

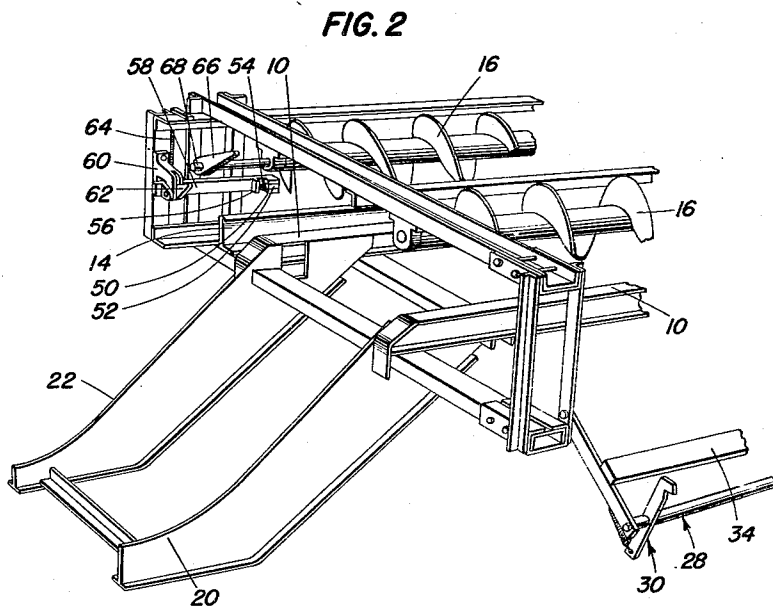
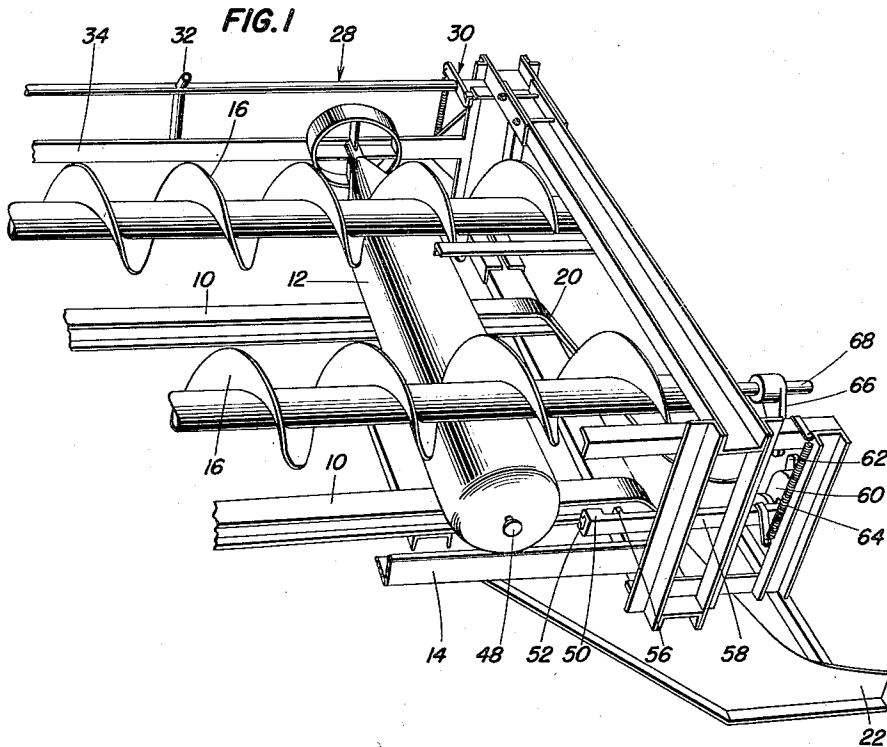
Nov. 7, 1950

