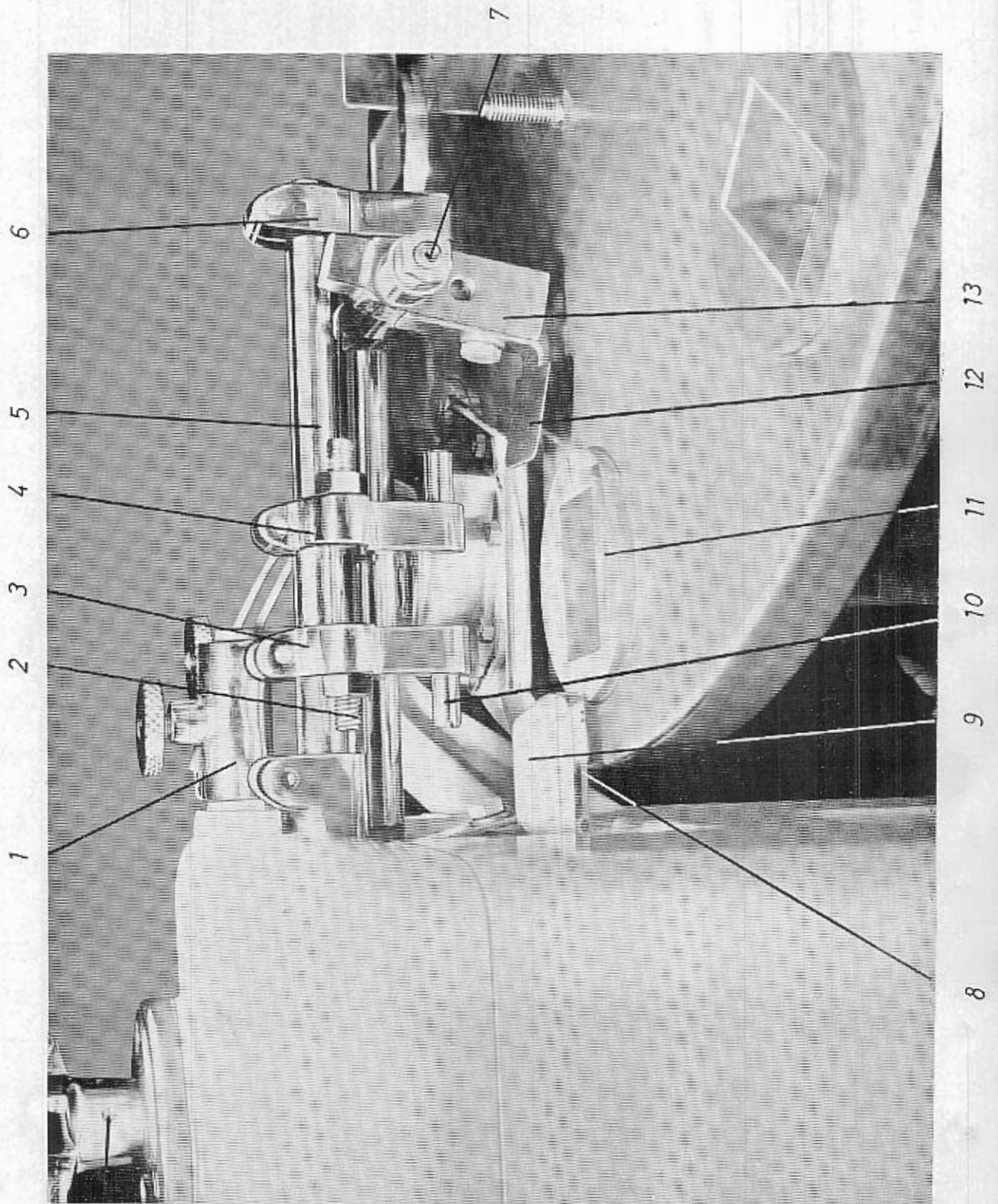
Fig. 8304 / 30



Part	Denomination
1	stop
2	support
3	lever
4	screwing
5	bolt
6	cover
7	cover
8	star handle
9	cover
10	housing
11	bolt
12	lever
13	stop
14	stop
15	axle
16	bolt
17	stop
18	bolt
19	lever
20	intruding folder
21	folding plate
22	heating element, cpl.

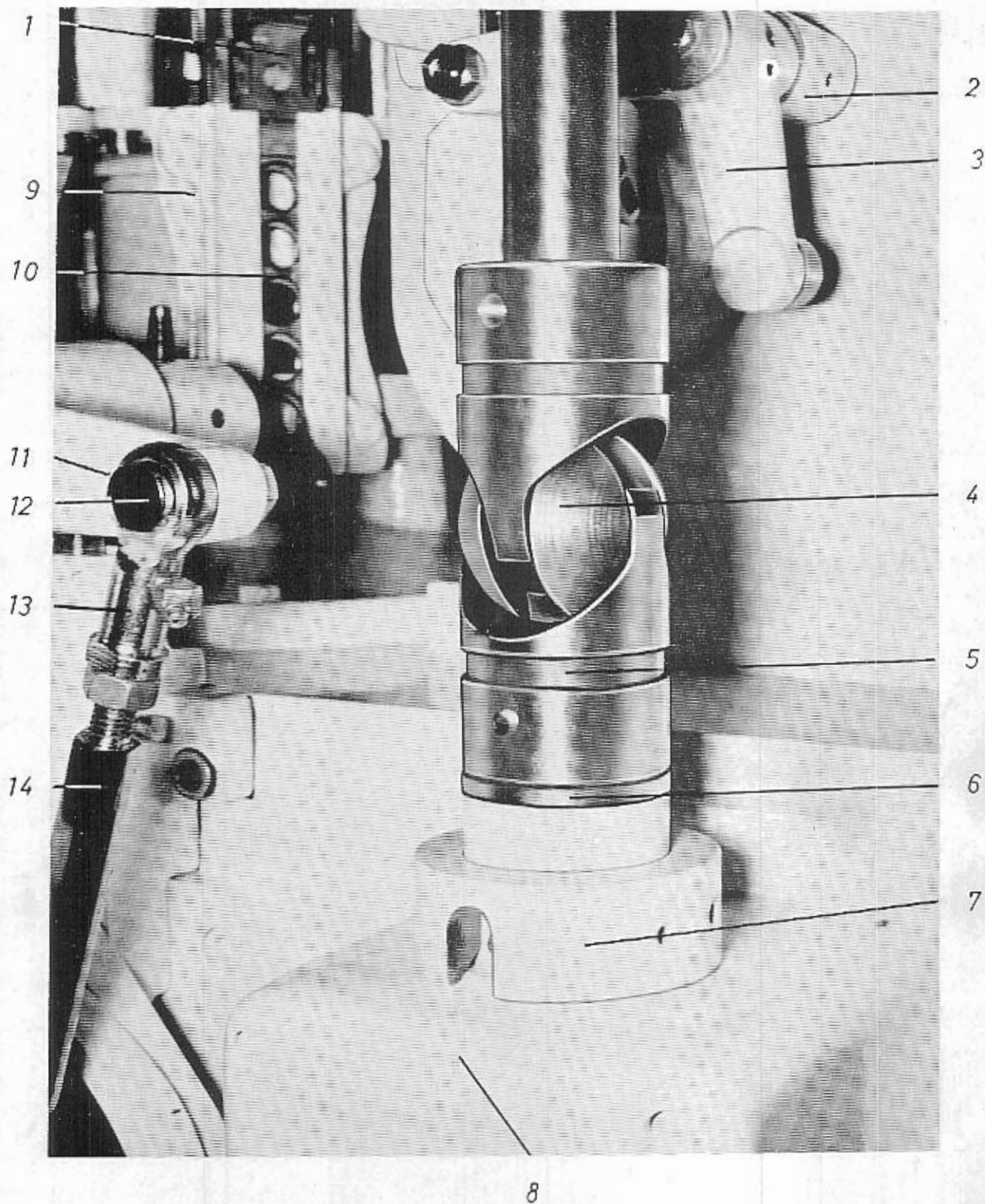
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Fig. 8304/31



Part	Denomination
1	lever
2	bolt
3	stop
4	stop
5	axle
6	stop
7	bolt
8	bar of rotary folder
9	rotary folder
10	fold
11	cell, cpl.
12	intruding folder
13	lever

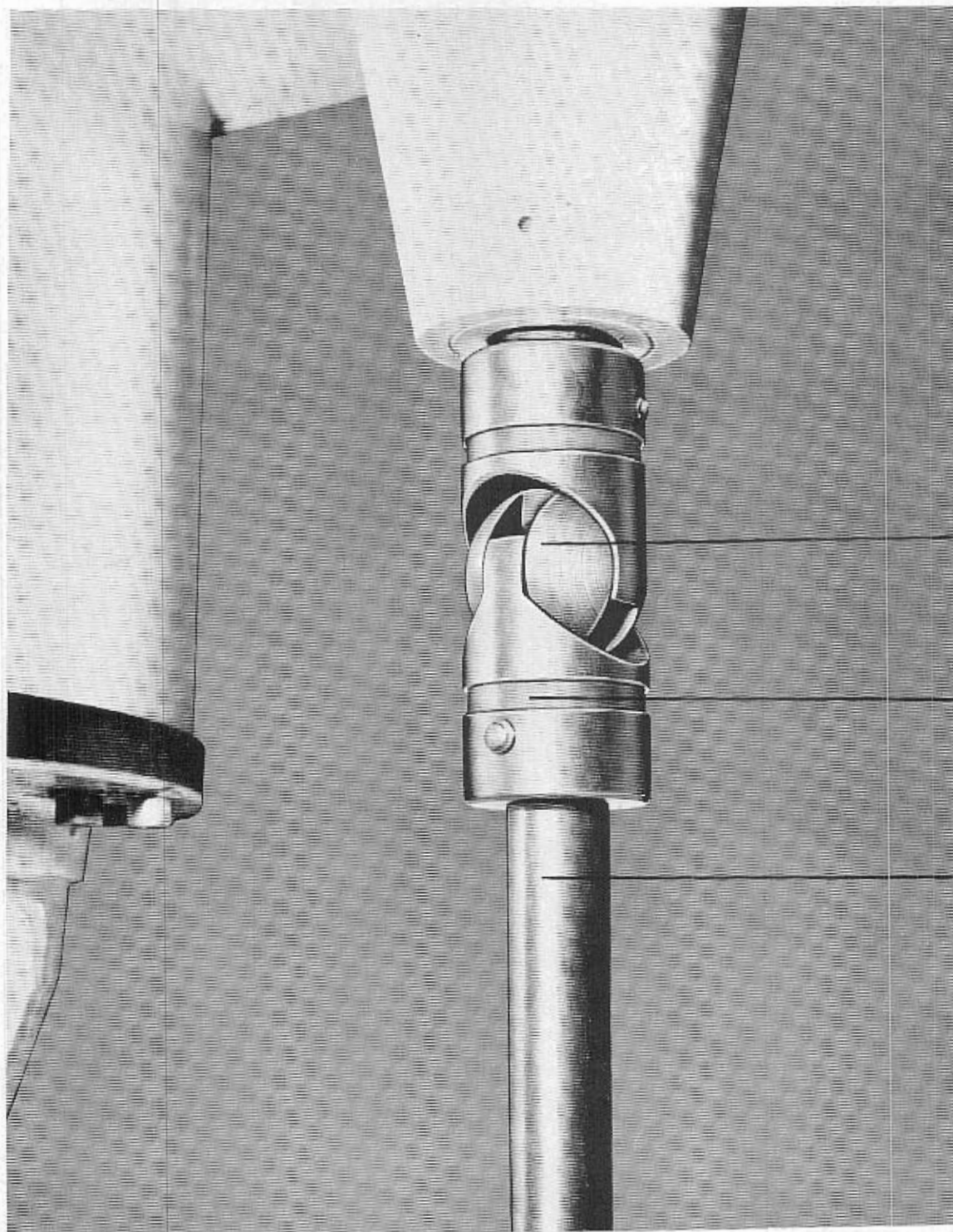
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Part	Denomination
1	cell bottom
2	lever
3	lever
4	articulated shaft
5	
6	disc
7	ring
8	bevel wheel housing, cpl.
9	cell guide, cpl.
10	cell bottom pusher, cpl.
11	lever
12	bolt
13	joint
14	connecting rod

