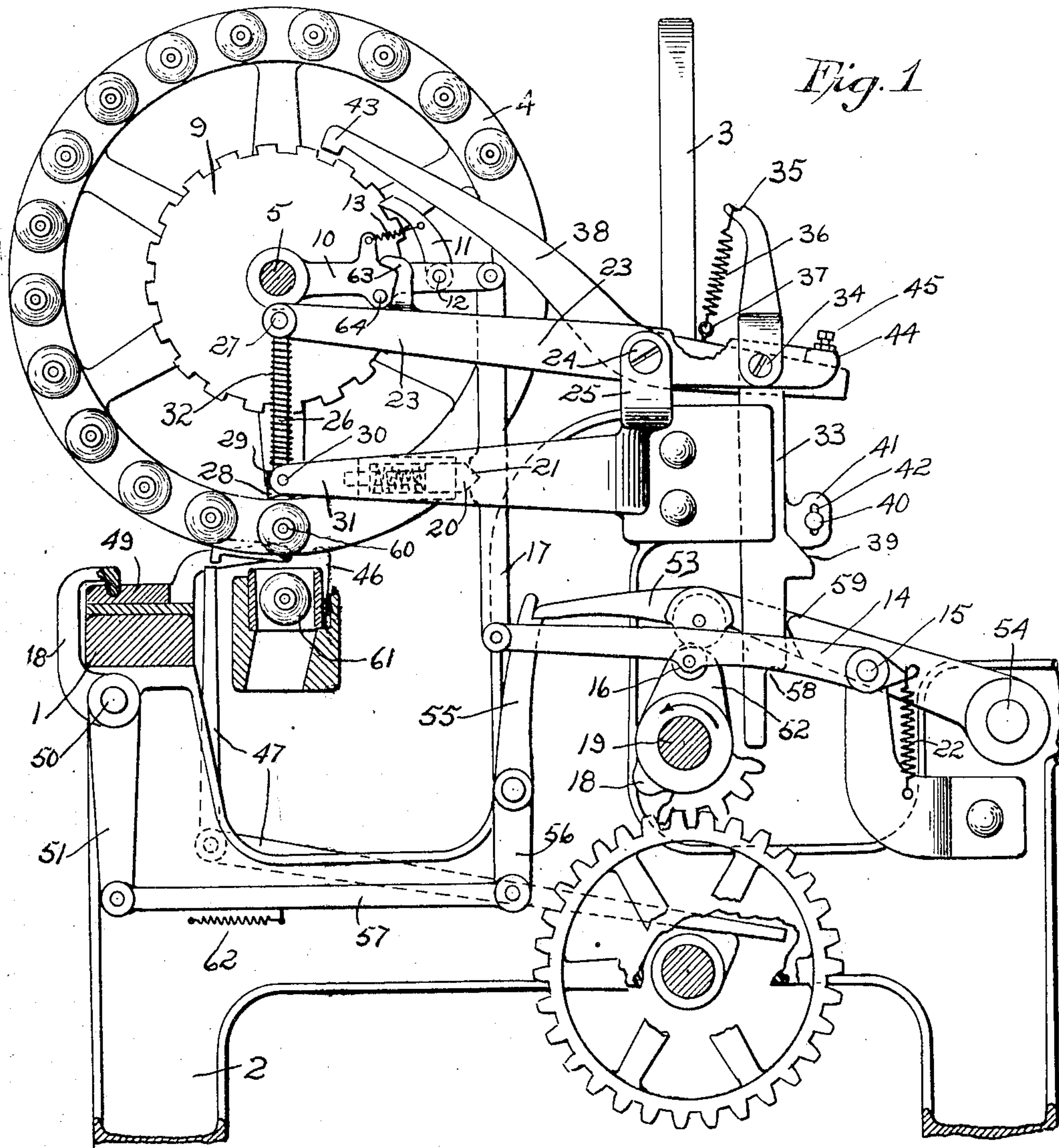


F. O'DONNELL.
WEFT REPLENISHING MECHANISM FOR LOOMS.
APPLICATION FILED JAN. 30, 1908.

916,362.

