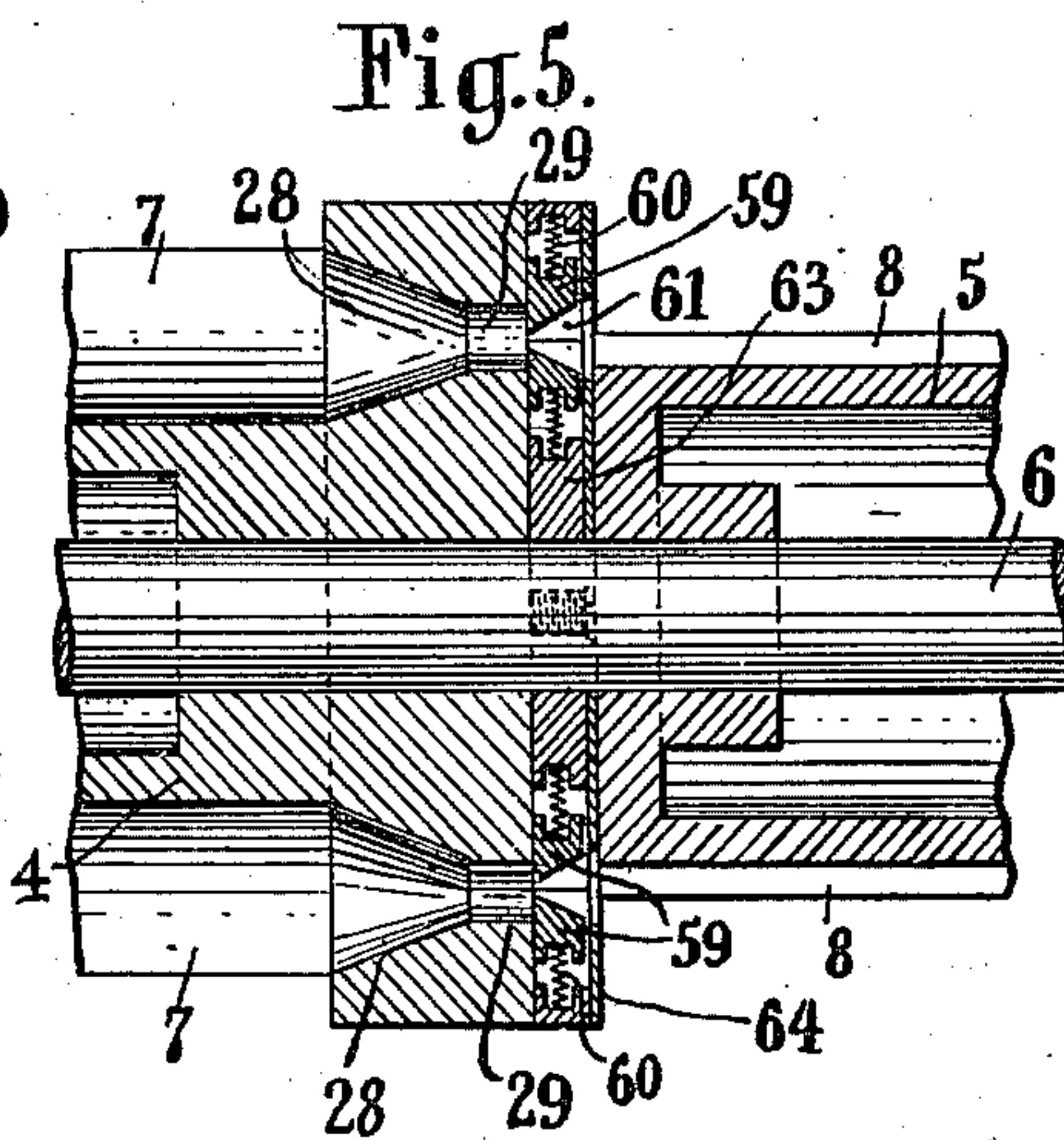
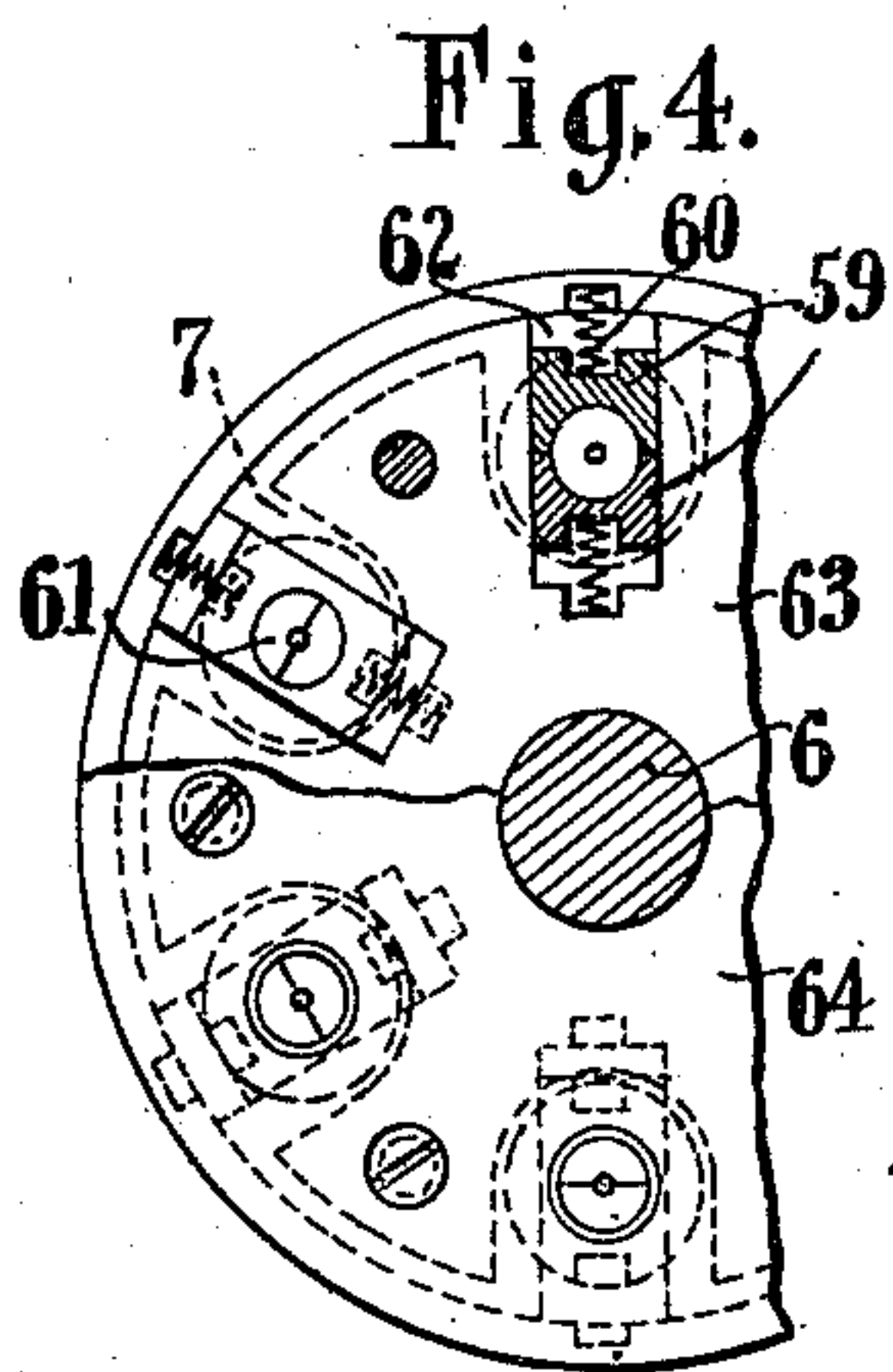
