No. 766,770. PATENTED AUG. 2, 1904.

E. N. REED.

TACK PLATE FEEDER.

APPLICATION FILED JUNE 10, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

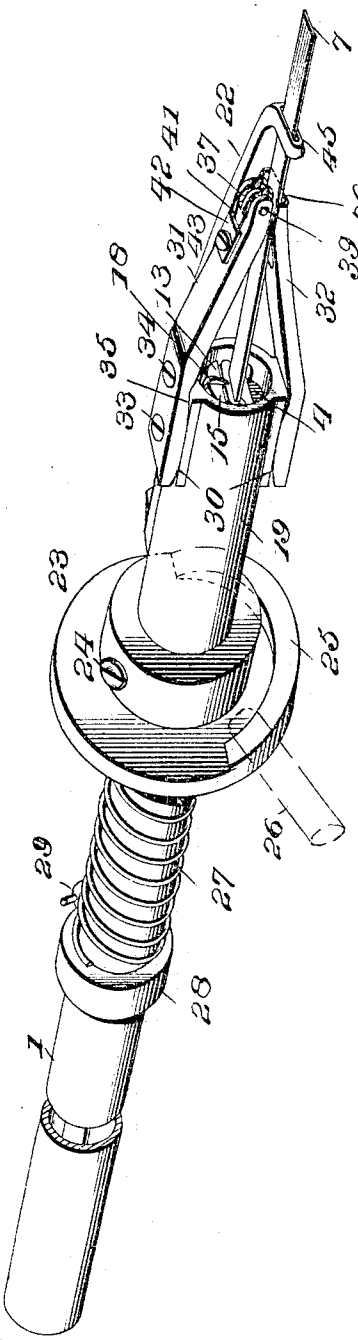
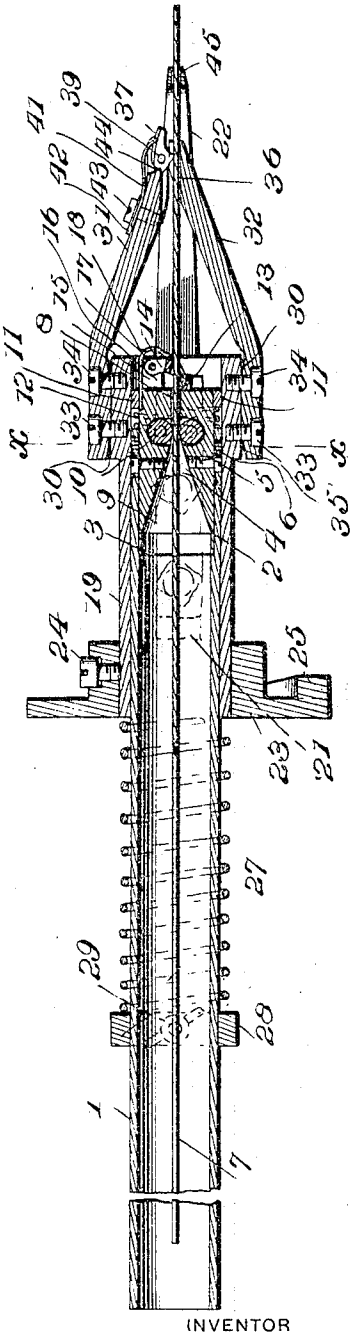


Fig. 2.



WITNESSES

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

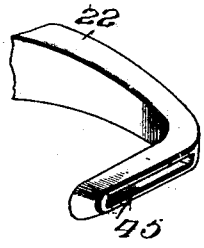


Fig. 4.

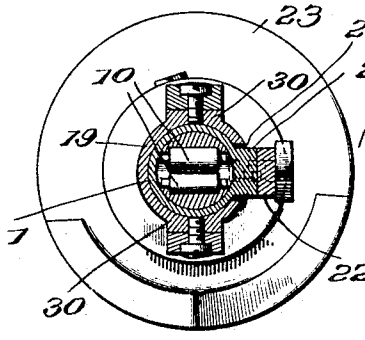


Fig. 5.

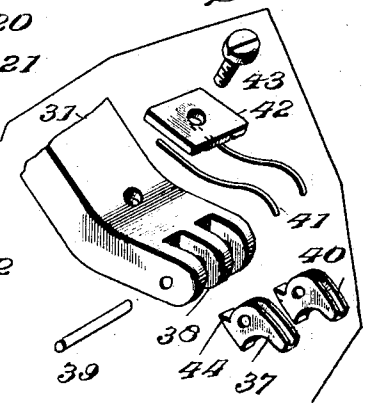


Fig. 6.