Patented Mar. 23, 1909.
2 SHEETS—SHEET 1



Witnesses

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Fig. 4

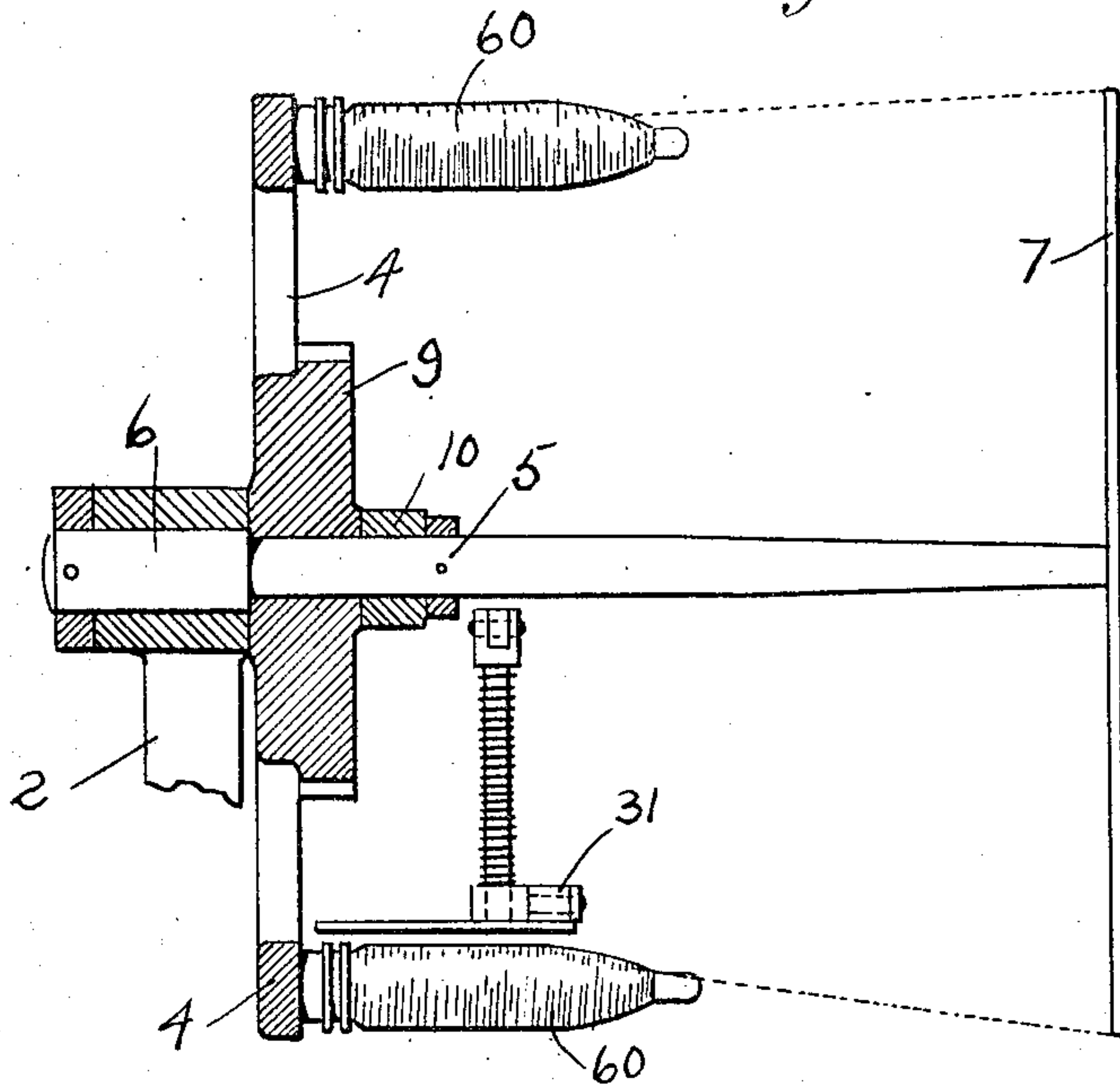


Fig. 5

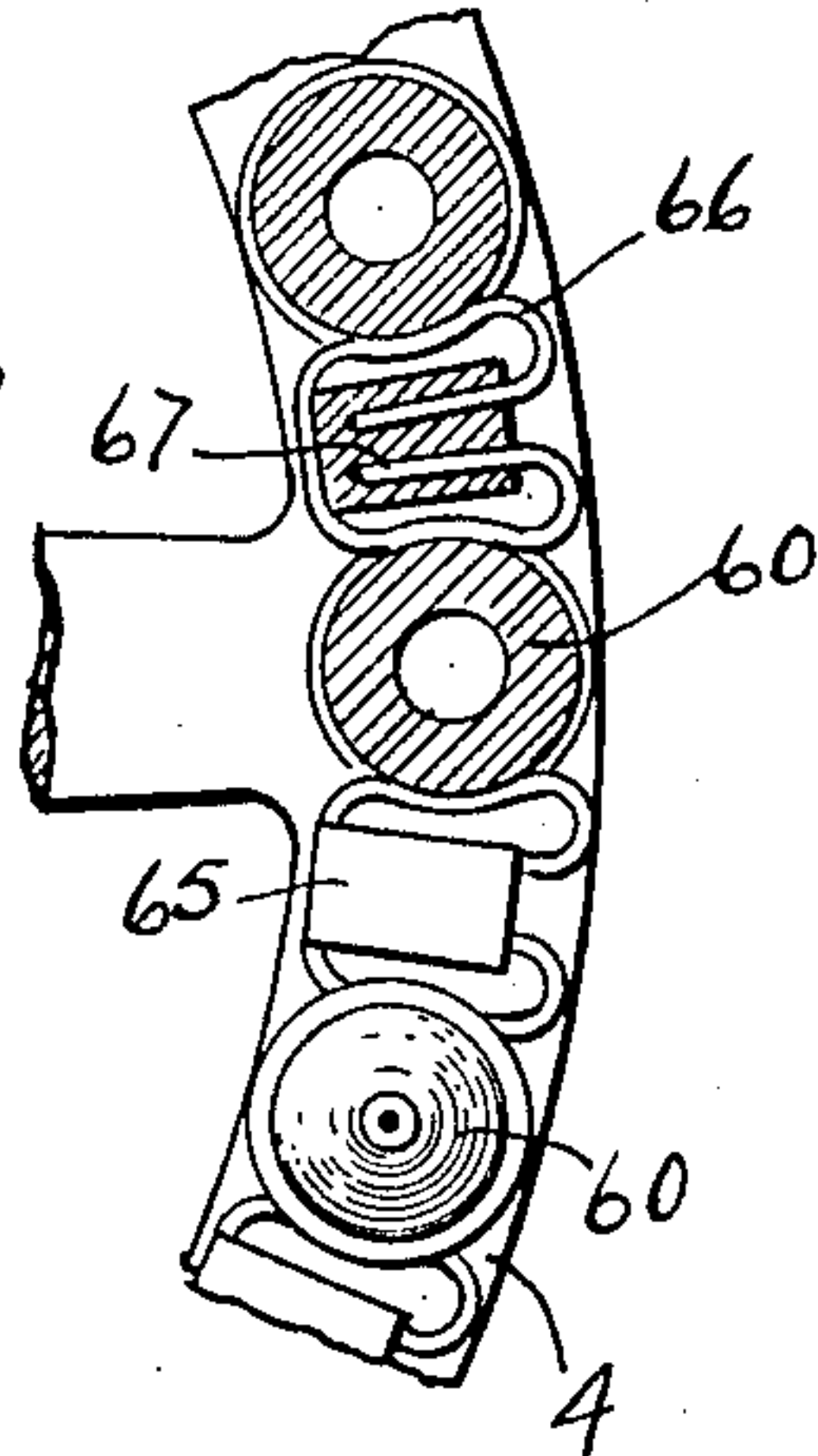


Fig. 2

