

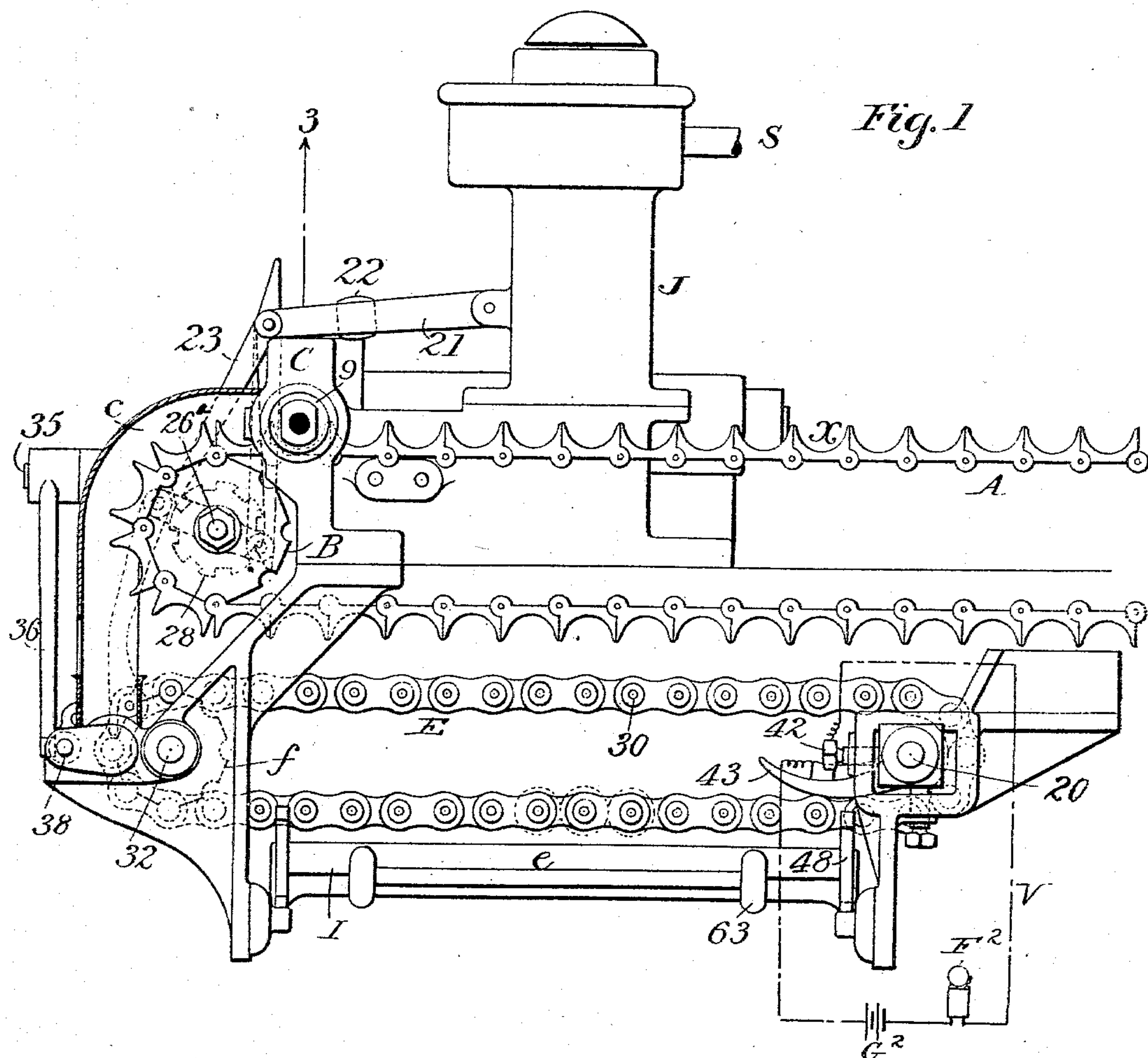
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4 Sheets—Sheet 1.

S. W. WARDWELL, Jr.
APPARATUS FOR PRESSING AND PACKING COPS.

No. 551,482.

Patented Dec. 17, 1895.



