Dec. 19, 1939. A. WOLFF 2,184,030

MACHINE FOR ROLLING THE BASES OF CARTRIDGE CASES

Filed May 11, 1936 5 Sheets-Sheet 1

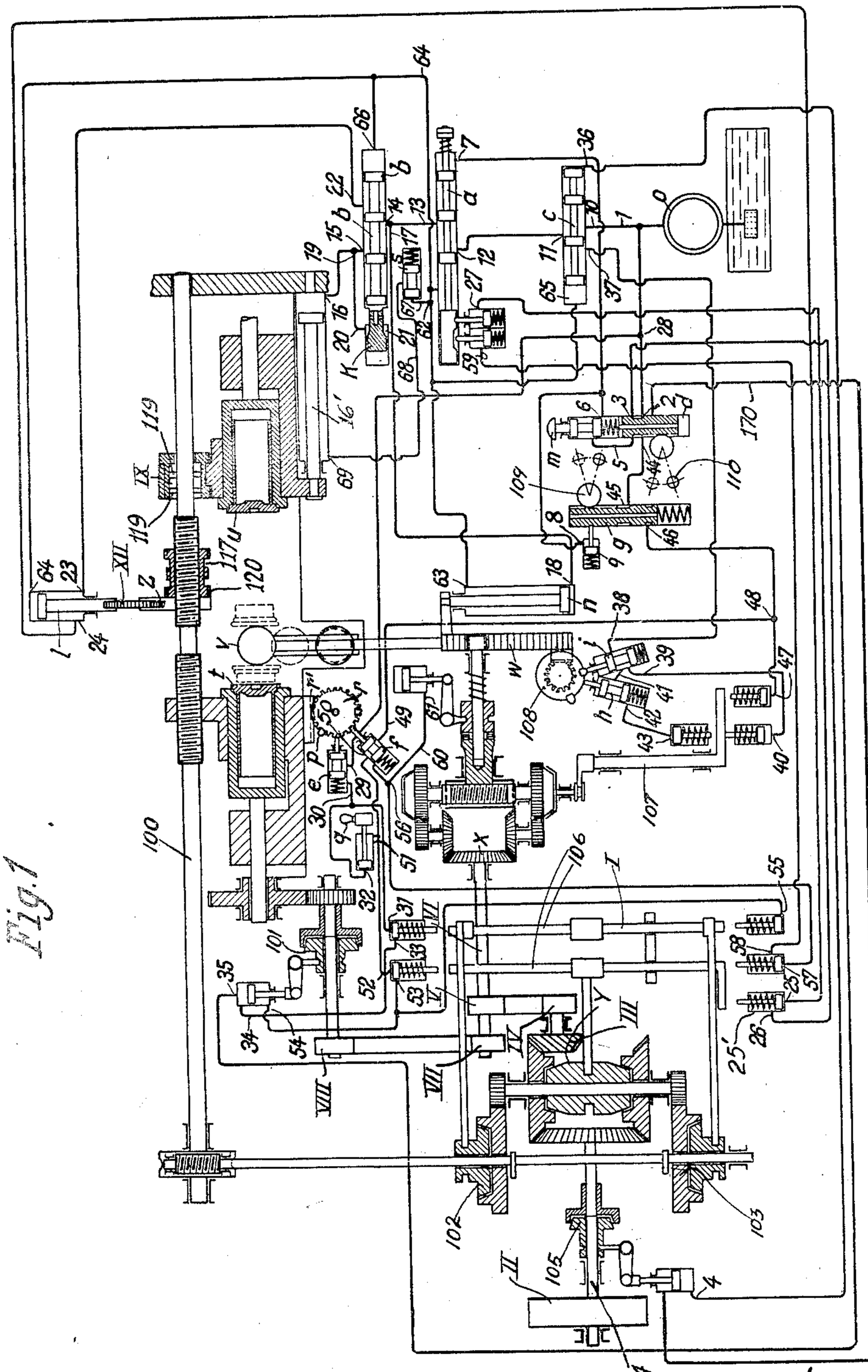


Fig. 1

Inventor:
Albert Wolff,
By Watson, Cole, Grindle & Watson
Attys.

