

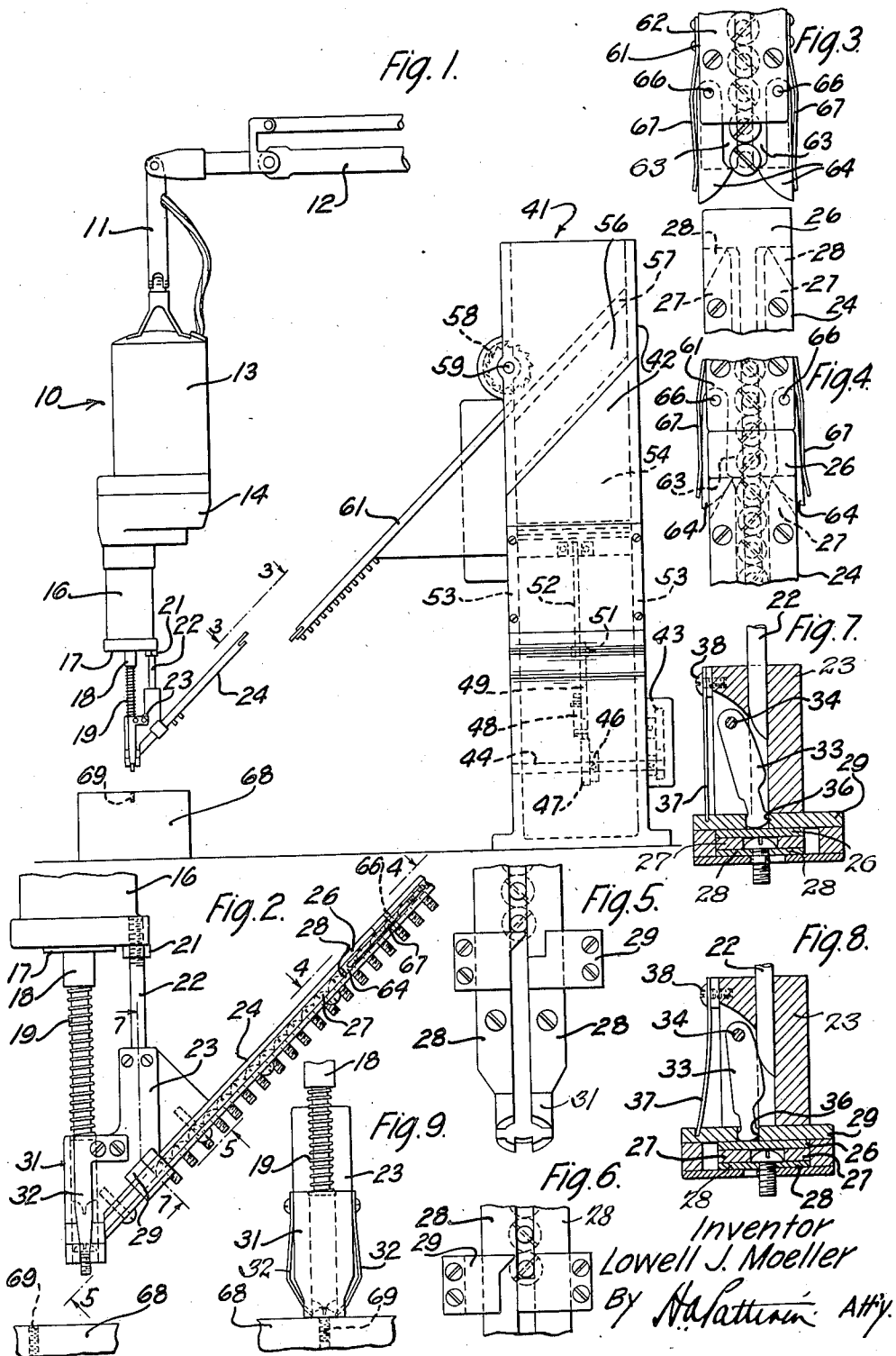
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APPARATUS FOR DISTRIBUTING PARTS

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APPARATUS FOR DISTRIBUTING PARTS

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This invention relates to an apparatus for distributing parts and more particularly to an apparatus for automatically feeding a continuous supply of parts to an assembling machine.