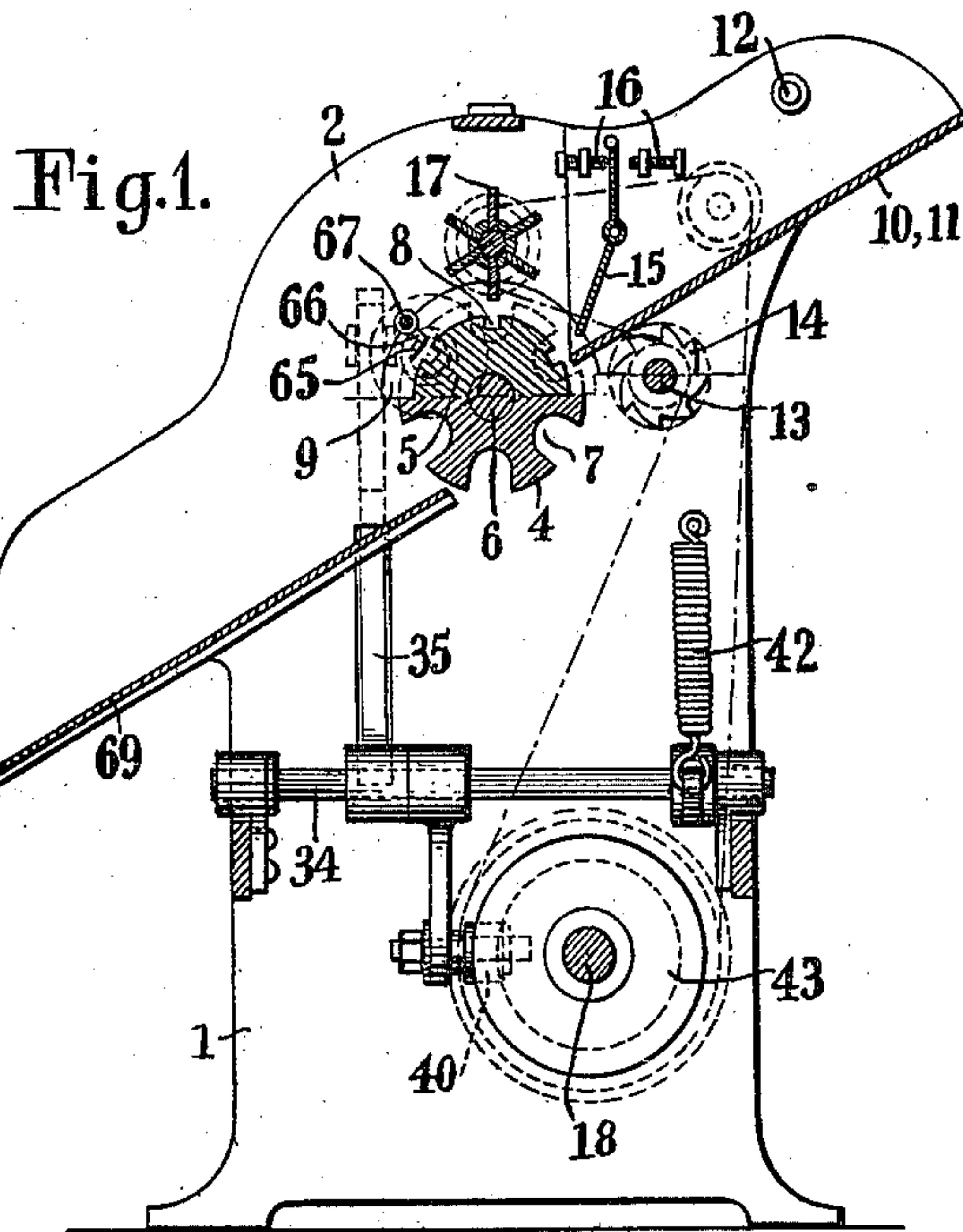