Witnesses
J. A. Fairgrieve
G. P. Kramer

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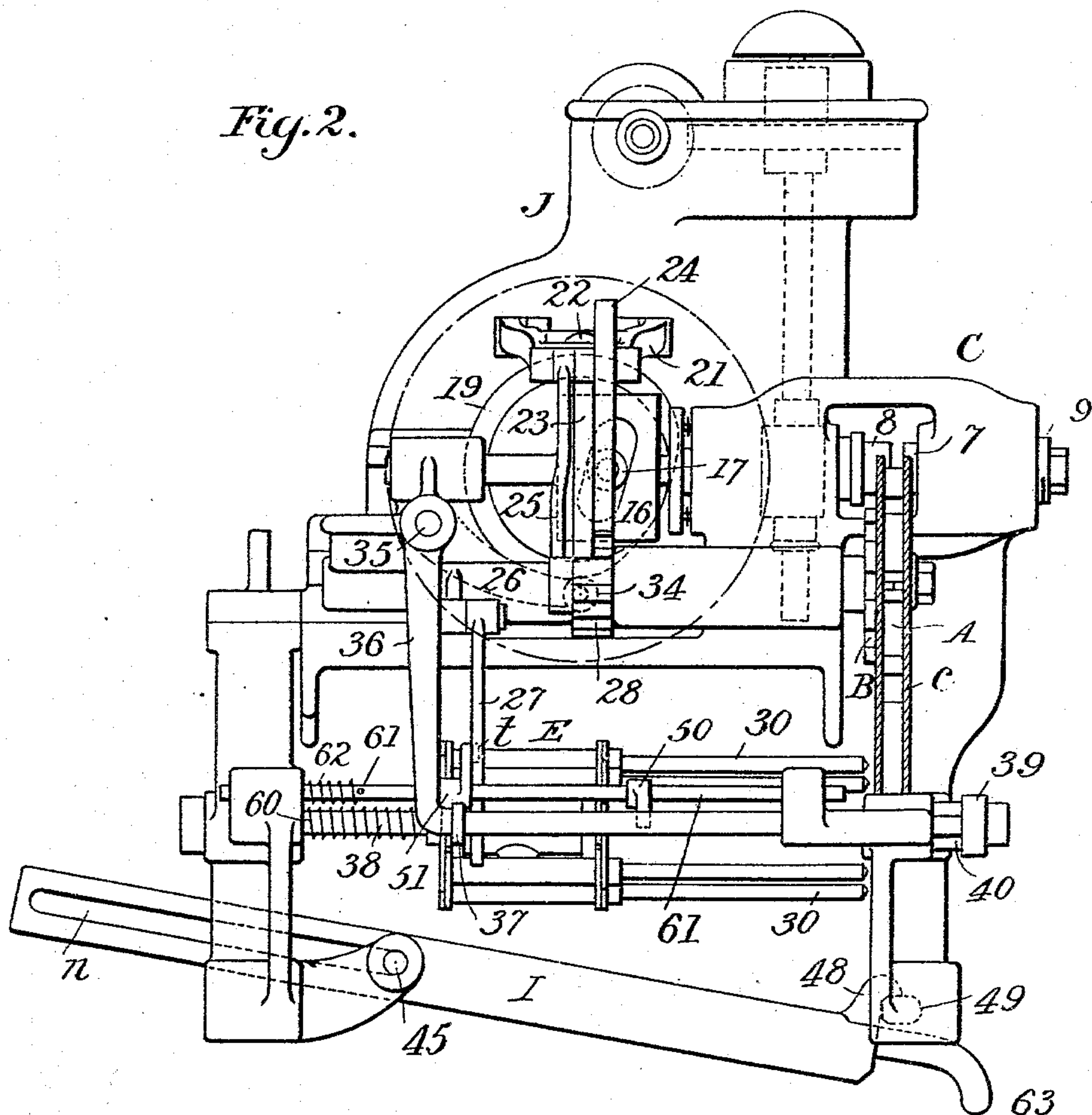
