Dec. 29, 1925. 1,567,119

S. A. DOBYNE

FASTENER STOCK SUPPLYING MECHANISM FOR FASTENER INSERTING MACHINES

Filed Nov. 25, 1922

Fig. 1.

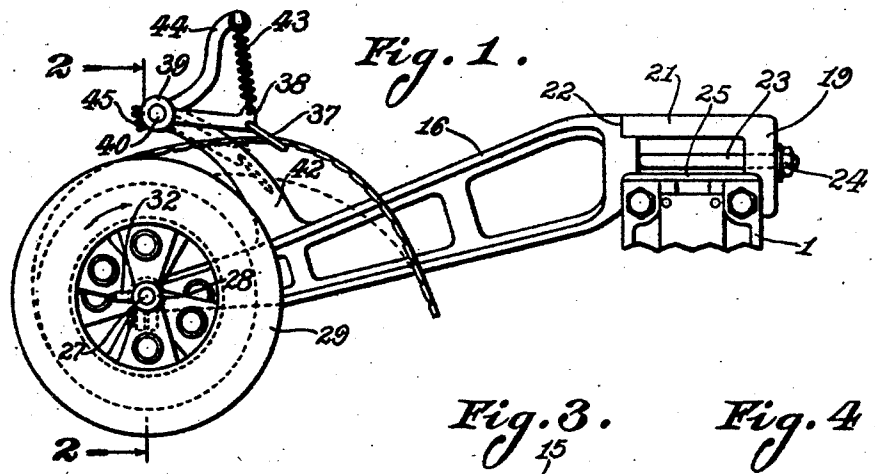


Fig. 3.

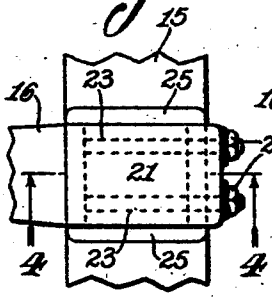


Fig. 4.

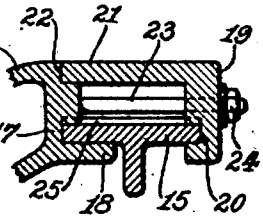


Fig. 2.

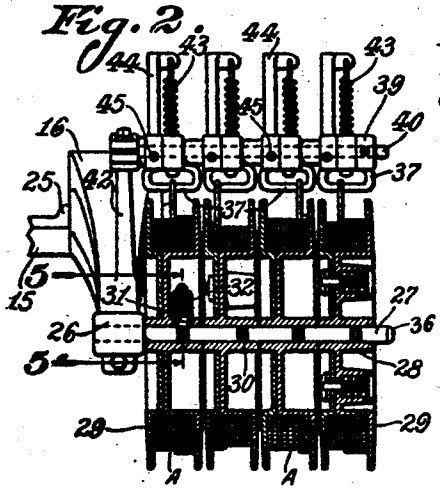


Fig. 8.

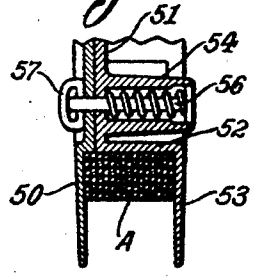


Fig. 5.

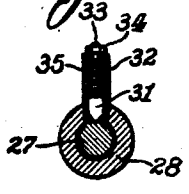


Fig. 6.

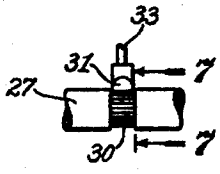


Fig. 9.



Fig. 7.



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His Attorney.

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UNITED STATES PATENT OFFICE.

STEPHEN A. DOBYNE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO CHAMPION SHOE MACHINERY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

FASTENER-STOCK-SUPPLYING MECHANISM FOR FASTENER-INSERTING MACHINES.

Application filed November 25, 1922. Serial No. 603,287.

To all whom it may concern:

Be it known that I, STEPHEN A. DOBYNE, a citizen of the United States, and residing at St. Louis, Missouri, have invented the new and useful Improvement in Fastener-Stock-Supplying Mechanism for Fastener-Inserting Machines, of which the following is a specification.

This invention relates to mechanism for feeding strands of fasteners from coiled sources of supply, and more particularly, to means for feeding a strand of connected nails from a reel on which the strand is coiled, to fastener inserting mechanism which severs the nails from the string and drives them.

Fastener inserting machines utilizing strands of connected nails have the fastener stock coiled on a reel or reels mounted on the machine; the strand of connected nails is conducted or fed from the coiled source of supply to the operating means which completely severs the partially severed nail from the string and drives it. In such a machine the string is fed by the engagement with the head of a nail on the string in order to insure the accurate cutting of the nail just above its head. A stop or pawl is provided to arrest retrograde movement of the strand, this pawl engaging the head of a nail on the string so as to insure accurate positioning of the strand.