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Fig. 8304/33



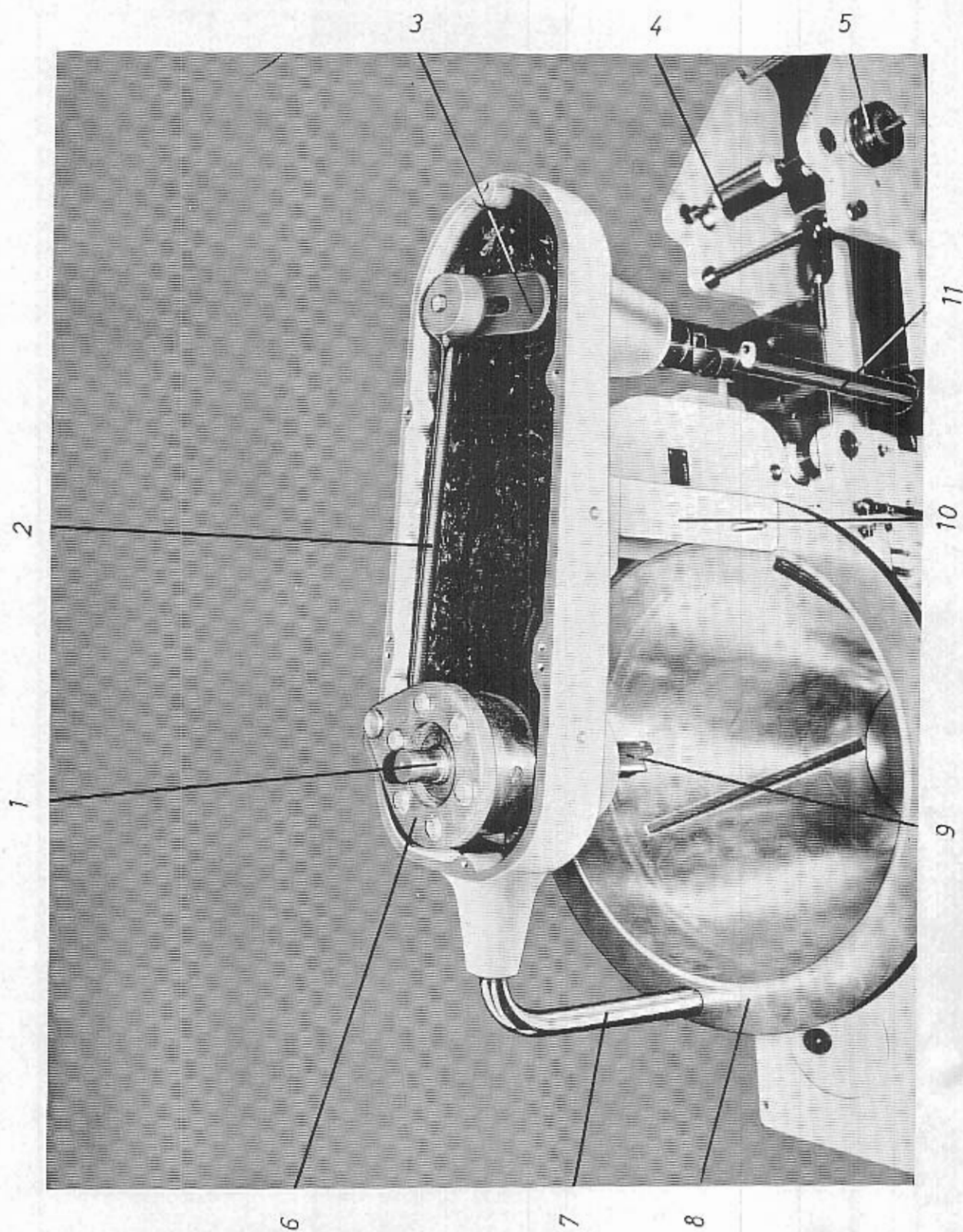
1

2

3

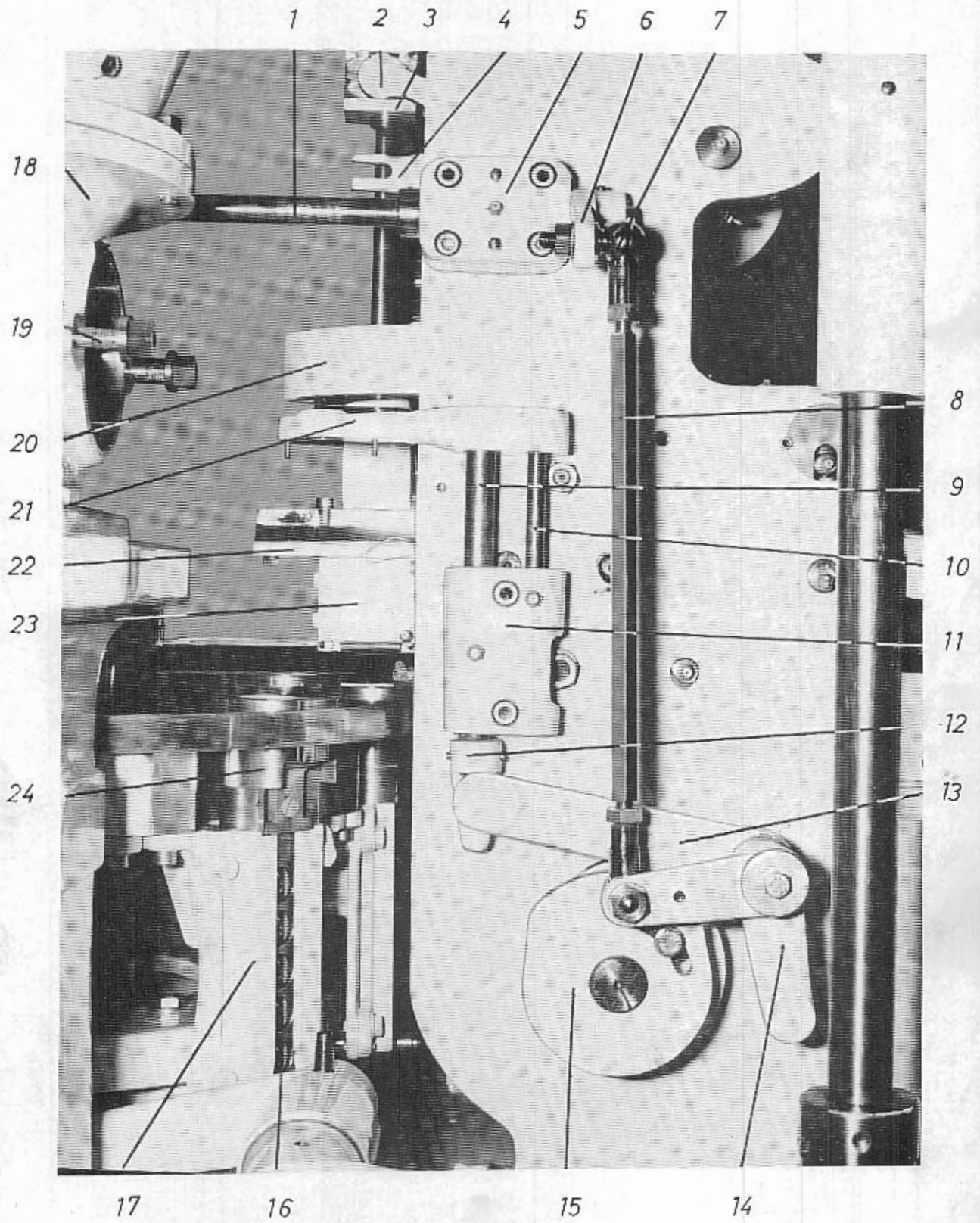
Part	Denomination
1)	
2)	Articulated shaft, cpl. 1999-261-260
3)	

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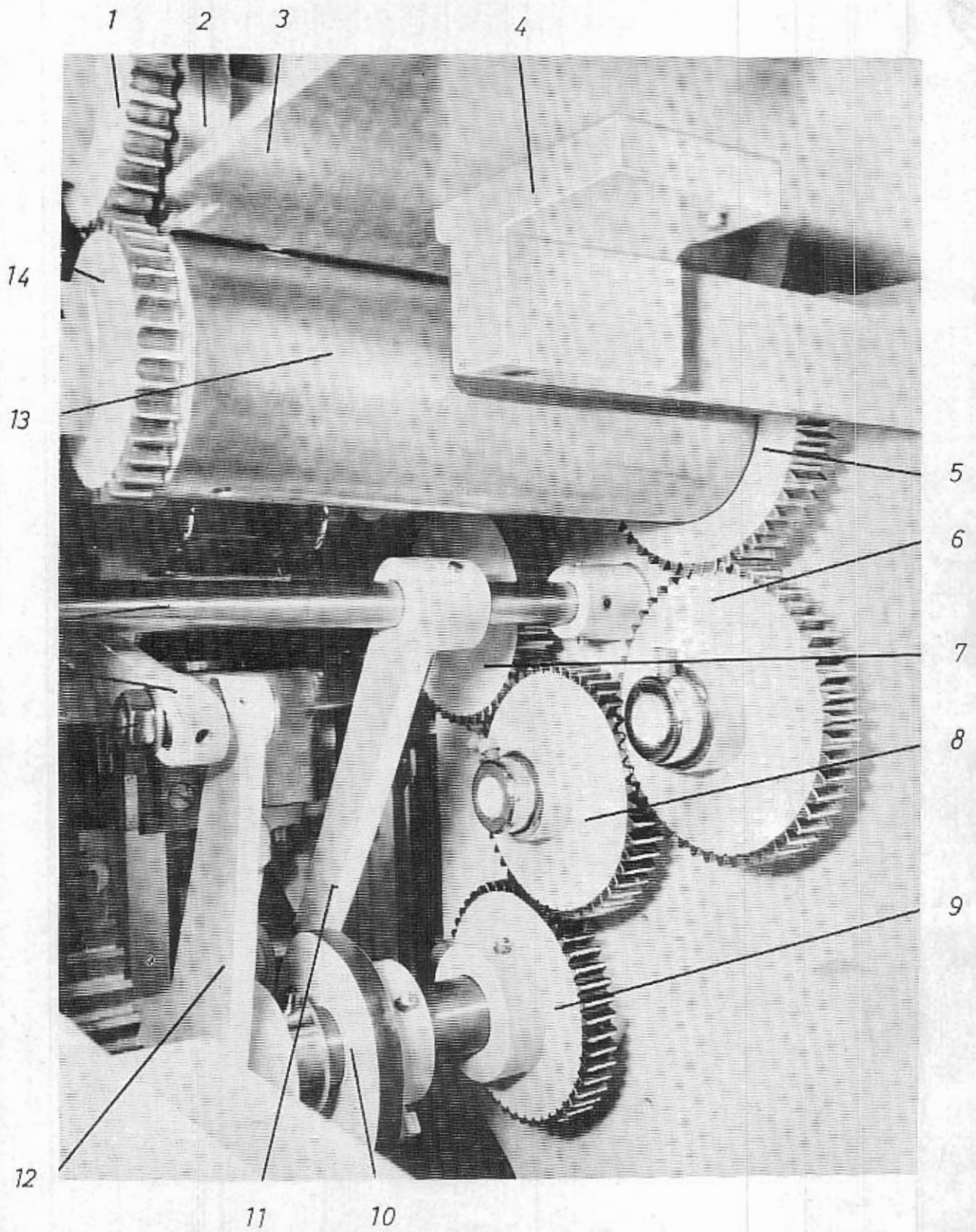
Part	Denomination
1	shaft
2	connecting rod
3	lever
4	feed roller, preliminary unwinding
5	clutch
6	free-wheel
7	support
8	funnel
9	shaft
10	bearing
11	articulated shaft, 1999-261-260