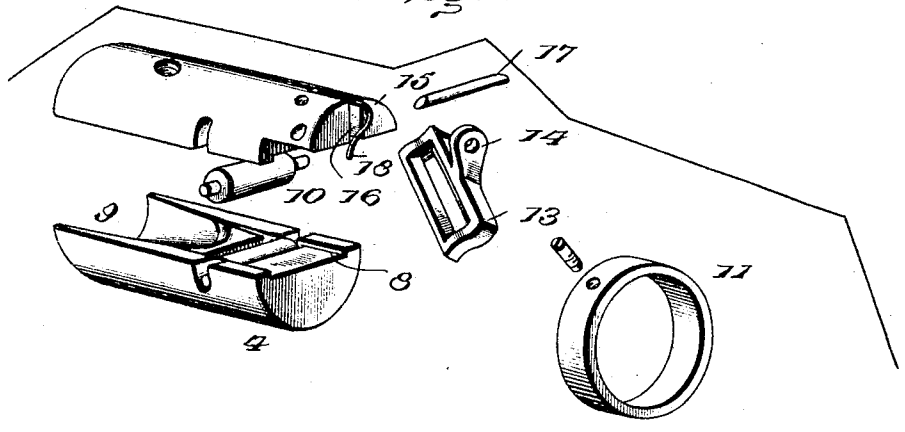
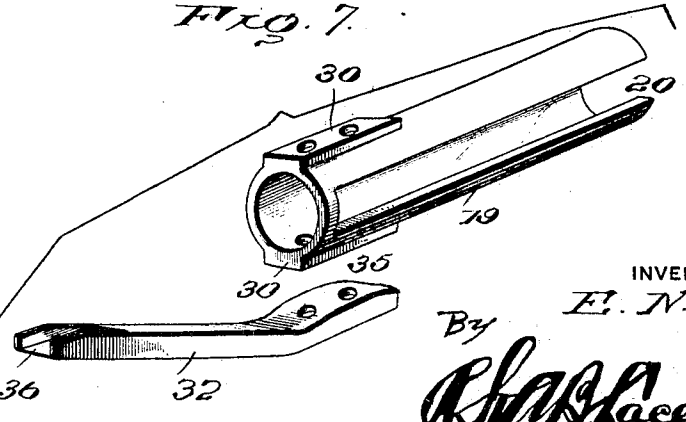


Fig. 7.



WITNESSES

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No. 766,770. Patented August 2, 1904.

UNITED STATES PATENT OFFICE.

EDWARD N. REED, OF BINGHAMTON, NEW YORK.

TACK-PLATE FEEDER.

SPECIFICATION forming part of Letters Patent No. 766,770, dated August 2, 1904.

Application filed June 10, 1903. Serial No. 160,928. (No model.)

To all whom it may concern:

Be it known that I, EDWARD N. REED, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain new and useful Improvements in Tack-Plate Feeders, of which the following is a specification.

This invention is designed for the barrel or spindle of any type of cut tack or nail machine using strips cut from sheet metal or formed into coils, said strips being fed through the spindle and the latter given a half-turn after each tack or nail has been cut from the spindle. In operating machines of the class aforesaid considerable difficulty has been experienced from failure of the plate or strip to feed freely and from its binding on the cutter. This invention obviates these objectionable features besides providing positive adjustment of the feed-dog to insure its effective working.

The improvement consists of a core yieldably mounted within the spindle and provided with an opening for the passage of the tack-plate and with rollers at each side of the opening and having a detent to prevent backward movement of the tack-plate when the feed-dog is moving to obtain a new grip prior to advancing the said plate at each operation of the machine.