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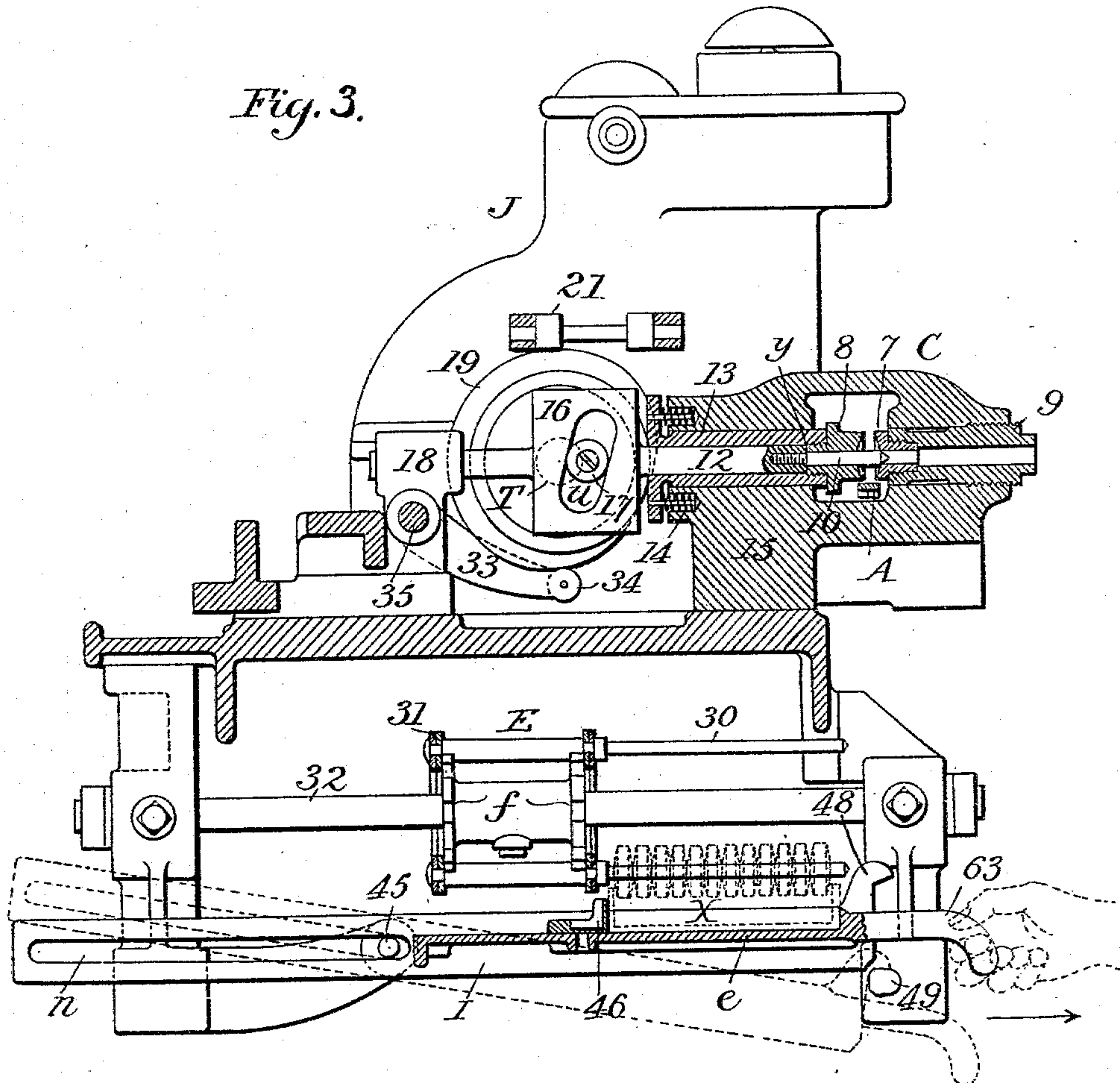
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Fig. 3.



