

No. 816,364.

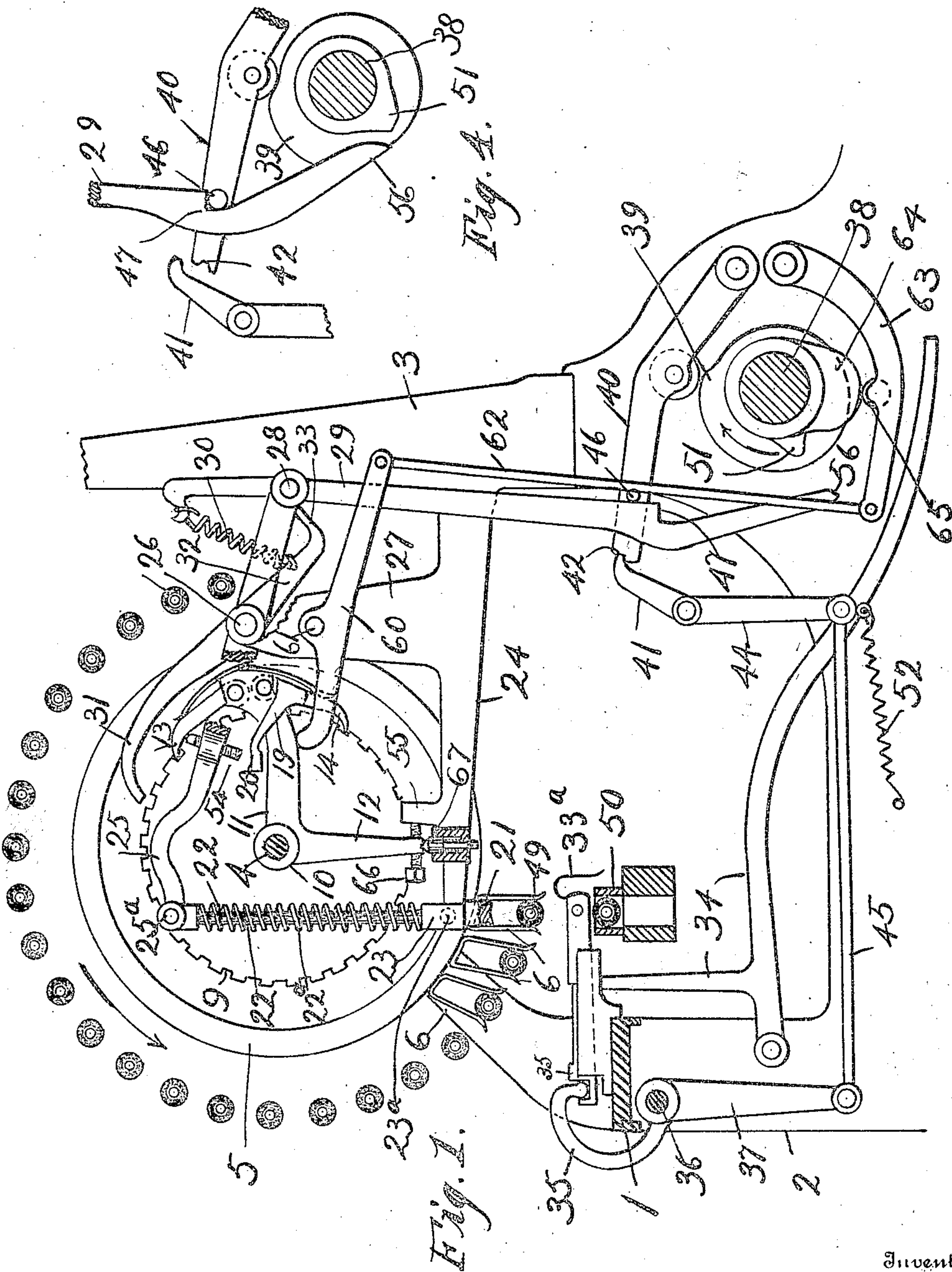
PATENTED MAR. 27, 1906.

F. O'DONNELL.

WEFT REPLENISHING MECHANISM FOR LOOMS.

APPLICATION FILED MAR. 3, 1905.