T. H. CARPENTER
DISPENSING DEVICE

2,528,945

Filed Aug. 19, 1944

3 Sheets-Sheet 1



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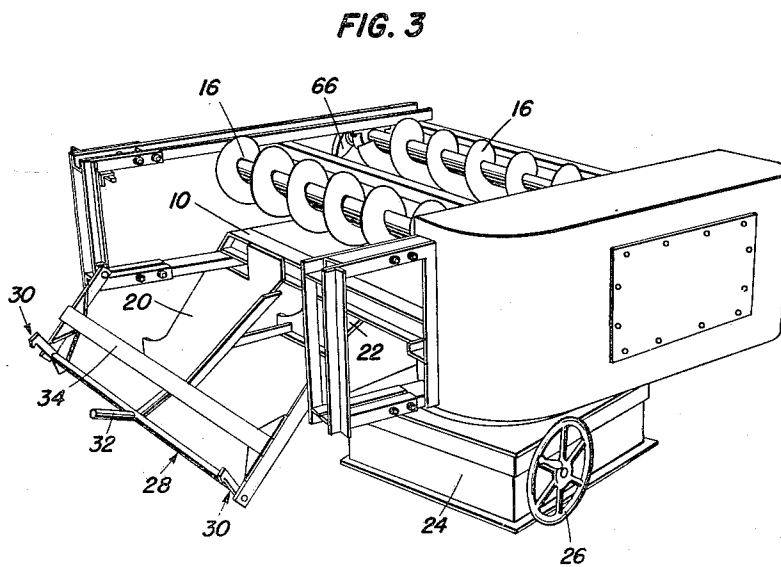
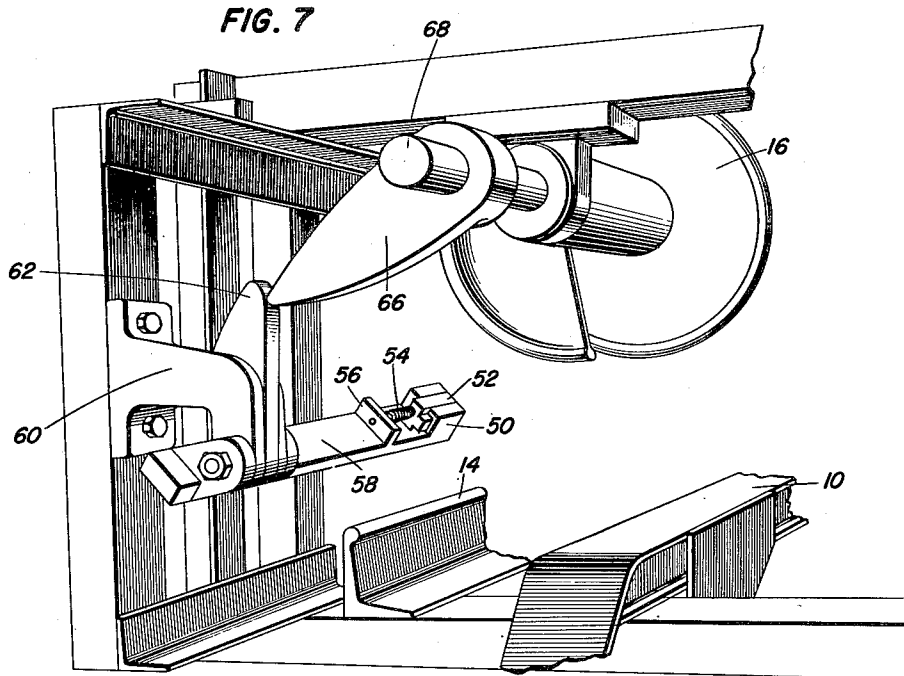
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FIG. 6