In feeding parts, such as screws or nuts, to an assembling machine, such as a movable screw driving or nut threading machine, it has been the practice in some instances to store a supply of parts in an auxiliary magazine attached to the machine, and when the supply of parts has become exhausted, for the operator to replenish the supply by hand from a major supply removed from the machine.

The object of the present invention is to provide an apparatus for readily and expeditiously furnishing an assembling machine with a renewed supply of parts.

One embodiment of the invention contemplates the association with a power driven screw driver having a magazine for storing and feeding screws to the driving member, of a continuously operating hopper for supplying properly positioned screws to a projecting magazine, from which magazine they may be automatically unloaded as required into the magazine of the screw driver.

For a better understanding of the invention, reference may be had to the following detailed description, taken in connection with the accompanying drawings, wherein

Fig. 1 is an elevation of an apparatus embodying the features of the invention;

Fig. 2 is a fragmentary enlarged view showing cooperating portions of the apparatus in engagement;

Fig. 3 is a fragmentary section taken on the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary section taken on the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary section taken on the line 5—5 of Fig. 2;

Fig. 6 is a fragmentary view of the escapement, shown in Fig. 5, in its other position;

Fig. 7 is a fragmentary section taken on the line 7—7 of Fig. 2;

Fig. 8 is a fragmentary sectional view taken on the line 7—7 of Fig. 2, showing

means for operating the escapement to the position shown in Fig. 6, and

Fig. 9 is a fragmentary side elevation, in section, showing the screw driver portion engaging the work.

Referring to the drawings in which similar reference numerals represent similar parts in the several views a power driven screw driver, generally denoted by the numeral 10 is rotatably mounted on and suspended by a rod 11 from a movable swinging beam 12, an opposite end of which is provided with a weight or other suitable counterpoising means (not shown) in such a manner that the position of the screw driver may be readily changed by the operator with a minimum of effort. The screw driver includes a motor casing 13, a gear casing 14, a hand hold 16, a bearing 17, and a rotary spindle 18 which is centered through a compression spring 19. A lock nut 21 secures in the casing 16 one end of a cam post 22, the other end of which is slidably accommodated in a housing 23 against an upper portion of which the compression spring 19 is seated.

A slotted feeding magazine 24 comprises a cover plate 26, a pair of intermediate guide plates 27 having tapered ends, and a lower pair of guide plates 28. Slidably mounted on the slotted feeding magazine 24 and through the housing 23 is an escapement 29, and slidably mounted in the same housing 23 and integral with the spindle 18 is a driving member 31. A plurality of fingers 32 secured to the housing 23 at their upper ends, are adapted at their lower ends to yieldably embrace and hold in position for the driving member, a screw. Within the housing 23 and so positioned as to engage the cam post 22 is a cam 33 pivotally mounted on a pin 34 and having a projection which engages a notch 36 in the escapement 29. A leaf spring 37 is secured to the housing 23 by a screw 38 in such manner as to serve to maintain, by co-operation of the escapement 29, the cam 33 in close engagement with the cam post 22.

A continuously operated hopper, generally denoted by the numeral 41, is shown comprising side walls 42 in which are journaled by suitable shafting (not shown) reducing

gears 43 driven from any suitable source of power (not shown). Connected to the reducing gears 43, and secured on a shaft 44 by means of a pin 46, is a cam wheel 47. The cam wheel engages a compound lever 48 which actuates an associated lever 49, which is connected by a coupling 51 to a piston shaft 52. A pair of grooves 53 are positioned in the sides of the casing 41 and govern the vertical travel of a tray support 54 which is alternately raised and lowered in grooves 53 by the above described mechanism to bring into a position to be loaded from hopper walls 56 a tray 57 which is sloped to insure that screws carried thereon will fall against a counter-clockwise rotated brush wheel 58 and be properly positioned thereby. The brush wheel is disposed in the hopper casing and mounted upon a shaft 59 which is suitably journaled in the hopper and connected, by any suitable means, to the source of power.