Dec. 19, 1939. A. WOLFF 2,184,030

MACHINE FOR ROLLING THE BASES OF CARTRIDGE CASES

Filed May 11, 1936 5 Sheets-Sheet 2

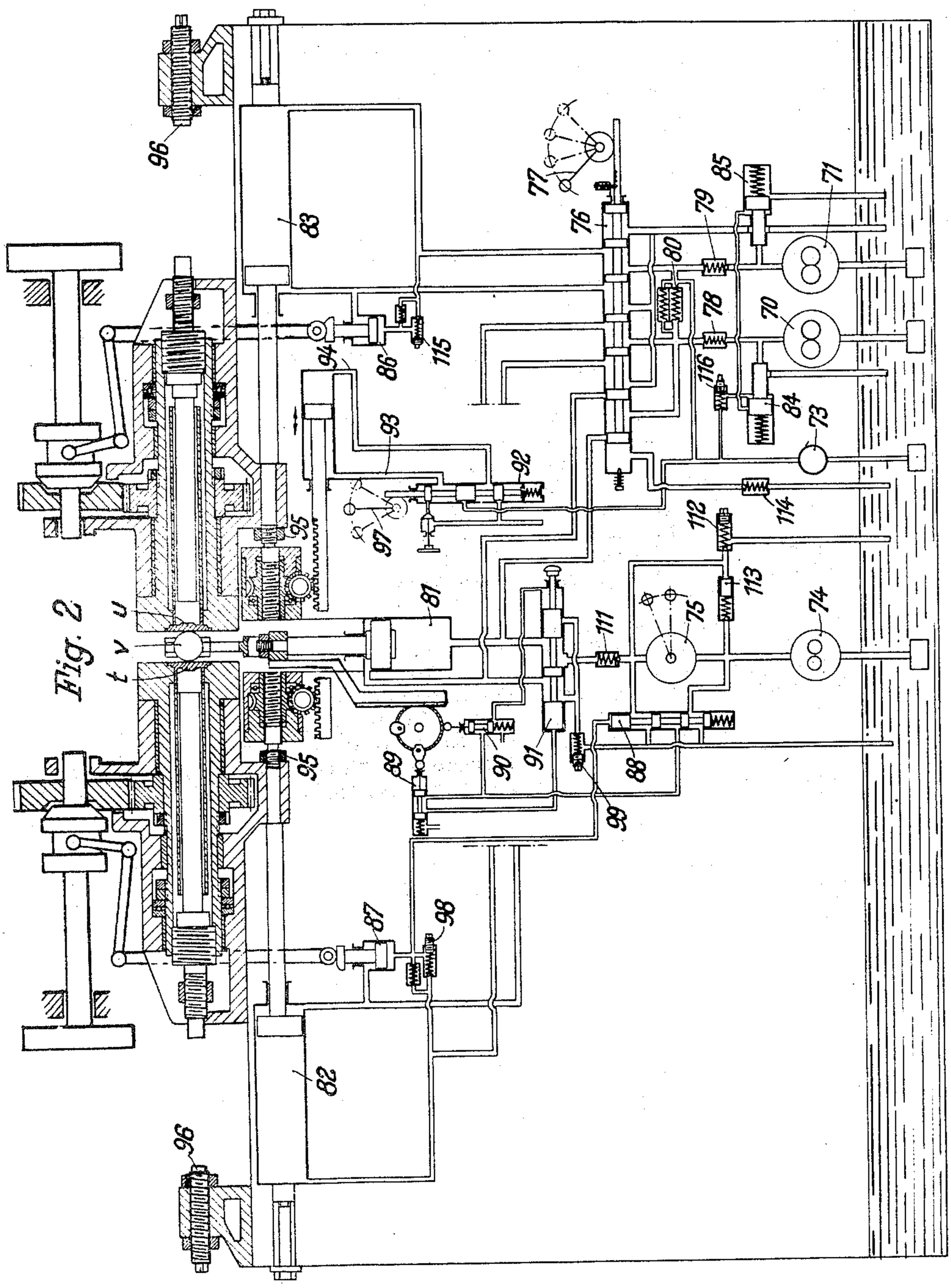


Fig. 2

Inventor:
Albert Wolff,
By Watson, Coit, Moore & Grindle
Attys.

