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S. EVANS

1,922,425

DEVICE FOR REGISTERING AND FEEDING OBJECTS TO A MAGAZINE

Original Filed Aug. 6, 1928

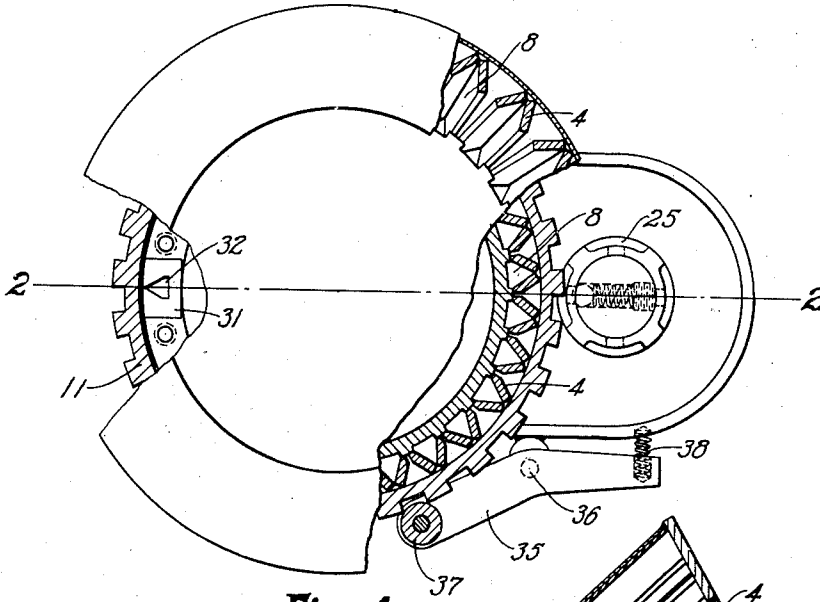


Fig. 1

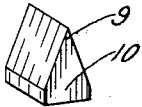


Fig. 4

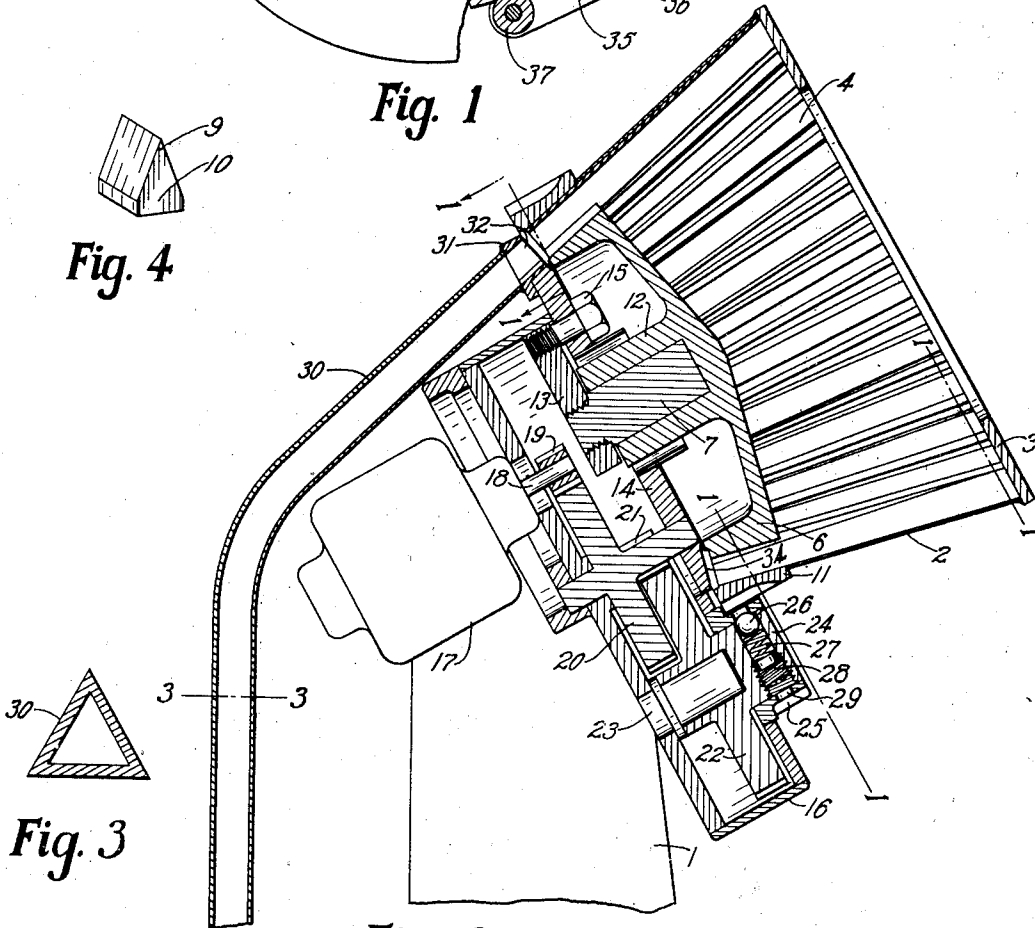


Fig. 2

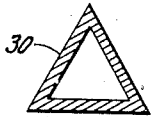


Fig. 3

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1,922,425

DEVICE FOR REGISTERING AND FEEDING
OBJECTS TO A MAGAZINESeth Evans, Houston, Tex., assignor to Hughes
Tool Company, Houston, Tex., a Corporation
of TexasSubstitute for abandoned application August 6,
1928, Serial No. 297,648. Divided and this
application October 25, 1930. Serial No.
491,308

4 Claims. (Cl. 219-4)

My invention relates to devices for arranging uniformly shaped objects to register with the opening in a magazine formed to contain them; so that said objects may be held properly positioned for use.

Although not limited to any particular shape of object, I have illustrated my invention as applied to the feeding of steel cutter teeth to a containing magazine. These teeth are flat sided, but of irregular shape, and in use, must be fed automatically to a welder in proper position for application to the tool upon which they are designed to be fixed. Such a welder is shown in my copending application No. 323,737, filed December 4th, 1928, since matured into Patent No. 1,839,384, dated January 5, 1932.

It is an object of my invention to provide a device which will arrange the cutter teeth in proper position to fit within the magazine, and to feed them to said magazine automatically.

It is also desired to provide a means for operating the feeding device which will tend to avoid clogging, and a safety drive which will slip when clogging occurs, thus avoiding breakage. This application is a revival of my abandoned application No. 297,648, filed August 6th, 1928.

Referring to the drawing herewith, Fig. 1 is a front view of the hopper, certain parts being broken away on the separate planes 1-1 of Fig. 2 to show the construction more clearly.

Fig. 2 is a side view mainly in section on the plane 2-2 of Fig. 1.

Fig. 3 is a transverse section on the plane 3-3 of Fig. 2.