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Fig. 6.

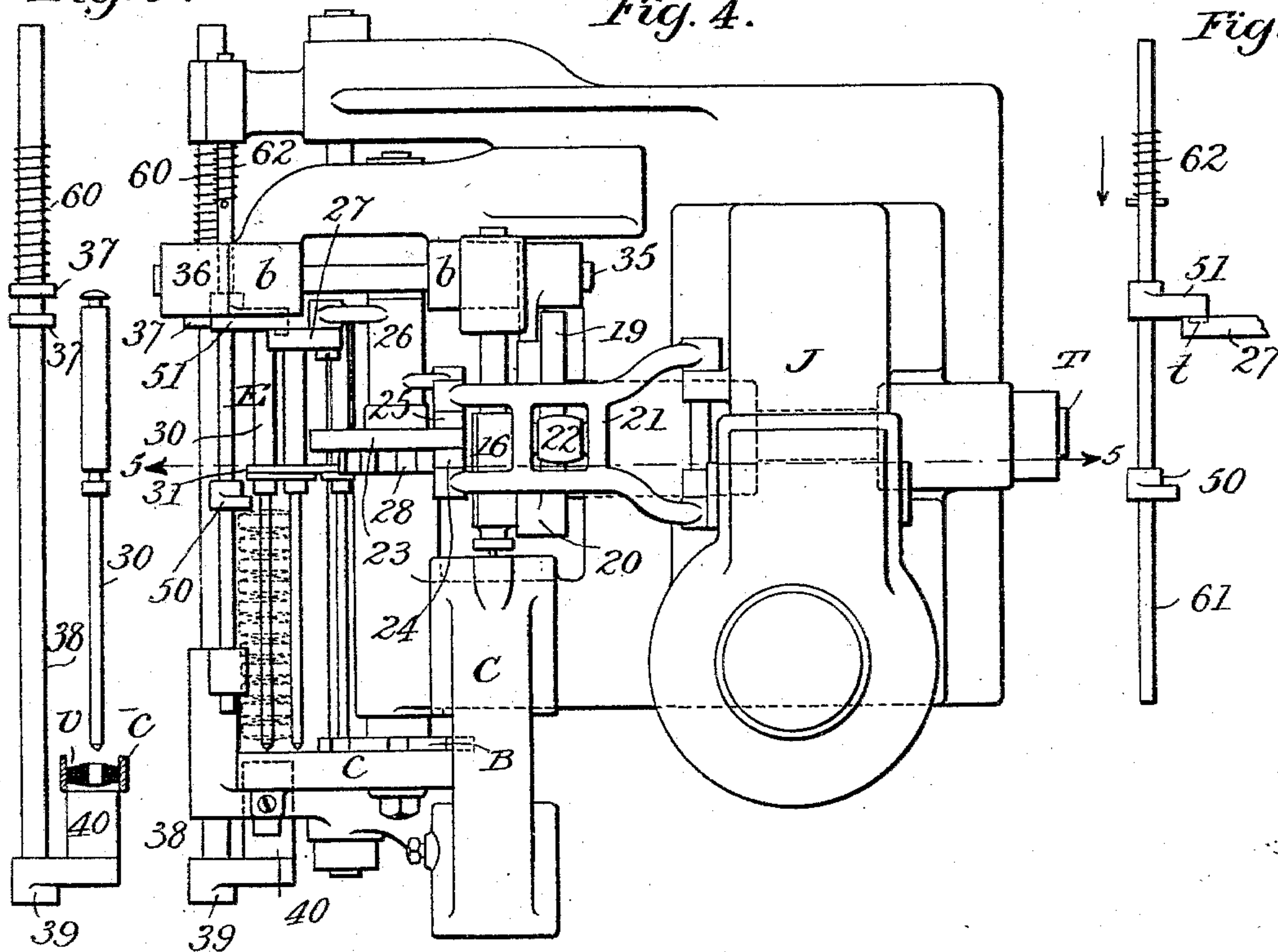


Fig. 4.

Fig. 7.