Dec. 19, 1939. A. WOLFF 2,184,030

MACHINE FOR ROLLING THE BASES OF CARTRIDGE CASES

Filed May 11, 1936 5 Sheets-Sheet 3

Fig. 4

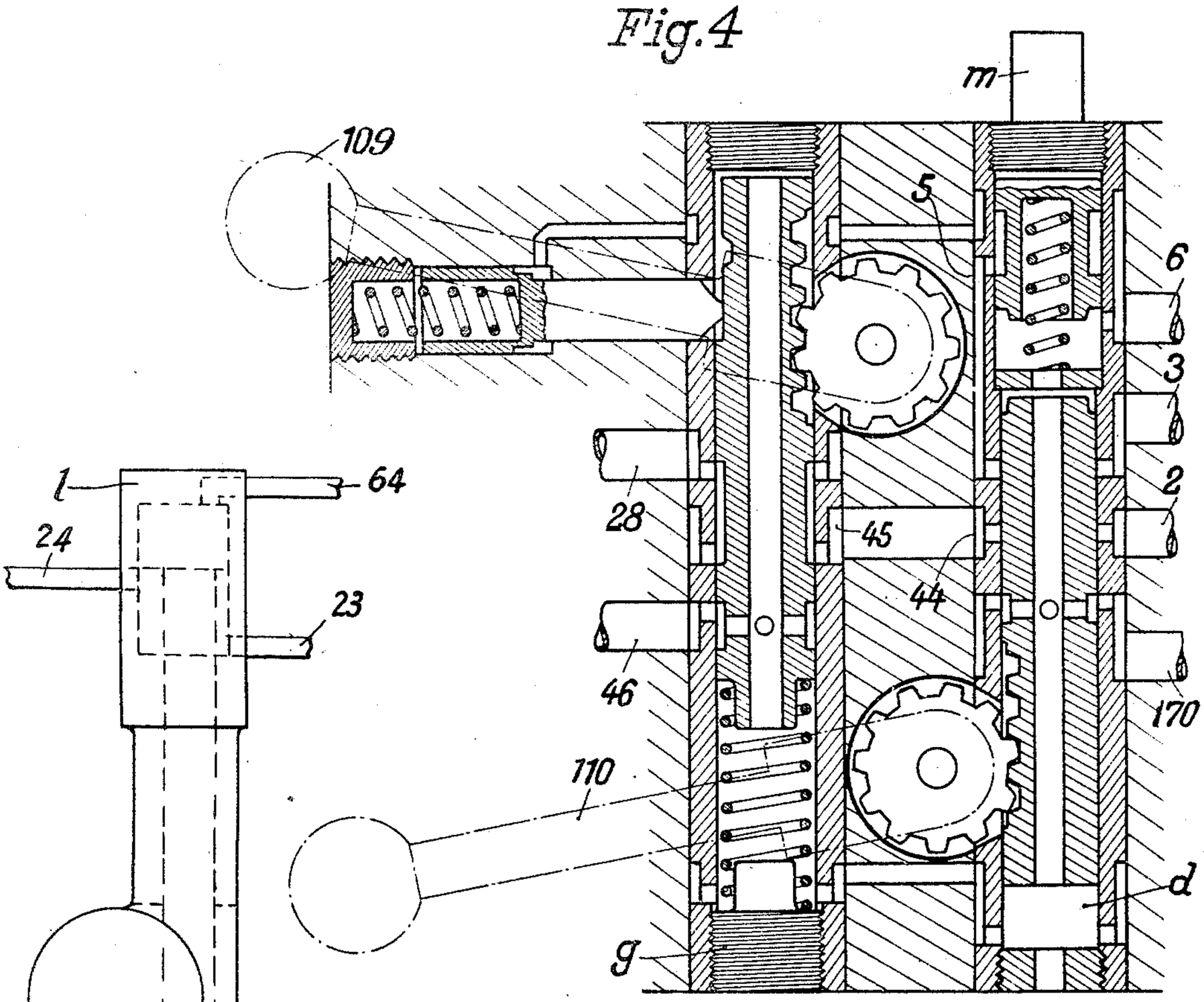
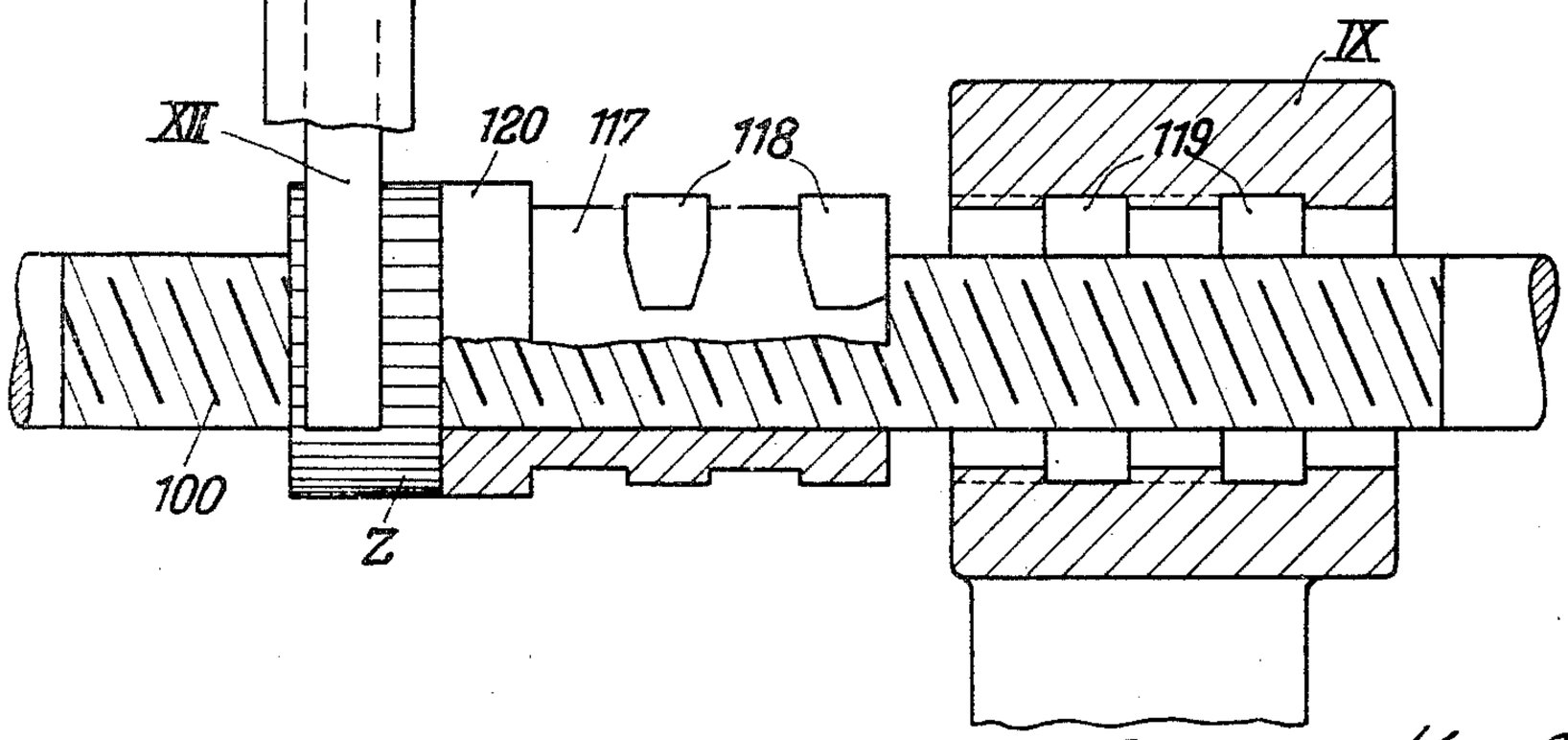


Fig. 3



Inventor:

Albert Wolff,

By Watson, Coit, Morse & Grindle

ATTYS.

