Nov. 20, 1945. C. McINNES, JR 2,389,162

MULTIPLE SIGNAL DISCHARGER

Filed Aug. 21, 1942

Fig. 2

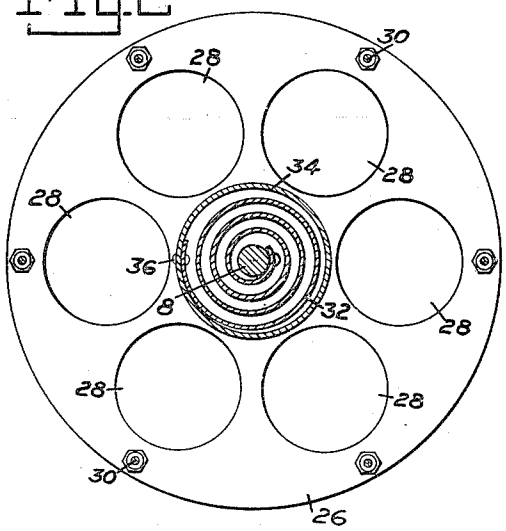


Fig. 3

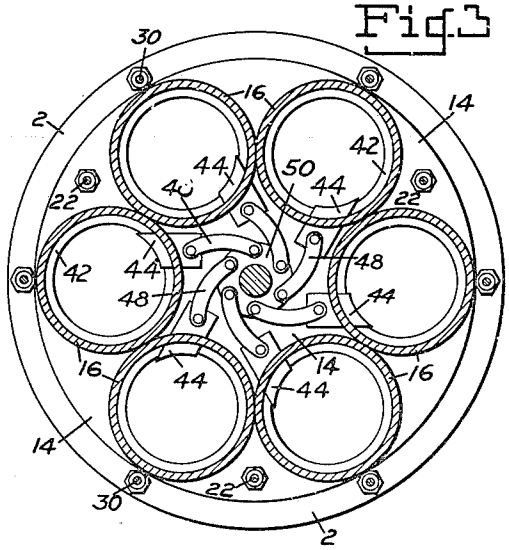


Fig. 1

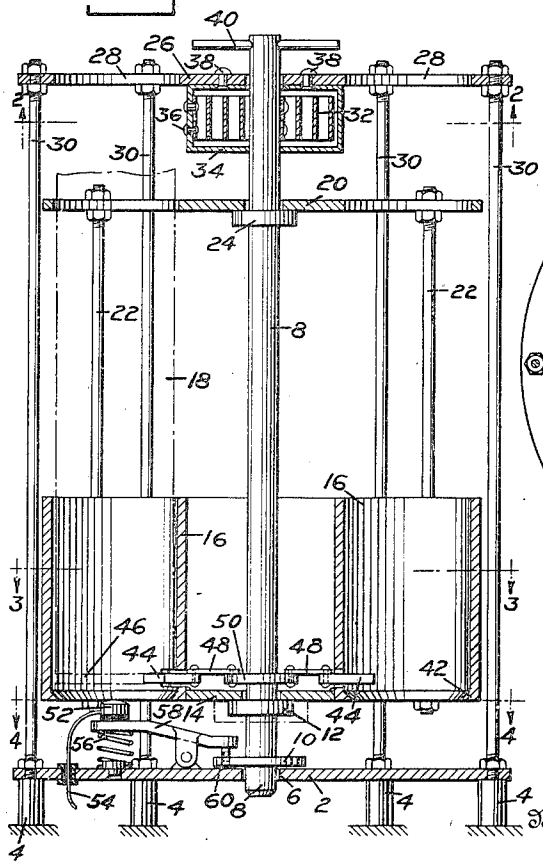
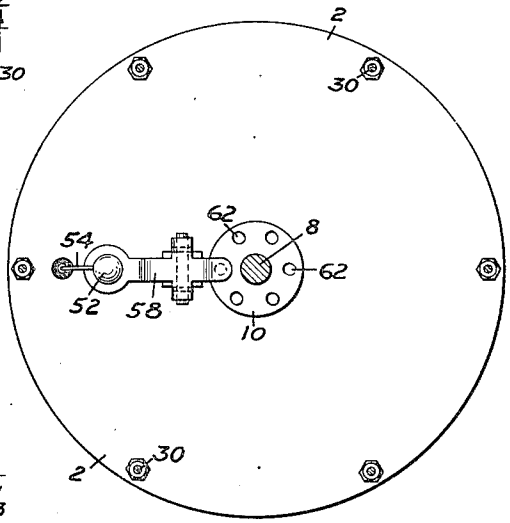


Fig. 4



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MULTIPLE SIGNAL DISCHARGER

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Application August 21, 1942, Serial No. 455,588

3 Claims. (Cl. 89—1)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a multiple signal discharger such as might be used for the firing of signal flares in rapid succession.

It is the object of this invention to provide a device which permits several flares to be fired in rapid succession, without the necessity of individual handling of the cartridges for each signal To this end a cartridge holder or magazine is mounted for rotation past a firing means; the magazine is indexed as it rotates, to permit the cartridges to be presented one by one to the firing means. The magazine is mounted on a shaft to which is attached a spring which may be tensioned by an initial winding movement of the shaft. Operation of the indexing means is effected by the recoil of the cartridge fired.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which:

Fig. 1 of the drawing is a view in elevation of a device built according to the invention, with parts broken away and in section.

Fig. 2 is a view in section on line 2—2 of Fig. 1.

Fig. 3 is a view in section on line 3—3 of Fig. 1.

Fig. 4 is a view in section substantially on line 4—4 of Fig. 1.

