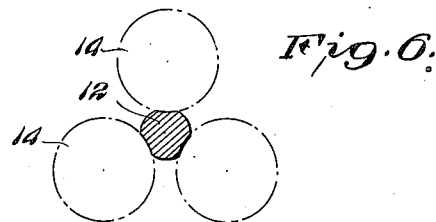
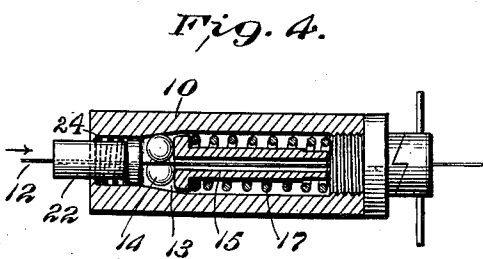
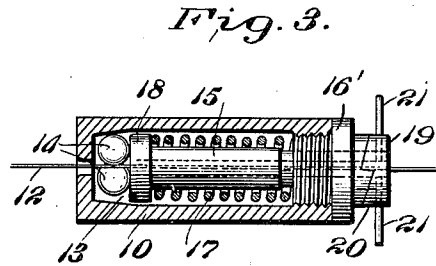
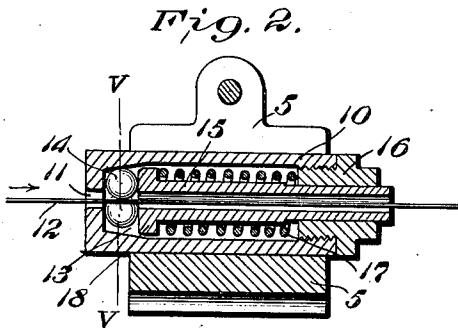
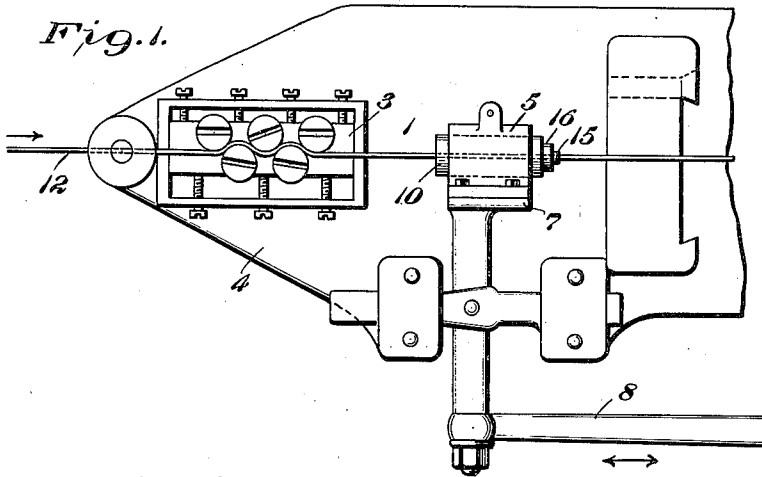


J. P. DELIHANTY.
WIRE NAIL FEEDER.
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1,026,567.

Patented May 14, 1912



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JOHN PATRICK DELIHANTY, OF PUEBLO, COLORADO.

WIRE-NAIL FEEDER.

1,026,567.

Specification of Letters Patent.

Patented May 14, 1912.

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To all whom it may concern:

Be it known that I, JOHN P. DELIHANTY, a citizen of the United States, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented new and useful Improvements in Wire-Nail Feeders, of which the following is a specification.

My invention relates to devices for feeding a continuous wire blank to the anvil block of a nail machine, and is more particularly adapted to that type in which the wire is grasped and held firmly in a clutch-holder while it is presented to the heading-die of the nail-machine.

The principal object of my invention is to provide a feed mechanism which will positively grip the wire when moving in a forward direction but will freely move over the wire when moving in a reverse direction and which will not mutilate or injure the wire.

Another feature of my invention resides in the facility with which the wire may be inserted and threaded through the feeder.