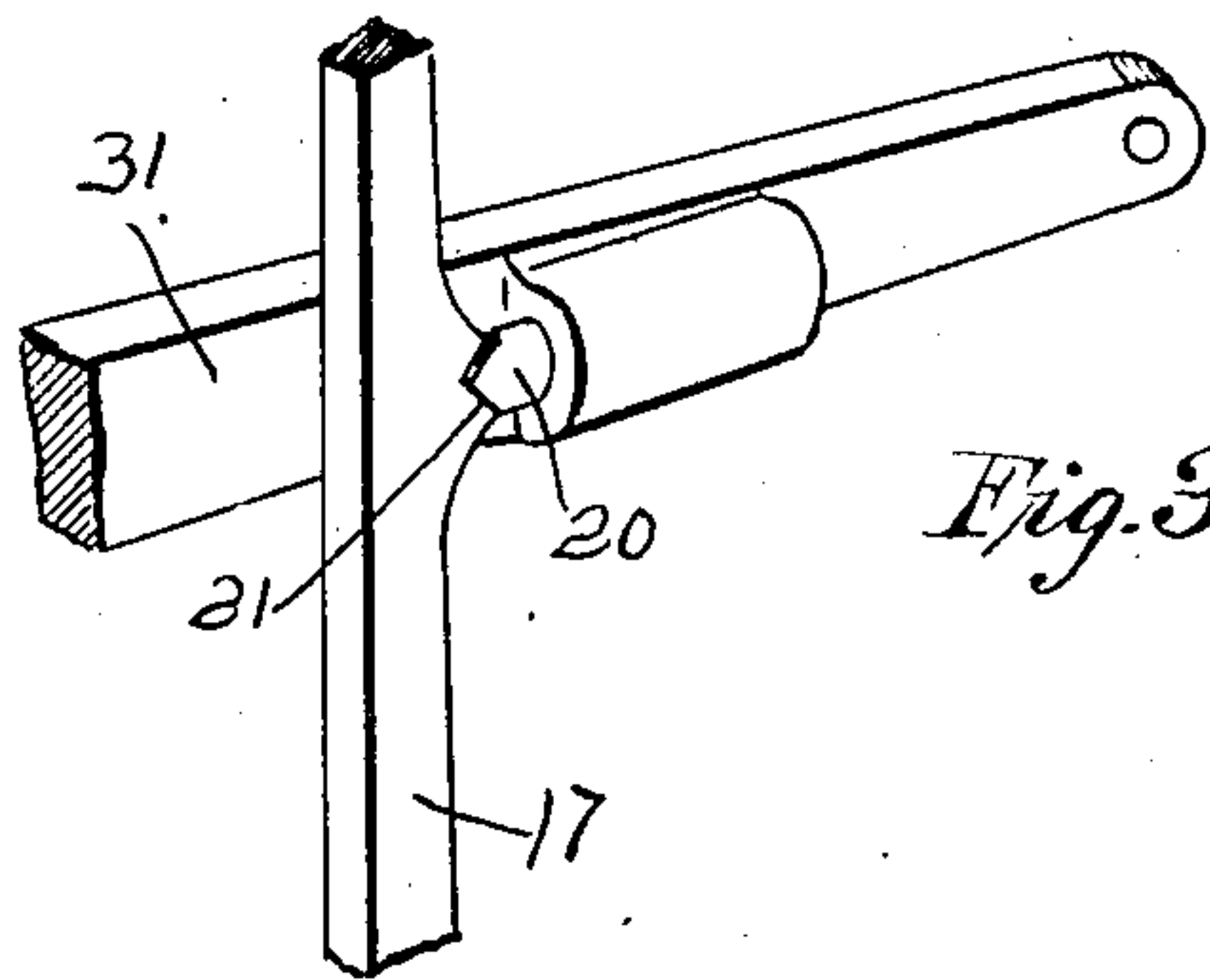
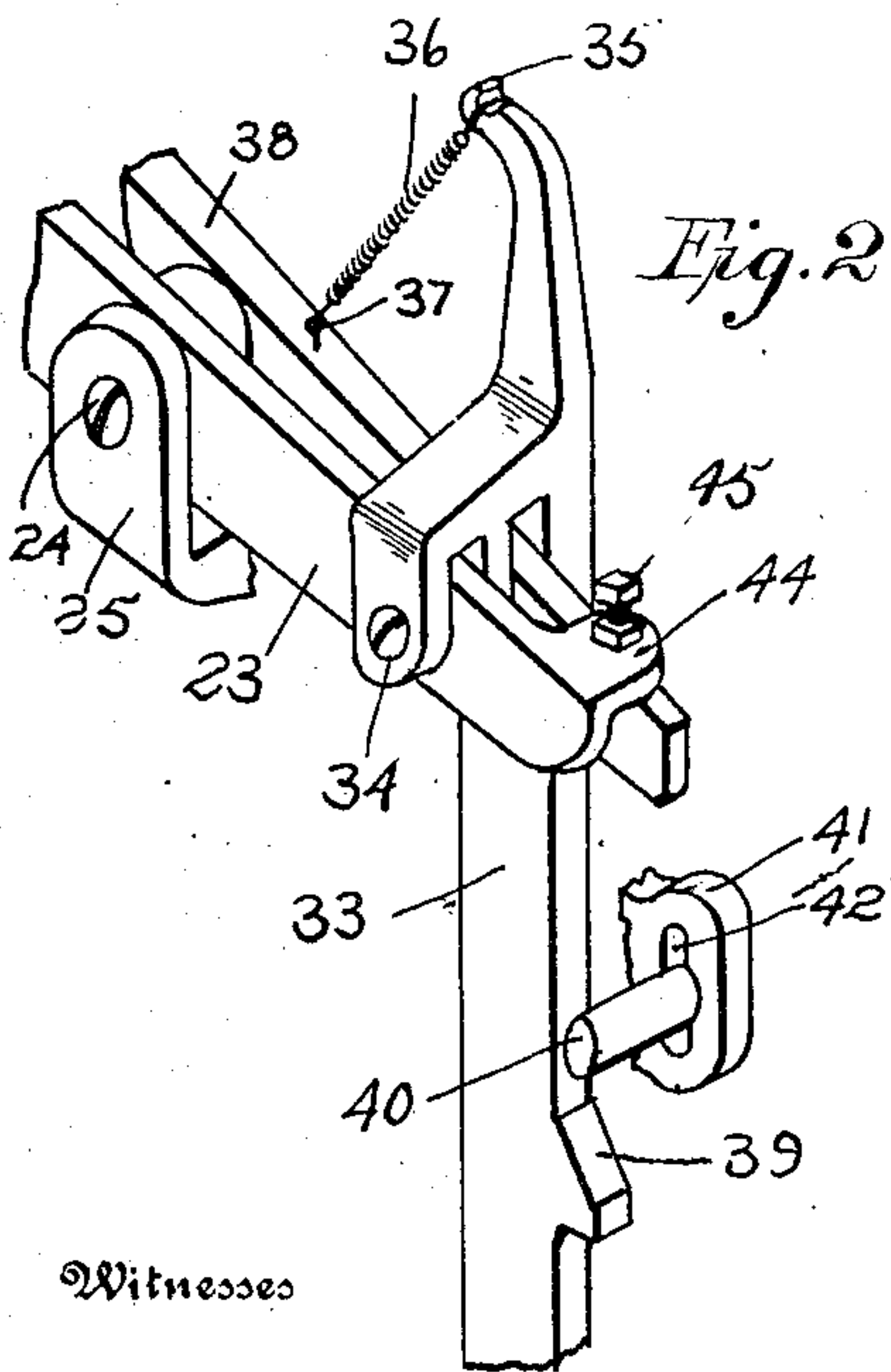
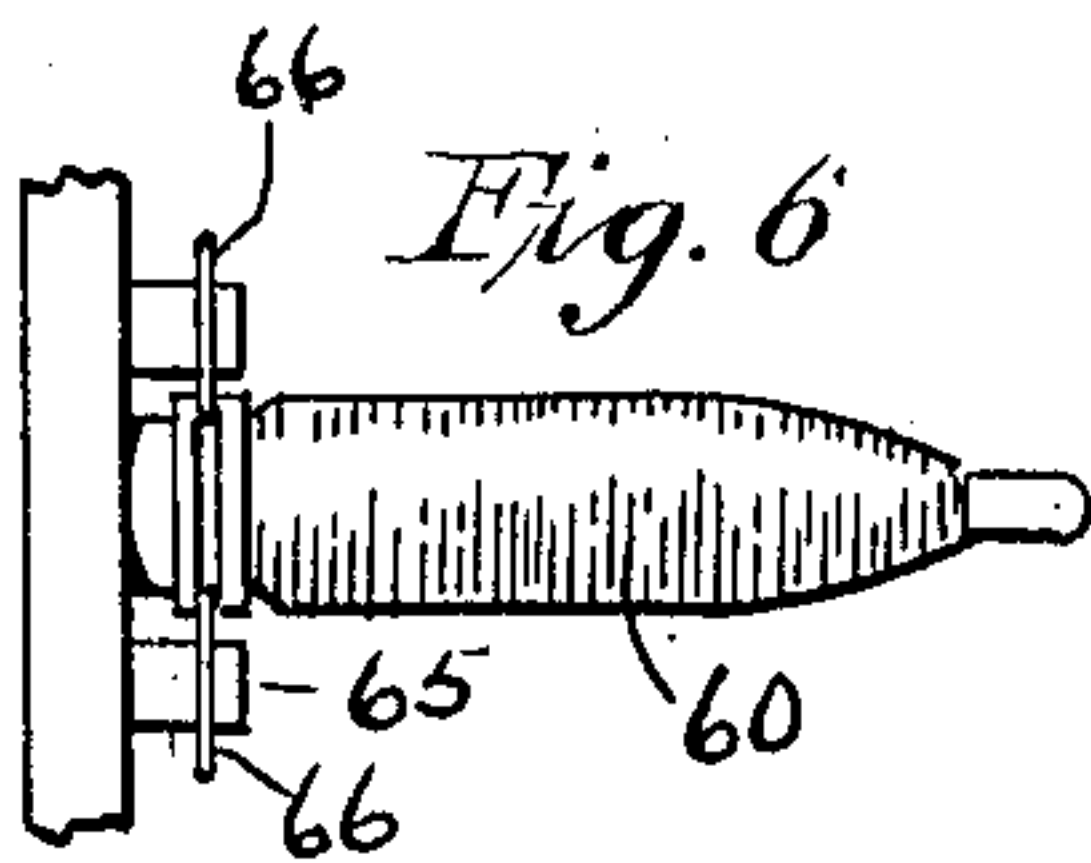