3 SHEETS—SHEET 1.



Witnesses

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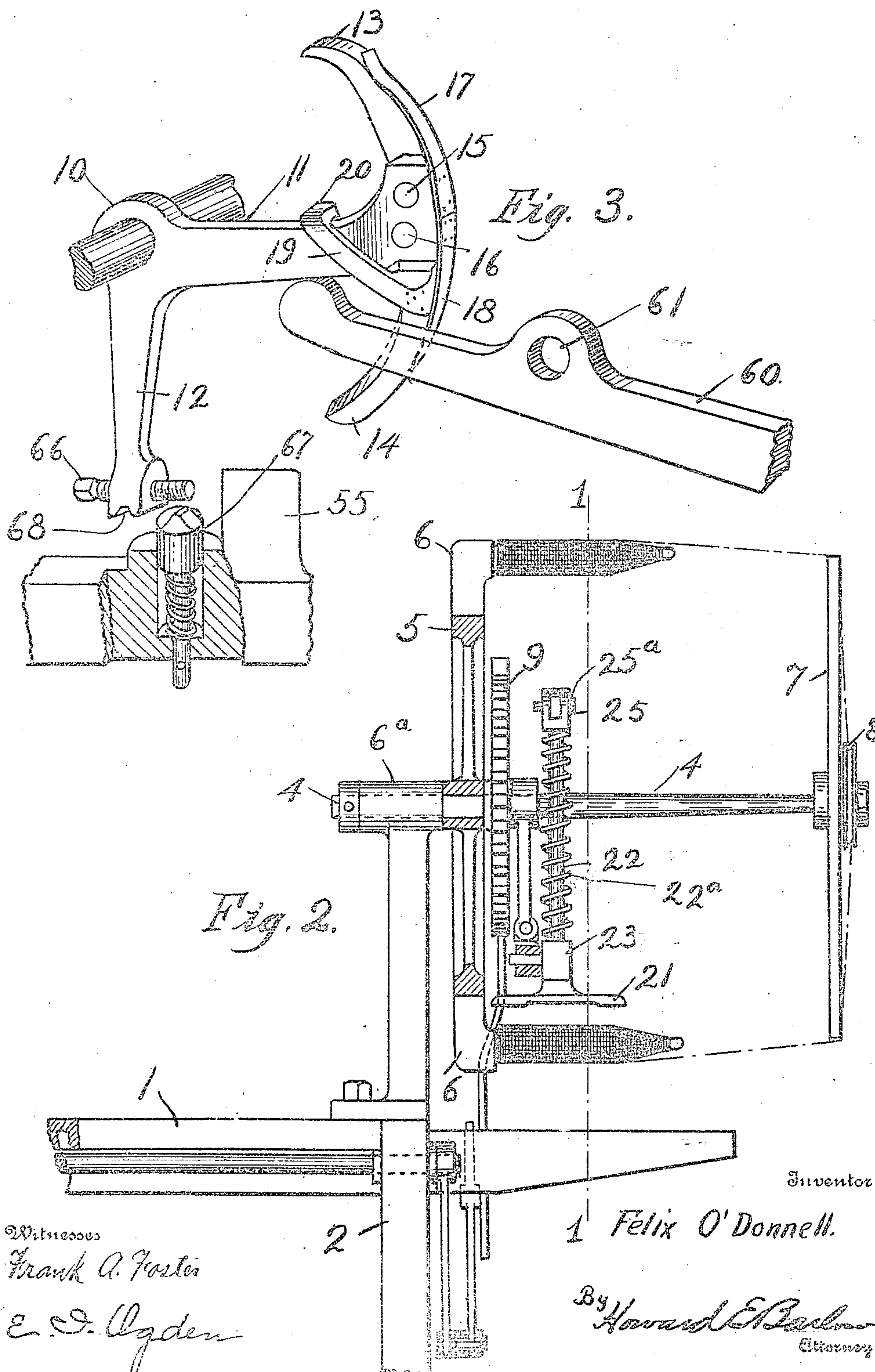