Outwardly and downwardly projecting from the loading level of the hopper is a slotted supply magazine 61, comprising a cover plate 62 grooved to accommodate the heads of screws, projecting guide plates 63, and a pair of oppositely disposed notched latches 64 pivotally mounted on the top plate 62 and the guide plates 63 by pivots 66. Leaf springs 67 are provided exteriorly of the magazine to provide an adequate pressure for maintaining the notched latches yieldably in closed position. Any suitable subject of work 68 is shown provided with holes 69 for the accommodation of screws.

From the foregoing it will be observed that the screw driver may be brought in association with the work 68 for the purpose of driving screws into holes 69, by the operator manually locating the screw driver over the section of the work to be treated. With a downward pressure manually applied to the hand hold 16, the casing is lowered to permit the screw to be driven to engage the work at which time the end of the housing 23 rests upon the surface of the work. A further downward pressure compresses the spring 19 and brings into engagement with the head of the screw the driving member 31 for the completion of the assembling operation. At the same time the cam post 22 is moved downwardly with the downward action of the hand hold 16, engages the circumference of the cam 33 and rotates it about the pivot 34, by which means the escapement 36 is moved to the right to permit the passage of a screw into the escapement. Upon completion of the operation, the driving member is raised to its non-operative position, the screw driving machine is raised from the work, the compression of the spring 19 is released, and the cam post 22 is disengaged from the cam 33, the escapement moved to the left by action of the leaf spring 37 to permit the selected screw to slide into position

between the screw-holding springs 32, and to prevent the passage of additional screws from the feeding magazine.

In this manner the screw driver may be applied to a piece of work and continuously operated until the supply of parts in the feeding magazine 24 is exhausted. When the operator desires to replenish the supply of parts the screw driver is lifted from the work, swung in the disreccion of the hopper, the upper end of the feeding magazine 24 is applied to the lower end of the supply magazine 61, the tapered end of the guide plates 27 of the feeding magazine 24 are inserted between the notched ends of the latches 64 of the supply magazine 61 and a quantity of parts contained in the supply magazine 61 permitted to slide downwardly into the feeding magazine 24. When in such engagement, the cover plate 26 will overlap the projecting portion of the latches 64, the tapered ends of the intermediate guide plates 27 will act to maintain apart the latches 64, and the ends of the guide plates 28 will closely abut the ends of the guide plates 63. A close jointure between the two magazines will be thus established which will permit free passage of screws from the supply magazine to the feeding magazine and will effectually prevent dropping and consequent waste of parts. The feeding magazine upon being filled with parts may be withdrawn from the supply magazine by the operator in returning it to the location of the work, the latches 64 will be closed by pressure of the leaf springs 67, further passage of parts from the supply magazine will be stopped, and the supply magazine immediately refilled by the continuously operating hopper and loading tray.

By employing the above described apparatus, or any other suitable embodiments of the invention, the parts will be positioned properly in the magazines, will be maintained in proper position during the transfer from supply magazine 61 to feeding magazine 24, and be individually fed to the driving member by operation of the escapement 29. A considerable saving in time and labor in assembly work is occasioned in use of the apparatus by a skilled workman, and the interfitting of the cooperating portions of the magazines, enable an appreciable saving over present apparatus by eliminating dropping and waste of parts.

It will be understood that the embodiment of the invention herein described and illustrated is merely a convenient and useful form of the invention which is capable of other modifications without departing from the spirit and scope of the invention as defined in the claim.

What is claimed is:

In an apparatus for feeding parts to an assembling machine, a hopper providing

properly positioned parts, a supply magazine associated with said hopper for receiving the parts therefrom, a feeding magazine associated with said assembling machine for feeding parts thereto, opposed coacting spring-pressed members carried by said supply magazine adapted for retaining the parts against removal therefrom when disconnected from the feeding magazine and adapted for guiding the feeding magazine into receiving connection with the supply magazine and yieldably maintaining such connection, and recesses formed in the walls of the feeding magazine and co-acting with the members of the supply magazine to yieldably maintain connection therebetween

In witness whereof, I hereunto subscribe my name this 24th day of November, A. D., 1928.

LOWELL JOHNSON MOELLER.