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Part	Denomination
1	shaft
2	lever
3	slide block
4	lever
5	bearing
6	lever
7	joint
8	connecting rod
9	axle
10	axle
11	bearing
12	support
13	lever
14	lever
15	cam
16	cell, cpl.
17	
18	filling housing
19	worm screw
20	guide of wrapper bag plunger
21	lever
22	folding plate
23	folding box, cpl.
24	cell, cpl.

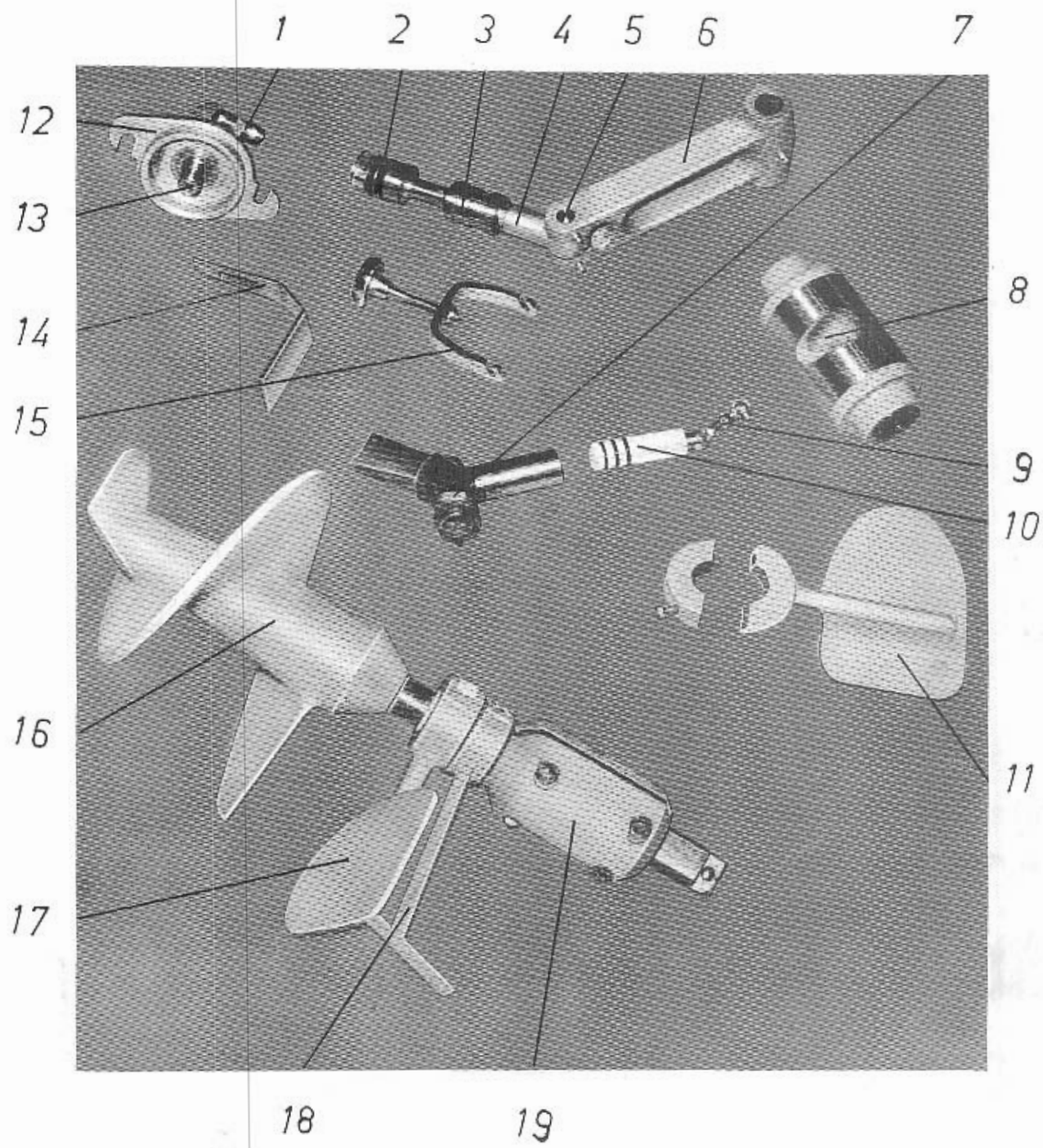
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Part	Denomination
1	toothed wheel
2	supporting roll
3	plate
4	lever
5	tooth wheel
6	tooth wheel
7	tooth wheel
8	tooth wheel
9	tooth wheel
10	cam
11	lever
12	lever
13	lower main feed roller
14	tooth wheel

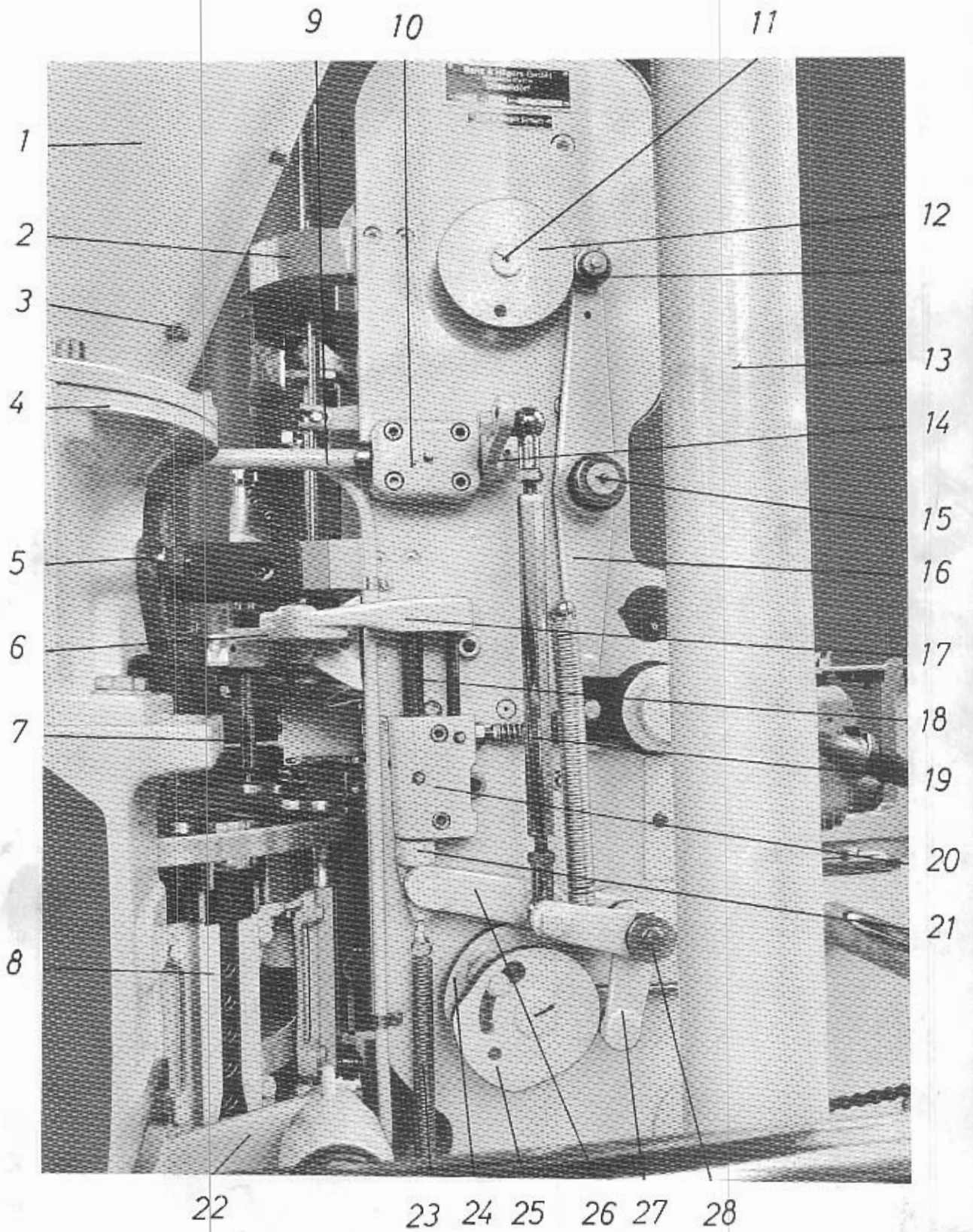
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Part	Denomination
1	set screw
2	collar
3	piston
4	piston holder
5	piston axle
6	lever
7	filling nozzle
8	slide valve
9	joint
10	piston
11	blade
12	cover
13	bolt
14	paper bag holding device
15	thightener
16	screw
17	blade
18	scraper
19	clamping sleeve