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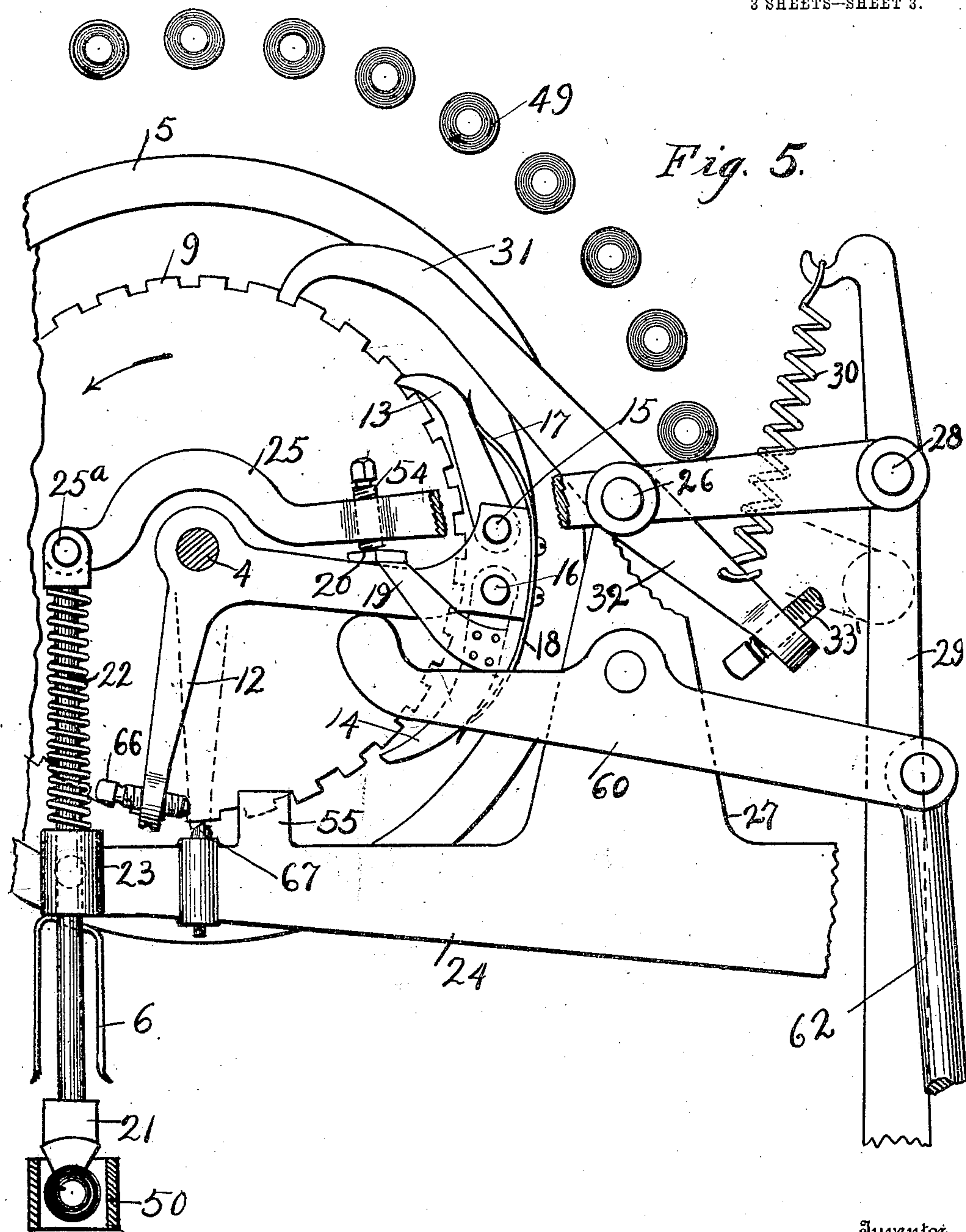
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# UNITED STATES PATENT OFFICE.

