

March 30, 1943.

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2,315,108

WIRE FEEDER FOR NAIL MACHINES

Filed May 5, 1942

2 Sheets-Sheet 1

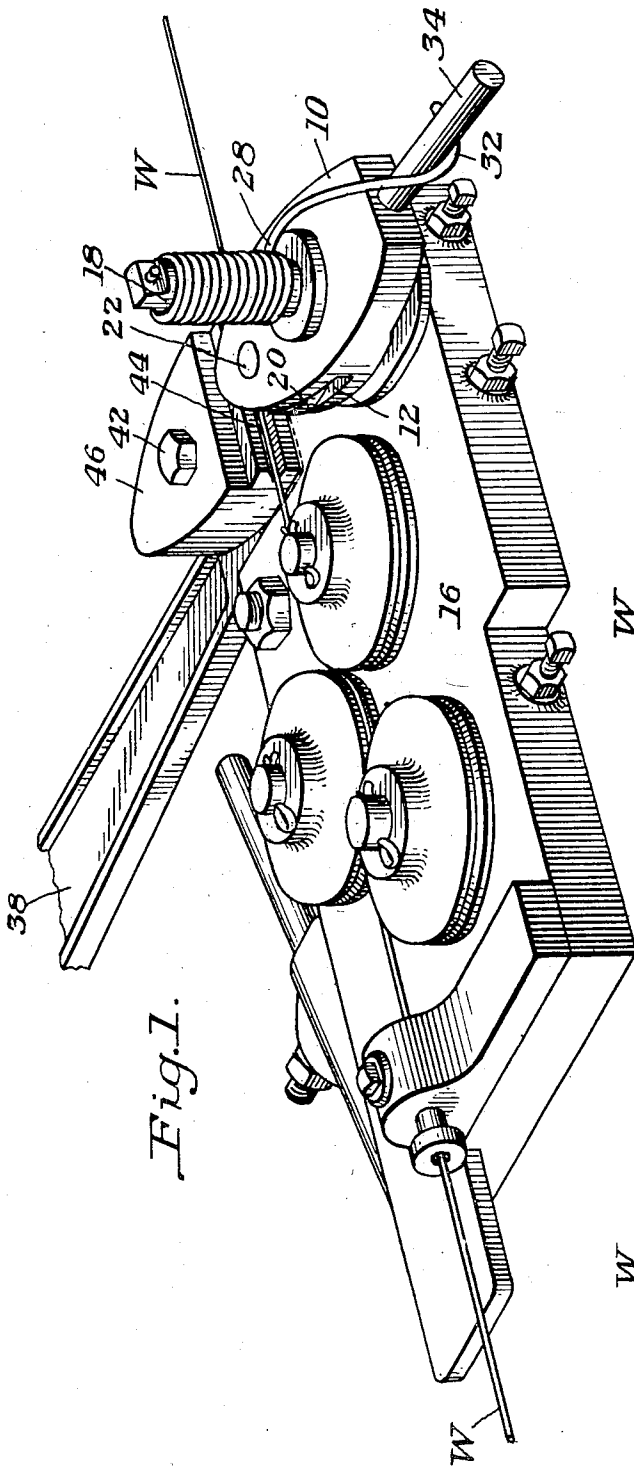


Fig. 1.