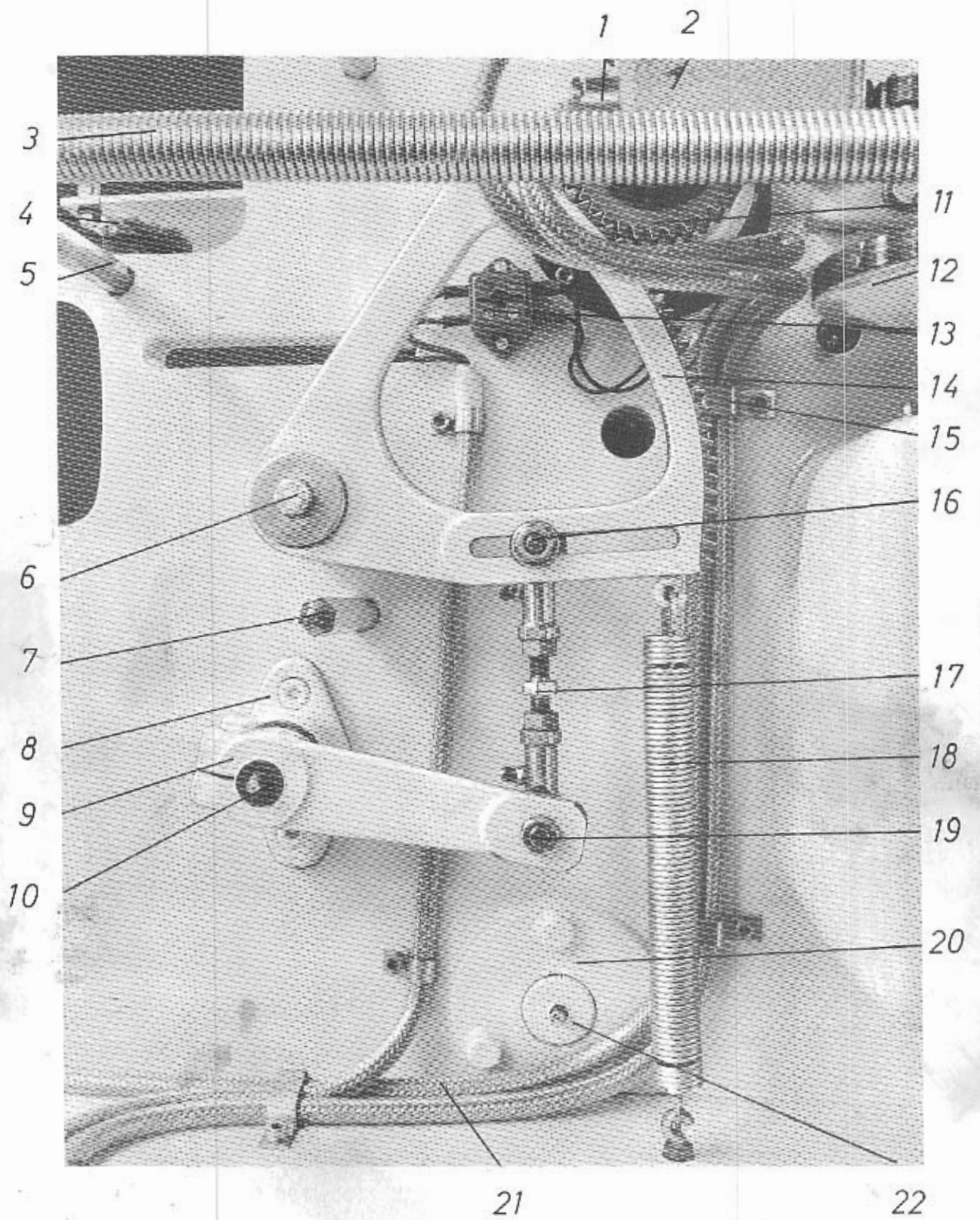
Fig. 8304 / 71



Part	Denomination
1	funnel
2	paper plunger bearing
3	nuts
4	filling housing
5	cover
6	lever
7	feeler
8	cell guide
9	shaft
10	bearing
11	shaft
12	cam
13	protecting sleeve
14	lever
15	axle
16	lever
17	lever
18	axle
19	rod
20	bearing
21	holder
22	lever
23	spring
24	cam
25	cam
26	lever
27	lever
28	axle

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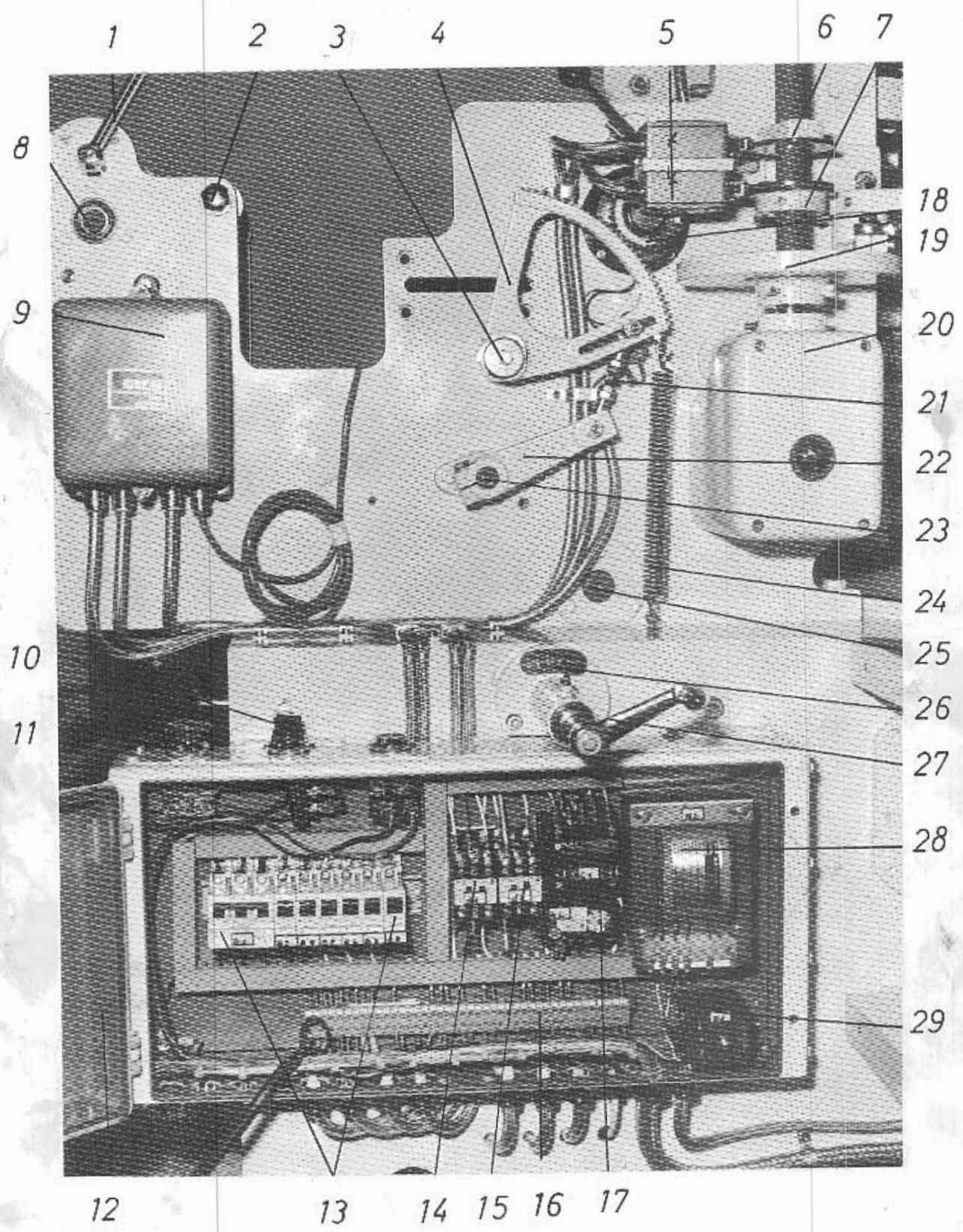
Fig. 83041 72



Part	Denomination
1	cable connector
2	contact switch
3	spring
4	holder
5	spring holder
6	axle
7	axle
8	bearing
9	lever
10	shaft
11	gear
12	cam
13	cable joint
14	toothed segment
15	cable holder
16	axle
17	rod
18	spring
19	axle
20	bearing
21	cable
22	shaft

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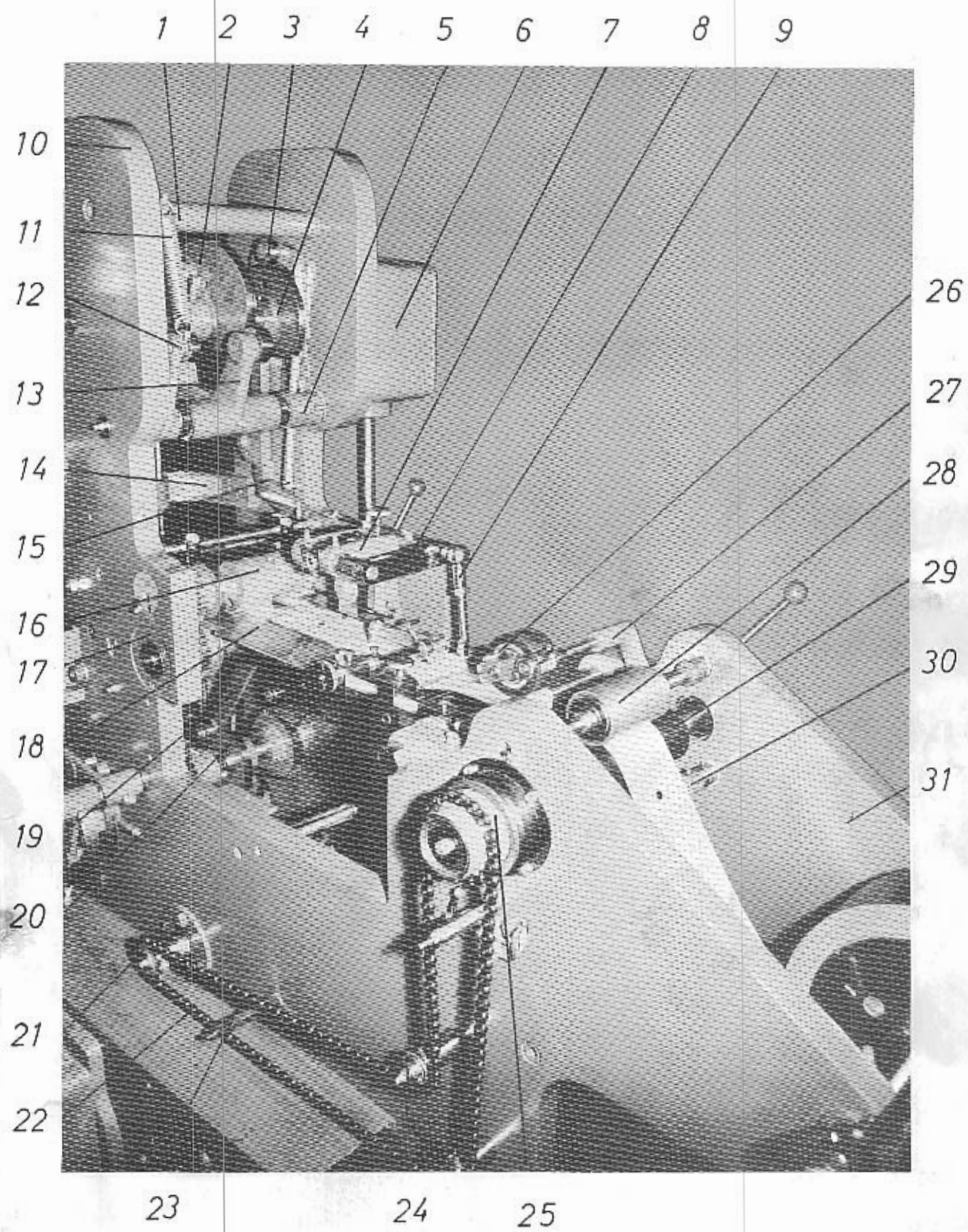
Fig. 8304 / 73



Part	Denomination
1	lever
2	axle nut
3	axle
4	toothed segment
5	contact switch
6	cam
7	cam
8	roller bearing
9	amplifier
10	check clutch
11	0-motor
12	1999-172-010
13	socket
14	contact relay
15	control relay
16	terminal
17	air relay
18	gear
19	cam
20	bevel gear box
21	rod
22	lever
23	shaft
24	spring
25	shaft
26	plate
27	crank
28	transformer
29	selen rectifier