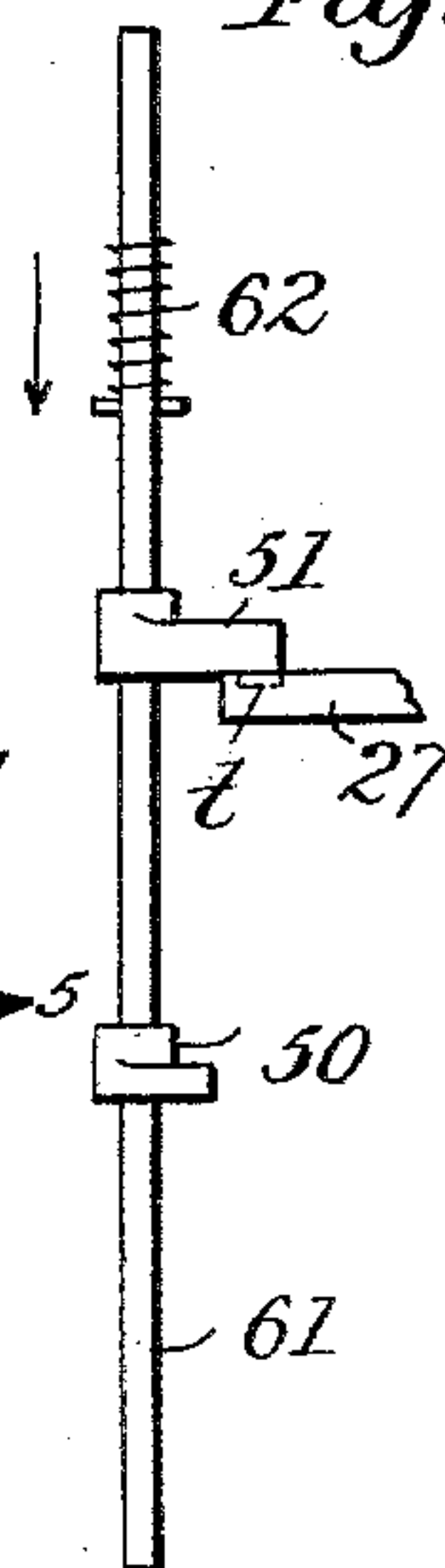
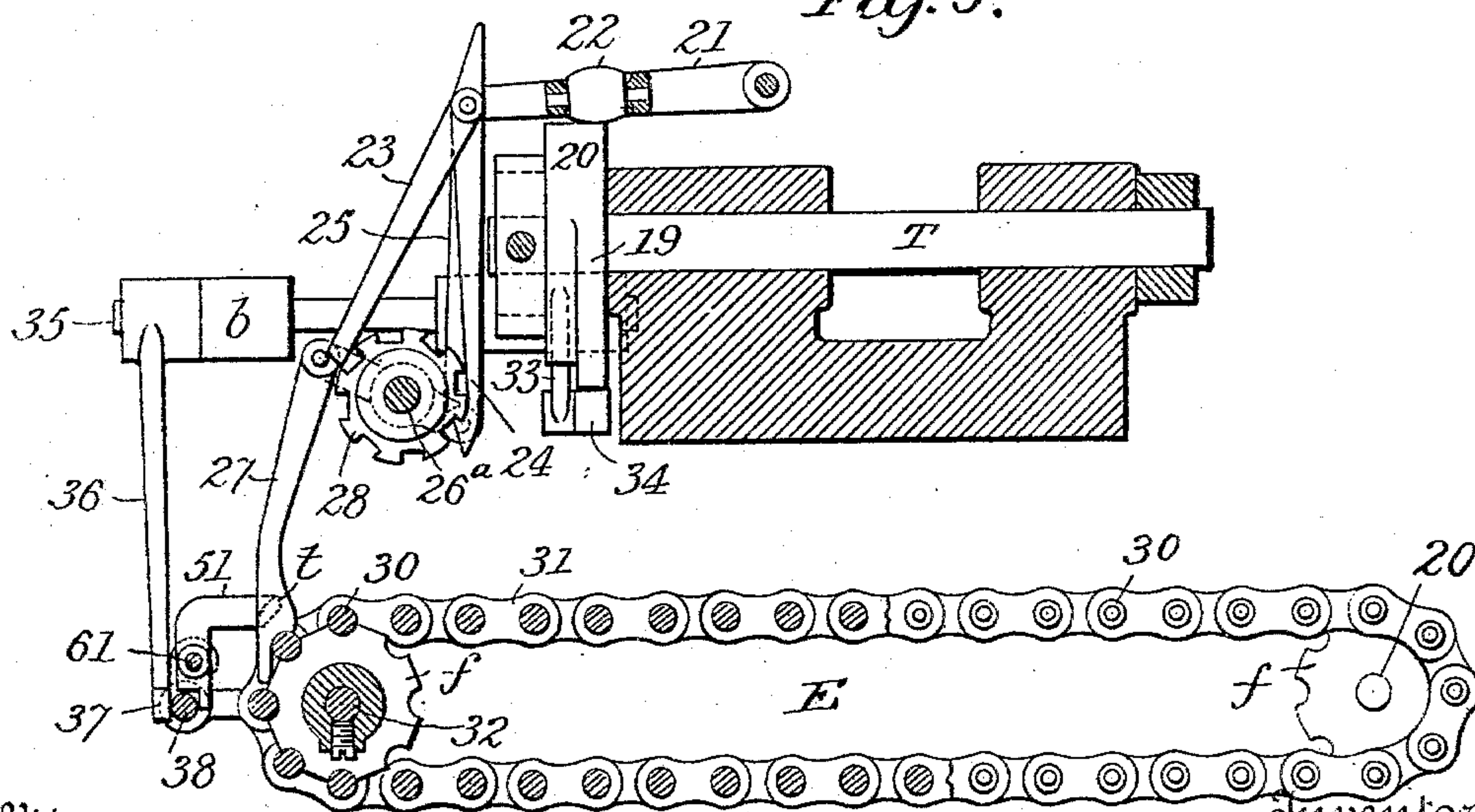


Fig. 5.