Fig. 4 is a perspective view of one of the cutter teeth to be fed to the magazine.

I mount my device so that gravity will assist in carrying the cutter teeth away from the feeder. The device is therefore mounted upon a pedestal 1. The hopper 2 is set at an angle to the pedestal with the open end presented forwardly and upwardly. Said hopper is frusto-conical in shape, the outer larger end having an annular plate 3 thereon forming an inwardly projecting flange to prevent the teeth from dropping from the hopper in use.

On the inner wall of the hopper 2 are a series of narrow plates 4 which extend longitudinally of the hopper from the outer plate 3 and project from the inner end of the hopper to fit along the outer edge of a bottom plate 6 which is rotatable upon a shaft 7. Said plates 4 are welded together and to the hopper wall as shown in Fig. 1 to provide a series of V-shaped troughs 8 between them

which serve to receive the cutting ends 9 of the teeth 10 which are to be fed from the machine.

The projecting ends of the plates 4 are welded to the plate 6 on their inner sides and to a gear ring 11 upon their outer sides, the inner ends of the troughs being thus left open. The bottom plate 6 is slightly tapered toward the central axis thereof from the outer edge, thus tending to move the teeth into said troughs. It has a boss 12 on its lower side within which a bearing recess is formed to fit over the bearing shaft 7, which is supported upon a plate 13 secured to a base plate 14 by means of bolts 15.

The base plate 14 is stationary and is supported upon the pedestal 1. A housing 16 is secured to its lower side, said housing enclosing the operating gears from the motor 17 to the hopper. The motor is supported upon the pedestal and is secured to the lower side of the housing 16 with its shaft 18 extending through the lower wall thereof.

On the inner end of the motor shaft 18 is a small gear 19 which meshes with a larger gear 20 mounted in the housing. A small gear 21 upon the shaft of the gear 20 engages with the larger gear 22 rotatable upon a shaft 23 in the housing wall. This train of gears comprises a common type of reduction gearing.