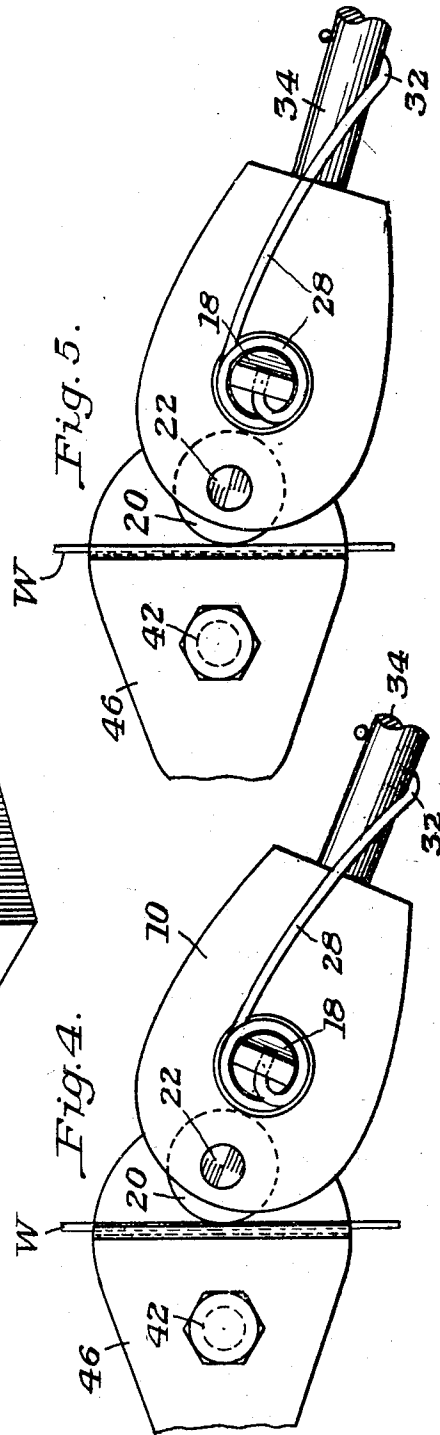


Fig. 5.

Fig. 4.

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March 30, 1943.

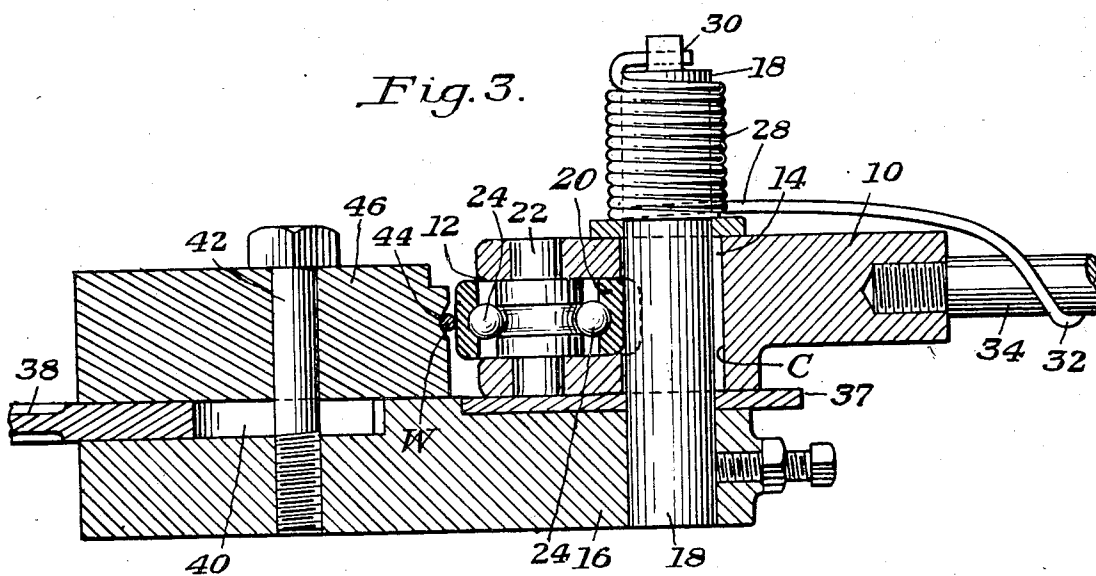
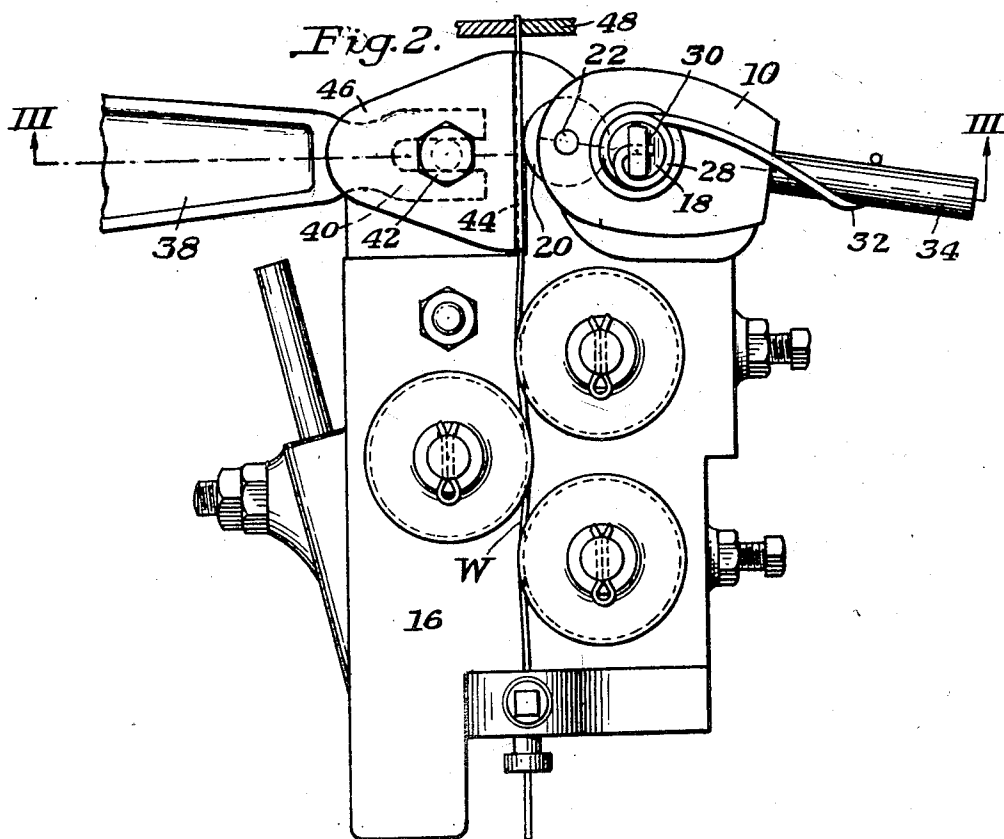
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WIRE FEEDER FOR NAIL MACHINES

