

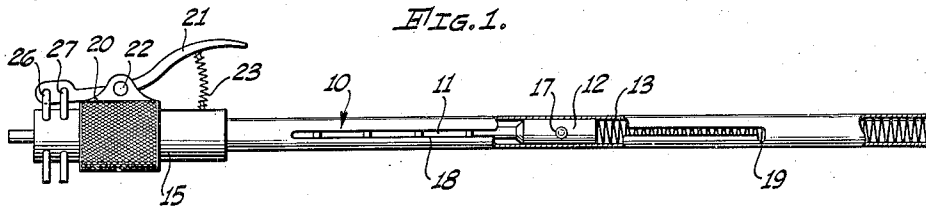
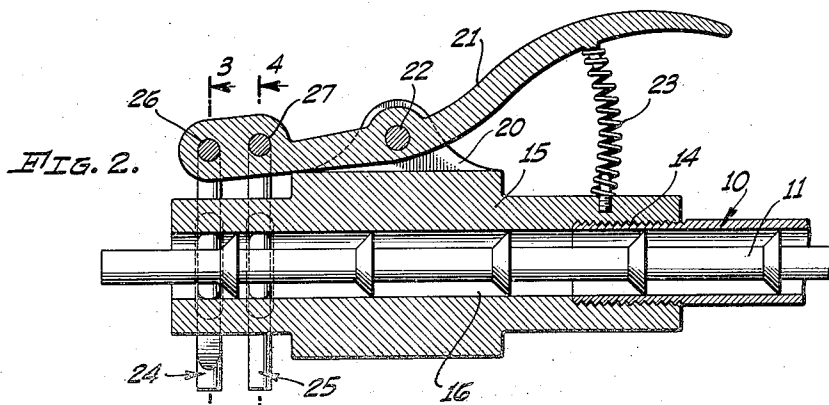
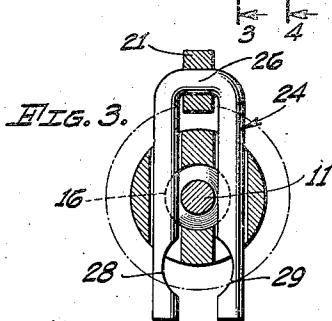
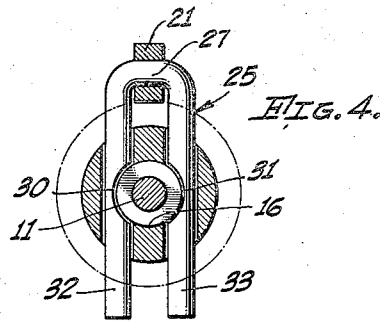
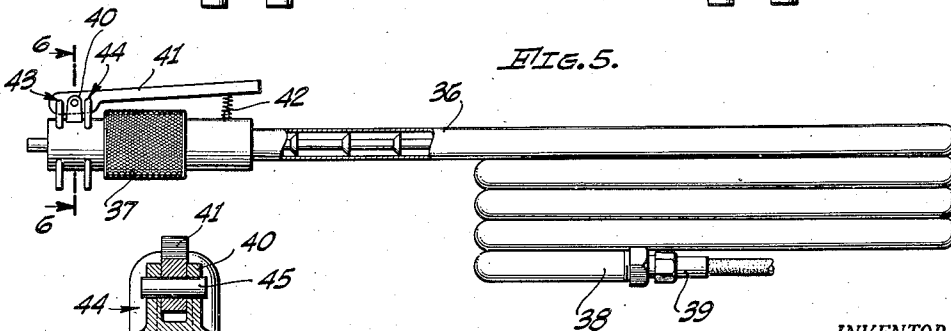
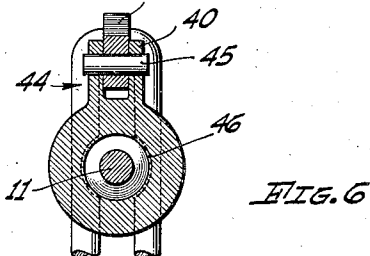
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2,366,448

RIVET FEEDER

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RIVET FEEDER

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5 Claims. (Cl. 78—46)

This invention relates to improvements in rivet feeders and similar devices designed to deposit and consecutively release rivets or similar articles from a magazine containing a supply of the rivets.

An object of the invention is to provide a rivet feeder consisting of a magazine in which a multiplicity of rivets or like devices are positioned in shank to head relationship and from which magazine the rivets are continually urged and to provide a simple, novel, and durable escapement mechanism that will consecutively release the rivets in such a manner that they may be conveniently positioned with the shanks of the rivets entering rivet holes.