This strand should have its nails as nearly severed as possible without, however, causing the strand to become broken, as the operation of the machine is thereby interfered with and a piece of work into which the fasteners are driven may thereby become spoiled. Accordingly violent kinking or twisting of the strand must be avoided in order to prevent such parting.

In order to permit shipment and utilization of the fastener stock, it should, of course, be coiled so as to not only present the smallest possible space, but also to permit ready delivery of the strand. Such a coil should, of course, be wound as closely as possible in order to not only save space, but also prevent tangling of the coils.

In order to obtain all of these desirable features, a limitation or difficulty is encountered which is essentially inherent in coiled fastener stock strands and more especially in strands of connected nails. Such a strand presents a series of lateral projections, formed by the heads of the nails, which are liable to become caught in the adjacent coils on the reel so that when it is attempted to unreel the strand from its coiled source, the strand is liable to become kinked or even broken, where it is the weakest, namely where one nail point joins the adjacent nail head.

One of the objects of this invention, therefore, is to provide mechanism of the class described which is constructed to cause release of the strand at the source and to loosen the unwinding coil at the source of supply.

Another object is to provide mechanism of the class described which is constructed to not only insure delivery of the strand but also to prevent binding, kinking and breaking of the strand.

Another object is to provide mechanism of the class described whereby a retrograde tension is applied to the strand in order to insure accurate positioning, feeding and delivery of the strand to operating mechanism.

Further objects will appear from the detail description taken in connection with the accompanying drawing, in which:

Figure 1 is a front elevation showing the mechanism embodying this invention and its mounting upon the machine;

Figure 2 is a section on line 2—2, Figure 1;

Figure 3 is a detail showing the attachment of the reel bracket to the fastener inserting machine;

Figure 4 is a section on line 4—4, Figure 3;

Figure 5 is a section on line 5—5, Figure 2, showing the ratchet and detent mechanism for restraining the movement of the wheel;

Figure 6 is another detail of the same mechanism;

Figure 7 is a section on line 7—7, Figure 6;

Figure 8 is an enlarged detail of the connection between the reel and its flange; and

Figure 9 is a detail of the reel fastening.

Referring to the accompanying drawing, the invention is shown as applied to a fas-

tener inserting machine of the well known string nail type, the particular embodiment being that shown in application Serial Number 174,096, filed June 11, 1917, Patent No. 1,507,667, Sept. 9, 1924.

Mounted on a cross-beam 15 on the machine head is a bracket 16. This bracket is provided with an undercut portion 17 taking over one of the flanges of the beam and having a lip 18 taking underneath the beam. A clamping element 19 has a channel 20 engaging the opposite edge of the beam and has a web 21 engaging a cut out portion 22 in the bracket 16. One or more studs 23 tapped into the bracket passing through the clamping element 19 and provided with nuts 24 operate to securely clamp the bracket in position on the machine head. It will, therefore, be seen that the bracket is detachably mounted on the machine head, embraces the beam and is securely clamped in position. In order to readily locate the bracket on the machine head, the cross-beam 15 is provided with lugs 25 which are spaced to receive the bracket and clamping element therebetween.

Mounted on the end of the bracket is a split bearing 26 arranged to receive a shaft 27 which is clamped in the bearing. This shaft 27 is arranged to receive the hubs 28 of a series of reels 29. These reels may be constructed as shown in detail in Figure 8. Each reel comprises a half member 51 which may be integral with the hub mounted thereon and which is provided with a seat 52 for the coil of fastener stock A and a radial flange 53. Internally of the flange 52 one or more bosses 54 may be provided to accommodate a spring-pressed locking pin 56 provided with an elongated head 57 adapted to pass through the key-hole-shaped slot 58 in a loose flange 50 by means of which said flange 50 may be detachably secured to the part 51, the head 57 being passed through the hole 58 and turned through a right angle.

The shaft 27 is long enough to permit a series of reels to be arranged therealong, depending upon the number of strands of fastener stock which it is intended to employ in the particular machine under consideration.

The shaft 27 is provided with a series of grooves 30 providing surfaces of smaller diameter than the shaft so as to form side shoulders as shown more particularly in Figure 6. Each of these reduced portions forming the grooves is toothed as shown in Figure 7 in preferably about a sixty degree angle so as to provide rising and falling surfaces. These teeth are adapted to be engaged by a detent 31 having its end arranged at the same angle and sliding in a tube 32 tapped into the hub 28. The detent has a reduced shank 33 which passes through the end of the tube so threaded to receive a stop nut 34 and is encircled by a spring 35. The spring operates to hold the detent in firm engagement with the toothed part 30 while the stop 34 prevents inward movement too far of the detent when the reel is removed from the shaft. In order to permit ready placement of the reel on the shaft, the end of the latter is coned as shown at 36 so as to permit the detent to readily slide on the shaft. After the reel is in place, it will drop into the reduced portion, and this detent engaging with the shoulders on the reduced portion will effectually retain the reel against endwise movement on its shaft It will be understood, of course, that the shaft, and more particularly the toothed portion 30 and the detent 31 are hardened to prevent wear.

