

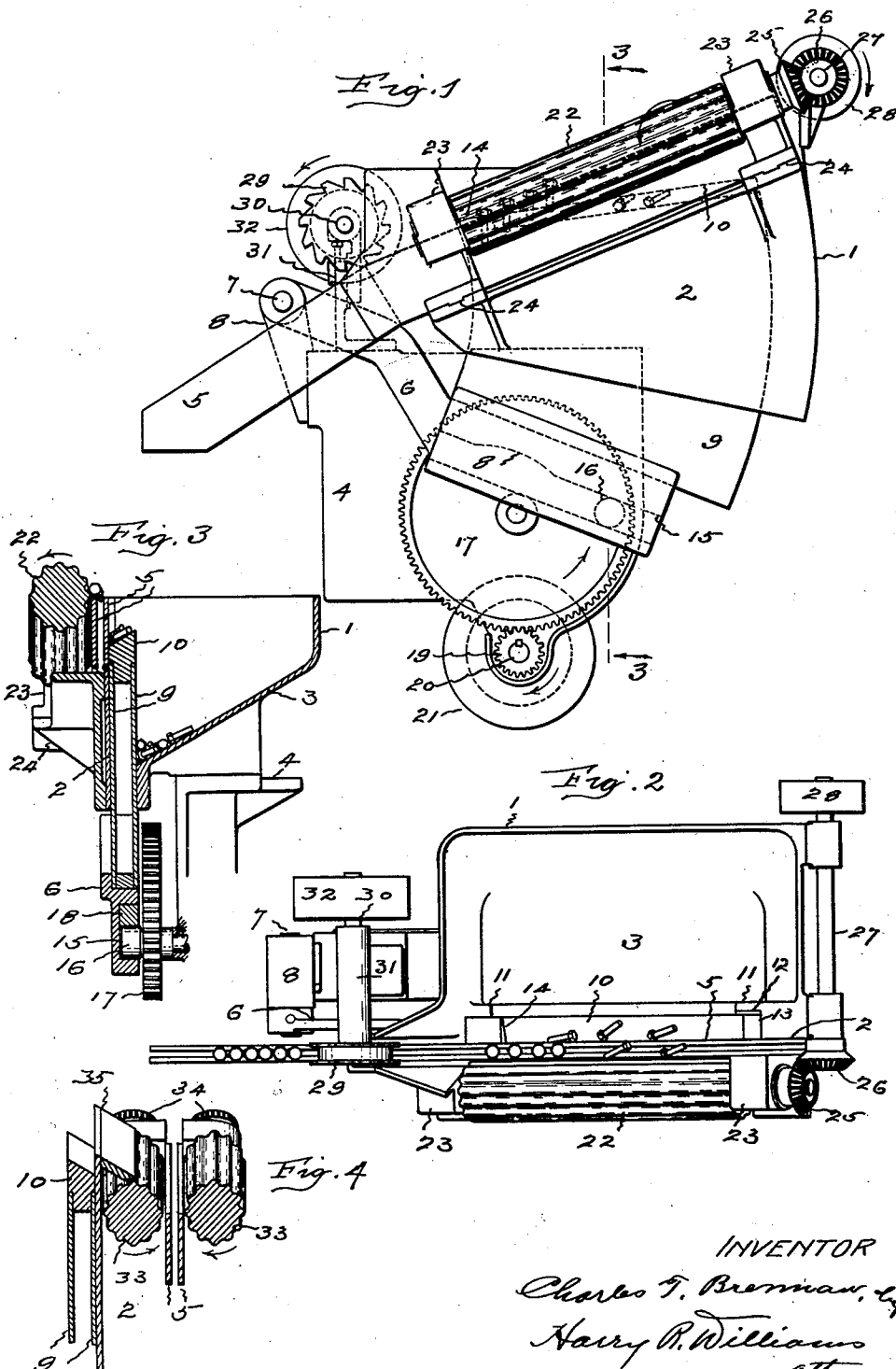
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HOPPER FEED

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## UNITED STATES PATENT OFFICE

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## HOPPER FEED

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This invention relates to a hopper which is designed to receive a promiscuous mass of bolt, rivet, screw or the like blanks, and feed them to an inclined track down which they will slide hanging by their heads in correct position for further treatment.

The object of the invention is to provide simple means whereby the blanks will be rapidly fed from the hopper and readily positioned on the track, with liability of clogging the track reduced to minimum.

In the embodiment of the invention illustrated this object is attained by providing a hopper with a swinging blade that is movable up and down at one side for lifting the blanks from the bottom of the hopper to a position above the upper edge of the inclined track, and arranging a roll or rolls substantially parallel with the track and rotating the roll or rolls in such manner that those blanks which do not initially drop into the track and hang by their heads and slide down, will be twisted or agitated until they are in position to fall into the track or are thrown back into the hopper and thus prevent the track from becoming clogged.

In the accompanying drawings Fig. 1 shows a side elevation of the improved hopper. Fig. 2 is a plan of the same. Fig. 3 is a section on the plane indicated by the dotted line 3—3 on Fig. 1. Fig. 4 is a sectional detail of a modified construction.

The hopper 1 has a vertical side wall 2 and a bottom 3 that slopes toward the vertical wall. The hopper is fastened upon a bracket 4 that may be attached to any convenient part of the machine with which the hopper is designed to be used.