E. HERZOG.  
MACHINE FOR INSERTING SPINDLES INTO COPS.  
APPLICATION FILED AUG. 12, 1910.

989,782.

Patented Apr. 18, 1911.

3 SHEETS—SHEET 1.



Witnesses:  
M. C. Bender  
C. S. Brown.

Inventor:  
Edward Herzog  
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Attys

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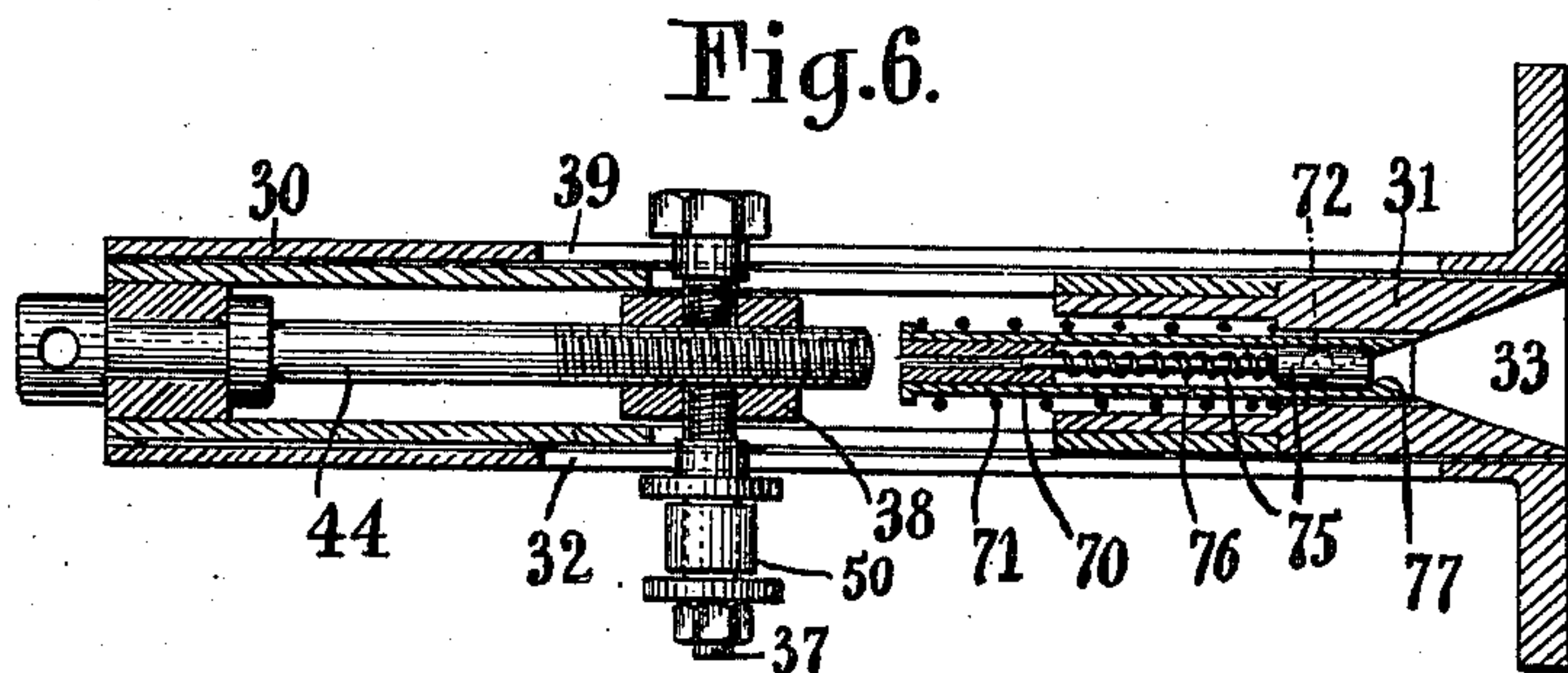
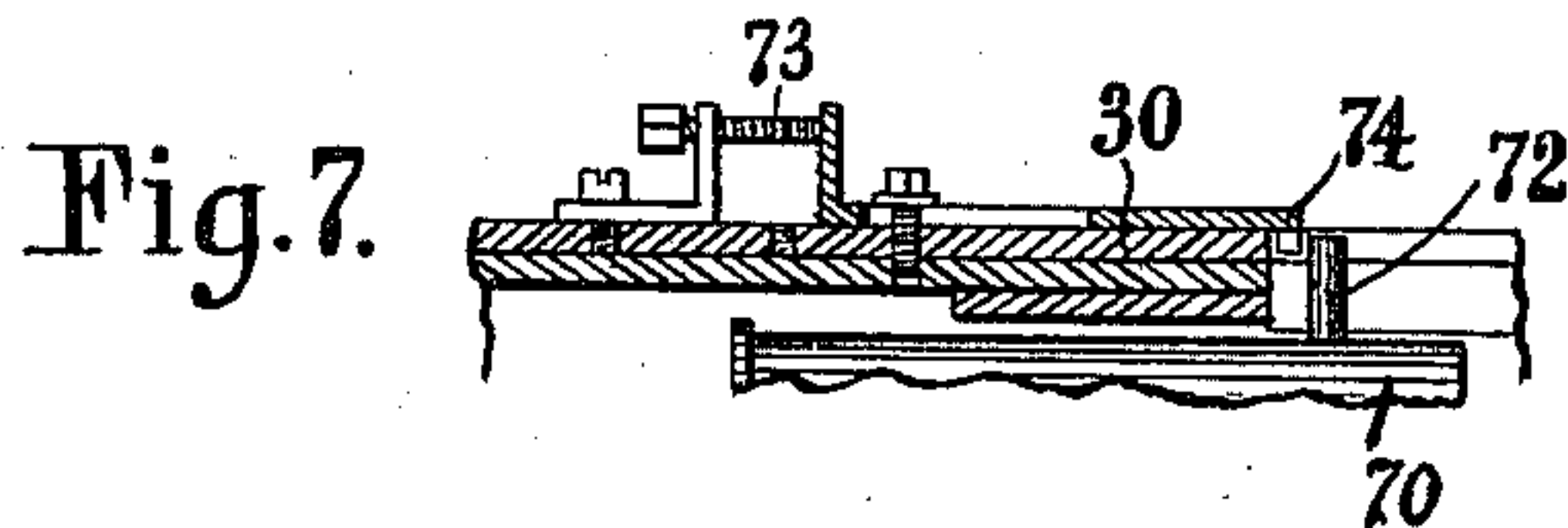
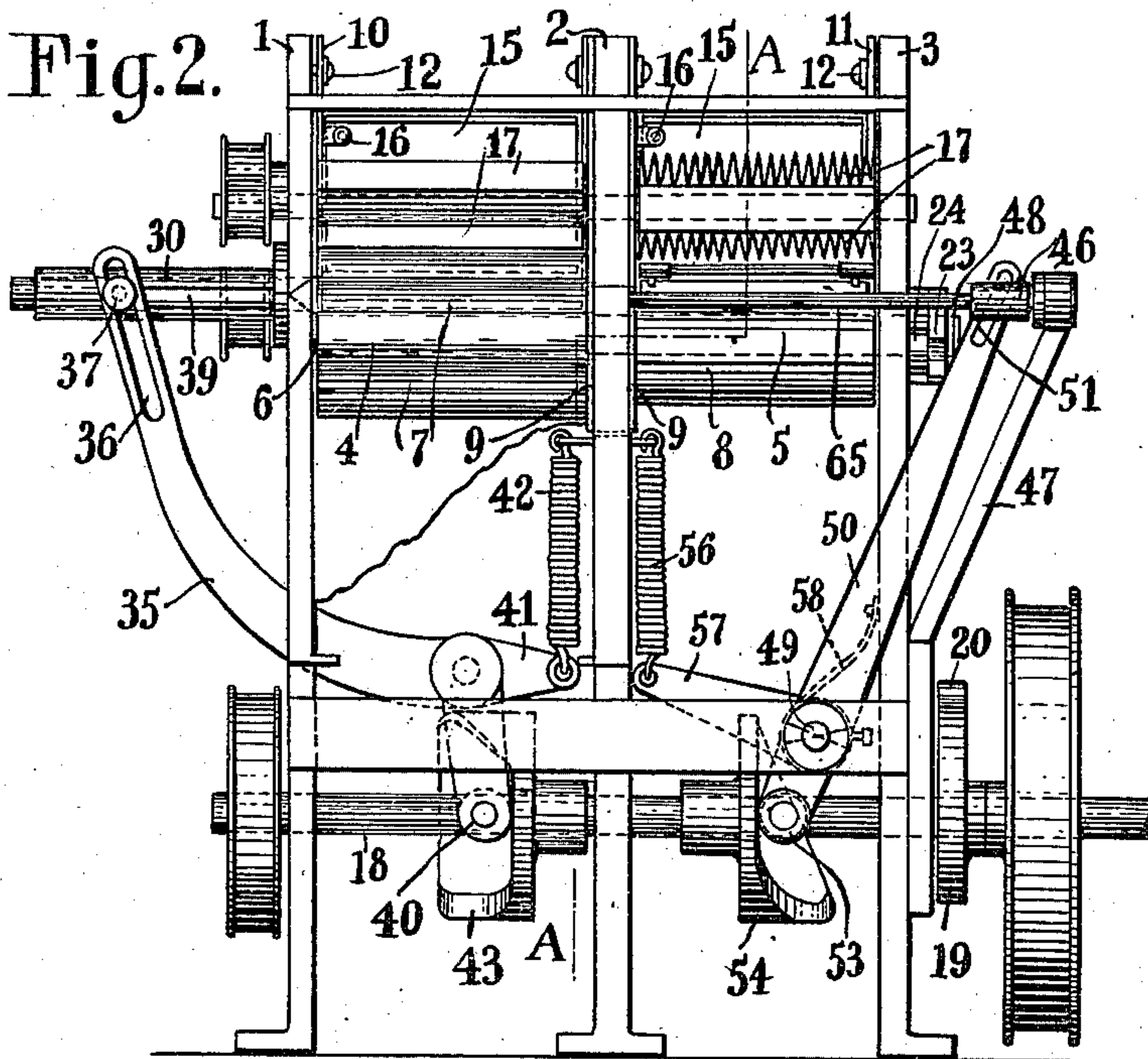
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3 SHEETS-SHEET 2.