Fig. 3

Fig. 6



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WEFT-REPLENISHING MECHANISM FOR LOOMS.

No. 916,362.

Specification of Letters Patent.

Patented March 23, 1909.

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To all whom it may concern:

Be it known that I, FELIX O'DONNELL, a citizen of the United States, residing at the city of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Weft-Replenishing Mechanism for Looms, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to looms, more particularly of the class which are provided with automatic replenishing mechanism for weaving, whereby a fresh supply of filling is automatically transferred from the magazine to the shuttle when said supply has been exhausted or the thread broken.

The object of this invention is to provide a simplified form of mechanism which is positive in its action and comparatively inexpensive in construction, the same being an improvement over that illustrated in my patent numbered 794,377.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— is an end elevation of the loom showing portions broken away, or in section, to better illustrate the action of the automatic filling replenishing apparatus, which is represented in its normal position. Fig. 2— is a detail showing the end of the transfer arm and its connection with the ratchet wheel locking pawl. Fig. 3— is a perspective view showing the spring lock bolt for retaining the pawl carrying arm in position. Fig. 4— is a central section through the magazine or filling feeder. Fig. 5— is a front view of a portion of the magazine enlarged, showing the means for retaining the cops in position therein. Fig. 6— is an edge view of a portion of the magazine showing the cop holding devices.

Referring to the drawings, at 1 is the loom breast beam and 2 one of the end frames on which is set the ordinary loom arch 3.