The track consists of inclined plates 5 located adjacent to the vertical wall with their upper sections a little higher than the top of this hopper wall, the plates being adjusted apart sufficiently to receive the shanks of the blanks but not the heads, so that properly positioned blanks will gravitate down the track hanging by their heads.

An arm 6 is pivoted at 7 to an ear 8 that extends from the bracket. Carried by the swinging end of this arm is a pair of plates 9 that extend up into the hopper adjacent to

the vertical wall. Fastened between the upper edges of these plates is a blade 10 that is carried by the arm and plates up and down against the vertical side wall from the bottom of the hopper to slightly above the level of the track. The upper edge of this blade is beveled toward the vertical side wall so as to retain such blanks as it gathers in its upward movement through the promiscuous mass in the hopper and allow them to slide off onto the track. The blade and plates are guided in ways formed by flanges 11 and the vertical wall of the hopper, the front and rear edges of the plates and the walls of the ways being formed on arcs, the centers of which are co-incident with the axis of the swinging arm. Hardened wearing plates 12 and 13 may be arranged in the ways if desired. Preferably there is a shoulder 14 at the end of the blade to prevent blanks from slipping off the end of the blade before they are carried higher than the track. The blank elevating blade may, instead of being built up in sections as shown, be made in one piece.

The swinging end of the arm 6 has a groove 15 extending into which is a roll 16 fastened to a gear 17. A wearing plate 18 may be used to form the upper wall of this groove. This gear is engaged by a pinion 19 on a shaft 20 provided with a driving pulley 21. The mechanism described lifts blanks from the lower part of the hopper to a position just higher than the upper section of the track, so that the blanks can slide off the blade onto the track. The blanks that fall so that their shanks drop between the track plates and that are suspended by their heads slide down the track unmolested. Those blanks that fall in the track otherwise are knocked about by a rotatable placement roll 22 and are either turned until their shanks will drop between the track plates or are kicked back into the hopper.

The placement roll is journaled in bearing blocks 23 mounted on a bracket 24 that is attached to the vertical wall of the hopper, and its axis is preferably slightly above and substantially parallel with the inclined upper edge of the track. The surface of the place-

ment roll may be smooth but it preferably is longitudinally corrugated as illustrated. On the end of the axle of the placement roll is a bevel gear 25 that is engaged by bevel gear 26 on the shaft 27 that is provided with a pulley 28 which may be belted to any convenient source of power. By this means the placement roll is slowly rotated in such manner as to straighten out the blanks raised by the elevating blade and deposited on the track.

A wheel 29 is located above the track a slight distance from the hopper for collecting and throwing back such blanks as are not properly placed. This wheel is attached to a shaft 30 that is supported by a bracket 31, and that has a driving pulley 32.

When the elevator blade is at the bottom of the hopper blanks will be gathered on its beveled edge and carried up to the top of the hopper where they will gravitate onto the track. Some of the blanks will assume the desired position while others will lie on the top of the track or against the roll and be hit by the roughened surface of the roll and straighten out. A majority of the blanks raised will be positioned as required on the track, that is, with the shanks between the plates and the heads resting on the top of the track so that they will slide by gravity to the machine with which the feed is to be used. The action of the placement roll on the blanks is sufficient to keep all of the raised blanks moving either turning them so that they will assume the proper position or throw them back into the hopper.

If desired there may be two placement rolls located one on each side of the upper edge of the track, as illustrated in Fig. 4. These rolls are provided with suitable gears 34 for rotating them. In this case the front wall of the hopper is provided with an inclined shelf 35 that partly covers the inner roll and the lifting blade 10 is raised above this shelf so that the blanks will slide over the shelf and down between the rolls to the track. The action of the two rolls is practically the same as that of the single roll. As the blanks move down the shelf they are quickly twisted so as to lie longitudinally of the track enabling their shanks to drop down into the track.

The invention claimed is:

1. A feed for headed blanks comprising a hopper, a fixed inclined track leading from the hopper, mechanism for lifting blanks from the hopper to said track, rotatable means with its axis extending substantially parallel with and at one side of and adjacent to the upper edge of the track for positioning blanks on the track, and mechanism for rotating said means.

2. A feed for headed blanks comprising a hopper, a fixed inclined track leading from the hopper, mechanism for lifting blanks

from the hopper to said track, a roll with its axis extending longitudinally with relation to and at one side of the upper edge of the track for positioning blanks on the track, and mechanism for rotating said roll.

3. A feed for headed blanks comprising a hopper, a fixed inclined track leading from the hopper, mechanism for lifting blanks from the hopper to said track, a roll with its axis extending substantially parallel with and adjacent to the upper edge of the track for positioning blanks on the track, and mechanism for rotating said roll.

4. A feed for headed blanks comprising a hopper, an inclined track leading from the hopper, mechanism for lifting blanks from the hopper to said track, a longitudinally corrugated roll with its axis extending substantially parallel with the upper edge of the track for positioning blanks on the track, and mechanism for rotating said roll.

5. A feed for headed blanks comprising a hopper, a fixed inclined track leading from the hopper, an oscillatory blade for lifting blanks from the hopper to said track, rolls with their axes inclined substantially parallel to and at each side of the upper edge of the track for positioning blanks on the track, and mechanism for rotating said rolls.

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