Witnesses:  
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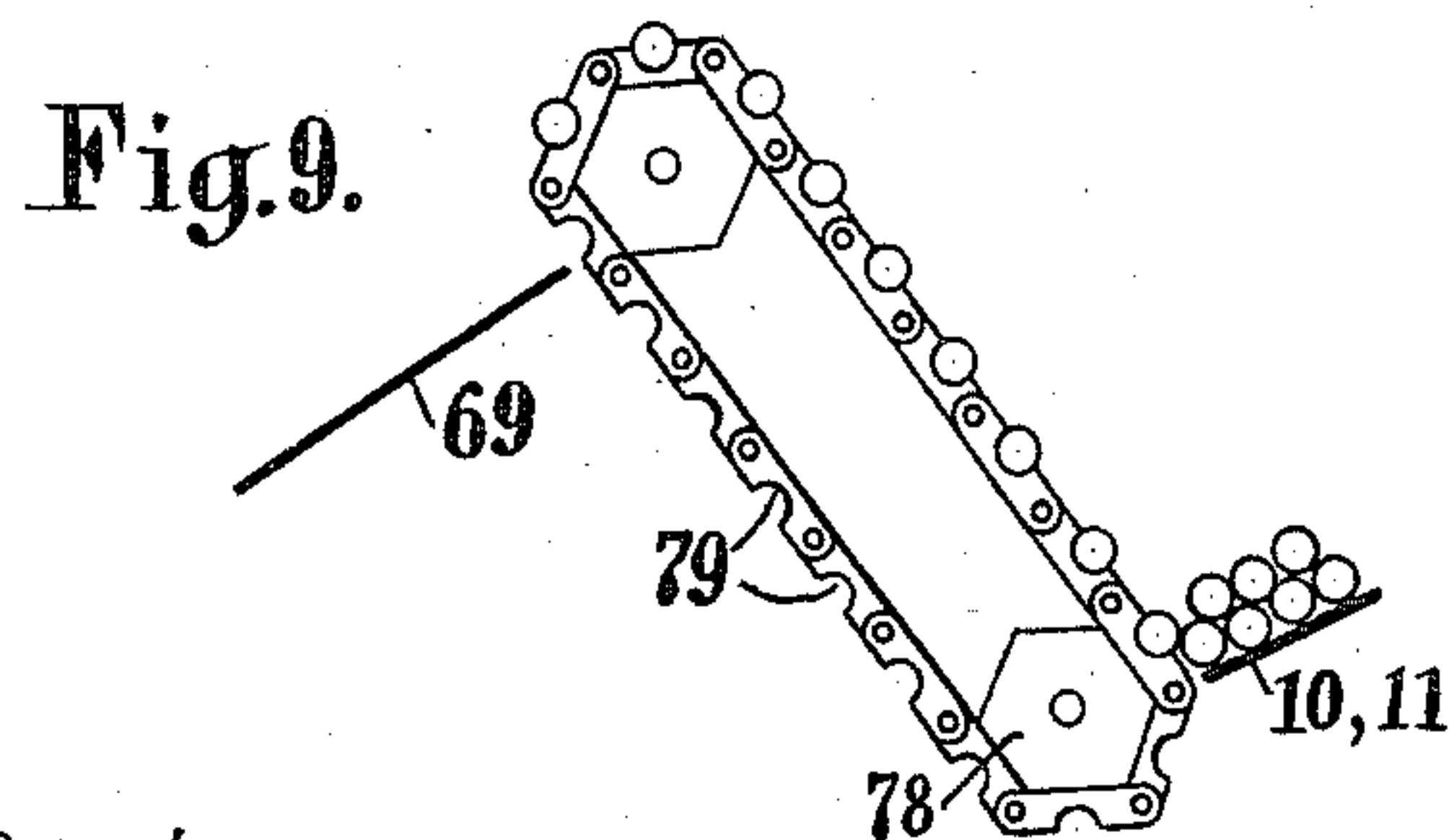
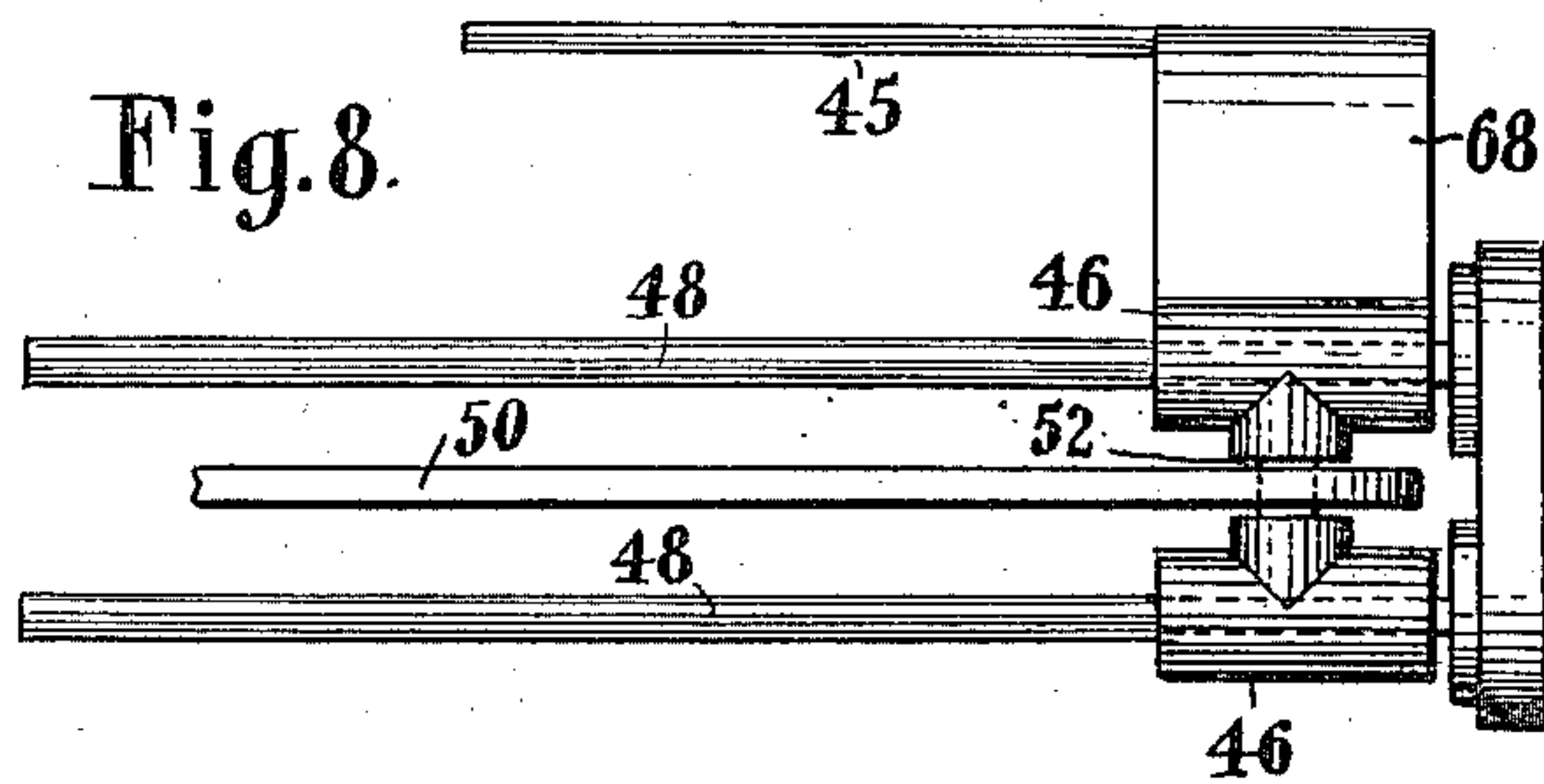