FELIX O'DONNELL, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR OF ONE-  
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## WEFT-REPLENISHING MECHANISM FOR LOOMS.

No. 816,364.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed March 3, 1905. Serial No. 248,285.

*To all whom it may concern:*

Be it known that I, FELIX O'DONNELL, a resident of 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; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention relates to looms, more particularly to that class which are provided with automatic weft-replenishing mechanism for weaving, whereby a fresh supply of filling is automatically transferred from the magazine to the shuttle when the supply of filling has been exhausted or the thread broken, and is an improvement on my Patent No. 794,337, dated July 11, 1905.

The object of this invention is to provide improved mechanism that will give a positive action to the rotating or feeding movement of the magazine.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

In the drawings, Figure 1 represents a transverse section of the loom, showing a sufficient portion to be understood with my improved device attached thereto, showing the mechanism of the automatic filling-replenishing apparatus in its normal position, section taken on line 1 1 of Fig. 2. Fig. 2 is a front view of a portion of the loom, showing my device attached thereto partially in section. Fig. 3 is a perspective view showing a detail of the bell-crank and the actuating lever that gives it a positive upward or feeding movement, also showing the latch-bolt that prevents a rebound of said bell-crank. Fig. 4 shows the position of the cams and levers as a fresh bobbin is about to be struck into the shuttle. Fig. 5 represents an enlarged view of the automatic filling-replenishing apparatus in the position taken when driving a bobbin into the shuttle.

Referring to the drawings, at 1 is the loom breast-beam, and 2 2 the end frames, on which frames are set the ordinary loom-arch 3. At 5 is the rotatable magazine or filling-

feeder. All around the periphery of this wheel are fixed spring-fingers 6, each pair of fingers being especially designed and adapted to engage one end of a cop or filling-carrier and firmly support it in a horizontal position while it is being carried around under the foot of the plunger. This wheel 5 is mounted on and fixed to the shaft 4, which shaft is supported to turn in the bearing 6<sup>a</sup>, (see Fig. 2,) said bearing being supported from the frame 2. This shaft extends out beyond the cop-wheel and has mounted upon it the filling-end support 7 and the filling-end holder 8. The ratchet-wheel 9 is also mounted on and fixed to the shaft 4, so as to turn with it and the filling-carrying wheel. The teeth in this ratchet-wheel are preferably made square and spaced to correspond to the spacing of the cop on the wheel 5, so that each time the ratchet is moved ahead one tooth a fresh bobbin is brought in position to be struck down into the shuttle, as will be hereinafter described.

At 10 is a bell-crank lever mounted to turn freely on shaft 4, said lever having a horizontal arm 11 and a depending arm 12. On the end of arm 11 are pivotally mounted the two pawls 13 and 14 on the pins 15 and 16. Fixed to the outer end of this arm are the flat springs 17 and 18, that press on these pawls 13 and 14, respectively, to hold them normally into engagement with the teeth of the ratchet-wheel 9. On the pawl 14 is fixed a finger 19, that extends up and over the top edge at 20 of its supporting-arm 11. By pressing downward on this portion 20 of the finger the pawl 14 may be thrown out of engagement with the teeth of the ratchet-wheel 9, and the arm 11, with its pawls, may then be carried downward for another tooth into the position shown in Fig. 5 without turning the ratchet-wheel 9.

In order to provide a positive action to the magazine-feeding mechanism, the lever 60 has been arranged to intercept the downward movement of the arm 11 of the bell-crank. This lever is pivoted to the bracket 27 of the frame at 61 and is connected at its opposite end through the rod 62 to the cam-actuated lever 63. Fixed to the cam-shaft 38 is the cam 64, which cam engages the roll 65 on the cam-lever to drive said cam-lever down and through the connecting-rod and lever 60 raise the bell-crank arm 11 to rotate the mag-

azine. When the bell-crank arm 11 is raised, the stop-screw 66 in its downwardly-extending arm 12 by bringing up on the stop 55 limits the upward movement of this bell-crank arm 11, and the spring-actuated latch-bolt 67 enters the V-shape slot 68 in the end of the said arm 12 and prevents the same from rebounding when the bell-crank arm 11 is moved quickly against the stop. The weight of the connecting-rod 62 and bell-crank 63 normally holds the roll 65 out of contact with the revolving actuating-cam 64 until it is again required to actuate the said mechanism and feed the magazine. This little latch 67 is so shaped on its end that it may be readily withdrawn and not interfere with the backward movement of the bell-crank arm 11 when the plunger-lever 25 descends.