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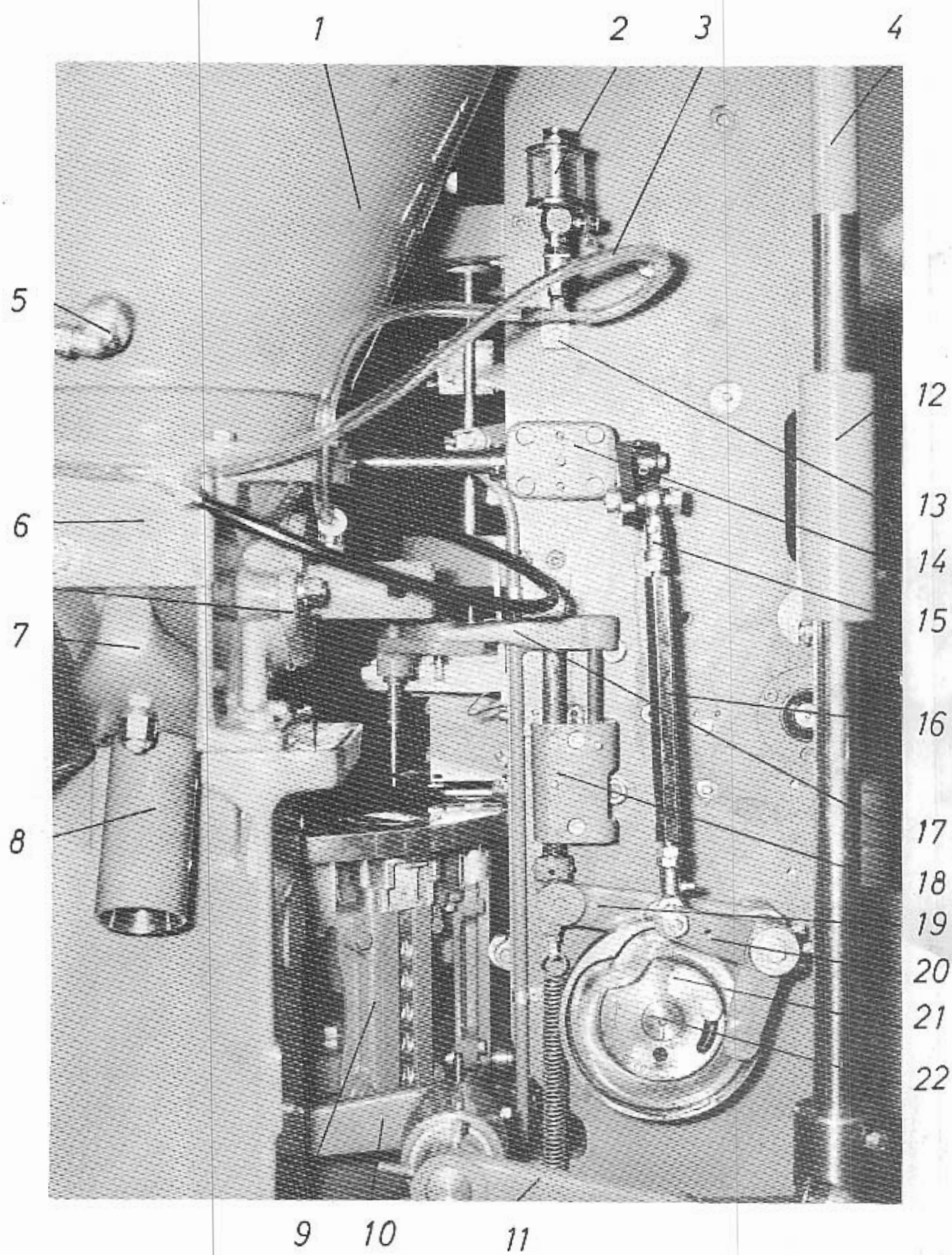
Fig. 8304 / 74



Part	Denomination
1	axle
2	cam
3	roller, compl.
4	cam
5	lever
6	bevel gear box
7	perforating holding
8	lever
9	joint
10	frame
11	spring
12	lever
13	paper forming lever
14	paper forming bearing
15	fork
16	segment, compl.
17	roller bearing support
18	wrapper support
19	lever
20	cam
21	chain sprocket
22	chain
23	axle
24	axle
25	chain sprocket
26	brake roller
27	lever
28	unwinding, top
29	unwinding bottom
30	pendulum
31	frame

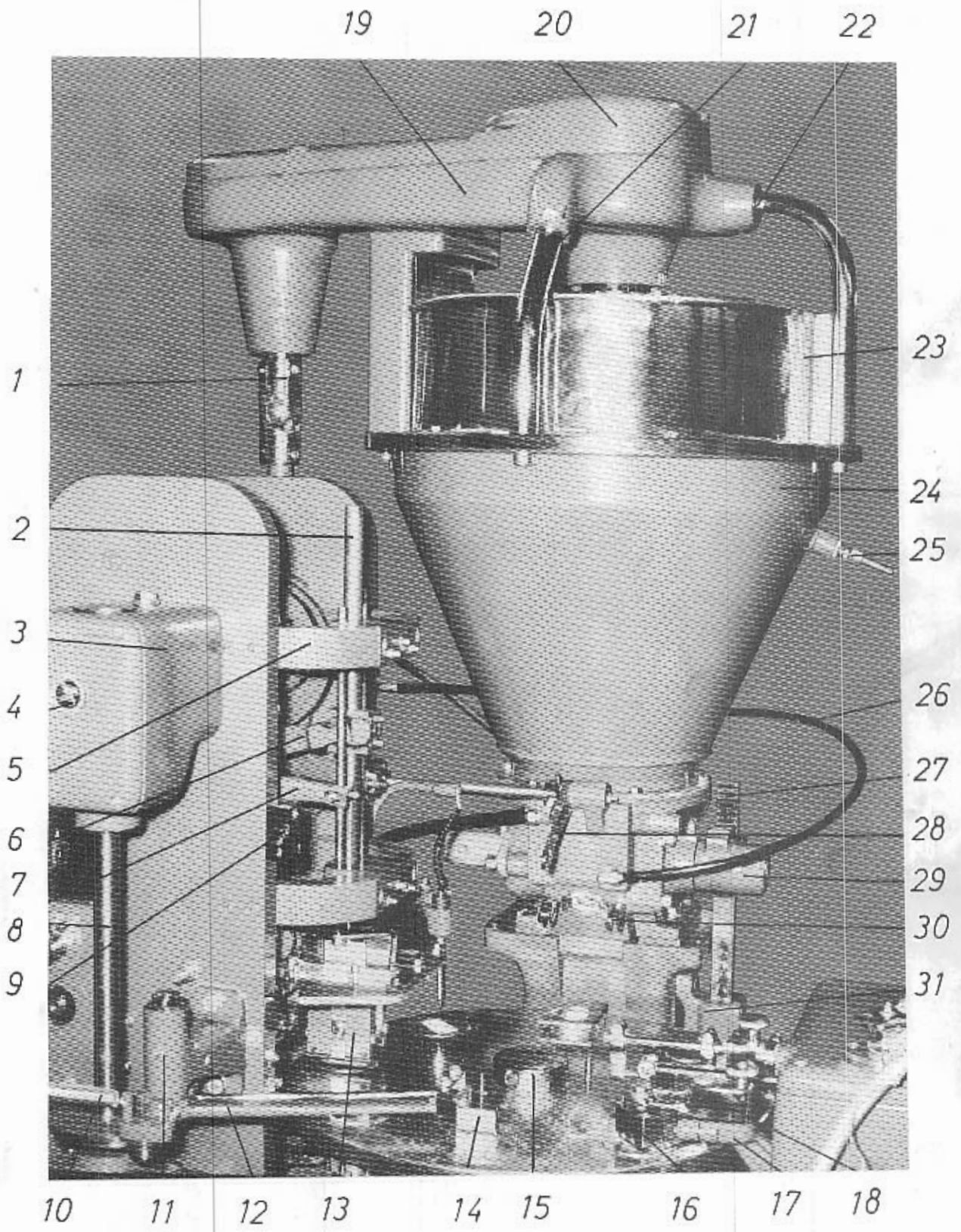
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Fig. 8304 / 75



Part	Denomination
1	funnel
2	oiler
3	tube
4	shaft
5	connection
6	cover
7	tightener
8	closing cylinder
9	cell guide
10	lever
11	lever
12	sleeve
13	holder
14	bearing
15	joint
16	rod
17	lever
18	bearing
19	lever
20	lever
21	can
22	shaft

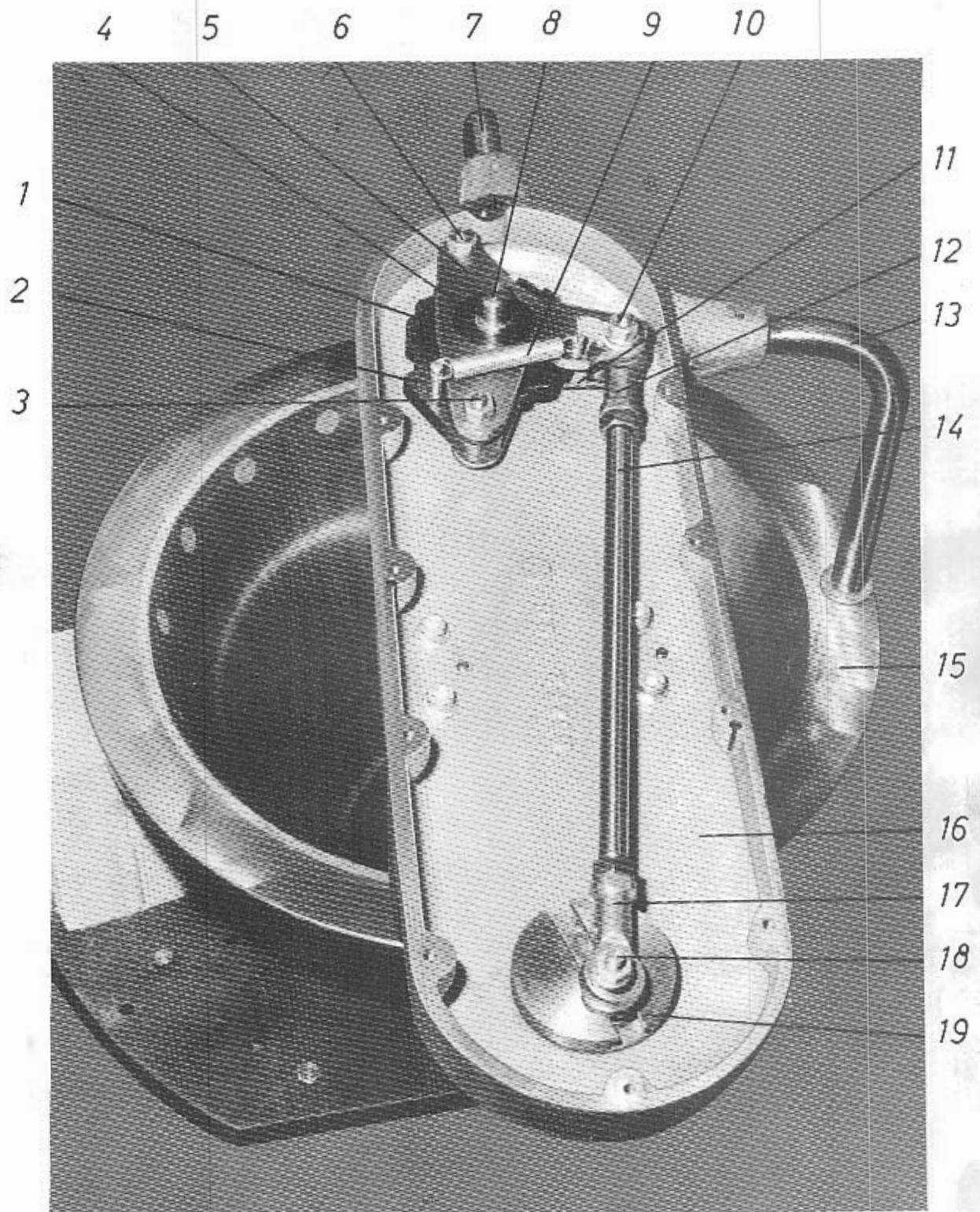
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Part	Denomination
1	joint
2	paper plunger, compl.
3	bevel gear box
4	oil sight
5	a paper plunger bearing
6	paper plunger lever
5	prefolding lever
6	shaft
7	holder
8	spring
9	holder
10	spring
11	bearing
12	lever
13	folding box , compl.
14	discharge plate
15	nut
16	pressing block
17	lever
18	lever
19	stiffing device, strengthener
20	cover
21	support
22	support
23	covering plate
24	double walled funnel
25	connection
26	tube
27	rack
28	lever
29	toothed segment
30	holder
31	bearing