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UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, JR., OF BOSTON, MASSACHUSETTS.

APPARATUS FOR PRESSING AND PACKING COPS.

SPECIFICATION forming part of Letters Patent No. 551,482, dated December 17, 1895.

Application filed December 8, 1894. Serial No. 531,243. (No model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, Jr., a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Pressing and Packing Cops, of which the following is a specification.

My invention has for its object to compress or condense and impart a rounded form to the ends of cops for sewing-machines, &c., and also to pack cops in definite numbers in proper boxes or receptacles; and my invention consists, first, of certain means for feeding and pressing said cops, and, second, of certain means for assembling the cops and depositing them in boxes, all of the operations being automatic, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the main part of an apparatus embodying my improved pressing and boxing appliances, the chute or guide between the pressing and boxing devices being shown in section. Fig. 2 is an end view of the apparatus, the chute being in section. Fig. 3 is a transverse section on the line 3, Fig. 1. Fig. 4 is a plan view of part of the apparatus. Fig. 5 is an elevation in section on the line 5, Fig. 4. Fig. 6 is a detached part sectional view of the appliances for feeding the cops from the socket or receptacle to the boxing-spindles. Fig. 7 is a detached view showing appliances for automatically starting the feed devices of the boxing-spindles.

The frame of the machine is constructed to support the operating parts which are driven from a shaft S, to which rotation is imparted in any suitable manner, the gears operated by the said shaft being contained within a gear-casing J.

The cops that are to be compressed and boxed are such cops as are generally used in sewing-machines and are deposited in the successive sockets *x* of an endless conductor or chain A, which passes around chain-wheels B at opposite ends of the machine, these wheels being turned with a step-by-step or intermittent motion, and one only being shown.

The travel of the chain brings each socket and the cop therein contained between the

dies 7 8 of a presser device C, the said dies having concave faces, and which impart a convex contour to each side of the cop, as the dies are brought together, this movement occurring during the time that the chain A is at rest. The cops are then carried through a chute or channel *c*, Fig. 1, to a socket *v* at the lower end of the channel *c* and opposite one of the spindles 30 of a receiver or conductor or holder shown as a continuous chain E and consisting of two parallel chains of links connected by the said spindles, and supported upon chain-wheels *ff*, carried by shafts 20 and 32. To this chain E an intermittent motion is also imparted, and each spindle 30 is brought to rest opposite the socket *v* in the channel *c* in line with the center of the said socket, so that each cop will come to rest in line with one of the said spindles. A reciprocating pusher 40 is carried inward in the direction toward the spindle 30, Fig. 6, after a cop is brought into position and pushes the said cop onto the opposite spindle 30, and the next cop that is brought into position is also pushed onto it, pushing that ahead of it farther onto the spindle 30, and so on until twelve cops are upon the spindle 30. The chain E then moves forward one step to bring the next vacant spindle 30 opposite the socket *v* when these operations are repeated.

A box X adapted to receive one gross of cops is placed upon a table *e*, carried by a frame I, which can be raised and lowered to the different positions shown in Figs. 2 and 3 and normally occupies the lower position, as shown in Fig. 2. When twelve spindles 30, each with a dozen cops upon it, are above the box X, an alarm is sounded and the operator then raises the frame I to the position shown in Fig. 3, thereby bringing the lower half of the cops within the box, and he then draws out the frame I in the direction of the arrow, Fig. 3, and thus strips the cops off of the spindles. They fall to the box in proper position during this operation.

The cops are thus pressed, assorted into lines of a dozen each, and twelve dozen are deposited into the box automatically, so that all the operator has to do is to put the boxes into place and to remove them from the machine.

Any suitable means may be employed for

imparting the various movements to the parts described. I will now describe those which in practice I have found effective.