More specifically, an object of the invention is to provide an escapement mechanism which is of such design that the rivets when released will readily escape therefrom without danger of binding or jamming.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawing for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in side elevation parts being broken away and shown in vertical section illustrating one form of rivet feeder embodying the present invention;

Fig. 2 is a longitudinal vertical section through the escapement mechanism forming a part of the rivet feeder embodying the present invention;

Fig. 3 is a vertical section taken substantially upon the line 3—3 upon Fig. 2 in the direction indicated;

Fig. 4 is a vertical section taken upon the line 4—4 upon Fig. 3 in the direction indicated;

Fig. 5 is a view in side elevation, parts being broken away and shown in vertical section illustrating an alternative form of rivet feeder embodying the present invention; and

Fig. 6 is a vertical section taken substantially upon the line 6—6 upon Fig. 5.

Referring to the accompanying drawing wherein similar reference characters designate similar parts throughout, in Fig. 1 the magazine for the rivets is formed of a straight tube 10 within which a supply of rivets 11 is disposed in end to end relationship with the end of the shank of one rivet engaging the head of the preceding rivet as clearly shown in Fig. 2. The internal diameter of the tube is such as to substantially fit the head of the rivet with a small clearance that will enable free sliding of the col-

umn of rivets through the tube. Within the tube there is disposed a plunger or follower 12 that is urged by a coil spring 13 toward the threaded end 14 of the tube which is detachably threaded into a barrel 15 of an escapement mechanism. The spring 13 thus constantly urges the column of rivets to be expelled through the bore 16 of the barrel.

In the preferred form of construction the follower 12 has a pin 17 that is slidable in a slot 18 in the tube. This pin may be positioned in the angular end 19 to lock the follower in a position compressing the spring 13 while the tube is being reloaded with rivets. The barrel of the escapement mechanism has its bore 16 flush with the interior of the tube 10. At its top the barrel is equipped with a pair of ears 20 between which is pivoted an operating lever 21 that rocks on a pivot pin 22. A spring 23 urges the operating lever into the position shown. At the forward end of the barrel there are two U-shaped stirrups 24 and 25. These are arranged to slidably extend transversely across the barrel and have their upper ends 26 and 27 extending through the forward end of the operating lever. Usually there is sufficient clearance between these portions 26 and 27 and the operating lever so that no binding will take place during the short stroke of the operating lever. The operating lever is normally in the position shown wherein the forward stirrup is occupying a position as illustrated in Fig. 3 wherein the upper portions of its legs are intersecting the bore 16 at the sides thereof to form an abutment for the rivet head. The shank of the rivet as clearly shown in Fig. 3, is capable of extending through or between the legs of the stirrup. The lower ends of the legs of the stirrup are shaped to provide release portions 28 and 29 which conform with the interior of the bore 16. These portions are capable of being lifted by the operating lever to register with the bore and thus permit the rivet head to be passed therethrough. The rear stirrup occupies a normal position illustrated in Fig. 4 wherein there are released portions 30 and 31 that are normally registering with bore 16 that permits the rivet head to pass therethrough. When this stirrup is elevated by the operating lever the lower portions 32 and 33 are brought up into the bore 16 to provide abutments for the rivet head.

The operations and advantages of the above-described construction are as follows: The spring 13 urges the follower to press the row of rivets toward the forward end of the barrel in which

position the foremost rivet has its shank projecting from the barrel so as to be capable of being positioned in a rivet hole. When the shank of the foremost rivet is so positioned the operating lever is pressed to elevate the two stirrups bringing the release portions 28 and 29 into registry with bore 16 and moving the released portions 30 and 31 out of registry with the bore 16. With the foremost rivet thus released the spring 13 is effective to shift the entire column of rivets forwardly to expel the foremost and released rivet from the barrel and into the rivet hole. The next succeeding rivet is moved until its head engages the abutment portions 32 and 33 of stirrup 25. Thereafter, upon release of the operating lever 21 and the return of the stirrups to their normal position the succeeding rivet has its head passed through the released portions 30 and 31 and positioned against the abutment portions of the stirrup 24. In this position the device is in condition for the release of a succeeding rivet. This operation may be continued until the magazine is exhausted after which the magazine is unscrewed from the barrel, the plunger 12 retracted, and locked in its retracted position, and a new supply of rivets placed in the tube.