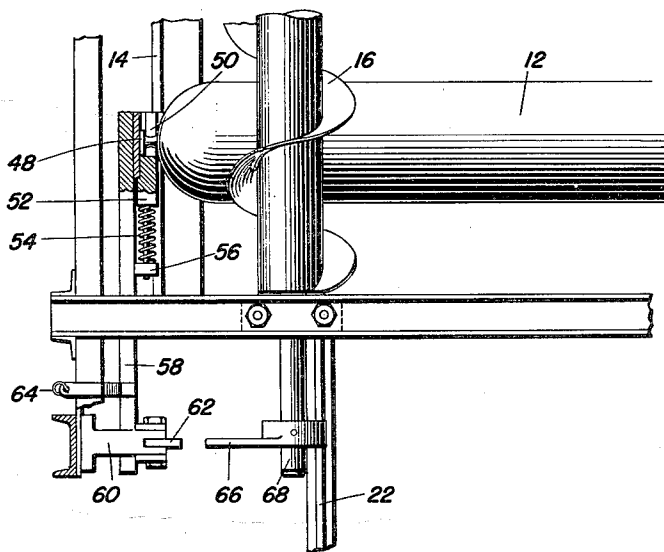


FIG. 5

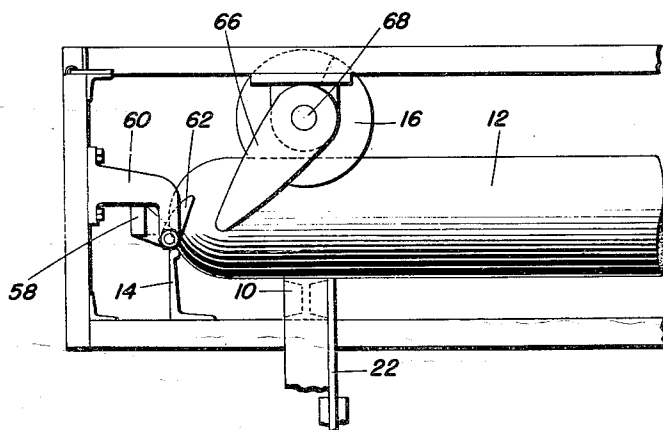
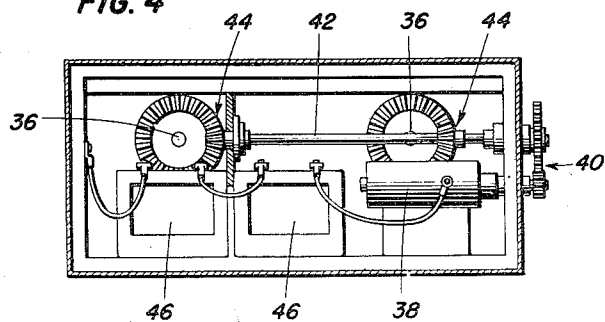


FIG. 4



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DISPENSING DEVICE

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Application August 19, 1944, Serial No. 550,292

3 Claims. (Cl. 114—18)

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The present invention relates to a mechanism for releasing fast-sinking anti-submarine projectiles. More particularly it relates to a means for releasing a number of these projectiles at accurately timed intervals and for removing the safety plug from each projectile just prior to its release.

The fast-sinking projectile was developed to reduce the time consumed, as compared with the conventional depth charge, in reaching the depth at which a submarine might be operating. In achieving this end, the dimensions of the projectile and the weight of the explosive charge were greatly reduced. This decreased the lethal range of the projectile to the point where a fuze of either the contact or the proximity type was required rather than a pressure operated fuze.

In using these projectiles, the method of attack is as follows: The attacking vessel maneuvers to cross the submarine's course far enough ahead of the submarine to make the projectile's path intercept the submarine's course at the submarine. To allow for changes in the submarine's course a series of projectiles are dropped at intervals somewhat less than the beam of the submarine. The time interval for a given spacing is inversely proportional to the speed of the attacking vessel; in other words, the projectiles must be dropped at a rate proportional to the speed of the dispensing craft.

The present invention provides a means for dropping fast-sinking projectiles at a rate proportional to the speed of the vessel and includes means for removing safety plugs from the noses of the projectiles as they are released, thus readying them for water arming. It also includes a means for causing them to strike the water in such a position as to compensate for the lateral motion imparted by the vessel and thereby sink almost directly below the point of impact.

The device and its component parts are shown in the accompanying drawing, in which

Fig. 1 is a perspective view of the device, showing a projectile in place;

Fig. 2 is a detail perspective view of the discharge apron;

Fig. 3 is a perspective view of the entire device from the loading side;

Fig. 4 is an elevational detail of the driving mechanism; and

Figs. 5 and 6 are side elevational and top plan views respectively, and

Fig. 7 is a perspective view, all relating to the mechanism for removing safety plugs.

Referring now to Fig. 1, the device consists

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essentially of a pair of track rails 10, on which projectiles 12 rest in transverse horizontal position located by and between nose guide rail 14 and tail guide rail 34. A pair of power operated conveyer screws 16 extend over the tracks to move the projectiles along the rails to the discharge end while constantly maintaining desired positioning of the projectiles.

The track rails terminate in a discharge apron shown in detail in Fig. 2 and consisting of a pair of inclined plates 20, 22 down which the projectile rolls. The lower end of the forward plate 20 inclines slightly upwards, while the lower end of the after plate 22 inclines slightly downward. The device is so constructed that the projectiles lie in it tail-forward; so when one rolls down the apron, its tail is given an upward push by the forward plate and at the same time the after plate lets its nose drop. The projectile enters the water nose downward but pointed aft with respect to the ship. This method of entry has been found to neutralize the effect of the ship's forward motion and cause the projectile to sink almost directly below the point of entry.

Referring now to Fig. 3, the entire assembly is pivotally mounted on a base 24, which is fastened to the deck (not shown). A handwheel 26 controls a clamp to secure the device in either the ready, loading or stowed position.