The improvement also consists of the novel features, structural details, and combinations of parts, which hereinafter will be more fully described, noted in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a tack-plate feeder embodying the invention. Fig. 2 is a central longitudinal section thereof. Fig. 3 is a detail perspective view of the outer end of the guide on a larger scale. Fig. 4 is a transverse section on the line X X of Fig. 2 on a larger scale. Fig. 5 is a detail perspective view of the outer end of the arm provided with the feed-dogs, the latter and the parts coöperating therewith being separated and arranged in a group. Fig. 6 is a detail perspective view of the core and the parts attached thereto, the several elements being separated and disposed in a group. Fig. 7 is a detail perspective view of the sleeve and the arm attached thereto for supporting the tack-plate against the action of the feed-dog, said arm being disconnected from the sleeve.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The spindle or barrel is indicated at 1 and is of tubular formation and in practice is mounted so as to receive a rotary or oscillatory movement, according to the design of machine to which the feeder may be applied. The bore or opening of the spindle is enlarged at one end, as shown at 2, to receive the ring or band portion 3 of the core 4, mounted within the spindle so as to receive a limited longitudinal play, but held against turning therein by suitable means, such as screws 5, threaded into core 4, and slots 6 in the sides of spindle 1 to receive the heads or outer ends of the screws 5. The slots 6 extend lengthwise of the spindle and determine the amount of play of the core 4. By having the outer end portion of the bore or opening of spindle 1 enlarged the inner wall of the band or rear portion 3 of the core may come about flush with the sides of the bore or opening, thereby preventing the end of the tack plate or strip 7 from catching upon the core when passing said plate through the spindle and core. Core 4 is provided with a longitudinal opening 8, through which tack plate or strip 7 passes, and the inner end of this opening flares, as shown at 9, so as to properly direct the plate 7 into and through opening 8 when placing the plate or strip 7 in position. Rollers 10 are located upon opposite sides of opening 8 and prevent binding of the tack plate or strip 7, said rollers being arranged at the point where opening 8 begins to flare to insure lateral strain incident to turning the plate coming upon the rollers, whereby binding of plate 7 in opening 8 is wholly obviated. To facilitate placing of rollers 10 in position, core 4 is composed of two parts, sections, or halves, as indicated most clearly in Fig. 6, said parts or sections being held together by suitable means, as ring 11. This sectional construction of the core also admits of the same being cast, stamped, or finished in an economical manner. A comparatively light

spring 12 is mounted upon core 4 and is confined between the outer end of spindle 1 and ring 11 and normally exerts an outward pressure upon the core, so as to hold same at the limit of its outward or forward movement. In operation core 4 is adapted to move within spindle 1, so as to ease tack-plate 7 and prevent binding and jumping of same on the cutter, and when said plate is in position for action of the cutting mechanism spring 12 forces core 4 outward, thereby insuring a tack-blank of proper size being cut from the tack plate or strip 7. The tension of the spring 27, which is heavy, pushes the strip 7 against the gage, (not shown,) and after the tack-blank has been cut therefrom the strip is given a half-turn, and in machines not having the spring 12 the strip either binds on the cutters and causes the barrel to jump or bends, and in either case prevents successful feeding. The spring 12 being light avoids the trouble, as it yields and permits the strip 7 to move back sufficiently to slide and turn freely on the cutters.

The detent 13 for holding the tack plate or strip 7 against rearward movement is of loop form and is provided with shank 14 at one side, by means of which it is pivoted to core 4. This detent is located at the outer end of the core and is pivoted to an extension 15 thereof, said extension having slot 16 to receive shank 14 and provided with a transverse opening to receive pivot-pin 17, by means of which detent 13 is pivotally connected to part 15. Spring 18, secured at one end to the core, has its opposite end portion bent and adapted to bear upon shank 14, so as to hold detent 13 in position to grip tack-plate 7 and hold same firmly against rearward movement when feed-dog is advancing to obtain a new grip upon the tack-plate prior to moving same forward the predetermined distance. When the tack plate or strip 7 is moved forward, detent 13 turns upon pivot-fastening 17 to admit of its sliding freely therethrough, and when tack-plate 7 comes to rest detent 13, acted upon by spring 18, grips said plate upon opposite sides and holds it firm and prevents rearward movement thereof.

Sleeve 19 is slidably mounted upon the end portion of spindle 1, provided with core 4, and is prevented from turning thereon by any suitable restraining means. As shown, sleeve 19 is formed in one side with a longitudinal slot 20, which receives lateral projection 21 of spindle 1. This lateral extension 21 acts in the dual capacity of preventing relative turning of the sleeve upon the spindle as well as providing means of attachment to the spindle of guide 22. Collar 23 is secured to the rear end of sleeve 19 by clamp-screw 24 and is provided upon the side facing the feed devices with cam 25 for coöperation with trip 26, whereby longitudinal movement of the sleeve upon the spindle is effected. Stout coil-spring 27 is mounted upon spindle 1 and exerts a forward or outward pressure upon sleeve 19 and holds same at the limit of its forward movement. This spring 27 is confined between sleeve 19 and collar 28, adjustably secured to spindle 1 by means of clamp-screw 29. The forward or outward movement of sleeve 19 is limited by collar 23 striking the inner end of lateral projection 21. Seats 30 are provided at opposite sides of sleeve 19 at or near its outer end, and arms 31 and 32 are secured thereto by clamp-screws 33 and 34. The outer ends of arms 31 and 32 are forwardly converged, and their inner or rear ends are arranged to extend approximately parallel when secured to sleeve 19, and the inner faces of the attaching ends of arms 31 and 32 are longitudinally curved, as shown at 35, to admit of rocking said arms upon seats 30, whereby their outer ends may be moved toward and from each other and the plane of tack-plate 7, thereby providing for relative lateral adjustment of the outer ends of the arms to insure effective operation of the feed-dog and proper positioning of same. Arm 32 is notched upon its inner side near its outer end, as shown at 36, to receive the tack plate or strip 7 and prevent lateral displacement thereof. Arm 31 is provided at its outer end with one or more feed-dogs 37, same being fitted into slots 38, formed in the extremity of arm 31 and mounted upon pivot-pin 39, passed through openings formed in the parts separated by slots 38. Feed-dogs 37 are grooved in their outer sides, as shown at 40, to receive the outer end of springs 41, which are secured to arm 31 by clamp-plate 42 and clamp-screw 43. Heel extensions 44 limit the movement of the feed-dogs in one direction by engaging with the inner ends of slots 38, as shown most clearly in Fig. 2. By loosening one of the clamp-screws 33 or 34 and advancing the other one or both arms 31 and 32 may be rocked upon longitudinally-curved faces 35, so as to advance the outer ends of the arms or separate same to regulate the distance between them, or the outer ends of the arms may be moved laterally with reference to the tack plate or strip 7.