Filed May 5, 1942

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,315,108

WIRE FEEDER FOR NAIL MACHINES

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Application May 5, 1942, Serial No. 441,865

3 Claims. (Cl. 140—130)

This invention relates to improved means for feeding wire or rod stock to a nail making machine. More specifically the present invention contemplates specific features of design and arrangement particularly described in the following specification, shown in the accompanying drawings and defined with particularity in the appended claims.

In the drawings:

Figure 1 is a perspective view illustrating the improved feeder;

Figure 2 is a plan view of a portion of a nail making machine equipped with the improved feeder;

Figure 3 is a cross section on line III—III of Figure 2;

Figure 4 is an enlarged detail of the gripping device of the present invention; and

Figure 5 is a view similar to Figure 4 illustrating the parts in another position.

The invention, while not limited thereto, is well suited for incorporation in the well known type of nail machine. The conventional nail machine, as usually constructed, employs a rigid steel pin for feeding engagement with the wire. Constant frictional drag on this pin, which is normally stationary, causes the same to groove and scratch the wire. This results in objectionably marring and weakening the product. The feed of the present invention overcomes this inherent weakness, which is characteristic of the wire feeding devices used in the prior art nail making machines.

Referring in detail to the drawings, the apparatus includes a roller holder 10 having a slot 12 which extends inwardly to the post hole 14. The holder is pivotally mounted on a steel post 18 carried by a reciprocating feed table 16. This post passes freely through the hole 14 to provide for necessary clearance, marked C in Figure 3, to insure proper operation of the coacting parts.

A particular novel feature of the invention resides in the provision of an anti-friction ball bearing roller 20 carried by a spindle 22 and having bearing balls 24 which make a rolling anti-friction contact with the spindle 22, the roller being positioned in the slot 12 and the spindle being rigidly secured to the holder 10. The respective sizes of the roller and the holder are such that the periphery of the roller extends slightly beyond the outer portion of the holder. The ball bearing roller 20 bears firmly on the post 18 on the forward wire feeding stroke of the table, and during the back stroke the clearance C permits the holder to shift with respect to the post a

sufficient distance to release the pressure and thus free the roller grip on the post. To insure this action there is provided a spring 28 which surrounds the post 18 and has one end anchored thereto at 30. The other end 32 of the spring is engaged with a stud 34 extended outwardly from the holder 10. Thus the spring normally tends to turn the holder 10 counterclockwise, as viewed in Figure 2.