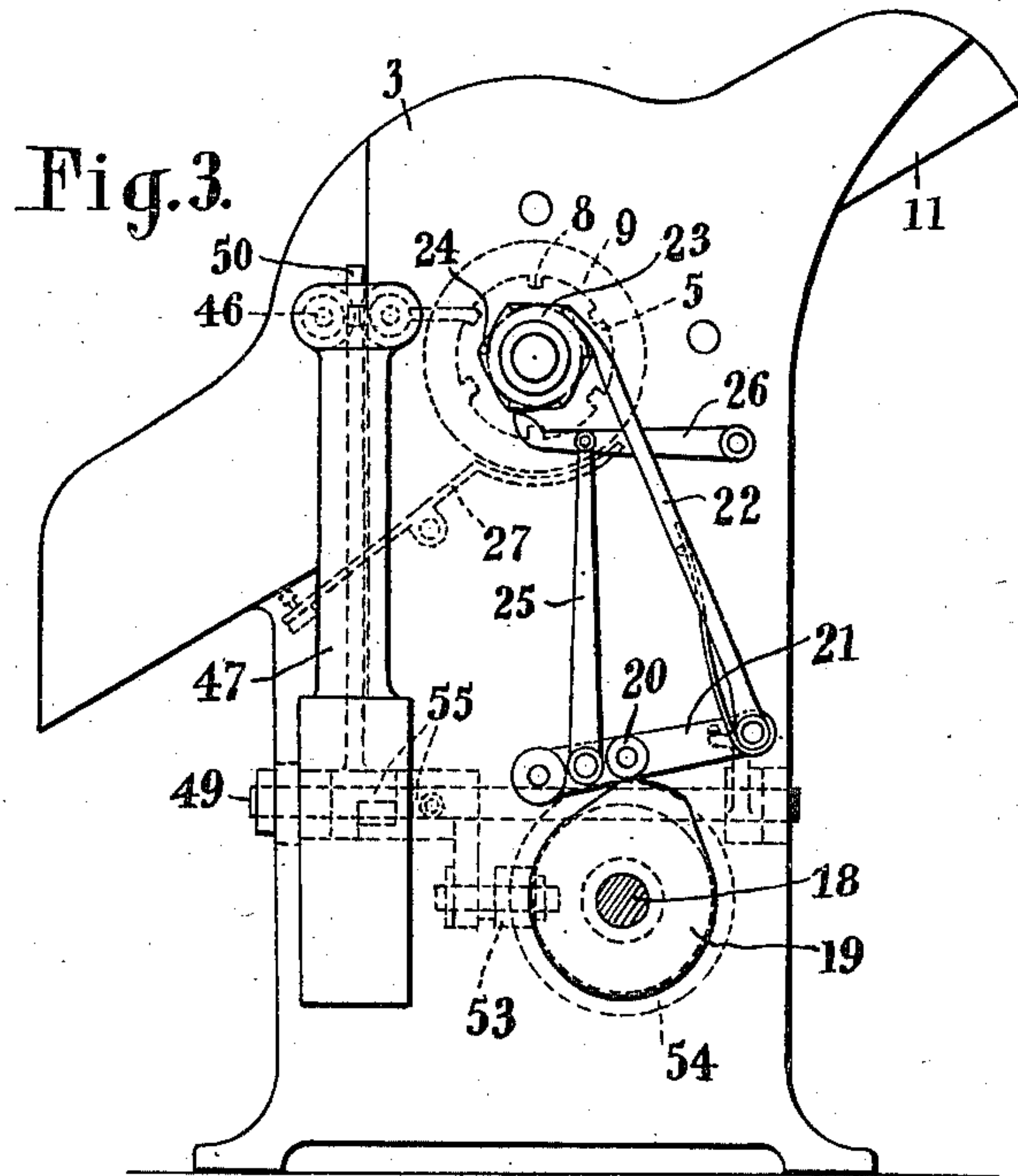
Inventor:  
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3 SHEETS—SHEET 3.