Dec. 19, 1939. A. WOLFF 2,184,030

MACHINE FOR ROLLING THE BASES OF CARTRIDGE CASES

Filed May 11, 1936 5 Sheets-Sheet 4

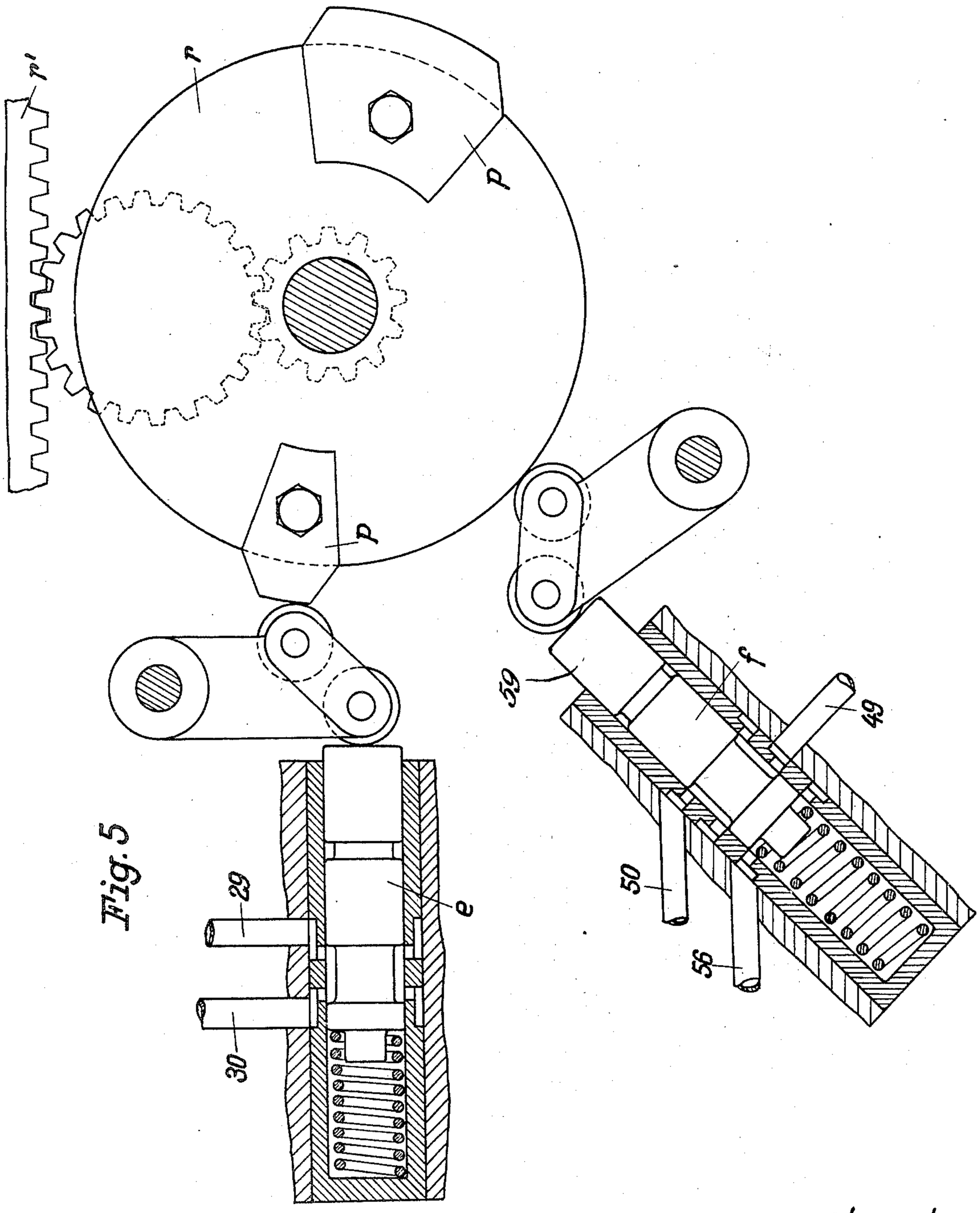


Fig. 5

Inventor:
Albert Wolff,
By Watson, Coit, Morse & Grindle
Attys.

Dec. 19, 1939. A. WOLFF 2,184,030

MACHINE FOR ROLLING THE BASES OF CARTRIDGE CASES

Filed May 11, 1936 5 Sheets-Sheet 5

Fig. 6

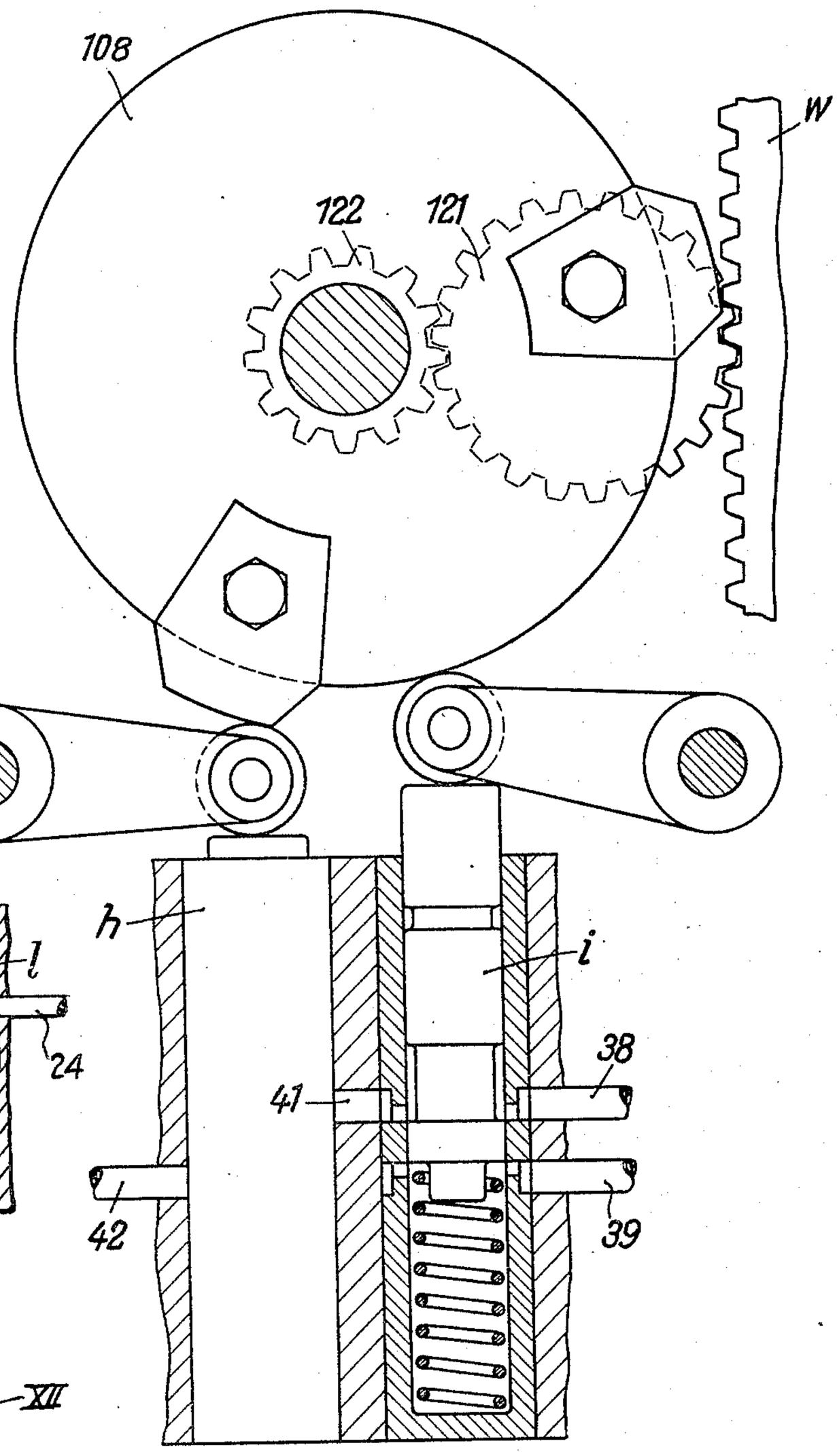


Fig. 7

Inventor:
Albert Wolff,
By Wateon, Coit, Moore & Cuinda
Attys.