The transferrer comprises an arm or lever 25, pivoted in an arm 27 of bracket 24, said lever having a plunger-spindle 22 pivoted thereto at 25<sup>a</sup>. Said spindle is provided with a plunger-foot 21 and is free to reciprocate in a bearing 23, pivotally supported at 23<sup>a</sup> in bracket 24, whereby the same is free to adjust itself to the circular movement of the upper end of the spindle. To the opposite end of the lever at 28 is pivoted the upright lever 29. The upper end of this latter lever extends up above the pivoting-point, forming a hook to which the spring 30 is attached. At 31 is the ratchet-wheel-locking pawl that is also pivoted to the bracket at 26. The outer end of this pawl is shaped to fit the square notches in the ratchet-wheel and securely lock said wheel and the cop-wheel from moving in either direction while the filling is being driven into the shuttle. The opposite end of this pawl extends back of the pivoting-point at 32 and engages the under side of the plunger-lever 25 by the turned-up end 33. If desired, a screw 33' may be substituted for the upturned end 33. (See Fig. 5.) This pawl is held up against said lever by the tension of spring 30, which spring serves the double purpose of holding this pawl in position and also to exert a tension on the upper end of the upright lever 29 to swing its lower end into position for the purpose hereinafter specified.

At 33<sup>a</sup> is the ordinary weft-fork, mounted to slide in the usual way on the breast-beam, and at 34 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 reciprocating lever. One end of the arm 35 engages the rear end of the fork-slide 35<sup>a</sup> and is fixed at its opposite end to the shaft 26. This shaft extends along under the breast-beam and has the depending arm 37 fixed to its opposite end. At 38 is the crank-shaft on which is mounted the rotating cam 39. Above this cam is located the cam-bar 40, which is held up and just out of engagement with said cam by means of a pivoted latch 41

engaging a notch 42 in the free end of said cam-bar. This latch is connected with arm 35 of the weft-fork slide by means of the arm 44, connection 45, arms 37, and shaft 36, whereby movement of said weft-fork slide will disengage said latch from said cam-bar. When the cam-bar 40 drops, the hooked portion 47 in the lower end of the lever 29 is drawn in by the tension-spring 30 and hooked over the pin 46 in the bar 40, as shown in Fig. 4. As the cam 39 rotates in the direction of the arrow the cam-arm 40 is thrown quickly upward, carrying with it the upright lever 29 and transferrer-lever 25, driving the plunger down and forcing a fresh cop 49 into the shuttle 50. As soon as the cam portion 39 has carried the cam-bar 40 to its extreme upward position the latch 41 under tension of the spring 52 engages the notch 42 and prevents the cam-bar from falling again. Just at this point the rotating cam 51 engages the downwardly-extending end 56 of the lever 29, pushes it over and disengages the notch 47 from the pin 46, allowing this lever 29 to fall and the plunger and transferrer-lever to rise under tension of the plunger-spring 22<sup>a</sup> encircling spindle 22, and by this motion the locking-pawl 31 is withdrawn from the ratchet-teeth, the bell-crank released and under the influence of the actuating-cam 64 the motion is transmitted through the cam-lever 63, connection 52, and lever 60 to move the said bell-crank arm 11 forward from the full-line position shown in Fig. 5 over against the stop 55 into the position shown in Fig. 1, in dotted lines in Fig. 5, feeding the ratchet-wheel around one tooth and bringing a fresh cop into position under the plunger.

The operation of the device is further explained as follows: When the fork 33<sup>a</sup> fails to find the weft-thread, the fork-slide 35<sup>a</sup> is driven back in the usual way by the lever 34, and through the arms 35 and 37 and connection 45 the latch 41 is withdrawn from the cam-bar 40, which latter is allowed to drop and ride on the cam 39. When this bar drops to the lower portion of said cam, the upright lever 29 swings in by the action of the spring 30 above and the notched portion 47 engages the pin 46. As the cam revolves the quick rise in the cam acts on the bar 40 to force it quickly upward, and as lever 29 is hooked onto the pin 46 it is also carried upward with a sudden impulse, and by this upward motion the rear end of the locking-pawl is allowed to rise and under tension of spring 30 throws the locking end into engagement with the ratchet-wheel, securely holding it and the cop-wheel from turning until said pawl has been again withdrawn. As the long end of the transferrer-lever 25 is thrown downward the set-screw 54, shown in said lever, engages the turned-over portion 20 of the finger 19 and forces it down onto the top edge of the arm 11, which act raises the end of pawl 14 out of engagement with the teeth of the