Witness:  
M. C. Bender  
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Inventor:  
Eduard Herzog  
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# UNITED STATES PATENT OFFICE.

EDUARD HERZOG, OF ERLACH, AUSTRIA-HUNGARY.

MACHINE FOR INSERTING SPINDLES INTO COPS.

989,782.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed August 12, 1910. Serial No. 576,896.

*To all whom it may concern:*

Be it known that I, EDUARD HERZOG, factory manager, of Erlach, a small factory place in Lower Austria, in the Empire of Austria-Hungary, have invented a Machine for Inserting Spindles into Cops; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

As is known the cops coming from spinning machines present a tapering passage running in the axial direction and originating in the spinning spindle. It is absolutely necessary to maintain this passage in the cops unobstructed in order to work up the yarn completely without waste. If, however, such cops are wetted, boiled, bleached, dyed or subjected to some other such manipulation, in order to prevent stoppage of the passage during the said manipulations, a suitable spindle is passed through them and retained therein during the several operations to which the cops are to be subjected. The insertion of such spindles in the cops has heretofore been effected exclusively by hand. This manipulation is not only tedious and costly but also entails the defect that frequently owing to unskilled work the passage in the spindle is stopped.

The present invention has for its object a machine which serves to effect this operation speedily and accurately.

It consists broadly of two cylinders mounted on a common shaft and presenting on their periphery corresponding longitudinal channels, the channels in one of the cylinders serving for the reception of the cops and those in the other cylinder for the reception of the spindles, which, like the cops, are supplied to the cylinders from delivery tables. These two cylinders are intermittently rotated by ratchet mechanism and during the intervals of repose one of the channels for the spindles comes within reach of a bolt which inserts the spindle then contained in the channel into the adjacent cop which is brought into correct position by an automatic centering device.

A machine embodying the invention is illustrated by way of example in the accompanying drawing, in which:

Figure 1 shows the machine in longitudinal section on the line A—A in Fig. 2. Fig. 2 is a front elevation, and Fig. 3 is a side

elevation of the machine. Figs. 4 and 5 show the means for centering the spindles in cross section and partial elevation and in longitudinal section. Fig. 6 illustrates the centering device for the cops in longitudinal section. Figs. 7 and 8 show details. Fig. 9 illustrates a modification.

