A. L. LILLEY.

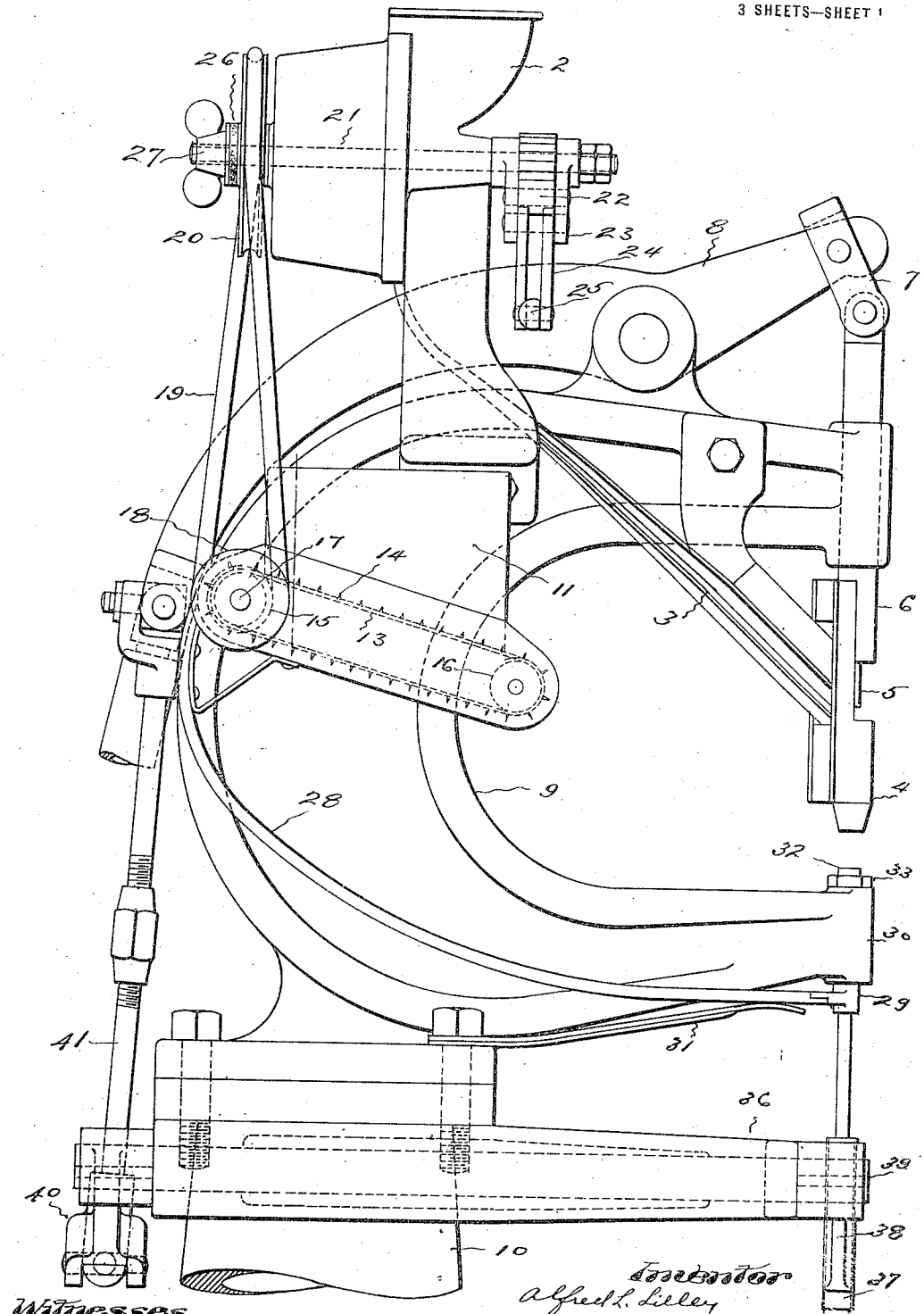
CAP FEEDING ATTACHMENT FOR RIVETING MACHINES.

APPLICATION FILED MAR. 10, 1914.

1,182,183.

Patented May 9, 1916.

3 SHEETS—SHEET 1



Witnesses
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Fig. 1.