Other objects will be apparent from the following description in which the invention is clearly set forth, in connection with the accompanying drawings, in which—

Figure 1 is a plan view of a wire nail feeder embodying my invention; Fig. 2 is a longitudinal section through the gripper or clutch mechanism; Fig. 3 is a longitudinal section of another form of the gripper; Fig. 4 is a further form of the gripper or clutch; Fig. 5 is a cross-section on the line V—V of Fig. 2, showing the ball clutch; and Fig. 6 is an enlarged sectional view of the wire, showing in dotted lines the manner in which the ball clutch forms indentations therein to secure a positive grip.

For purposes of illustration, I have shown my wire feeder 1, secured to the reciprocating feed carriage of an old form of nail-machine. The wire coming from the feed-reels passes through a wire-straightener 3, secured to the frame 4 of the machine, and is then threaded through the feeder clutch, which may be clamped in a sectional holder 5, bolted to a head 7 of a feed carriage, to which a reciprocating motion is imparted through the medium of a connecting-rod 8.

The feeder mechanism which constitutes my invention is shown in one form in Fig. 2. The barrel or casing 10 is interiorly threaded at the open end, and at the other closed end is provided with an opening 11, for the

passage of the wire 12. The interior side walls of the barrel are tapered toward the closed end to form a converging conical recess for the steel balls 14, which engage and clutch the wire. The balls 14 are normally forced toward the conical surface by a spring-pressed hollow plunger 15, the outer end of which slides through a nut or cap 16, threaded into the end of the barrel. The spiral spring 17 is confined between the cap and an annular shoulder or flange 18 on the inner end of the plunger. Under normal conditions, when no wire is passing through the feeder, the balls 14 will be yieldingly held by the spring-pressed plunger in the rear of the ball chamber 13, and by reason of the conical walls the balls will be brought into contact, as shown in Fig. 5. When a wire is inserted through the opening 11, the balls will yield, permitting the wire to pass through the central channel in the plunger, the wire being carried on to the dies or anvil block of the machine. The initial forward movement of the feeder will cause the balls to firmly grip the wire, and as considerable resistance is offered by the straightener 3, the continued movement of the feeder mechanism causes the hard steel balls to indent the wire in the manner shown in Fig. 6, thereby securing an absolutely positive grip upon the wire which will be maintained throughout the forward movement and until the beginning of the reverse motion of the feeder. The grip of the nail machine now holds the wire firmly, and the instant the motion of the reciprocating table is reversed, the plunger 15 will permit the balls to yield and loosen the grip upon the wire so that the feeder clutch will move easily over the wire during the backward stroke. It is evident that as the balls are not in contact with the end of the ball chamber during the reverse movement, nor in contact with each other, they may revolve freely. Upon again starting forward, the feeder will first move a sufficient distance to cause the balls to wedge into the rear of the ball chamber and firmly engage the wire, then indent it to form a positive grip by which the wire will be drawn through the straightener and fed forward to the anvil block. It will be evident to engineers and to those familiar with wire-working machinery that the dents in the wire will vary in depth with the size or diameter of the wire, and as a heavy wire requires a deeper

dent than a light wire to afford a positive grip, my feed-clutch will automatically control the depth of indentations in accordance with the pull required to straighten and feed the wire.

While the wire may be threaded quite readily through the feed-clutch shown in Fig. 2, I have shown in Fig. 3 a form in which the pressure of the plunger upon the balls can be entirely released when it is desired to insert the wire. Upon the outer end of the stem of the plunger, I secure a ratchet disk 19 having inclined faces 20 which engage with corresponding inclined faces upon the nut or cap 16' on the barrel. When the disk is rotated slightly by means of the rods 21, the oppositely inclined faces will cause the disk to move the plunger outwardly, thereby withdrawing the pressure upon the balls. In conjunction with this arrangement, I may also provide a small spring-pressed plunger 22, in the opposite end of the barrel, as shown in Fig. 4, which will positively force the balls into the enlarged portion of the ball-chamber as soon as the pressure of the spring 17 on the plunger 15 is withdrawn, the spring 24, surrounding the plunger 22, being weaker than the spring 17.