Guide 22 is located at one side of the spindle and is bolted or otherwise fastened to lateral extension 21 and is provided at its outer end with loop or eye 45 to give proper direction to the tack plate or strip 7. The feed dog or dogs operate in the space between eye 45 and core 4. Hence the tack plate or strip is properly directed to the cutting mechanism when the feeder is in position in an organized machine for forming tacks or fastenings of kindred nature.

The spindle or barrel 1 is mounted in the usual manner, so as to receive an oscillatory or backward and forward rotary movement sufficient to reverse the strip 7. The trip 26 constitutes a fixed stop, and as the spindle

makes a half-revolution in one direction it travels upon the cam 25 and compresses the spring 27 and moves the sleeve 19 rearward, carrying the arms 31 and 32 and the feed-dogs 37. Simultaneously with the initial rearward movement of the sleeve 19 and attached parts the forward end of the strip 7 slides upon the stationary knife of the cutting mechanism (not shown) and is moved rearward a slight distance to prevent binding of said strip upon the cutter. The instant the strip 7 clears the cutter in the reverse movement the spring 12, repressed by the rearward movement of the strip 7, regains itself and moves the strip forward a distance corresponding to the rearward movement effected by gliding of the strip upon the cutter. A moment later the cam 25 clears the stop or trip 26 and the spring 27 moves the sleeve 19 and attached parts forward, thereby feeding the strip 7 the proper distance to form the tack, nail, or other fastener, according to the type of machine embodying the invention.

Having thus described the invention, what is claimed as new is—

1. In a plate or strip feeder for tack and kindred machines, the combination of a spindle, a core having a limited longitudinal play with reference to the spindle, a spring for holding the core in its forward position, a detent carried by said core, and a feed device supported upon the spindle, substantially as set forth.

2. In a feeder for tack and kindred machines for intermittently advancing the plate or strip, the combination of a spindle, a feed device mounted to reciprocate upon said spindle, a core slidable within the spindle and provided with a detent, and a spring normally holding the core projected and adapted to permit inward movement thereof to prevent binding or jumping of the tack-plate upon the cutter, substantially as specified.

3. In a tack-plate feeder, the combination of a spindle, a feed device slidably mounted upon the spindle, a core slidable within the spindle, means for preventing turning of the core within the spindle and limiting the longitudinal play thereof, a spring mounted upon the core and confined between a portion thereof and the outer end of the spindle to normally hold the core projected, and a detent applied to said core, substantially as described.

4. In a tack-plate feeder, a tubular spindle having the outer end of its bore or opening enlarged, a feed device slidable upon the spindle, a core slidable within the enlarged portion of the bore of the spindle and having a longitudinal opening and having the rear end of the opening flared or enlarged to bring the inner wall of the rear portion of the core about flush with the inner sides of the spindle, a spring normally holding the core projected, and a detent applied to said core, substantially as set forth.

5. In a tack-plate feeder, the combination of a spindle, a feed device slidably mounted thereon, a core arranged within the spindle and composed of longitudinal halves or sections, a ring for confining said sections, a spring mounted upon the core and confined between said ring and spindle and normally holding the core projected, and a detent applied to said core, substantially as described.

6. In a tack-plate feeder, the combination of a spindle, a core applied thereto and provided with a detent, a sleeve slidable upon the spindle, arms projected from said sleeve, a feed-dog applied to one of said arms, and means for adjustably connecting either of said arms to the sleeve, the same consisting of longitudinally-spaced clamp-screws, and a fulcrum intermediate of said clamp-screws, substantially as set forth.

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

EDWARD N. REED. [L. S.]

Witnesses:
H. N. BAKER,
C. W. BEMAN.