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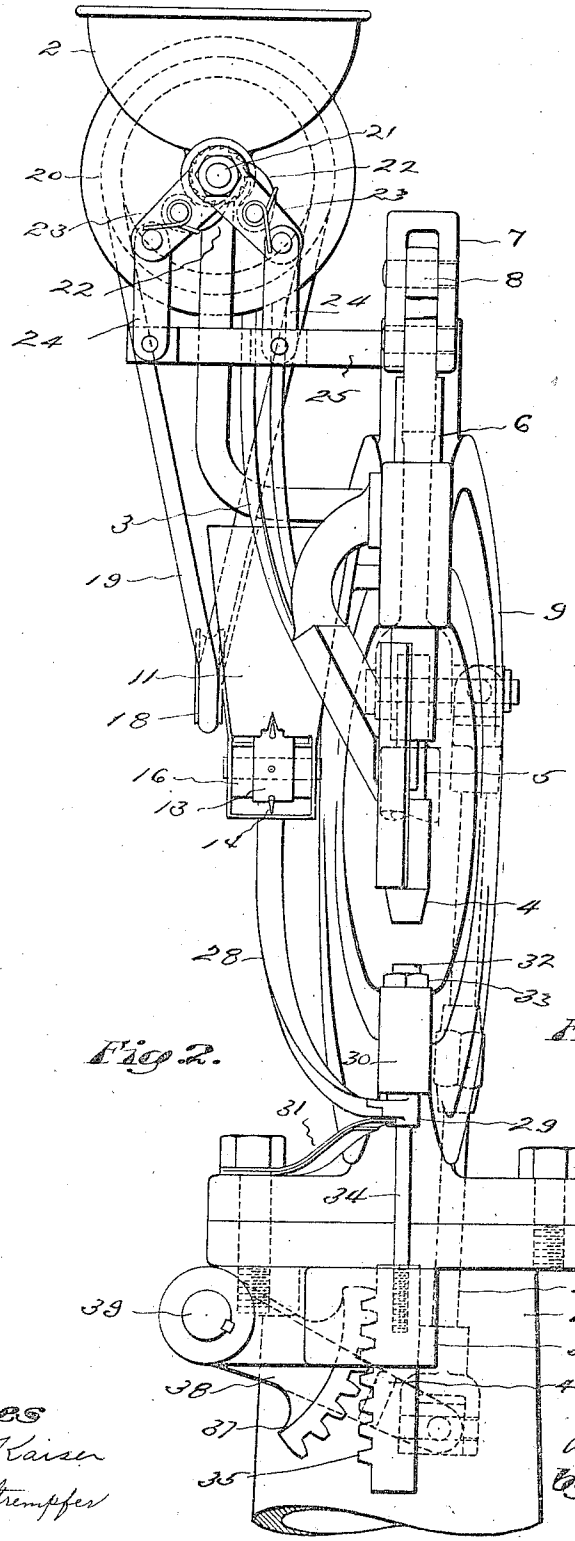


Fig. 2.

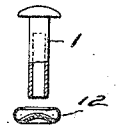


Fig. 3.

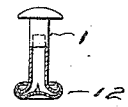


Fig. 4.

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3 SHEETS—SHEET 3.

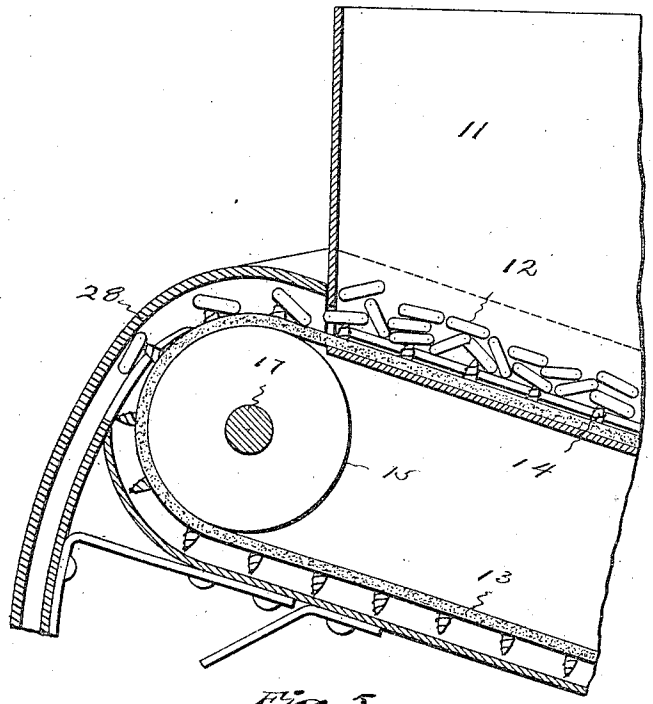


Fig. 5.

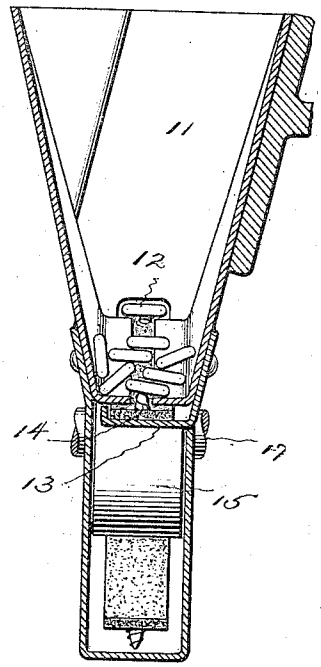


Fig. 6.