During the operation of the fastener inserting machine, the movement of the feeding and cutting member will, as heretofore described, feed the strand step by step and intermittently. As the strand is fed there is applied a pull thereon tending to move the reel in the direction of the arrow, Figure 1, so as to unwind the coil on the reel. This movement is, however, restrained by the engagement of the detent on the reel with the toothed portion on the shaft. The result is, therefore, that the tension device 37 is placed under tension. As the pull applied to the strand continues, the tension of the spring 43 increases until, at the termination of each step of the feed, sufficient tension is applied to the reel to overcome the tension between the teeth and the detent. At this time the detent rises to the top of the tooth so that the tension of the reel is suddenly released. The result, therefore, is that the device 37 moves suddenly from dotted to full line position, Figure 1, as the reel is released by its detent to make a partial revolution. As a strand is fed intermittently by the feeding mechanism of the machine to which this device is attached, the tension device 37 is intermittently tensioned and released as the reel 29 is intermittently rotated with the result that the strand of stock is given a motion as it leaves the reel, which motion is effective in causing a strand to release itself from the remaining stock on the reel. The result is, therefore, that the strand is released at its source by loosening the unwinding coil, leaving the source, from the remaining coils on the reel. This insures that the strand coil being unwound is separated from the adjacent coil or coils not by a pulling movement, but by a straight outward movement or a radial movement, applied to the coil over half of its circumference, so that this coil is in effect loosened by a radial movement, so that the heads of the nails of that coil cannot catch. As a result, therefore, over half of a coil is continually being loosened and unwound, and remains unwound during the operation of the ma-

chine, so that there is no pulling action at all and all danger of kinking and breaking is, therefore, avoided.

It is obvious that various changes may be made in details of construction without departing from the spirit of this invention; it is, therefore, to be understood that this invention is not to be limited to the specific construction shown and described.

Having thus described the invention, what is claimed is:

1. Mechanism for feeding a strand of fastener stock from a reel to means for operating on fastener stock, comprising, means for restraining the reel adapted to cause sudden release thereof.

2. Mechanism for feeding a strand of fastener stock from a reel to means for operating on fastener stock, comprising, means for restraining the reel adapted to cause sudden release thereof at the termination of a step of the feed of the strand.

3. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a reel mounted for rotation thereon, and restraining means adapted to cause sudden rotation of said reel on said shaft.

4. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a reel mounted for rotation thereon, and toothed mechanism adapted to restrain rotation of said reel on said shaft constructed and arranged to caused sudden release of said reel at the termination of a step of the feed of the strand.

5. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a reel mounted for rotation thereon, and toothed means on said shaft engaged by a detent on said reel constructed and arranged to cause sudden release of said reel at the termination of a step of the feed of the strand.

6. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a reel mounted for rotation thereon, and means for restraining rotation of said reel on said shaft adapted to retain said reel in position on said shaft.

7. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a reel mounted for rotation thereon, and toothed means on said shaft engaged by a detent on said reel adapted to restrain rotation of and retain said reel on said shaft.

8. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a series of reels mounted for rotation thereon, and restraining means between said reels and said shaft adapted to retain said reels in definite angular positions and constructed and arranged to cause sudden release of said reel at the termination of a step of the feed of the strand.

9. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a series of reels mounted for rotation thereon, toothed means on said shaft, and detents on said reels engaging said means, adapted to retain said reels on said shaft.

10. Mechanism for feeding a strand of fastener stock from a coiled source of supply to operating means, comprising, a shaft, a reel mounted for rotation thereon, and toothed means on said shaft engaged by a detent on said reel, adapted to retain said reel on said shaft but to permit replacement of said reel on said shaft.

11. In a fastener inserting machine, the employment of a fastener stock reel, comprising a hub, a web and spaced flanges, and means for detachably securing one of said flanges to said web adapted to permit loading of the reel.

12. In a fastener inserting machine, the employment of a fastener stock reel, comprising, a hub, a web and spaced flanges, and yielding means for detachably securing one of said flanges to said web adjacent said hub adapted to permit loading of the reel.

In testimony whereof I affix my signature this 19th day of September, 1922.

STEPHEN A. DOBYNE.