The means for loading the dispenser is shown in Fig. 3 and also in Fig. 1. A loading gate 28 is pivoted in the frame on the side opposite to the nose stop rail 14. This gate is held in place by latches 30 operated by a rod and handle 32 and carries the tail guide rail 34. When the gate is dropped as shown in Fig. 3, the projectiles can be inserted nose-end-first under the conveyer screws.

Referring now to Fig. 4, shafts 36 of the conveyer screws 16 are driven in the same direction by an electric motor 38 of the automotive starter type through a Bendix drive (not shown), reduction gears 40, shaft 42 and bevel gears 44. Power for the motor is supplied from batteries 46. The motor is a heavy-duty, series type for which the load of the dispenser is so light as not to affect materially its no-load characteristic of speed variation proportional to applied voltage. Taking advantage of this condition, electrical connection of the motor to the battery is made through a number of relays (not shown) by means of which the motor may be connected to a variable number of cells of the batteries to provide a series of discharge rates corresponding to vessel speed. The Bendix drive is provided to

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disconnect the motor in the event that the motor or power supply should fail and the dispenser should have to be operated by means of a hand-crank applied to one of the shafts 36.

The fuzes used in the projectiles carried by this device are armed by water pressure and in some cases employ water activated sea cells as their source of energy. It is, therefore, necessary to prevent entry of water or moisture to the fuze prior to the time of use. The opening in the end of the fuze is closed by means of a plug having a T-shaped head 48 (Fig. 6) by which it may be removed. Figs. 5, 6 and 7 illustrate the automatic mechanism which removes the plugs.

As the projectile 12 is pushed along the rails 10 by the screws 16, the T-head 48 of its safety plug enters a T-shaped slot in block 50, pushing back a plunger 52 which compresses a spring 54 bearing against a stop 56.

The block 50 and stop 56 are mounted on a bar 58 which is pivoted to the frame in a bracket 60. A cam follower 62 is fastened to the bar 58 at the bracket. The bar is held in position to receive the plug 48 by means of a spring 64 (Fig. 1) extending between a bracket on the frame and one on the bar.

When the screws 16 have pushed the projectile 12 a certain distance past the position at which its plug 48 entered the slotted block 50, a cam 66, attached to an extension 68 of the screw shaft 36 nearer the nose of the projectile, engages the cam follower 62 and presses it upward. The upward movement of the cam follower rotates the bar 58 about the pivot in the bracket 60. The axis of this pivot is tangent to the spherical portion of the nose of the projectile 12 so that the block 50 rotates about its point of contact with the nose surface and extracts the safety plug 48 without any unwanted stresses. As soon as the plug is clear of the projectile, the spring 54 forces the plunger 52 forward, expelling the plug from the block. When the cam 66 clears the cam follower 62, the spring 64 returns the mechanism to the removing position ready for further use. The projectiles are held against the nose stop rail 14 by the rotation of the conveyor screws 16 both rotating in the same direction toward the rail. Such a device has also been successfully operated with screws rotating in opposite directions, the projectiles being held against the rail through the action of spring plungers in the tails pushing against the rail 34 on the loading gate 28. It will be apparent that other modifications may be made within the spirit and scope of the subjoined claims.

I claim:

1. In a dispenser for projectiles comprising an

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inclined chute down which such projectiles may be fed and in which the projectiles are adapted to move down said chute in transverse position, the combination of a feed support connected to said chute and upon which the projectiles are adapted to rest in transverse position, and screw feed means for moving projectiles over the feed support and into the chute, said screw feed means comprising a plurality of screws adapted to engage the projectiles at longitudinally spaced points, means for rotating said feed screws in the same direction, whereby the screws exert a longitudinal component upon the projectiles engaged thereby, and alignment means engageable with the ends of such projectiles toward which they are urged by said longitudinal component.

2. In a dispenser for projectiles comprising an inclined chute down which such projectiles may be fed and in which the projectiles are adapted to move down said chute in transverse position, the combination of a feed support connected to said chute and upon which the projectiles are adapted to rest in transverse position, and screw feed means for moving projectiles over the feed support and into the chute, said screw feed means being arranged spacedly above said feed support, guide means for preventing longitudinal displacement of the projectiles, one of said guide means being movable to permit insertion of projectiles into the space between the feed support and screw feed means.

3. In a dispenser for depth charges and the like of generally cylindrical form and which are provided with a removable protective element, a feed support on which such charges are adapted to rest in transverse parallel relation, means including a feed screw for moving such charges over the feed support, and means operated by the feed screw means for removing the protective element.

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