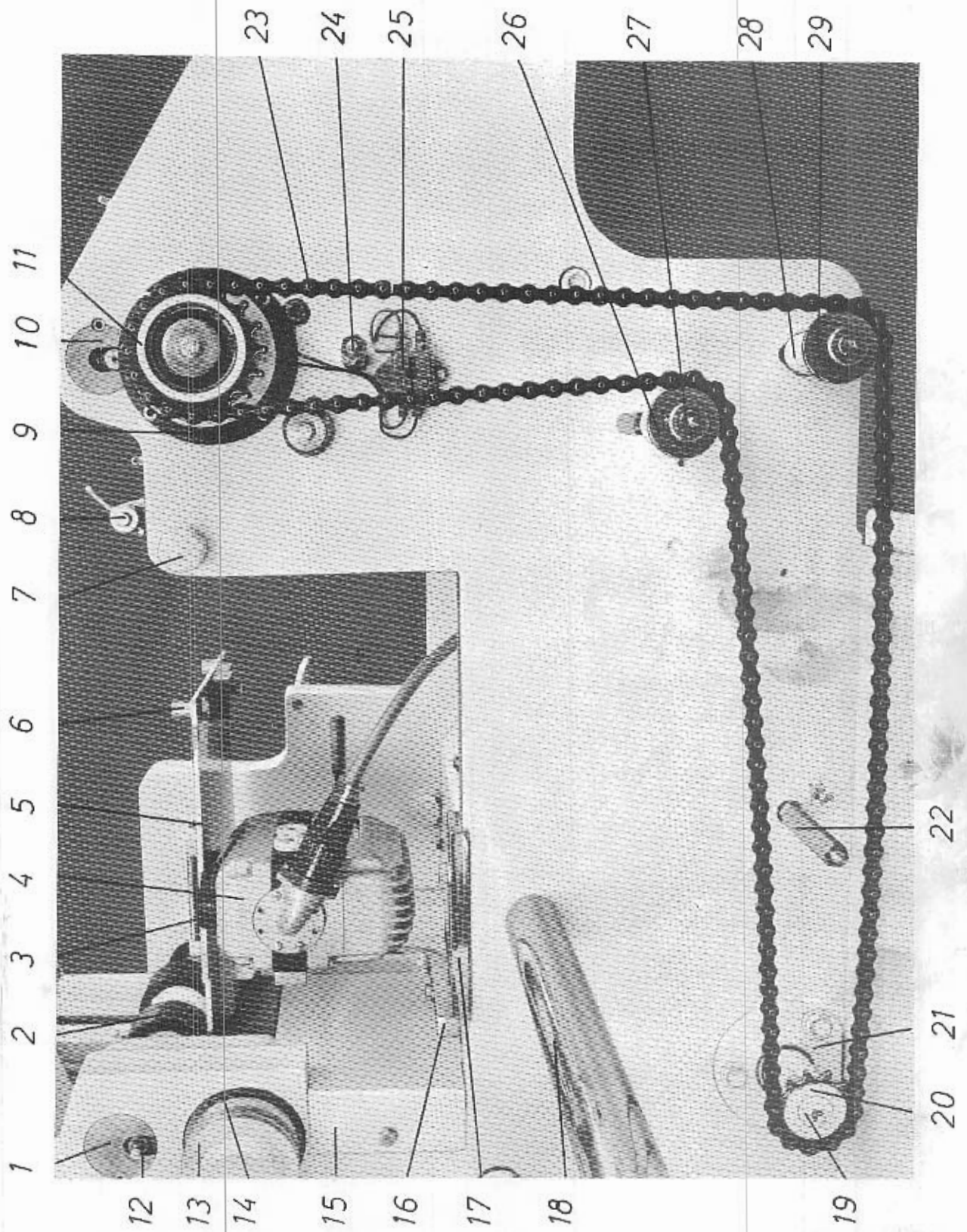
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Fig. 8304/77



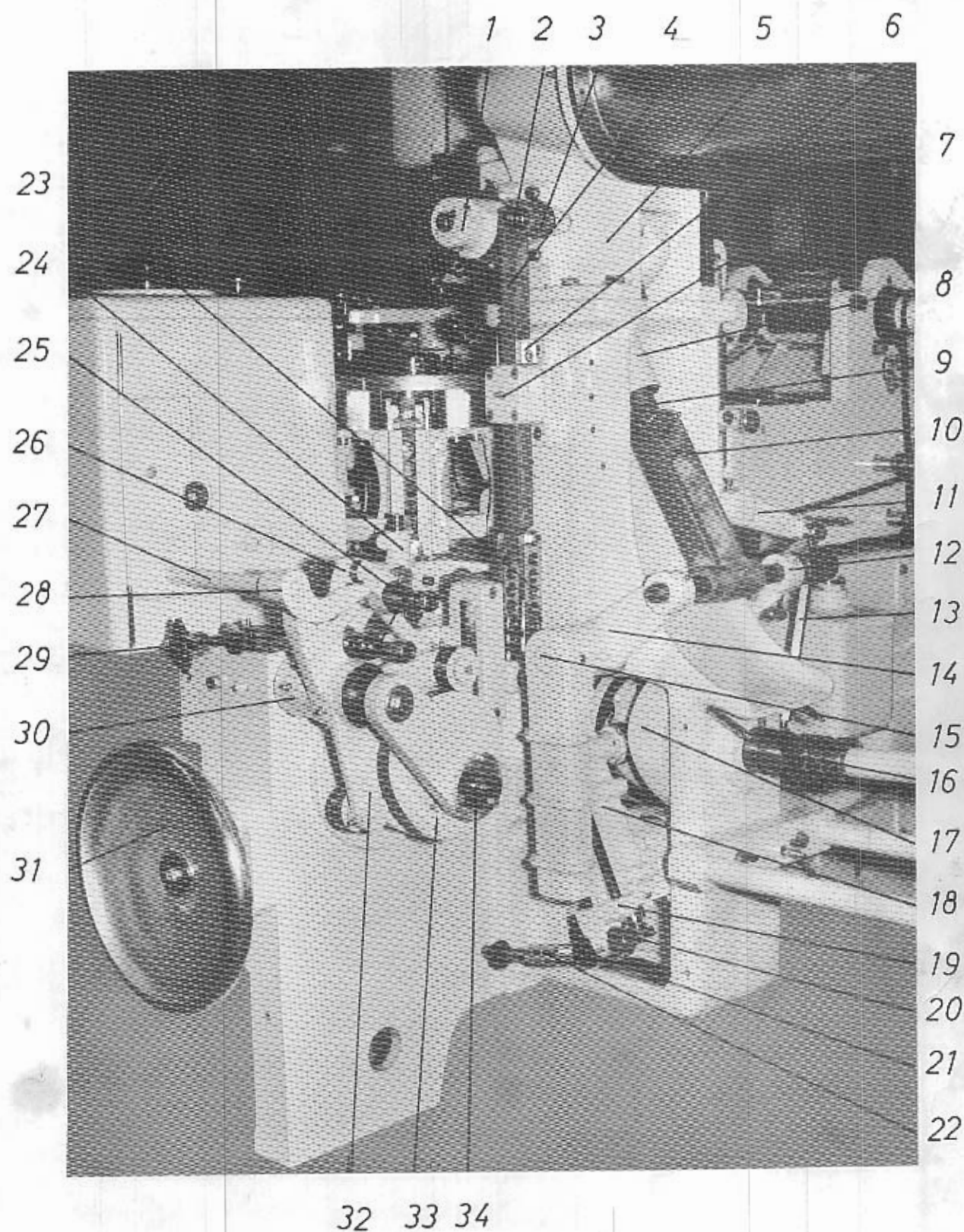
Part	Description
1	clank wheel
2	clank
3	bolt
4	clank wheel
5	disc
6	bolt
7	support
8	axle
9	tension spring
10	bolt
11	disc
12	articulation
13	support
14	rod
15	funnel ring
16	gear box
17	articulation
18	bolt
19	driver

Fig. 8304/ 78



Part	Denomination
1	plug
2	main driving rubber-type roller
3	sheet
4	feeler head photocell
5	wrapper sheet
6	bolt
7	axle connection
8	axle
9	clutch
10	plug
11	gear chain
12	axle
13	brake ring
14	ball bearing ring
15	sheet
16	holder
17	guide
18	tube
19	shaft
20	chain gear
21	bearing
22	axle
23	chain
24	axle
25	clamp
26	deviation roller
27	axle
28	axle
29	deviation roller