The post 18 and holder move back and forth with the feed table 16 which in turn slides in suitable fixed ways 37, the table being actuated by an oscillating arm 38 having a forked end 40 which straddles a bolt 42 secured to the table and passing through a groove 44 of a wire guide member 46.

In normal operation, throughout both the forward and return strokes, the roller 20 contacts the wire stock W to be fed, this contact being maintained by the spring 28 surrounding the post 18. The resulting pressure of the spring, coupled with the friction developed between the roller and the wire during travel, causes the roller and the holder 10 to move toward the nail dies conventionally indicated at 48. Since the radius of the roller is greater than the distance between the roller center and the post hole circumference, the roller contacts with the steel post. The resulting pressure at this point of contact is great enough to bind the roller to the steel post and prevent rotation of the roller. Since the roller cannot rotate, it will tend to grip the wire. Thus upon the forward stroke of the table 16 the wire will be advanced toward the dies 48. Figures 3 and 4 show the parts in the feed position. During the return stroke the parts take the position of Figure 5, the friction between the wire and the roller acting in the opposite direction. This will tend to twist the roller away from the steel post. Thus, because of the allowed clearance at the steel post hole, the roller is moved free of the post and is allowed to turn on its axis and thus roll along the wire as the feed table returns to its initial position.

It will be apparent that after each feeding stroke a slight turning movement is imparted to the roller. This results in periodically presenting a different wear surface of the roller to the wire at each stroke of the machine. This is advantageous because it adds greatly to the life of the wire engaging part of the nail machine. Heretofore the wire engaging fixed pin has been prematurely rendered ineffective. The gripping roller of my invention is periodically turned to a

different position each time the wire is engaged and the rolling contact prevents the marring or scratching of the stock and thus overcomes an inherent defect in the conventional feeding device heretofore used.

Having thus described my invention, what I claim is:

1. A feeder for wire stock comprising a feed table having a grooved guide for the wire stock, means for imparting forward and backward strokes to said table, a holder pivotally engaging a post carried by the table, said holder having a bearing opening therein of larger diameter than the post to provide a clearance, a roller journaled in the holder and coacting with the post to grip the wire stock in said guide upon forward movement of said table, a spring tending to turn the holder about said post in a direction toward the wire stock and also effective upon the back stroke of the feed table to shift the holder with relation to said post to an extent permitted by said clearance to thus free the grip of the roller upon the post and thereby cause the roller to turn as it rides on the wire during the back stroke of the table.

2. A feeder for wire stock comprising a feed table having a grooved wire guide, a pivot post secured to the table, a holder having a bearing opening of larger diameter than the post to provide a clearance, a wire engaging roller journaled on a spindle carried by said holder and having bearing balls incorporated therein for anti-friction contact with said spindle, the periphery of said roller contacting both the post and the wire stock in said guide upon the forward movement of said table to thereby grip and move said wire

stock forward, a spring tending to turn said roller about said post in a direction toward said wire stock and also effective upon the back stroke of the feed table to shift the holder with relation to said post to an extent permitted by said clearance to thus free the grip of the roller upon the post and thereby cause the roller to turn as it rides on the wire stock during said back stroke of the table.

3. In a nail making machine, a feeder for the wire nail stock comprising a feed table carrying a grooved guide, means for imparting forward and backward strokes to said table, a post secured to the table, a holder having a bearing opening therein for coaction with the post and of larger diameter than the post to provide a clearance, a ball bearing wire engaging roller carried by a spindle secured to said holder and coacting with said post to grip the wire stock in said guide upon the forward movement of said table, a torsion spring having one end engaged with the post and the other end connected to the holder and tending to turn it about the post in a direction toward said wire stock and also effective upon the back stroke of the feed table to shift the holder with relation to the post to an extent permitted by said clearance to thus release the grip of the roller upon the post and thereby cause the roller to turn as it travels along the wire stock during the back stroke of the table whereby upon subsequent strokes of the feed table different portions of the periphery of the roller will successively come into gripping engagement with the wire stock and thus distribute the wear and consequently lengthen the useful life of the roller.

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