On the outer end of the gear 22 is a hub 24 on the outer surface of which is a ring-shaped gear 25 engaging with the gear 11 upon the hopper, a diametrical opening being formed in the hub 24 within which is fitted a steel ball 26. A spring 27 bears against said ball and against a plug 28 in said opening, thus tending to force the ball from said opening into any one of a plurality of recesses 29 in the inner wall of the gear ring 25. A slip clutch is thus provided between the hub 24 and the gear ring 25. The ball will clutch the ring to the hub, but when the gear is stopped by any excessive resistance, such as might be set up through the clogging of the feeder, the clutch will slip until the resistance is moved.

A magazine 30 is connected with the base plate 14 at the upper edge of said plate. Said magazine is triangular in cross section and will receive the teeth 10 when said teeth are properly registered to drop therein. The upper end of the magazine has a small plate 31 thereon, said plate having an opening 32 therein of the same shape as the end of the tooth. Said plate is secured detachably to the base plate, and where different sizes of teeth are to be handled, one magazine may be substituted for another of different size without difficulty. The outer margin 34 of the base plate is

beveled to be approximately perpendicular to the troughs 4 of the hopper which are closed by said beveled face on the base plate, except for the opening 32, previously noted.

- 5 As will be seen from Fig. 1, the teeth upon the gear ring 25 are spaced widely apart, and, in the particular embodiment shown but four teeth are formed. The movement imparted to the gear 11 and the hopper is therefore an intermittent one.
- 10 Each tooth engaging the hopper gear moves one trough 8 to position registering with the opening 32 to allow a tooth to drop therein, and the next gear tooth moves the next succeeding trough to the same registering position.
- 15 To assist in holding the hopper in registered position at each step in its revolution, I employ a dog 35 shown in Fig. 1, which is pivoted between its ends at 36 upon a post upon the frame. One end has a roller 37 mounted to rotate thereon and
- 20 positioned to engage with the teeth of the gear 11. The other end of the dog has a spring 38 bearing on the housing 16 and tending to hold the roller 37 resiliently against said gear 11.

- The operation of the device will now be clear.
- 25 Teeth 10 are dumped into the hopper which is rotated through the motor and the intermediate train of gears. As the hopper rotates, the teeth 10 are caught with the apex 9 in the outer troughs and carried around by steps to the opening 32
- 30 though which they fall by gravity to the magazine. At each step in the intermittent rotation of the hopper, the roller 37 on the dog 35 is snapped into the spaces between adjacent gear teeth and not only holds the hopper temporarily
- 35 in registered position but also imparts a blow to the gear and hopper which tends to jar the teeth 10 into position and to cause the registered tooth to slide into the magazine. Should a tooth catch in the mouth of the opening 32 and tend to clog
- 40 the device, the clutch 26 will give sufficiently to prevent injury to the device until the tooth is jarred loose or manually removed.

- By the use of this device, the teeth may be automatically arranged in the magazine ready for
- 45 use. While I have shown the device as adapted for use with a specific type of tooth, it is to be understood that the invention may be modified for different shaped objects in an obvious manner.

- 50 What I claim as new is:

1. In a device of the character described, a downwardly tapered hopper having longitudinal

troughs to receive irregular shaped objects, means to support said hopper in an inclined position, means to rotate said hopper, a magazine positioned to register with said troughs as said hopper is rotated, means to hold each trough successively into registration with said magazine, and to jar said objects into said magazine, and means on said rotating means to allow said hopper to remain stationary when said objects act to clog in said magazine.

2. In a device of the character described, a hopper having its side walls formed with angular longitudinal grooves, a bottom plate secured to said hopper and extending upwardly therein, the periphery of said plate being spaced from the interior wall of said hopper to form a series of pockets into which articles may slide when properly registered, a magazine positioned to register with said channels to receive said articles, means to rotate said hopper intermittently to bring said channels in succession adjacent said magazine, and means to jar said articles into said magazine.

3. In a device of the character described, a hopper having its side walls formed with angular longitudinal grooves, a bottom plate secured to said hopper and extending upwardly therein, the periphery of said plate being spaced from the interior wall of said hopper to form a series of pockets into which articles may slide when properly registered, a magazine positioned to register with said channels to receive said articles, means to rotate said hopper intermittently to bring said channels in succession adjacent said magazine, said means being automatically releasable under excessive resistance whereby said hopper may remain stationary when an article engages within said opening, tending to clog the magazine, and means to jar said articles into said magazine.

4. In a device of the character described, a hopper rotatable on an inclined axis and having its side walls formed with grooves therein, a bottom plate secured to said hopper and having grooves mating with the grooves in said hopper to form tooth receiving channels, a stationary base plate having an opening therein to receive a tooth when said opening is properly registered with said channels, a magazine below said base plate opening, and means to move said hopper together with said bottom plate intermittently to bring said channels successively over said opening.

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