Patented Dec. 19, 1939 2,184,030

UNITED STATES PATENT OFFICE

2,184,030

MACHINE FOR ROLLING THE BASES OF CARTRIDGE CASES

Albert Wolff, Berlin-Dahlem, Germany, assignor to Deutsche Waffen- und Munitionsfabriken Aktiengesellschaft, Berlin, Germany

Application May 11, 1936, Serial No. 79,187
In Germany March 28, 1935

8 Claims. (Cl. 80—40)

The invention relates to a control for base rolls for rolling the bases of cartridge cases and its object is to make the whole of the working operations automatic, preferably by means of a fluid under pressure.

The heretofore customary manual attendance of the base rolls requires firstly an exceptional expenditure of force and secondly considerable skill if the various operations of the machine are to be carried out continuously in succession without considerable loss of time. In order to reduce the labours of the attendants as far as possible and to increase the capacity of the machine, it is proposed according to the invention to initiate the various working operations of the machine either in succession or together by means of an automatically operating hydraulic control. According to the invention, the individual working operations, such as inward movement of the roll slide, upward movement of the rolling ball, locking of the bayonet joint for the slide, movement of the slide until the commencement of rolling, starting of the rotary movement of the base roll, lowering starting of the rotary movement of the base roll, lowering and raising of the rolling balls during the rolling operation, unlocking of the bayonet joint, engagement of the roll slide fast speed and the moving part of the slides are controlled or initiated or even carried out absolutely automatically by hydraulic means by piston strokes or the like, which in their turn are controlled by special valves, cocks, pistons or the like, and also mutually, in such a manner that the next movement in the working cycle of the base roll is initiated in a positive manner only after or by the termination of the preceding movement.

In order that the attendants shall have complete control of the actual rolling operation further steps are taken according to the invention for controlling the automatic raising and lowering of the rolling balls as rapidly as desired by engagement by hand and also for repeating this as often as may be desired.

The drawings show in Figures 1 and 2 constructional examples of a hydraulically controlled base roll according to the invention, the structure of the machine in question being shown diagrammatically.

Figs. 3 to 7 are detail views, partly in section of actuating and control members forming part of my present machine, Fig. 3 showing in particular a bayonet closure, Fig. 4 a pair of valves serving for the actuation of said bayonet closure for throwing-in and out the roll slide and for controlling the rolling ball, Fig. 5 a further pair of valves serving for initiating the downward or upward movement of the rolling ball and for controlling a shaft for the rolling cylinder by way of a special mechanism, Fig. 6 a still further pair of valves controlling the operation of said roll slide and said bayonet closure, and Fig. 7 the driving means for said bayonet closure.

According to Figure 1, the hydraulic control is driven by a single pump and according to Figure 2 by two pumps with constant delivery quantity for the fast speed of the roll slides, a regulating pump, a pump for the latter with a delivery quantity which can be adjusted in a continuous manner and a further high pressure pump for the working operation.

In the constructional form of the control according to Figure 1, the cases *t* and *u* to be machined are fixed in rolling or receiving cylinders which are moved towards each other until the bases of the cases come into contact with the rolling ball *v*, which is moved up and down during the rolling operation, the rolling or receiving cylinders being adjusted axially by a small amount. The adjustment of the rolling or receiving cylinders is effected by means of a guide spindle **100** which is coupled to the receiving cylinders by means of a bayonet joint *z*, Figures 3 and 7. The base roll is driven by means of a variable speed gear assembly *y*, **102**, **103**. The rolling ball *v* is mounted in a cage adapted to be raised and lowered by the rack *w*. The rack is driven partly by the reversible gear *x* and also by the piston *n*.

At the right-hand side of the variable speed gear *x* there is provided a worm-gear drive for the pinion co-operating with the rack *w*, said worm-gear drive being reversible by action of the control lever **107**.

The other controlling and driving elements of the base roll according to Figure 1 comprise a clutch **101** for the rotary movement of the left hand rolling or receiving cylinder, a clutch **102** for driving the guide spindle **100** at one speed, a clutch **103** for driving the guide spindle **100** at another speed, the actual main driving shaft **104**, the clutch **105** which is engaged or disengaged by the control piston shown below it in the drawings, the control levers **106** for the variable speed gear assembly *y*, **102**, **103**, for moving the controlling or receiving cylinders together and apart, a further control lever **107** for the upward and downward movement of the rolling balls *v* by means of the toothed wheel and toothed segment *w*, a cam disc **108** having two cams for

controlling the valves *h* and *i* for initiating the downward or upward movement of the balls, a control lever 109 for stopping the base roll or for returning it into its initial position and a further control lever 110 for engaging the mechanical drive of the main driving shaft 104.

With respect to the action of the two clutches 102 and 103 it may further be noted that on movement of the push-rods of the pistons at 55 and 31 the coupling rod I will be displaced to either throw-in clutch 102 and throw-out clutch 103 or to throw-in clutch 103 and simultaneously therewith throw-out clutch 102. The clutches are driven at different speeds but in the same direction.

The main driving shaft 104 is continuously rotated even in inoperative condition of the machine. A disk II is mounted on said shaft 104. If clutch 105 is thrown-in also the large bevel gear wheel of the variable speed gear *y* will rotate, while shaft VI is positively driven through *y* from the shaft 104. In the drawings this connection is indicated by a small bevel gear III fast on the driving disk IV. The latter is connected with wheel V fast on shaft VI by a chain or the like. In like manner the sprocket wheel VIII is rotated by a chain from the sprocket wheel VII.

Upon rotation of shaft VI also the one half of clutch 101 will rotate idle therewith. After throwing-in said clutch 101 the rolling cylinder with the cartridge shell therein will also be rotated.