As best seen in Fig. 3, the die 7 has a threaded stem so as to be detachably secured in a threaded sleeve 9, which fits an opening in the frame, so that by turning the said sleeve which has a square head, as shown in Fig. 2, the said die 7 may be set properly in its position. The die 8 screws into a sleeve 13, which slides in the frame and has a flanged end, which flange bears on springs 14, which tend to throw the die in the direction toward the left, Fig. 3. Through the sleeve 13 reciprocates a rod 12, having a shoulder y and a projecting centering-pin 10, so that as the rod 12 moves toward the right the pin 10 first goes through the opening in a cop, and then the shoulder y comes against the end of the die 8, and carries the latter and the sleeve 13 with it until the cop is compressed. Reciprocation is imparted to the rod 12 by means of a stud 17 upon a cam-wheel 19 carried by a shaft T, the said stud extending into an angular groove u in a bearing-plate 16 secured to the rod 12. The step-by-step motion is imparted to the chain A from a swinging frame 21 pivoted to the frame of the machine and carrying a roller-bearing 22 that bears upon the edge of the cam-wheel 19 that lifts the frame 21 once at each revolution of the shaft T, a pawl 24, connected with the frame 21, engaging a pawl-wheel or ratchet-wheel 28 upon the shaft 26^a that carries the forward chain-wheel B. A check-pawl 23 prevents any return movement of the wheel 28 and its connecting parts. The pusher 40 is also operated from the cam 19 which bears against a roller 34 on a lever 33 extending from a rock-shaft 35, an arm 36 at the forward end of the said rock-shaft extending between two collars 37 on a shaft 38, having at one end an arm 39 from which extends the pusher 40. A spiral spring 60 throws the rod 38 and the pusher in the opposite direction.

The step-by-step motion of the chain E carrying the spindles 30 is effected by means of a reciprocating pawl 27 hanging from one arm of a rock-sleeve 26, the other arm of which is connected by a rod 25 with the frame 21 so that when the chain A is moved to feed forward a cop into the socket v the chain E may also be moved at the same time, the projection of the cam-wheel 19 acting on the stud 34 of the arm 33 to move the pusher 40 after these operations have taken place. It will be evident, however, that the chain E is only to be moved after one of the spindles 30 has received a dozen cops, and I therefore provide means for normally holding the pawl 27 out of contact with the shank of the spindle 30, with which it would otherwise engage, until one of the said spindles is filled with cops.

As shown a sliding bar or shaft 61, Figs. 2 and 7, carries an arm 51 having a lip t which is normally beneath and lifts the end of the

pawl 27 so that the latter cannot engage with the shanks of the spindles 30. The shaft 61 also has a stud or projection 50 in such position that as a spindle 30 becomes filled with cops the innermost end cop will come in contact with the said stud 50, and as the last or twelfth cop is placed upon the spindle 30 it will by its contact with the stud 50 push the latter and the shaft 61 so as to carry the arm 51 and its lip t away from the pawl 27. The next reciprocation of the pawl will then bring the end of the arm thereof into contact with the shanks of the spindle 30 and turn the chain E one step, bringing the next empty spindle opposite the pusher 40. As the spindle with its cop is carried downward, the cop in contact with the stud 50 passes below the latter and a spring 62 then acts to carry the rod or shaft 61 in the direction of its arrow, Fig. 4, and again bring the lip t of the arm 51 in position to prevent the further contact of the pawl 27 with the shanks of the spindle until the above-described operations are repeated.

When twelve of the spindles are filled with cops as above described, the cops upon the right-hand spindle, Fig. 1, will be brought against a curved arm 43 pivoted at 20, and the said arm will be raised so as to make contact with a stop 42, the arm and contact being connected with the terminals of a circuit V, including a battery G² and an alarm-bell F², so that the ringing of the latter will announce to the attendant that there is a gross of cops in position above the box X. The attendant then seizes the arms or brackets 63 upon the swinging frame I, the side bars of which have slots n through which extends the supporting-bar 45, the table or platform being provided with an adjustable gage 46 against which the box X is set. As the attendant raises the frame I, he brings the box into position to receive the lower portions of the cops, and then by simply drawing the frame forward he carries the cops successively off of the spindle 30, and they drop into the box. He then removes the filled box, placing an empty box against the guide 46, and pushes the frame back into the position shown in Fig. 2, when the above-described operations are repeated.

While I have shown a conductor in the form of a chain I have adopted this form of conductor because of its convenience and simplicity; but I have contemplated the use of other forms of conductors, and my invention may be carried out with any suitable appliance which will feed the cops successively to and hold them between the pressing-dies of the presser device.

I do not limit myself to the particular devices shown for feeding intermittently either the conductor A or the conductor or holder E, as it will be evident that various appliances may be used for effecting this result, and also for putting into operation the con-

ductor E when a spindle thereof has been filled with cops.