The rotatable magazine or filling feeder 4 is provided with resilient bobbin holders placed at intervals all around the periphery of the same. These holders are especially

designed and adapted to engage one end of a cop or filling carrier and firmly support it in a horizontal position while being carried around under the foot of the plunger, the construction of said carrier being more fully hereinafter described. This wheel 4 is mounted and fixed on the shaft 5, which shaft is supported to turn in the bearing 6, see Fig. 4. This shaft extends out beyond the cop wheel and has mounted upon it the filling-end support 7 and the filling-end holder 8. A ratchet wheel 9 is also mounted on and fixed to this shaft so as to turn with it and the filling carrier wheel. The teeth of this ratchet wheel are preferably made in a square form and spaced apart to correspond to the spacing of the cop carriers on the wheel 4 so that each time the ratchet is moved ahead one tooth a fresh bobbin is brought into position to be struck down into the shuttle, in the manner hereinafter described.

At 10 is an arm, one end of which is pivotally mounted to be moved freely on the shaft 5. A pawl 11 is pivotally mounted at 12 on said arm and is normally held in mesh with the teeth of said ratchet wheel by the tension of the spring 13. This arm is carried down, in the manner hereinafter described, so that the pawl will take another tooth each time a bobbin has been transferred into the shuttle. In order that this arm shall be carried back to its normal position at the proper time a lever 14, pivoted at 15, is provided with a contact wheel 16 and extends forward, its free end being connected to said arm by means of the connecting rod 17 so that when the cam 18, which is mounted on the crank shaft 19, rotates and engages said wheel 16, the said arm 10 is raised, through its connections described, moving the magazine forward in a positive manner to bring a fresh bobbin into position to be struck into the shuttle, and is held in that position by friction of the spring pin 20 which engages the notch 21 in the connecting rod 17. A balancing spring 22 is connected to the end of the lever 14 to assist in raising and supporting the same while in the act of moving from one position to another.

A transferer, comprising an arm or lever 23, is pivoted at 24 in the bracket 25, said lever having a plunger spindle 26 pivoted at its outer end 27. Said spindle is provided

with a plunger foot 28 and is free to reciprocate in a bearing 29, which bearing is pivotally supported at 30 in the arm 31, whereby said bearing is free to adjust itself to the circular movement of the upper end of the spindle. A light coil spring 32, surrounding said spindle, is placed between the end of the lever and the bracket to assist in returning the lever after it has been forced down to strike a bobbin into the shuttle.

A depending arm 33 is pivotally connected to the lever 23, and near the end of the same at 34. The upper end of this arm extends up above the pivoting point forming a hook 35 to which one end of the spring 36 is attached, the lower end of said spring being connected at 37 to the ratchet wheel lock pawl 38. A cam portion 39 is formed on the back edge of this depending arm below its pivoting point and is adapted to be engaged and pressed forward by the contact pin 40 when said bar is raised by the cam bar hereinafter described. This contact pin 40 is held in the bracket 41 and is adapted to be adjusted in the slot 42.

The ratchet wheel locking pawl 38 is pivoted at 24 and is adapted to extend out over the ratchet wheel 9, its outer end 43 being shaped to fit the square notches in said wheel to firmly lock the same and the cop wheel from moving in either direction while the filling is being driven into the shuttle. The opposite end of the pawl extends back over its pivoting point and is adapted to be engaged by the overlapping lip 44, see Fig. 2, on the end of the transferrer lever 23. An adjusting contact screw 45 is threaded through said lip so as to regulate the exact time of operating said pawl and also the extent to which its locking end shall be raised. This pawl is held up against said overhanging lip by the tension of the spring 36, which spring serves the double purpose of holding this pawl in position and also to exert a tension on the upper end of the depending arm 33, to swing its lower end back into position for the purpose hereinafter specified.

At 46 is the ordinary weft fork mounted to slide in the usual way on the breast beam 1, and at 47 is the usual two arm cam actuated lever that operates the fork when there is no weft thread to raise its end out of the path of said lever as the same reciprocates. The end of the arm 48 engages the rear end of the fork slide 49 and is fixed at its opposite end to the shaft 50. This shaft extends along under the breast beam and has a depending arm 51 also fixed to it.

At 19 is the crank shaft on which is mounted the cam 52. Above this cam is located the cam bar 53 pivotally held at 54 at one end in the frame, its opposite end being supported and held out of engagement with said cam by means of the latch 55.