In Fig. 5 an alternative form of construction is illustrated wherein the magazine indicated at 36 is in the form of a coil of tubing having one end threaded for attachment to the barrel 37. The opposite end indicated at 38 is threaded for attachment to an air hose 39 through which compressed air is supplied to the coil of tubing tending to expel the rivets through the barrel. In this form of construction the barrel is equipped with ears 40 between which is pivoted an operating lever 41 urged into a predetermined position by means of a spring 42. U-shaped stirrups 43 and 44 are pivotally connected to the operating lever on opposite sides of its pivot pin 45. These U-shaped stirrups are formed in a manner similar to that above described and extend through the barrel transversely through the bore 46 thereof. The arrangement is such that when the operating lever 41 is depressed the forward stirrup 43 will be lifted and the rear stirrup 44 will be depressed. Stirrups 43 in this position will have its release portion registering with the bore 46 of the barrel to release the foremost rivet. The rear stirrup 44 will then be in a position wherein its release portion is out of registry with the bore 46 of the barrel so as to temporarily engage and restrain the expelling movement of the succeeding rivet. Upon release of the operating lever 41 the stirrups 43 and 44 are returned to their initial positions wherein the release portion of stirrup 43 is out of registry with the bore of the barrel so as to engage the head and retain the foremost rivet therein. In this position the rear stirrup 44 has its release portion in registry with the bore of the barrel.

From the above-described construction it will be appreciated that the rivet feeder is of relatively simple yet durable design and is capable of consecutively feeding rivets one at a time without danger of the rivets becoming jammed. The proper operation of the rivet feeder is in no way dependent upon the length of the shanks of the rivets. The rivet feeder is susceptible of equal operation regardless of the lengths of the shanks, and if necessary it is capable of handling rivets of varying shank lengths in the same tool. The same construction will handle rivets with variously shaped heads, although if rivets with larger or smaller sized heads are employed, it is

important to have the internal diameter of the magazine and of the bore 16 conform thereto as closely as it is reasonably possible.

Various changes may be made in the details of construction without departing from the spirit or scope of the invention as defined by the appended claims.

We claim:

1. A rivet feeder comprising a tubular magazine adapted to contain a supply of rivets arranged in shank to head relationship, means for urging the rivets to be expelled from one end of the magazine, a barrel attachable to the mentioned end of the magazine through which the rivets are urged, an operating lever on the barrel, a pair of U-shaped stirrups consecutively arranged and slidable transversely with respect to the barrel, said stirrups being operatively connected to the operating lever, each stirrup having a release portion the release portions in the stirrups being out of alignment but each being capable of being brought into registry with the bore of the barrel to allow a rivet head to pass therethrough.

2. A rivet feeder comprising a tubular magazine adapted to contain a supply of rivets arranged in shank to head relationship, means for urging the rivets to be expelled from one end of the magazine, a barrel attachable to the mentioned end of the magazine through which the rivets are urged, an operating lever on the barrel, a pair of U-shaped stirrups consecutively arranged and slidable transversely with respect to the barrel, said stirrups being operatively connected to the operating lever, each stirrup having a release portion, the release portions in the stirrups being out of alignment but each being capable of being brought into registry with the bore of the barrel to allow a rivet head to pass therethrough, the foremost stirrup being so arranged with relation to the barrel that when it is restraining a rivet by its head the shank of the rivet may project from the end of the barrel.

3. A rivet feeder comprising a tubular magazine adapted to contain a supply of rivets arranged in shank to head relationship, means for urging the rivets to be expelled from one end of the magazine, a barrel attachable to the mentioned end of the magazine through which the rivets are urged, an operating lever on the barrel, a pair of U-shaped stirrups consecutively arranged and slidable transversely with respect to the barrel, said stirrups being pivoted to the operating lever on opposite sides of the pivotal connection between the operating lever and the barrel whereby one stirrup will be lifted and the other depressed upon operation of the operating lever, each stirrup having a release portion adapted to be brought into and out of registry with the bore of the barrel on manipulation of the operating lever.

4. A rivet ejector, which includes: a housing having a bore for the passage of rivets therethrough; a pair of parallel rods slidably mounted in opposite walls of said bore for movement laterally thereof, said rods being spaced to normally engage the head of a rivet in said bore, and provided with oppositely recessed portions on their inner faces adapted to permit the passage of said rivet head therethrough, said rods being adjacent the forward end of said bore so as to operate on the first rivet therein; a second pair of parallel rods similar to said first pair and located a short distance to the rear thereof so as to operate on the second rivet in said bore, all of said rods be-

ing connected at their outer ends to a lever pivotally mounted on said housing and adapted when moved, to alternately align the recessed portions of said pairs of rods with said bore, whereby when said first rivet is released said second rivet will be restrained, and vice versa.

5. An ejector for fasteners having a head and shank portion comprising a housing having a bore for the passage of the fasteners in head-to-shank alignment, a plurality of spaced fastener releasing means mounted for movement transversely of said bore, each of said means including a slot having a width corresponding substantially to the shank and an opening commu-

5 nicating with said slot corresponding substantially to the diameter of said bore, whereby said releasing means in one position restrains movement of a fastener along the bore and in another position permits movement of a fastener along said bore, and means connecting said releasing means to selectively and sequentially position the releasing means with respect to the bore, whereby the head of one fastener is released for movement along the bore and the head of the next adjacent fastener is restrained from movement along the bore.

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