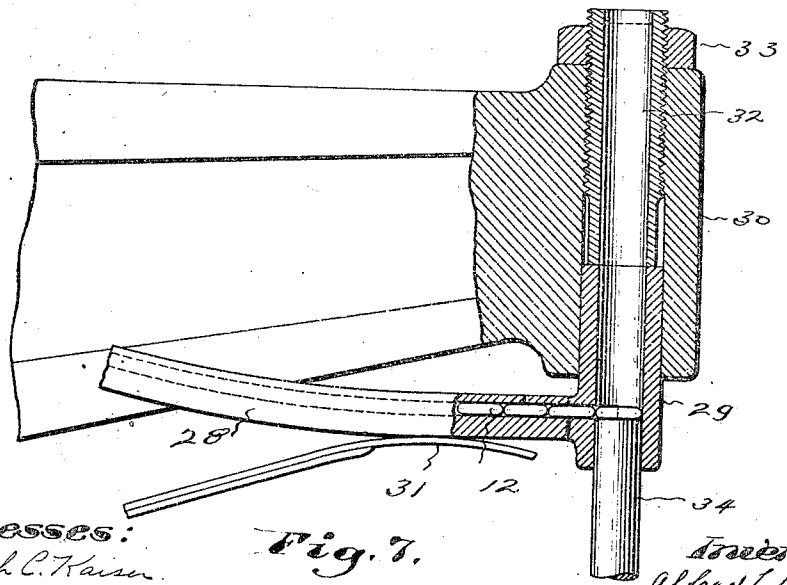


Fig. 7.

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UNITED STATES PATENT OFFICE.

ALFRED L. LILLEY, OF HARTFORD, CONNECTICUT.

CAP-FEEDING ATTACHMENT FOR RIVETING-MACHINES.

1,182,183. Specification of Letters Patent. Patented May 9, 1916.

Application filed March 10, 1914. Serial No. 823,701.

To all whom it may concern:

Be it known that I, ALFRED L. LILLEY, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Cap-Feeding Attachments for Riveting-Machines, of which the following is a specification.

This invention relates more particularly to those riveting machines which feed and set such tubular rivets and caps as are utilized for fastening together harness and other leather parts, although, of course, the invention is applicable to machines using different forms of rivets for fastening together other materials.

Many kinds of machines have been devised for feeding and setting various types of solid and tubular rivets and burs. It is compartively easy to automatically feed both the rivets and burs when it makes no difference which side up the burs land on the anvil, but as far as is known, no one has devised a successful machine which will automatically feed both rivets and rounded hollow caps, which latter must, to fit the former, always come right side up on the anvil. It has been found necessary to place such hollow caps on the anvil by hand in order to be sure that they are in proper position for receiving or being applied to the rivets.

The object of this invention is to provide a simple attachment which can be readily applied to a machine having means for automatically feeding headed rivets, and that will automatically feed to the anvil only such rounded hollow shell-like caps as are in the proper position to be correctly applied to and set on the ends of the rivets.

In the accompanying drawings, Figure 1 shows a side elevation of the principal mechanisms of a rivet machine provided with an attachment, which embodies this invention, for feeding and setting on the ends of the rivets rounded hollow caps. Fig. 2 shows a front elevation of the same. Fig. 3 shows one of the rivets and one of the caps before being put together. Fig. 4 shows a rivet and cap after having been fed and set by this machine. Fig. 5 shows on a larger scale a longitudinal vertical section of a portion of the cap hopper and feed belt, and a part of the upper end of the cap feed-trough. Fig. 6 shows a transverse vertical section of the cap hopper and feed belt. Fig. 7 shows a sectional view of the lower end of the cap feed-trough and the guide through which the caps are lifted by the anvil when they are to be applied to the ends of the rivets.

The headed rivets 1, Fig. 3, are deposited promiscuously in the hopper 2 and by common mechanism are selected and allowed to feed through the trough 3 down to the delivery mouth 4. From this mouth the rivets are forced down by the punch 5, which is attached to the lower end of the slide 6 that by a link 7 is connected with the upper end of the lever 8. This lever is pivoted on the top of the yoke-shaped bracket 9 and its lower end is raised and lowered by any suitable means, usually a crank mechanism. The yoke-shaped bracket is mounted on the top of a supporting standard 10. These parts are old and well known, and consequently are not herein shown and described in detail.

Attached to one side of the bracket is a hopper 11 into which the caps 12, Fig. 3, are thrown in a promiscuous mass. These caps are hollow shells which are circular in outline and have rounded edges with an opening in one side. Of course it is essential that the open sides of the caps be presented to the ends of the rivets in order that the ends of the rivets may be inserted into the caps, or the caps be forced onto the ends of the rivets, as shown in Fig. 4.