This latch may be withdrawn to allow said bar to drop and engage said rotating cam when the weft fork fails to find the weft thread, which is done through the arm 56, connection 57, arms 51 and 48 and shaft 50, as the weft fork slide is driven back in the manner above described. When the cam bar 53 drops the recessed portion 58 in the lower end of the depending arm 33 is carried back by the spring 36 to engage the projecting portion 59 in the cam bar. As the cam 52 now rotates in the direction of the arrow the said cam arm is thrown quickly upward carrying with it the depending lever and the transferrer lever 23, driving the plunger down and forcing a fresh cop 60 into the shuttle 61. As soon as this cam has carried its bar, and the mechanism operated by the movement of the same, to its extreme upward position, the latch 55, under tension of the spring 62, engages the end of said cam bar and prevents the same from falling again into contact with the cam. As the depending bar 33 is being raised by the cam bar its outwardly projecting cam face 39 engages the pin 40 swinging the lower end of said bar forward causing the same to be disengaged from said bar 53 and allowing it to descend and the plunger and transferrer lever to raise under tension of the plunger spring 32. As this plunger lever rises its overhanging lip 44 engages the end of the locking pawl withdrawing the same from the ratchet teeth.

The plunger lever 23 is provided with a hook portion 63 which engages the pin 64 on the pawl 10 carrying said pawl down with it for another tooth as said lever descends. After this lever has again risen to its normal position the pawl arm is raised by means of the cam 18 through its connecting levers, rotating the ratchet wheel the space of one tooth, bringing a fresh cop into position under the plunger.

An essential feature of my invention is my particular means for retaining the bobbins on the magazine or filling feeder, which comprises essentially small blocks 65-65 located at intervals all around the front face of the rim of the feeder wheel 4. Each of these blocks is provided with a resilient wire or holder 66 extending up on either side of the same. The ends of said wire 67 are secured to said block preferably by being set into corresponding holes therein. These springs are located a short distance out from the face of the wheel leaving a space for the head of the bobbin. The head of the bobbins are preferably constructed with grooves to receive this wire and are adapted to be forced down or pressed in between two retaining springs in the manner illustrated in Fig. 5 so that said springs will grip the bobbin on either side

and at the same time hold its head back against the face of the wheel by means of which the bobbin is positively held in its correct position and prevented from getting
5 out of line, insuring its being directly over and in line with the shuttle when the presser foot descends to force it into the shuttle.

The operation of the device may be further described as follows: When the fork
10 46 fails to find the weft thread it is driven back in the usual way by the lever 47 and through the arms 48 and 51 and connections 57 the pawl 55 is withdrawn from the cam bar which latter is allowed to drop and ride
15 on the cam 52. When this bar drops to the lower portion of the cam the depending bar 33 swings inward by the action of the spring 36 above and the notched portion 58 engages the projection 59. As the cam revolves its
20 quick rise acts on the cam bar to force it quickly upward and the depending bar 33 is carried upward with a sudden impulse. By this upward motion the rear end of the locking pawl 38 is allowed to rise under tension
25 of the spring 36 causing its locking end to engage with the ratchet wheel securely holding the same and the cop wheel from turning during the period in which the bobbin is being forced into the shuttle. As the long
30 end of the transferrer lever 23 is thrown inward the hook 63 engages the pawl arm and carries it down so as to cause the pawl 11 to engage another tooth. The forward movement of this transferrer lever 23 causes
35 the presser foot 28 to force the cop out from engagement with its carrier and into the shuttle as heretofore described. After the transferrer lever has been released and raised again the cam 18 operates the arm 14
40 through the connection 17 to again raise the pawl arm 10 back to its normal position carrying with it the ratchet wheel and the magazine, bringing a fresh cop into position to be struck down into the shuttle, the
45 pawl arm being retained in its normal position by means of the check or spring bolt 20. The whole mechanism now stays in this, its normal position, represented in Fig. 1, until the thread breaks or the filling runs
50 out of the shuttle, when the operation above described is again repeated driving the bobbins one after another into the shuttle as the holder is rotated, at the same time ejecting the bobbin from the shuttle previously
55 contained therein.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A machine of the character described,
60 comprising a rotatable filling feeder, a transferrer, a pawl-carrier supported independently of said transferrer and adapted to impart movement to said feeder, a projection being formed on said pawl carrier, means

carried by said transferrer arranged to en- 65
gage said projection, and means for positively returning said pawl carrier to normal position whereby said feeder is operated.

2. A machine of the character described, comprising a rotatable filling feeder, a trans- 70
ferrer, a pawl-carrier supported independently of said transferrer and adapted to impart movement to said feeder, a projection being formed on said pawl carrier, means carried by said transferrer arranged to en- 75
gage said projection, means for positively returning said pawl carrier to normal position whereby said feeder is operated, and means for rotating the said carrier in said normal position. 80

3. A machine of the character described, comprising a rotatable filling feeder, a trans-
ferrer, a pawl-carrier supported independ-
ently of said transferrer and adapted to im-
part movement to said feeder, a projection 85
being formed on said pawl carrier, means carried by said transferrer arranged to en-
gage said projection, and cam actuated
means for positively returning said pawl
carrier to normal position whereby said 90
feeder is operated.