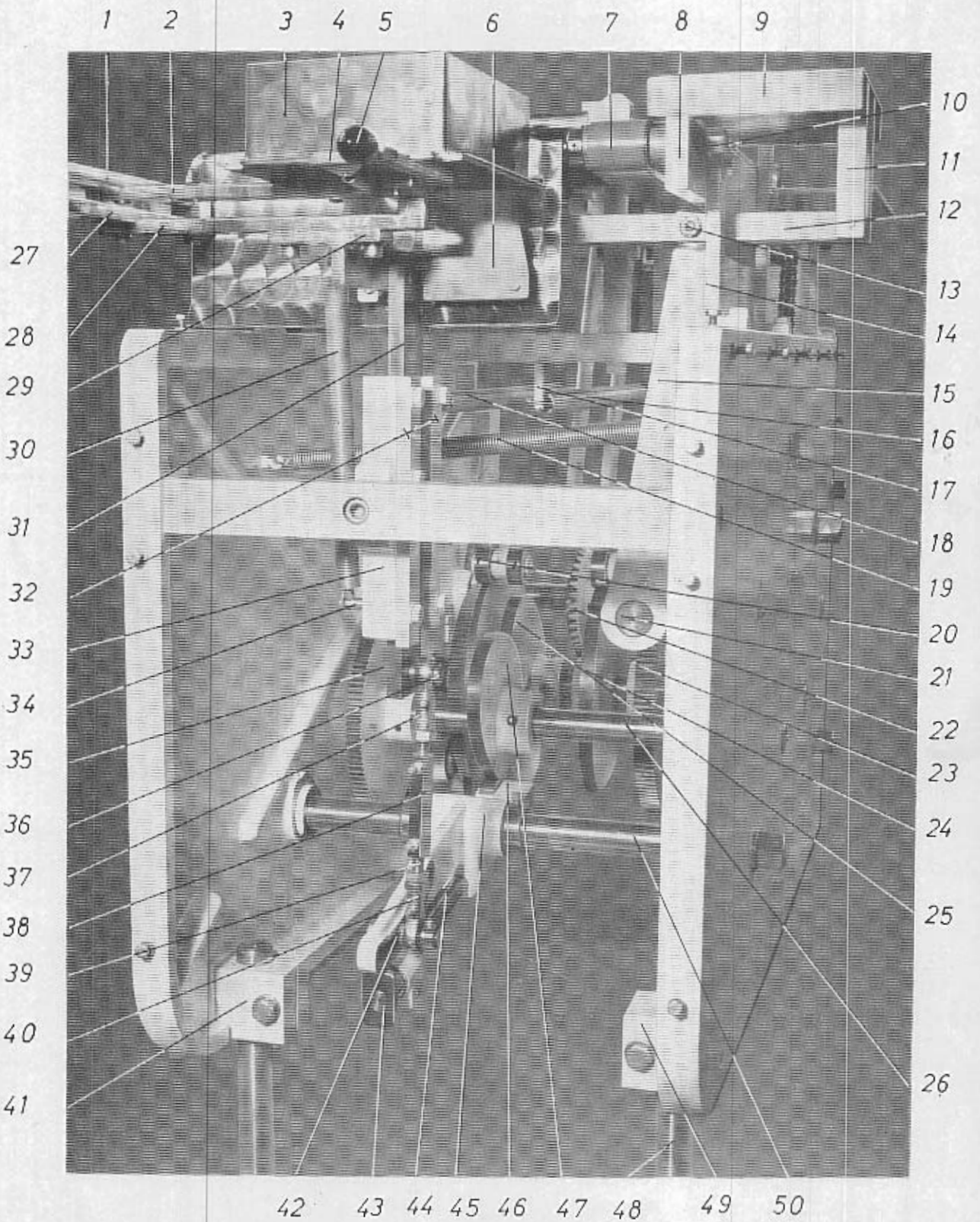
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Part	Denomination
1	toothed segment
2	axle
3	roller
4	rack
5	closing housing
6	holder
7	bearing
8	cylinder
9	piston
10	piston lever
11	lever
12	lever
13	tie rod
14	lever
15	shaft
16	articulation
17	piston cam
18	coulisse lever
19	plate
20	screwed wheel
21	articulation joint
22	articulated shaft
23	tie rod
24	bearing
25	bolt
26	clank
27	shaft
28	lever
29	bearing
30	lever
31	handwheel
32	lever
33	cam
34	support bearing

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 lage behalten wir uns alle Rechte vor.

Fig. 8534 / 1



Part	Denomination	Part	Denomination
1	bolt	34	spring pin
2	lever	35	toothed wheel
3	turning box	36	bolt
4	clamp with tension spring	37	ball joint
5	ball handle	38	connecting rod
6	plate		
7	belt pulley	40	ball joint
8	capping	41	bearing
9	belt pusher	42	bolt
10	bolt		
11	support	44	spindle
12	rail	45	lever for stacking plate
13	bolt	46	cam roll
14	support	47	cam
15	lever for pusher	48	frame foot
16	tension spring	49	bearing
17	spring pin	50	lever axle
18	tension spring		
19	tension spring		
20	cam roll		
21	lever axle		
22	bevel wheel		
23	toothed wheel		
24	cam		
25	cam		
26	shaft		
27	support		
28	rest		
29	angle		
30	tension spring		
31	guide rail		
32	bearing cover		
33	guide bearing		

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Fig. 8534 / 2

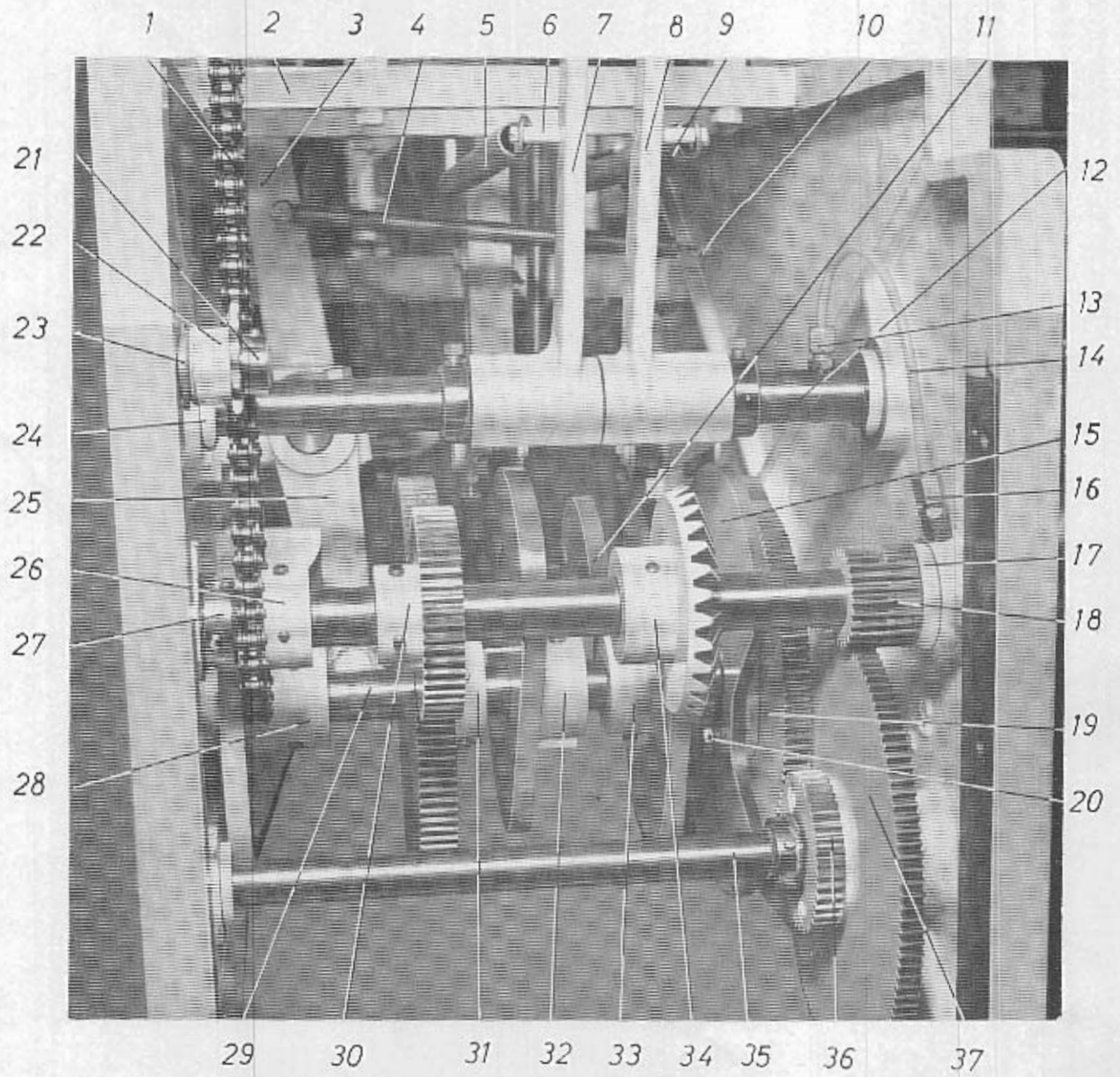


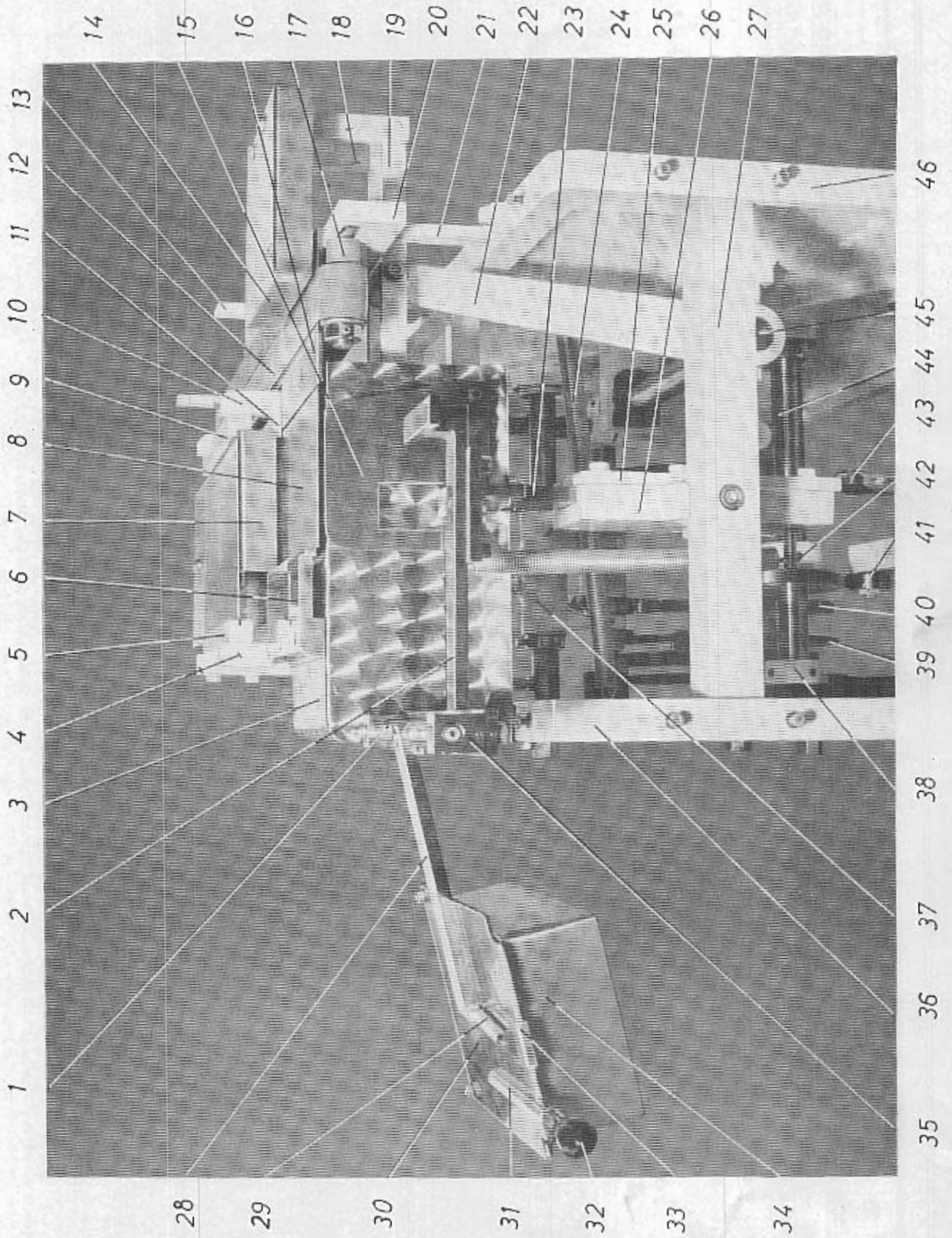


Fig. 8534/2

Part	Denomination	Part	Denomination
1	roller chain	34	bevel wheel
2	square bracket	35	shaft
3	lever for belt pusher	36	toothed wheel
4	tension spring	37	toothed wheel
5	tension spring		
6	spring pin		
7	lever		
8	lever		
9	tension spring		
10	spring eye		
11	cam		
12	lever axle		
13	nipple		
14	lubricating hose		
15	cam		
16	nipple		
17			
18	toothed pinion		
19	toothed wheel		
20	hexagon head screw		
21	set ring		
22	chain wheel		
23	disc		
24	plug-in disc		
25	lever for belt pusher		
26	chain wheel		
27	set ring		
28	drum cam for belt pusher		
29	cam shaft		
30	toothed wheel		
31	toothed wheel		
32	cam		
33	cam		