Below the bottom of the hopper is an endless belt 13 with pointed pins 14 projecting therefrom. These pins are desirably small screws. The pins project from the belt upwardly through a slot in the bottom of the hopper. The belt passes around two drums 15 and 16 which are desirably arranged so that the belt will travel on an incline below the bottom of the hopper. The drum 15 is mounted on an axle 17 which is provided with a pulley 18 that is by a belt 19 connected with a pulley 20 on the shaft 21 which operates the rivet feed. This shaft 21 is intermittently rotated by pawls 22 mounted on arms 23 which by links 24 are connected with a bar 25 that projects from the punch operating lever 8 so that as the lever moves up and down, the pawls through the mechanism described, operate both the rivet feed and the belt which feeds the caps. The pulley 20 is frictionally connected with the shaft 21 so that it will slip in case the cap feed belt is held by the clogging or

jamming of any of the caps. This may be accomplished by binding the pulley onto the shaft by a friction washer 26 and thumb nut 27. By turning this nut the frictional connection of the pulley with the shaft can be regulated.

Leading from the upper end of the cap hopper and about the belt as it passes around the drum 15 is the cap feed trough 28. This feed trough curves downwardly and toward the front and terminates in a tube 29 that fits in a vertical opening in the outer end of the lower arm 30 of the bracket. A spring 31 is arranged so as to hold the lower end of the cap feed trough and the tube at the end upwardly. In the upper part of the opening through the lower end of the bracket a cylinder 32 is threaded. The upper end of this cylinder forms the bed upon which the work is placed and it is adjusted up or down and fastened by the nut 33 according to the thickness of the stock through which the rivets are to be passed.

The caps feed by gravity down through the feed trough and pass one at a time into the tube, and rest on the upper end of the anvil 34. This anvil is a rod that is connected with a rack 35 arranged to move up and down in the end of an arm 36 that is attached to the top of the standard. Engaging this rack is a segmental rack 37 on the end of an arm 38 that is fastened to a shaft 39. A rocker arm 40 also fastened to the shaft 39 is connected by an adjustable link 41 with the lower end of the punch operating lever 8. By means of this mechanism the rivets are fed hanging down in the old way to a position below the punch, and the caps are fed in the new way to a position above the anvil in line with the rivets. When the lever depresses the punch for forcing a rivet down through the stock, at the same time, through the mechanism described, the anvil is raised so as to lift a cap with its open end up onto the end of the rivet that is forced down. As the belt with the screw pins passes through the hopper, only those caps into which the ends of the screw pins project are picked up and carried along out of the hopper into the feed trough. These pins being pointed and having threads will pass into the openings in and engage the walls of the caps so as to carry them along and will push out of the way all of the caps which do not lie in the hopper with their open sides downward. As the caps pass down through the feed trough, after they slide off from the belt prongs, they of course turn over so that when they land on the anvil the open sides are up in proper position to meet and receive the small ends of the rivets. With this simple mechanism these caps of peculiar form are fed properly at the same time that the rivets are fed and land on the anvil, which is some distance down so as to not to interfere with the work, in correct position to insure the assembling of the rivets and caps.

The invention claimed is:

1. A hollow cap feeding mechanism comprising an anvil, mechanism for reciprocating the anvil, a cap guide surrounding and extending above the anvil, a hopper for receiving the caps, means adapted to enter the caps which are disposed open side down and withdraw such caps from the hopper, and a feed trough communicating with the cap hopper and with the interior of the cap guide below the upper end but above the lowest position of the top of the reciprocatory anvil, said trough receiving the caps from said withdrawing means open side down and delivering them open side up in the lower part of the cap guide on the top of the anvil.

2. A cap feeding attachment for a machine for setting hollow caps on rivets, comprising a hopper having an inclined and slotted bottom wall for receiving promiscuously a quantity of hollow disk-shaped caps that are open on one face only, a feed trough leading from said hopper for conveying the caps therefrom, an endless belt movable parallel with and adjacent to the inclined slotted bottom wall of the hopper, and pins extending from the belt through said slot into the hopper, said pins being shaped and arranged to enter into and engage with the walls of the open sides of those caps that are so disposed as to receive the pins and carry such caps faced in the same direction out of the hopper into the feed trough.

3. A cap feeding attachment for a machine for setting hollow caps and rivets, comprising a hopper having an inclined and slotted bottom wall for receiving promiscuously a quantity of hollow disk-shaped caps that are open on one face only, an endless belt movable adjacent to the inclined slotted bottom wall of the hopper, pins extending from the belt through said slot into the hopper, said pins being shaped and arranged to enter into and engage with the walls of the open sides of those caps that are so disposed as to receive the pins and carry such caps faced in the same direction out of the hopper, and a feed trough leading from the hopper for conveying the caps therefrom and turning them from open side down to open side up.

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