Between three uprights 1, 2 and 3 of the machine frame, two cylinders 4 and 5 are rotatably mounted upon a common shaft 6. The cylinder 4 is provided on its periphery with a number of recesses or channels 7 running axially and of such dimensions that sufficient space is provided for a spool (in the present case a cop) in each channel; the cylinder 5 presents a corresponding number of channels 8 corresponding to the channels 7 and serving for the reception of the spindles. The two cylinders are separated by a plate 9 which is mounted in the uprights 2 so that the cylinders are guided in their rotation in the frame. The cops and spindles are fed to the cylinders from separate inclined tables 10 and 11 respectively. These two tables are freely rockable about studs 12 and each of them is caused to vibrate by means of a cam plate or toothed wheel 14 rotated by the driving shaft 13 so that the cops and spindles roll into the cylinders with certainty. Flaps 15 are provided at the guide places on the tables and the interval remaining between them and the table can be adjusted by means of set screws 16, this interval being made of such a size that only one cop and one spindle respectively can reach the cylinders in succession. If nevertheless more than one of the superposed cops or spindles should be taken by the cylinders, the cops or spindles not exactly located in the channels are rejected by means of cylinders or vane rollers 17 arranged above the cylinders and rotating in the same direction as the latter. The two receiver cylinders are intermittently rotated through the angle corresponding to the interval separating two channels this rotation being produced by a cam plate 19 mounted on the driving shaft 18 and a lever arm 21 resting upon the plate by the intermediary of a roller 20; a pawl 22 is pivoted to this arm and engages in a ratchet wheel 23 mounted on the cylinder shaft the number of teeth on this ratchet wheel corresponding to the number of channels in the cylinders.

In order to prevent the cylinders from being rotated further than necessary by the



shock of the ratchet mechanism, another ratchet wheel 24 is mounted beside the ratchet wheel 23 and this wheel 24 is engaged by a pawl 26 displayed by means of links 25 by the lever 21. The shock on operating the cylinders is likewise moderated by means of brake levers 27 acting upon the periphery of the guide plate 9. Every time the cylinders have been fed forward the cop located in the foremost channel of one cylinder comes into the plane of a centering device and the spindle contained in the foremost channel of the other cylinder comes within reach of a bolt serving to insert the spindles into the cops. The centering device is constituted in the following manner. The guide plate comprises on its side adjacent to the cop cylinder tapering recesses 28 connecting with the channels and shaped in correspondence with the cop projections and these recesses 28 adjoin the cylindrical openings 29 serving for the reception of the paper sleeves inserted in the usual manner in the cops and serving for the passage of the spindles, while upon the other side of the cop cylinder in continuation of the channel located in position for insertion a guide sleeve 30 is mounted on the frame of the machine in which sleeve a bolt or a second sleeve 32 ending in a head is inserted. This head directed toward the cylinder comprises a cavity 33 corresponding to the point of the cop so that when the bolt moves forward after each feed movement, the cop located at the time being in the position for the insertion of the spindle is clamped by its ends between the bolt and the guide plate in such a manner that the passage in the cop comes exactly concentric with the admission aperture 29 in the plate. The reciprocating movement of the cop pusher is produced by a bell crank lever 35 mounted on the shaft 34 and which by means of a slot 36 embraces a stud 37 of the cop pusher which is formed as a cross head 38 and guided in slots 39 in the sleeve, while the other free end of the lever bears against a striking plate 43 mounted on the driving shaft under the influence of a tension spring 42 one end of which is secured to the frame of the machine while its other end acts upon a lever 41 mounted on the shaft 34. By means of this plate 43 the cop pusher is moved forward by the intermediary of the bell crank lever 35, while the retractive movement of the pusher and of the parts connected therewith is produced by the influence of the spring 42. By rotating the set screw 44 in one direction or the other the pusher can be moved backward or forward and thus adjusted to the length of the cops that are being threaded on to the spindles.

While the cop for the time being located in position for passing onto a spindle is re-

tained by the centering device, the spindle opposite it is inserted into the passage in the cop by a bolt or pin 45 engaging in the channel 8. The spindle pusher pin is mounted on a cross head 46 which is guided on two guide rods 48 running parallel with the spindle channel and fixed at one end to the frame of the machine and at the other end to a support 47. The cross head and the spindle pusher pin with it are reciprocated by means of a lever 50 mounted on the shaft 49 and which by means of a slot 51 embraces a bolt 52 on the cross head 46 while its other free end is pressed by means of a roller 53 onto a striking plate 54 mounted on the driving shaft, under the influence of a spring 56; one end of this spring is fixed to the frame of the machine while its other end engages a lever arm 57 mounted on the shaft 49. By the intermediary of the lever 50 the plate 54 displaces the spindle pusher pin 45 while its retractive movement is produced by the spring 56.

As it may happen that the passage of some of the cops is blocked, so that the spindle cannot be passed through it, it is essential that when the resistance is excessive the pin of the spindle pusher should yield in order to avoid breakage of the machine. To this end the lever arm 50 serving for the actuation of the pin 45 of the pusher is only loosely mounted on the shaft 49 and is connected by its spring 58 with the shaft. The extent to which the spring yields can be limited by a claw clutch 55 mounted on the shaft and engaging the hub of the lever.

In order that the introduction of the spindle may take place exactly in the middle of the cop opening, each of the passages in the plate is covered by two diametrically displaceable jaws 59 which are pressed together by means of weak springs 60. In this position the jaws leave free a small hopper-shaped aperture 61 through which the tapering spindle is conducted exactly in the center of the passage in the cop and is guided in its further passage by the jaws, which separate in correspondence with the thickness of the spindle. The jaws are guided laterally in slots 62 in a second plate 63 arranged in front of the first plate, while their front and rear sides move between the first plate and a cover plate 64.

The channel in which the spindle to be inserted is located, is covered by a cover plate 65 which prevents the spindle from falling out and likewise affords a secure guidance to it as this plate forms a closed passage with the channel. In order that the movement of the pin of the spindle pusher may not be impeded, the cover plate is secured to arms 66 and by means of said arms is rockably mounted on a small shaft



67 fixed to the frame of the machine. The cover plate 65 is made narrower where the pin of the spindle pusher enters so that the arm of the cross head 68 carrying the pin 5 (Fig. 8) is able to engage beneath and lift the cover plate as the pin moves forward.