The advantages of my invention will now be appreciated by those familiar with wire-nail machines. I have provided a feed-mechanism which is absolutely positive in action and yet will not seriously mutilate the wire and which automatically regulates the grip to the size of wire which is being drawn through the straightener and fed to the anvil-block of the nail machine. The wire is gripped symmetrically between the balls of the clutch. The release of the grip upon the wire is effected instantly upon a reverse movement of the feeder, and the clutch balls are permitted to revolve freely throughout the return stroke. Special provision is made whereby the wire may be readily threaded through the feeder. The device is exceedingly simple in construction and is practically indestructible, there being no parts which are liable to get out of order.

While I have described in detail the construction shown in the drawings, for the purpose of illustrating embodiments of my invention, it will be evident to engineers and mechanics that changes may be made therein without departing from the spirit of my invention or from the scope of my claims, which are—

1. A feeder for wire-nail machines, comprising a barrel having a bore with the walls at one end tapering to form a conical clutch chamber, clutch-members loosely mounted in symmetrical relation within said chamber, a hollow spring-pressed plunger having an enlarged head normally forcing

ing said clutch-members into engagement with the tapering walls of said chamber, and means causing said members to move outwardly from said tapering walls upon the release of pressure from said plunger.

2. A feeder for wire-nail machines, comprising a barrel having a bore with the walls at one end tapering to form a conical clutch chamber, clutch-members loosely mounted in symmetrical relation within said chamber, a hollow spring-pressed plunger normally forcing said clutch-members into engagement with the tapering walls of said chamber, and a hollow spring-pressed plug slidably mounted in an opening in the end wall of said barrel normally exerting a pressure upon said clutch-members in opposition to the pressure of said plunger.

3. A feeder for wire-nail machines, comprising a barrel having a bore with the walls at one end tapering to form a conical clutch chamber, clutch-members loosely mounted in symmetrical relation within said chamber, a hollow spring-pressed plunger having an enlarged head to engage said clutch-members, a spring surrounding said plunger and bearing against said head to normally force the plunger into engagement with said clutch members, and means for moving the plunger outwardly and out of engagement with said clutch-members.

4. A feeder for wire-nail machines, comprising a barrel having a bore with the walls at one end tapering to form a conical clutch chamber, clutch-members loosely mounted in symmetrical relation within said chamber, a hollow spring-pressed plunger normally forcing said clutch-members into engagement with the tapering walls of said chamber, a cap upon one end of said barrel having an opening through which said plunger projects and provided with a ratchet face, and a disk or head upon the end of the plunger having inclined surfaces cooperating with said ratchet face.

5. A feeder for wire-nail machines, comprising a barrel having a bore with the walls at one end tapering to form a conical clutch chamber, clutch-members loosely mounted in symmetrical relation within said chamber, a hollow spring-pressed plunger normally forcing said clutch-members into engagement with the tapering walls of said chamber, a cap upon one end of said barrel having an opening through which said plunger projects and provided with a ratchet face, a disk or head upon the end of the plunger having inclined surfaces cooperating with said ratchet face, and a hollow spring-pressed plug slidably mounted in the end wall of the barrel adjacent the clutch-chamber and normally exerting a pressure upon said clutch-members in opposition to the pressure of said plunger.

6. A feeder for wire-nail machines, comprising a barrel having in one end a conical ball chamber, clutch balls loosely mounted in symmetrical relation therein, a spring-pressed plunger within said barrel normally forcing said balls into engagement with the tapering walls of said chamber and having a longitudinal bore, said barrel having an opening through the end wall adjacent
10 said chamber to form a wire passage, a longitudinally extended plug in the end of the barrel opposite the ball-chamber, hav-

ing a bore forming an elongated bearing for said plunger to maintain the same in a central position in the barrel throughout its range of sliding movement. 15

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN PATRICK DELIHANTY.

Witnesses:

JNO. McKENNAN,

JAS. H. ROBINSON.