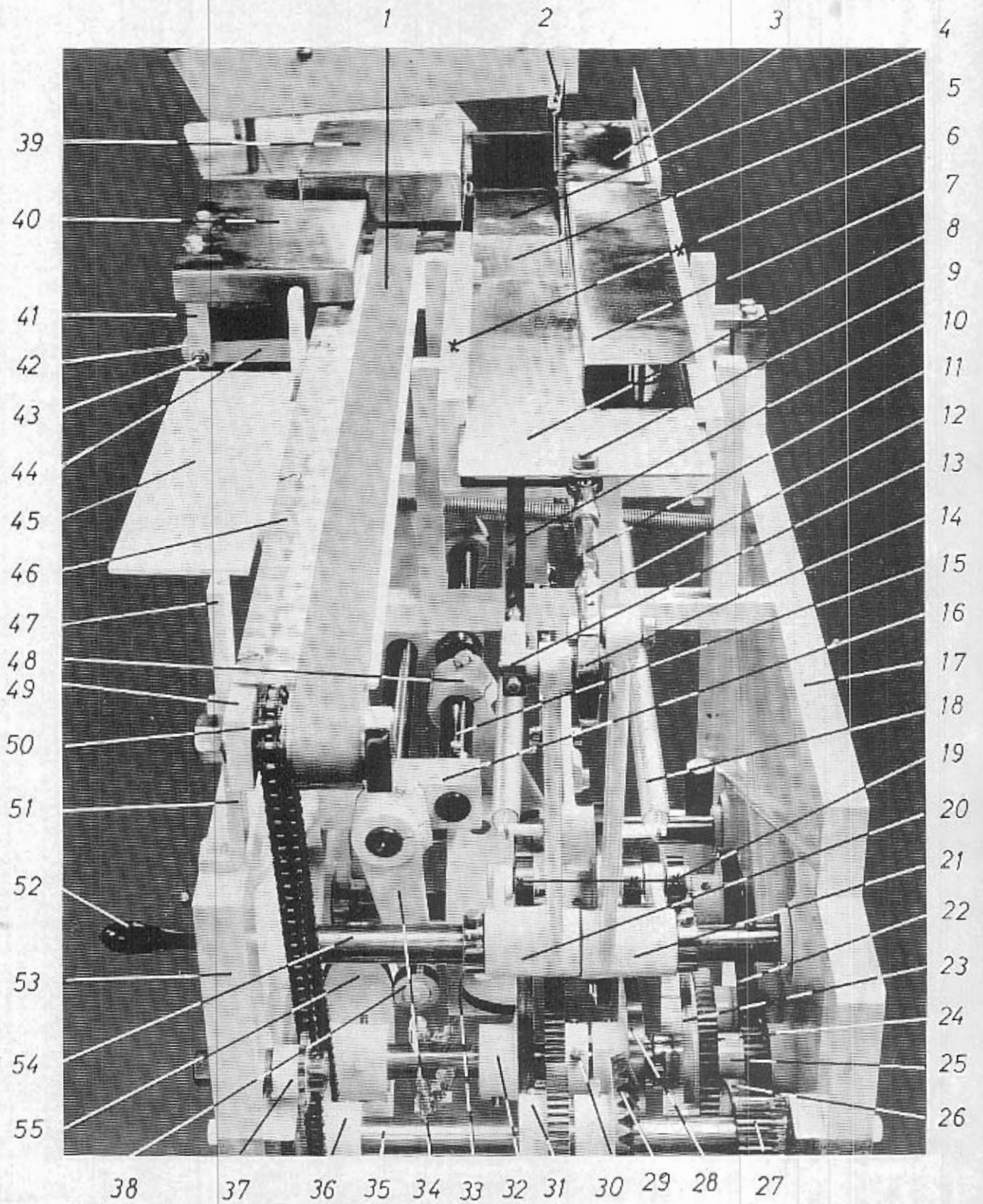
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Fig. 8534 / 3



Part	Denomination	Part	Denomination
1	bearing	34	turning box
2	rest	35	bearing
3	plate	36	frame wall
4	support	37	lever
5	guide gib	38	toothed wheel
6	stop	39	cam
7	pusher	40	cam
8	pusher plate	41	cam roll
9	guide gib	42	cam
10	support	43	ball joint
11	guide gib	44	shaft
12	belt discharge conveyor	45	axle
13	support	46	frame wall
14	pusher		
15	lateral wall		
16	connection		
17	bolt		
18	support		
19	rail		
20	capping		
21	support		
22	lever for pusher		
23	guide rail		
24	tension spring		
25	bearing cover		
26	guide bearing		
27	bracket		
28	lever		
29	tension spring		
30	floor		
31	bolt		
32	ball handle		
33	clamp		

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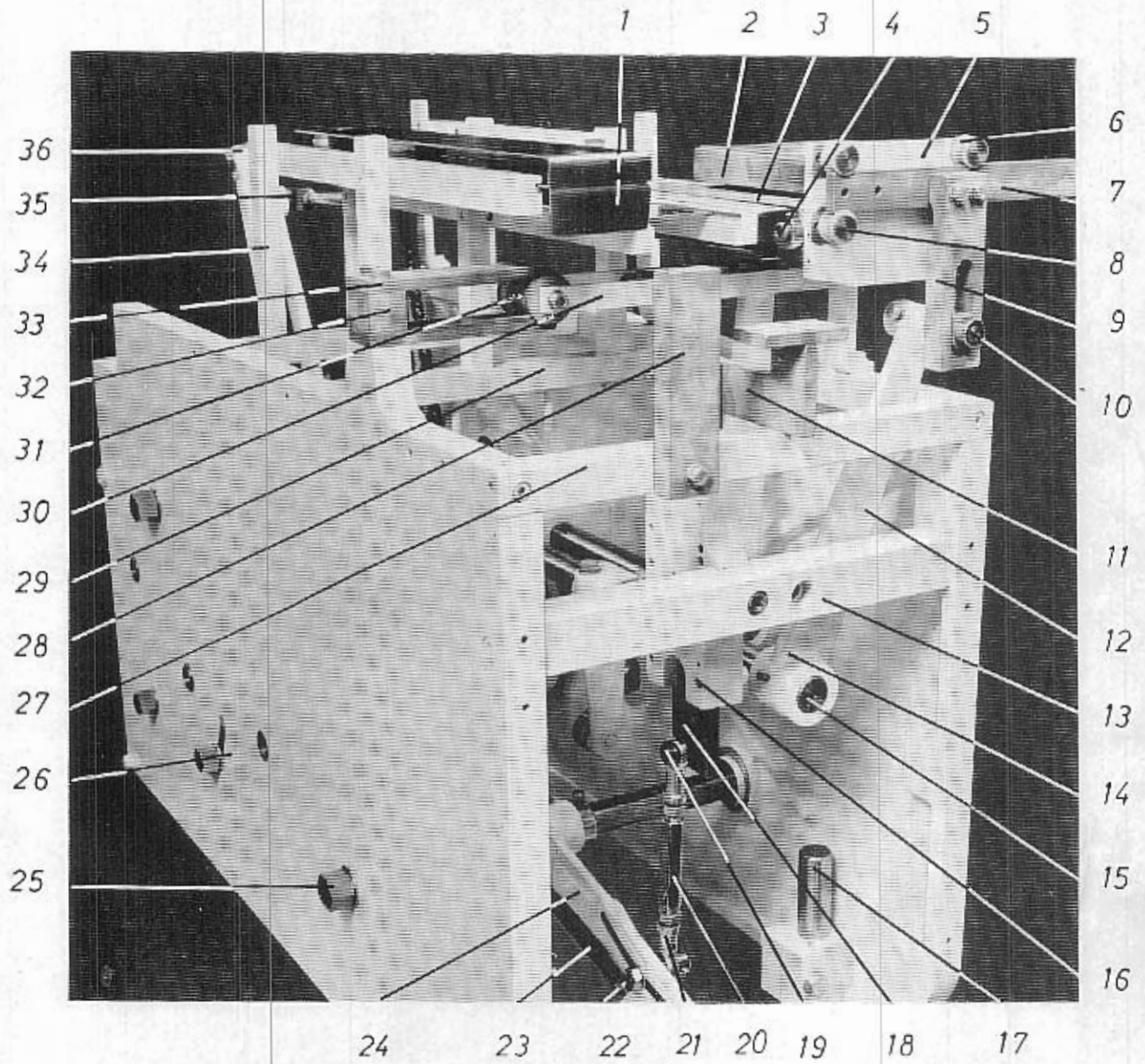


Part	Denomination
1	conveyor belt
2	spring part
3	guide angle
4	stacking plate
5	tray
6	guide
7	block pusher
8	pusher
9	bolt
10	connecting rod
11	connecting rod
12	joint
13	support
14	driver
15	shaft
16	block
17	frame
18	tension spring
19	roll
20	lever
21	lever
22	toothed wheel
23	locking disc
24	toothed wheel
25	toothed wheel
26	toothed wheel
27	pinion
28	pusher cam
29	bevel wheel
30	toothed wheel
31	toothed wheel
32	tray cam
33	drum cam
34	lever
35	shaft

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 lage behalten wir uns alle Rechte vor.

Part	Denomination
36	chain wheel
37	chain tensioning device
38	roll, cpl.
39	bolck pusher
40	pusher
41	bracket
42	roll
43	bolt
44	flat iron
45	plate
46	belt plate
47	support
48	lever
49	bracket
50	chain
51	support
52	crank
53	frame
54	axle
55	drum cam

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Part	Denomination
1	pusher
2	pusher
3	conveyor belt
4	axle
5	bearing
6	roll
7	flat iron
8	bolt
9	support
10	bolt
11	support, cpl.
12	lever
13	bracket
14	lever
15	shaft
16	bearing
17	food
18	pusher
19	bolt
20	connecting rod
21	joint
22	bolt
23	bar
24	lever
25	cap nut
26	cap nut
27	bracket
28	bracket
29	bracket
30	flat iron
31	roll
32	block
33	flat iron
34	bracket
35	angle piece
36	lever

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