Before the pin 45 of the pusher has reached its end position, the bolt 31 of the cop pusher begins its return movement, so that when it has been passed on to the spindle the cop has already been pressed out of the tapering cavity 28 in the plate 9. Now while the bolt of the cop pusher is completing its return movement and thus releases the cop placed upon its spindle, the cylinders are displaced so that the cop falls on to the table 69 over which it rolls into a receptacle arranged for that purpose.

In order that the cop on its spindle may certainly be pressed out of the hopper-shaped cavity in the cop pusher bolt, a sleeve 70 is displaceably mounted in the tube of the bolt, the front end of this sleeve limiting the rear part of the tapering cavity; this sleeve is retained in the retracted position by a spring 71. Upon the return movement of the bolt of the cop pusher a pin 72 on the sleeve strikes against a tappet 74 which is adjustable by means of a set screw 73, whereby the sleeve is pressed out of the bolt of the cop pusher; it then presses the cop so far forward that it lies loosely in the channel. Finally, it may happen that the cop channel does not contain a cop. To provide for this case a second bolt 75 displaceable in the sleeve 70 is provided; by means of a spring 76 this bolt 75 is pressed into the front end position defined by projecting edge 77 of the sleeve; this bolt yields to the pressure of the cop spindle and if there should be no cop in the channel presses the spindle back into the channel as soon as the pin of the spindle pusher recedes. It should also be observed that the guidance of the 45 cops and of the spindles to the operative position can be effected by means of pater-noster work 78 if desired instead of by feed cylinders, in this case the separate chain links are provided with cavities 79 for the 50 reception of the cops and spindles.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a machine for the purpose described, the combination of two conveyers adapted, 55 respectively, to receive cops and spindles, means for intermittingly actuating the conveyers and bringing a spindle supported by one conveyer into alinement with the passage through a cop carried by the other conveyer, and means for forcing said spindle into said cop while the conveyers are stationary.

2. In a machine for the purpose described, the combination of two conveyers each comprising a series of channels adapted, re- 65

spectively, to support a plurality of cops and spindles therefor, means for actuating the conveyers and bringing a channel in one into alinement with a channel in the other, means for centering and holding the 70 cop in one channel in position to receive the spindle in the alined channel in the other conveyer, and means for effecting a relative movement between the spindle and cop to position the former in the latter. 75

3. In a machine for the purpose described, the combination of two conveyers mounted to move about a common axis and adapted, respectively, to support a plurality of cops and spindles, means for intermittingly actu- 80 ating said conveyers to bring a spindle into alinement with the passage through a cop, and two reciprocating pushers adapted respectively to engage said alined spindle and cop and effect a relative movement thereof 85 whereby the spindle is inserted in the cop.

4. In a machine for the purpose described, the combination of a support for a cop, means for supporting a spindle beyond one end of the cop, a guiding device arranged 90 between said supports and comprising radially movable spring pressed members forming an aperture with which the passage in the cop alines, and a pusher adapted to force the spindle from its support through 95 said guide into the cop.

5. In a machine for the purpose described, the combination of two supporting drums mounted to rotate about a common axis and each provided with a plurality of longitu- 100 dinally extending grooves or channels, each of the grooves in one drum being adapted to receive a cop and the grooves in the other adapted to support spindles to be inserted in such cops, means for intermit- 105 tingly rotating the drums and bringing a spindle supported by the one drum into alinement with the passage in a cop supported by the other drum, and a pair of re- 110 ciprocating members adapted to respectively engage said cop and spindle and effect a relative movement thereof to position the spindle within the cop.

6. In a machine for the purpose described, the combination of two conveyers adapted 115 respectively to support a plurality of cops and spindles, the support for each cop terminating at one end in a conical shaped passage adapted to receive one end of a cop, means for intermittingly actuating the con- 120 veyers and bringing a spindle into alinement with one of said conical shaped passages, a centering device adapted to engage a cop and force one end thereof into said passage, and a pusher adapted to engage the 125 spindle in alinement with said passage and force it therethrough and into the cop.

7. In a machine for the purpose described, the combination of two conveyers adapted, respectively, to support a plurality of cops 130



and spindles, hoppers for supplying cops and spindles to said conveyers, means for intermittingly actuating the conveyers and bringing a spindle into alinement with the passage in a cop, means for engaging the end of said cop adjacent the spindle, and means for pushing the spindle into the passage in the cop and then disengaging the latter from said holding means.

01 8. In a machine for the purpose described, the combination of two conveyers adapted respectively to support a plurality of cops and spindles, means for intermittingly actuating the conveyers to position a spindle  
15 in alinement with the passage in a cop, two oppositely arranged reciprocating pushers adapted to engage said alined cop and spindle, respectively, and position the spindle within the cop, and means for vary-  
20 ing the extent of movement of the cop engaging pusher.

9. In a machine for the purpose described, the combination of two conveyers adapted, respectively, to support a plurality of cops  
25 and spindles, means for intermittingly actuating the conveyers to position a spindle in alinement with the passage in a cop, a

pusher adapted to engage the end of said alined cop remote from the spindle and move toward and from the spindle, a second  
30 pusher adapted to engage the alined spindle and move it through the passage in the cop, and means for positively disengaging the cop from its pusher.

10. In a machine for the purpose de- 35 scribed, the combination of two conveyers adapted, respectively, to support a plurality of cops and spindles, a vibrating hopper coöperating with each conveyer, means for preventing the simultaneous passage from  
40 either hopper to its conveyer of a plurality of articles, means for intermittingly actuating the conveyers to bring a spindle into alinement with the passage in a cop, and  
45 means for effecting a relative movement between the alined cop and spindle to position the latter in the former.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDUARD HERZOG.

Witnesses:

HERMAN WUNDERLICH,  
AUGUST FUGGER.