Referring to the drawing in detail, a support plate 2 is shown mounted on legs 4. Plate 2 is bored centrally as at 6 to receive one end of shaft 8. A collar 10 on shaft 8 bears against plate 2 and supports the shaft. Another collar 12 on the shaft supports a cartridge holder or magazines 14 which is provided with numerous chambers 16 each adapted to receive a cartridge as shown in dotted lines at 18 of Fig. 1. Where the cartridges are so long as to extend beyond the ends of chambers 16, an additional plate 20 may be desirable to insure accurate alignment. Plate 20 may be held in place by rods 22 supported by holder 14. If desired, another collar 24, may be provided to assist in the support of holder 14.

An end or face plate 26, having openings 28, may be supported on rods 30. Any suitable spring such as the spiral spring 32 shown in Figs. 1 and 2 may be provided as a source of power to turn shaft 8. The outer end of the spring is preferably secured to a casing 34 by rivets 36. Casing 34 in turn is secured to plate 26 by rivets 38. For convenience in turning shaft 8 to wind up the spring, a handle 40 may be provided. If desired, spring 32 may be mounted at the other end of shaft 8, in which case the casing 34 could conveniently be secured to plate 2.

The lower ends of chambers 16 may be peened inward as at 42 to keep the cartridges from falling through. To permit operation of the device in an inverted position, means are preferably provided to hold the cartridges in their chambers against gravity. Such means may be the retainers 44, mounted in slots in the chamber walls for substantially radial movement to permit engagement with and disengagement from cooperating grooves 46, shown in the dotted line cartridge 18 of Fig. 1. Retainers 44 are preferably connected by links 48 to collar 50 on shaft 8, and are thereby actuable as stated by rotation of the shaft relatively to holder 14.

An indexing mechanism is preferably incorporated in the lower end of the device and made actuable by the recoil of a fired cartridge. The cartridges may be fired one by one by any suitable electrical firing means such as the contact 52 having electric lead 54 to a suitable source of power, not shown. Contact 52 may be biased toward a cartridge by means of spring 56, and is preferably mounted on a rocker arm 58. The opposite end of rocker arm 58 carries a pin 60 which is engageable with any of holes 62 in collar 10 for indexing.

Operation.—Cartridges may be placed in the chambers 16 with their firing ends resting on retainers 44. When a cartridge has been placed in each chamber, all the cartridges may be permitted to drop into the chambers completely by turning handle 40 clockwise, as seen from the top, relatively to holder 14. Retainers 44 will thus be withdrawn, permitting each cartridge to drop down into position for engagement of retainer 44 with its groove upon release of the handle. Spring 32 may be "wound up" or tensioned by turning handle 40 clockwise as seen from the top, while pin 60 is manually held out of engagement with the indexing collar. When the spring has been wound tight, pin 60 may be allowed to engage one of holes 62. The cartridge above the firing pin may then be fired by closing the firing switch (not shown). The recoil will cause rocker arm 58 to pivot counterclockwise, disengaging pin 60 and the collar and permitting spring 32 to turn the shaft. The cartridge holder 14, especially its base plate which rests on shaft collar 12, Fig. 1,

is made of stamped or forged metal so that it possesses a certain amount of resilience, to permit the distal edge of the base plate to flex sufficiently upon recoil to cause the said counterclockwise turning of rocker arm 58. As the next hole moves under the pin, the pin drops into it, and the device is ready to be fired again.

I claim:

1. In a device for firing a plurality of signal cartridges, the combination of a rotatable holder for the said plurality of cartridges, cartridge firing means in underlying relation to one of the cartridges held in the said holder, spring means for turning the said holder, an index disc mounted to rotate with the said holder and having a plurality of circumferentially spaced holes equal to the number of cartridges of the said holder, and a lever pivotally mounted in association with the said firing means having a pin at the distal end of one of its arms adapted to be received in the said holes of the index disc, the said lever being spring-pressed to place its said pin in one of the said index holes to normally restrain the said spring means from turning the said holder, the distal end of the other arm of the lever being in close juxtaposition to said cartridge holder so that the flexion of the container holder upon recoil will turn the said lever to withdraw its pin from the index disc, the said spring means turning the said holder until the pin is spring-snapped in the succeeding index hole to bring the succeeding cartridge to the firing means.

2. In a device for firing a plurality of signal cartridges having an annular groove near the primer base, the combination of a casing, a shaft rotatably mounted in the said casing, a holder having a plurality of tubular containers for the said cartridges mounted to rotate with the said shaft, a coil spring one end of which is anchored to the said casing with its other end attached to the said shaft, a plurality of elements engageable in the said annular groove of the cartridges in the said holder and mounted to rotate with the said shaft, devices connecting said elements with the shaft, the said shaft having manual means for turning in a direction to tension the said coil spring to actuate said devices to withdraw the said elements from underlying relation to the primer base of the cartridges, the said tensioned spring being adapted to turn the shaft in the opposite direction to engage the said elements with the cartridges to turn the said holder and plurality of cartridges.

3. In a device for firing a plurality of signal cartridges having an annular groove near the primer base, the combination with a shaft, a holder carried by the shaft and having a plurality of tubular containers for the cartridges, each container having a slot adjacent its base, spring means tending to rotate the shaft in anti-clockwise direction, means for indexing the holder to bring its cartridges successively to firing position, a retaining member for each cartridge container positioned to enter the slots in said containers for engagement with the grooves in the cartridges, a member fast to the shaft adjacent the holder, links pivoted to said member and to the retaining members wherethrough the retaining members are held simultaneously in engagement with the cartridges in the containers by said spring means.

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