The controlling operation according to Figure 1 proceeds as follows:

A pump *o* continuously forces oil under pressure from a supply tank into the conduit 1. Branching off the latter is the conduit 2 for the control valve *d* for engaging and disengaging the main clutch 105. The oil conduit 3 leads by 4 to the cylinder of the main clutch 105, whereby the base roll is started. This starting is effected by depressing the control button *m*, Figure 4, after throwing over the lever 110 on the piston *d*. The conduit 7 to the valve *a* is thereby opened and the latter moves into the left-hand position. The branch conduit 8 connects the conduit 6 with the cylinder 9 where a catch pin is disengaged and releases the control piston *g*. From the pump *o* the oil conduit 10 leads by way of 1 to the valve *c*, and furthermore the conduit 11 leads from the valve *c* to the valve *a*. The oil supply moves the valve *a* into its left-hand position and hence opens the conduit 13 which leads to the valve *b* by way of 14 thus moving the valve *b* into its left-hand position. The movement of the valve *b* into the left-hand position opens the conduit 15 which in its turn, by way of the supply conduit 16, puts under pressure the piston 16' for the inward movement of the right-hand roll slide and moves the latter.

At the same time, the piston *n* is put under oil pressure by 14 by way of the supply conduit 17. The piston moves upwardly and carries the ball *v* into the upper position.

Branching off 15 is the supply conduit 19 which reverses the pressure valve *k*, whereby pressure liquid is supplied thereto and the valve *b* is brought into the right-hand position. The conduit 22 is thereby put under oil pressure. This conduit leads to 23 and by moving forward the piston there situated effects the closing of the bayonet joint *z*.

The bayonet joint having been closed and the rolling or receiving cylinder having been coupled to the guide spindle 100, the conduit 24 is also opened and by way of 25 forces out the plunger of impulse cylinder 25', thereby initiating the moving together of the roll slides. After this has taken place, the conduit 26 is opened and by way of 27 disengages a catch pin whereupon the valve *a* moves into its central position. Branching off the pressure conduit 1 at 28 is an oil conduit leading to the control valve *e* which is moved by dogs on the control disc *r*, Figure 5. When by way of the conduit 24, 25 the left-hand rolling or receiving cylinder is set in motion, the control disc *r* will be driven by the latter, by way of a gear *r'* and the dog *p* on the said disc forces the piston *e* back, whereupon the conduit 30 leading to 31 is opened. The plunger of the impulse cylinder situated at that place is moved to the centre, the control rod is pushed back and thereby the rolling or receiving cylinder movement initiated by way of 25 is stopped. A branch of the oil conduit from 30 to 32 moves the piston of 32 forward, thereby switching on a light signal *q* for indicating that the actual rolling operation is now commencing.

After opening the conduit 30 leading to 31, the conduit 34 leading to the cylinder for starting and stopping the rotary movement of the rolling or receiving cylinders is also opened by way of 33. The said rotary movement is started by the piston being pressed downwardly.

Upon rotation of the receiving cylinders, the conduit 35 leading to 36 is also opened and presses the valve *c* to the left. The conduit 37 leading to 38 is thereby connected to the pump *o*. The control valve *i* is pushed downwardly by a dog when the ball slide is at the top, thereby opening the conduit 39, which leads to 40 and actuates the plunger of the impulse cylinder for the initiation of the downward movement of the ball.

The conduit 41 leads to the control valve *h* which after the downward movement of the ball has taken place is moved by a dog, whereupon the conduit 42 leading by way of 43 to the plunger of the impulse cylinder for the upward movement of the ball is opened. The conduit 45 leading from the piston *d* by way of 44 to the piston *g* is in communication with 46 when at the end of the upward movement of the ball, the control valve *g* has been moved downwardly by throwing over a control lever. The oil pressure is thereby transferred to 47, the plunger of the impulse cylinder is moved to the centre and the ball slide remains in its upper position. Branching off the conduit 46 is a conduit 48 leading to the control valve *f* by way of 49. It is in communication with 50 and by way of 52 actuates the plunger of the impulse cylinder for starting the moving apart of the roll slides, and by way of 51 actuates the piston for switching off the light signal *q*.

The conduit 53 is now opened. This conduit branches off to 54, stops the rotary movement of the receiving cylinders and by way of 55 actuates the plunger of the impulse cylinder for the rapid movement apart of the roll slides. The conduit 56 branching off the valve *f* is opened by the adjustable dogs on the control disc *r*, Figure 5, and by way of 57 moves the plunger of the impulse cylinder to the centre, thereby terminating the movement apart of the roll slides.

The conduit 56 supplied oil by way of 58 for disengaging the catch pin at 59 and causing the spring-controlled piston valve *a* to move to the right is thereupon opened. Branching off the conduit 56 is a pressure conduit leading by way

of 60 to 61 and serving for the disengagement of the clutch for the ball slide, the ball slide being thereby released for rapid movement. The valve *a* situated in the right hand position opens the conduit to 62 which leads to 63 and serves for the top-speed downward movement of the ball slide.

At the same time, the oil pressure of the conduit 64 branching off 62 effects the opening of the bayonet joint. The oil conduit 65 which likewise branches off 62, moves the valve *c* into the right-hand position, and the conduit 66 branching off 64 moves the valve *b* into the left-hand position. After the conduits 63, 64, 65 and 66 have been put under pressure, the flow from 67 to 68 is also opened and, by way of 69, the piston for moving apart the roll slide is pushed back by the admission of oil under pressure.

According to Figure 2 gear pumps 70 and 71 with constant delivery quantity are employed for actuating the fast speed. The gear pump 73 serves for the working pressure or maximum pressure for operating the control piston for moving the rolling or receiving cylinders inwardly, while the gear pump 74 is intended for the regulating pump 75 having a delivery quantity which can be adjusted in a continuous manner. The main control valve by which the whole of the control operations are initiated or stopped is shown at 76.