ratchet-wheel, and by a further downward movement of lever 25 the bell-crank lever is carried, with its two pawls 13 and 14, downward from the position shown in Fig. 1 to that shown in Fig. 5, in which latter position pawl 13 is shown as having been carried down one tooth in the ratchet-wheel. Simultaneously with the movement of lever 25 the spindle 22 is depressed, and the plunger-foot 21 thereof forces a cop out from engagement with the carrier and into the shuttle, as hereinbefore described. When the transferrer-lever 25 has been released and raised again, the actuating-lever through the mechanism described above engages and throws up the horizontal arm until the stop-screw 66 in the depending arm of the bell-crank brings up against the stop 55. Thus the cop-carrier is moved in a positive manner ahead one tooth, bringing a fresh cop into position to be struck down into the shuttle. The mechanism now remains in this its normal position, being retained by the spring-bolt, which is clearly shown in Fig. 3, until the thread breaks or the filling runs out of the shuttle, when the operation above described is again repeated, driving fresh filling into the shuttle and at the same time ejecting the bobbin previously contained by the shuttle.

I claim as my invention—

1. A machine of the character described comprising a rotatable feeder, a transferrer, operating means for said feeder supported independently of said transferrer and placed in operative position by the latter, and means for intercepting said operating means to return the latter to its normal position after the operation of said transferrer.

2. A machine of the character described comprising a rotatable feeder, a transferrer, operating means for said feeder adapted to be set by said transferrer, and means independent of the transferrer intercepting said operating means to return the latter to its normal position after the operation of the transferrer.

3. A machine of the character described comprising a rotatable feeder, a transferrer, operating means for said feeder intercepting the path of movement of the transferrer, and means independent of the transferrer for intercepting said operating means to return the latter to its normal position.

4. A machine of the character described comprising a rotatable feeder, a transferrer, operating means for said feeder arranged to intercept the path of movement of said transferrer in its downward stroke, and means for intercepting said operating means to return the latter to its normal position.

5. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier operated by said transferrer, and means intercepting said pawl-carrier to return the latter to its normal position.

6. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier arranged to intercept the path of movement of said transferrer, and means intercepting said pawl-carrier to return the latter to its normal position.

7. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier, and a pivoted member intercepting said pawl-carrier to return the latter to its normal position.

8. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier intercepting the path of movement of said transferrer, and a pivoted member intercepting said pawl-carrier to return the latter to its normal position.

9. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier, a pivoted member normally engaging said pawl-carrier, and means for intermittently operating said member.

10. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier, a pivoted member normally engaging said pawl-carrier, an operating-lever connected to said member, and means for intermittently rocking said lever.

11. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier, a pivoted member intercepting said pawl-carrier to return the latter to its normal position, and means for limiting the movement of said pawl-carrier.

12. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier intermittently operated by said transferrer, and means for preventing a rebound of said pawl-carrier.

13. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier intermittently operated by said transferrer, means for returning said pawl-carrier to its normal position, and means for preventing a rebound of said pawl-carrier.

14. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier intermittently operated by said transferrer, and a catch adapted to engage said pawl-carrier to prevent rebound thereof.

15. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier having a notched portion and intermittently operated by said transferrer, and a spring-catch adapted to engage the notch of said pawl-carrier.

16. A machine of the character described comprising a rotatable feeder, a transferrer, a pawl-carrier having a notch and intermittently operated by said transferrer, a spring-catch adapted to engage said notch, and means for returning said pawl-carrier to its normal position.

17. A machine of the character described  
comprising a rotatable feeder, a transferrer,  
an angular pawl-carrier operated by said  
transferrer, a pivoted returning member nor-  
mally engaging one member of said pawl-car-  
rier and a locking device adapted to engage  
the other member of said pawl-carrier.

In testimony whereof I have herunto set  
my hand this 1st day of March, A. D. 1905.

FELIX O'DONNELL.

In presence of—

A. HORN,  
HOWARD E. BARLOW