Although I have shown the conductor or holder E in the form of a continuous chain, any suitable means of supporting and feeding a series of parallel spindles might be employed in carrying out my invention.

Although I have shown the pressing device and the boxing device as connected as is most desirable, the two may constitute separate structures when required.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim as my invention—

1. The combination with a conveyer for cops and with means for operating the same, of compressing dies arranged to receive and press successively the cops conducted thereto by the conveyer, and devices for transferring the compressed cops successively laterally from the conveyer and axially into line with each other, substantially as set forth.

2. The combination with two pressing dies and means for moving one toward and from the other, of a conveyer adapted to receive the cops and arranged to conduct the same to the said dies, and means for operating the conveyer, a receiver for the pressed cops at right angles to the conveyer, and means for transferring the pressed cops successively to the receiver, substantially as set forth.

3. The combination of the compressing dies and a conveyer provided with a series of sockets adapted to receive cops and means for imparting intermittent motion to the conveyer and for operating the compressing dies, receivers for said cops at right angles to the conveyer, and means for carrying the receivers successively to position to receive the cops and then to a position above a box, and means for discharging the cops laterally from the conveyer to each receiver, and means for discharging the row of cops from each receiver successively into the box, substantially as described.

4. The combination of the compressing dies and a conveyer consisting of an endless socketed chain, and means for imparting an intermittent movement to said chain, and a series of receivers, means for discharging the cops laterally from the chain to the receivers and means for carrying said receivers into position above a box, and means for discharging the cops from the receivers into a box, substantially as described.

5. The combination of an endless chain carrying a series of spindles, a receptacle or socket and means for feeding cops successively thereto, means for moving the chain to bring the spindles successively opposite the center of said socket and means for carrying the cops successively from the socket, to the spindles, substantially as set forth.

6. The combination in a machine for packing cops of a socket or receptacle for the cops and means for feeding cops successively

thereto, a series of spindles and means for bringing the same successively opposite the center of the said socket and means for carrying each cop as it is brought into the socket laterally therefrom onto the opposite spindle, substantially as set forth.

7. The combination in a cop packing machine of a socket adapted to receive cops successively supplied thereto, a device for discharging the cops from said socket, and a series of spindles and means for bringing them successively opposite the said socket to receive the cops, substantially as described.

8. The combination of a machine for packing cops, of a socket adapted to receive cops successively fed thereto, means for discharging the said cops from the socket, a series of spindles, supported to be brought successively into position opposite the socket to receive the cops, and means for feeding the spindles to carry them opposite the socket, and for feeding the same automatically after any spindle has received a predetermined number of cops, substantially as set forth.

9. The combination with the socket, a series of spindles and feeding mechanism therefor, of a contact piece and devices arranged to start the feeding mechanism by the contact of one of the cops with the said contact piece as the last of a series of cops is placed upon a spindle, substantially as set forth.

10. The combination of a chain carrying a series of spindles, a socket or receptacle for cops and means for transferring cops successively therefrom to the spindles and means for automatically feeding the chain of spindles one step after a spindle has received the requisite number of cops, substantially as described.

11. The combination of the chain carrying a series of spindles, a pawl for imparting intermittent movement thereto, a device for holding the pawl out of operation, a contact piece arranged to be moved as the last of a series of cops is placed upon a spindle, and connections between the said contact piece and the pawl whereby the latter is thrown into operation by the movement of said contact piece, substantially as set forth.

12. The combination of a chain carrying a series of spindles, a socket for receiving cops, and a reciprocating pusher for forcing the cops upon the spindles and means for carrying the same into and out of the socket, substantially as set forth.

13. The combination with a series of spindles and means for supplying the same with cops, of a table or platform arranged to support a box in position below the said spindles, and means for elevating the table and for moving it to carry the said cops off of the spindles, substantially as set forth.

14. The combination of a chain carrying a series of spindles, a socket adapted to receive the cops successively and means for carrying the cops from the socket onto the spindles,

means for imparting movement to said spindles, a movable platform for receiving a box, and an alarm or indicator and connections whereby the same is put in operation when a series of filled spindles is above the box, substantially as set forth.

15. The combination with a series of spindles, a socket and means for transferring cops from the socket to the spindles, of a pressing device for pressing cops, and a guide or con-

ductor leading from said compressing device to said socket, substantially as described.

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

SIMON W. WARDWELL, JR.

Witnesses:

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PHILIP E. BRADY.