The pressure liquid is conveyed to the several control pistons by means of the pumps 70, 71, 73, 74 and 75, the pumps 70 and 71 being constructed to operate with a large quantity of pressure liquid at small pressure to operate the pistons serving to operate the respective operating members at accelerated speed, while the pump 73 is constructed to operate as high-pressure pump with a small quantity of pressure liquid. The pump 74 serves only as a feed pump for the regulating pump 75, the latter forwarding the pressure liquid supplied thereto in full or reduced quantity to the piston 81, in accordance with the adjustment of pump 75. In order to bring about an accelerated motion, for instance when moving the slides into rolling condition, at first the pumps 70, 71 and 73 jointly supply pressure liquid at a small pressure to the cylinders 82 and 83, in accordance with the small resistance to be overcome in this case. In operative condition of the slides the pressure of the operating liquid is raised through pump 73, while pumps 70 and 71 are rendered inoperative by the lifting of the valves 84 and 85. During accelerated motion of the slides the pumps 74 and 75 are running idle past valve 88. By action of the aforementioned raised pressure the valves 98 and 115 are opened and the pistons 86 and 87 lifted, thus causing insertion of the clutch to rotate the rolling cylinders. By way of a branch conduit the valve 88 is reversed with the result that the pumps 74 and 75 supply pressure liquid to the cylinder 81 to produce motion of the ball slide during the operation of rolling. This motion of the ball-slide upward or downward is initiated by the valves 89 and 90 and by the distributing valve 91.

The course of the individual control operations for the upward movement of the ball slide for moving the rolling slides inwardly and outwardly, for moving the rolling slides into the operative position, for moving the rolling slides apart and for the downward movement of the ball slide is as follows:

The upward movement of the ball slide is effected by bringing the main valve 76 into the position shown in solid lines by manipulating the control lever 77. The pressure conduit from the gear pump 70 to the main valve 76 by way of the valve 78 is thereby opened. Likewise, the pressure conduit from the gear pump 71 by way of the valves 79 and 80 and the pressure conduit from the high pressure gear pump 73 to the main valve 76 by way of the valve 80 are opened. The ball slide piston 81 and hence also the ball slide are thereby moved upwardly.

For moving the roll slides inwardly, the corresponding control pistons are operated with low pressure fluid, this being brought about by moving the hand lever 77 on the main valve 76 into the first position from the left. The pressure conduit from the gear pump 70 is thereby closed by way of the main valve 76, whereby the control piston 82 for the left-hand rolling slide is put under pressure and causes the latter to move inwardly. In the same manner, the pressure conduit from the gear pump 71 and 73 is made operative, whereby the right-hand rolling slide is moved inwardly by means of the control piston 83.

The movement of the rolling slides into the operative position is effected by means of high pressure, the gear pump 70 being first disconnected by way of the valve 84 after the inward movement of the left-hand rolling slide, and thereupon after the inward movement of the right-hand rolling slide, the gear pump 71 is disconnected by way of the valve 85, whereupon the gear pumps 70 and 71 run idle. After the increase in pressure, the rotary movement of the right-hand rolling or receiving cylinder is initiated by the valve 86 and that of the left-hand cylinder by the valve 87. Thereupon, the no-load valve 88 is reversed by the valve 87, whereby the pressure conduit from the gear pump 74 to the valve 88 and to the regulating pump 75 is opened and simultaneously therewith the no-load valve 88 operates the control valves 89 and 90, whereupon the pressure conduit of the first control valve reverses the valve 91, so that the pressure conduit from the regulating pump 75 moves the ball slide downwardly, whereby the valve 89 is released and, in a further operation, the valve 90 is also moved. The reversal of the valve 90 thereby produced effects the reversal of the valve 91, the consequence of which is that the ball slide is again moved upwardly in the working stroke. Due to the movement of the valve 92 by hand by means of the control lever in connection therewith, the rolling or receiving cylinders are moved apart by means of the conduit 93 or towards each other by means of the conduit 94 in order to maintain the suitable degree of rolling, this being attained by adjusting the stops 95.

After completion of the rolling operation, the rolling slides are now moved apart as far as the outer stops 96 provided for that purpose, this being effected by the pressure conduit of the gear pump 70 being connected by way of the main valve 76 to the right-hand end of the control piston 82, whereby the left-hand rolling slide is caused to move outwardly. At the same time the pressure conduit from the gear pumps 70 and 71 is connected by way of the main valve 76 to the left-hand end of the control piston 83, whereby the right-hand rolling slide is caused to move outwardly. By pressure being conducted to the right-hand end of the control piston 82, the rotary movement for the left-hand rolling or

receiving cylinder is disengaged and by pressure being conducted to the left-hand end of the control piston 83, the rotary movement for the right-hand rolling or receiving cylinder is disengaged.

When after the moving apart of the rolling slides, the latter abut against the outer stop 96, the control operations are repeated for initiating the movement of the rolling slides by high pressure in the working position, that is to say, the gear pumps 70 and 71 are disconnected by way of the valves 84 and 85. The ejection of the rolled cartridge case base, forming no part of the present invention, is effected by co-operation of the high-pressure pump 73. After the ejection of these cases, the main valve 76 seen from the left-hand is rotated into the fourth position shown in the dotted lines, that is to say into the right-hand end position, thereby initiating the reversal to downward movement of the ball slide at fast speed. This purpose is served by the pressure conduits coming from the gear pumps 70, 71 and 73.

Apart from the valves already mentioned, the following further valves are employed according to Figure 2. The pre-tension valve 98 serves for allowing the starting of the rotary movement by means of the piston 87 and the movement of the no-load valve 88 to take place only after a suitable rise in pressure, while the resistance valve 99 maintains a back pressure for reliable guiding of the ball slide piston 81. Furthermore a non-return valve 111 is provided for preventing oil under pressure from flowing away during the fast speed strokes of the ball slide. The maximum valve 112 serves for limiting the degree of pressure of the pumps 74 and 75, and the reaction valve 113 serves for relieving the feed pump 75 of the generation of pressure and for transferring the generation of pressure to the gear pump 74. A further maximum valve for limiting the pressure is provided at 116. A non-return valve 114 is provided for preventing the idle running of the ball slide cylinder 81, and the valve 115 is provided for starting the rotary movement by means of the piston 86 only after a corresponding increase in pressure.