4. A machine of the character described, comprising a rotatable filling feeder, a trans-
ferrer, a pawl-carrier supported independ- 95
ently of said transferrer and adapted to impart movement to said feeder, a projection being formed on said pawl carrier, means carried by said transferrer arranged to en-
gage said projection, cam actuated means
for positively returning said pawl carrier to 100
normal position whereby said feeder is operated, and a detent for retaining the said carrier in said normal position.

5. A machine of the character described, comprising a rotatable filling feeder, a trans- 105
ferrer, a pawl-carrier supported independently of said transferrer and adapted to impart movement to said feeder, a projection being formed on said pawl carrier, means carried by said transferrer arranged to en- 110
gage said projection, a locking member adapted to retain the feeder during the operation of the transferrer, cam actuated means for positively returning said pawl-
carrier to normal position whereby said 115
feeder is operated, and a detent for retaining the said carrier in said normal position.

6. A machine of the character described, comprising a rotatable filling feeder, a
transferrer including a pivotally mounted 120
arm, means for positively operating said feeder, said means being mounted independent of said transferrer, a locking member pivoted adjacent said arm and adapted to lock the feeder during the operation of the 125
transferrer, said transferrer arm having a lip extending over and normally engaging said lock member to hold the same normally

in its release position, a depending actuating arm pivoted to said transferrer arm, and a resilient connection between said locking member and said depending arm.

5 7. A machine of the character described comprising a rotatable filling-feeder, a transferrer including a pivotally mounted arm, a finger on said arm, a pawl arm for operating said feeder, provided with a lateral pin arranged to extend into the path of said finger whereby the former is moved by the downward stroke of the latter, and cam actuated means for returning said pawl arm and operating the feeder.

15 8. A machine of the character described comprising a rotatable feeder, a transferrer arm carrying a plunger, cam actuated means for imparting movement to said feeder, a cam lever provided with a recess, a depending arm pivoted to said transferrer arm and projecting through said recess, an actuating cam for causing said cam lever to raise said depending arm, and means for automatically disengaging said depending arm from said cam lever to allow the transferrer to return.

9. A machine of the character described comprising a rotatable feeder, a transferrer arm carrying a plunger, cam actuated means for imparting movement to said feeder, a cam lever provided with a recess, a depending arm pivoted to said transferrer arm and projecting through said recess, an actuating cam for causing said cam lever to raise said depending arm, and means whereby the upward movement of said depending arm will effect the disengagement of said arm from said cam lever.

10. A machine of the character described comprising a rotatable feeder, a transferrer arm carrying a plunger, cam actuated means for imparting movement to said feeder, a cam lever provided with a recess, a depending arm pivoted to said transferrer arm and projecting through said recess, a cam being formed on said depending member, means for raising said cam lever to actuate said depending arm, and means for engaging the cam on said depending arm to disengage said arm from said cam lever.

11. A machine of the character described comprising a rotatable feeder, a transferrer arm carrying a plunger, means for actuating said feeder, a depending arm pivoted to said transferrer arm, an operating arm provided with a recess through which said depending arm projects, means whereby said operating arm will elevate said depending arm, said depending arm being provided with a cam, and means for engaging said

cam to disengage said depending arm from said operating arm.

12. A machine of the character described comprising a rotatable feeder, a transferrer arm carrying a plunger, cam actuated means for imparting movement to said feeder, a locking member adapted to retain the feeder during the operation of the transferrer, a depending arm provided with an offset portion pivoted to said transferrer arm and also provided with an upper hooked end, a spring connecting said hooked end with said locking member, an actuating cam for raising said depending arm, and means for automatically tripping said depending arm to allow the transferrer to return and also disengage said locking member.

13. A machine of the character described, comprising a rotatable feeder, a transferrer arm carrying a plunger, cam actuated means for imparting movement to said feeder, a locking member adapted to retain the feeder during the operation of the transferrer, a depending arm provided with an offset portion pivoted to said transferrer arm and also provided with an upper hooked end, a spring connecting said hooked end with said locking member, a cam bar, the lower end of said depending arm being adapted to engage said bar, an actuating cam for raising said bar and depending arm, and means for automatically releasing said arm from said cam bar to allow the transferrer to return and also to disengage said locking member.

14. A device of the character described comprising a rotatable filling feeder provided with a plurality of supporting members spaced apart around the face of the same, resilient engaging members supported by and inclosing said supporting members and constructed to grasp one end of the filling carriers and hold the same against the face of the feeder, whereby said carrier is supported with its opposite end free.

15. A device of the character described comprising a rotatable filling feeder provided with a plurality of projecting members spaced apart around the face of the same, independent resilient fingers supported by and inclosing said members and constructed to engage opposite sides of said carrier whereby one end of the latter is grasped or held against the face of the feeder.

In testimony whereof I affix my signature in presence of two witnesses.

FELIX O'DONNELL.

Witnesses:

HOWARD E. BARLOW,
E. I. OGDEN.