Motion is imparted to the piston 81 at accelerated speed by means of the pumps 70 and 71 by way of the main valve 76 which is properly adjusted by hand. Upon adjusting said main valve to operate the roll, the piston 81 is operated at high pressure by the pumps 74 and 75, a regulation without steps being effected by varying the quantity of liquid supplied by the pump 75.

In the hydraulic control shown in Figure 2, no mechanical control members are employed apart from the adjusting levers 97 and 77 for the valve 92 and for the main valve 76, respectively, and the push button for the valve 91.

Referring now more particularly to the detail Figures 3 to 7, according to Fig. 3 the part 1 of the piston operated by conduit 24 is connected to a rack XII imparting rotation to the pinion Z and to a nut 117 connected thereto, as indicated at the right-hand side of said pinion. Said nut 117 is provided with a number of projections 118 which in inoperative condition of the bayonet closure engage with properly shaped recesses 119 on the slide. As soon as the collar 120 on said nut 117 abuts against the part IX of said slide, the axial displacement is completed and the bayonet closed. Closure of the bayonet is effected upon rotation of said pinion Z and said nut through an angle of about 60 degrees, the projections 118 having now fully entered said recesses 119. In closed condition of the bayonet the roll slide moves forward or backward in accordance with the condition of clutches 102 and 103.

Fig. 4 shows how the connection between conduits 45 and 46 is established by means of the two valves *d* and *g* by swinging the levers 109 and 110. For the sake of clearness the conduits 28, 44, 2, 3, 5, 6 and 170, as well as the push button *m* are likewise indicated in accordance with Fig. 1.

The construction and arrangement of the valves *e* and *f* is shown in Fig. 5. According to Fig. 5 the rack *r'* is fast on the roll slide and serves to transmit the reciprocating motion of the latter to the disk *r*. Fig. 5 also shows the conduits 29 and 30 connected to valve *e*, the conduits 49, 50 and 56 connected to valve *f*; as well as the dogs *p* on the disk *r*, all in agreement with Fig. 1.

Fig. 6 shows the construction and connections of the valves *h* and *i* which serve to operate the rack *w* for the ball *v*. Connections between said rack *w* and the disk 108 is effected by a gear wheel 121 and a pinion 122 on the axle of said disk. In Fig. 6 the conduits 41, 42 and 38, 39 for the valves *h* and *i* are likewise shown in agreement with Fig. 1.

Fig. 7 shows the shaft 100 with the pinion Z normally loose thereon, said pinion being driven by the rack XII which on its part is driven by piston 1, the latter being supplied and operated by conduits 23 and 64, the conduit 24 leading to 25 as shown in Fig. 1 and coming under pressure after piston 1 has arrived at its end position.

The examples merely show certain methods of constructing the hydraulic control device for a base roll. The individual control elements may be constructed, arranged and connected together in various ways. The idea of the invention would not be altered in any way if compressed air were employed as operative medium instead of oil under pressure.

Instead of employing a medium under pressure, such as oil under pressure or compressed air, the whole control may be effected electrically or mechanically.

I claim:

1. An automatic machine, said machine including a pair of roll-slides, a rolling ball, and a bayonet joint for said slides, automatic control means for said parts consisting of power mechanisms for imparting inward and outward movement to said rolling ball and for locking and unlocking said bayonet joint, and means linking said mechanisms whereby to initiate a movement of one after completion of a preceding movement of another.

2. Automatic machine as specified by claim 1, said machine further including additional manual control mechanism independent of said interlinked control means, said additional manual control mechanism being arranged to control said rolling ball and said roll-slides to regulate speed and direction of movement thereof and to repeat at will rolling movement thereof independently of said predetermined sequence due to the interlinking of said actuating mechanisms.

3. Automatic machine as specified by claim 1, the automatic control means including a pressure medium feed pump, a cylinder and plunger for imparting upward and downward motion to said rolling ball, a conduit interconnecting said

pump with said cylinder and plunger, a control button for controlling said conduit to supply pressure medium from said pump to said cylinder and plunger for imparting upward movement to said rolling ball.

4. Automatic machine for rolling the bases of cartridge cases, said machine including a roll-slide, a driving spindle therefor, a bayonet joint inserted therebetween, a pressure medium feed pump, a cylinder and plunger for locking and unlocking said bayonet joint, a conduit interconnecting said pump and said cylinder and plunger and means to open said conduit including an impulse cylinder.

5. Automatic machine as specified by claim 1, including a source of power, a main spindle adapted to initiate the working steps of said machine, a hydraulic cylinder and plunger, a second hydraulic cylinder and plunger, a conduit connecting the cylinders, means to actuate one plunger to open said conduit to supply fluid to the other cylinder, movement of the plunger of said second cylinder being adapted to engage said main spindle and said source of power.

6. Automatic machine as specified by claim 1, including a piston-operated ball-slide associated with the rolling ball and adapted to impart thereto alternately downward and upward movement, a valve mechanically controlled by said ball-slide to open in downward position of the latter a conduit leading to said piston-operated ball-slide, said valve controlling said conduit to initiate upward movement of the ball-slide and therewith of said rolling ball.

7. An automatic machine for rolling the bases of cartridge cases, said machine including a ball-slide slidable in upward and downward direction, roll-slides carrying receiving cylinders and adapted for rotary and alternate outward and inward movement, an impulse cylinder and plunger for terminating said outward movement of said roll-slides and said receiving cylinders, a valve controlling the top speed downward movement of said ball-slide, a conduit open in central position of said impulse cylinder and plunger and leading towards a catch-pin on said valve to cause the latter to move into position for said top speed downward movement of said ball-slide, conduits for releasing a clutch associated with said ball-slide, thereby releasing the latter for rapid motion.

8. An automatic machine for rolling the bases of cartridge cases, said machine including roll-slides, a guide spindle, a bayonet joint for coupling a roll-slide to said guide spindle, a cylinder and plunger for operating said bayonet joint, a second cylinder and plunger for initiating rotation of said guide spindle and moving together said roll slides, a conduit connecting said cylinders and means to open said conduit on movement of the first plunger.

ALBERT WOLFF.