Feb. 25, 1958 C. E. NORTH 2,824,482

CARTRIDGE BREAKDOWN MACHINE

Filed Nov. 12, 1953 2 Sheets-Sheet 1

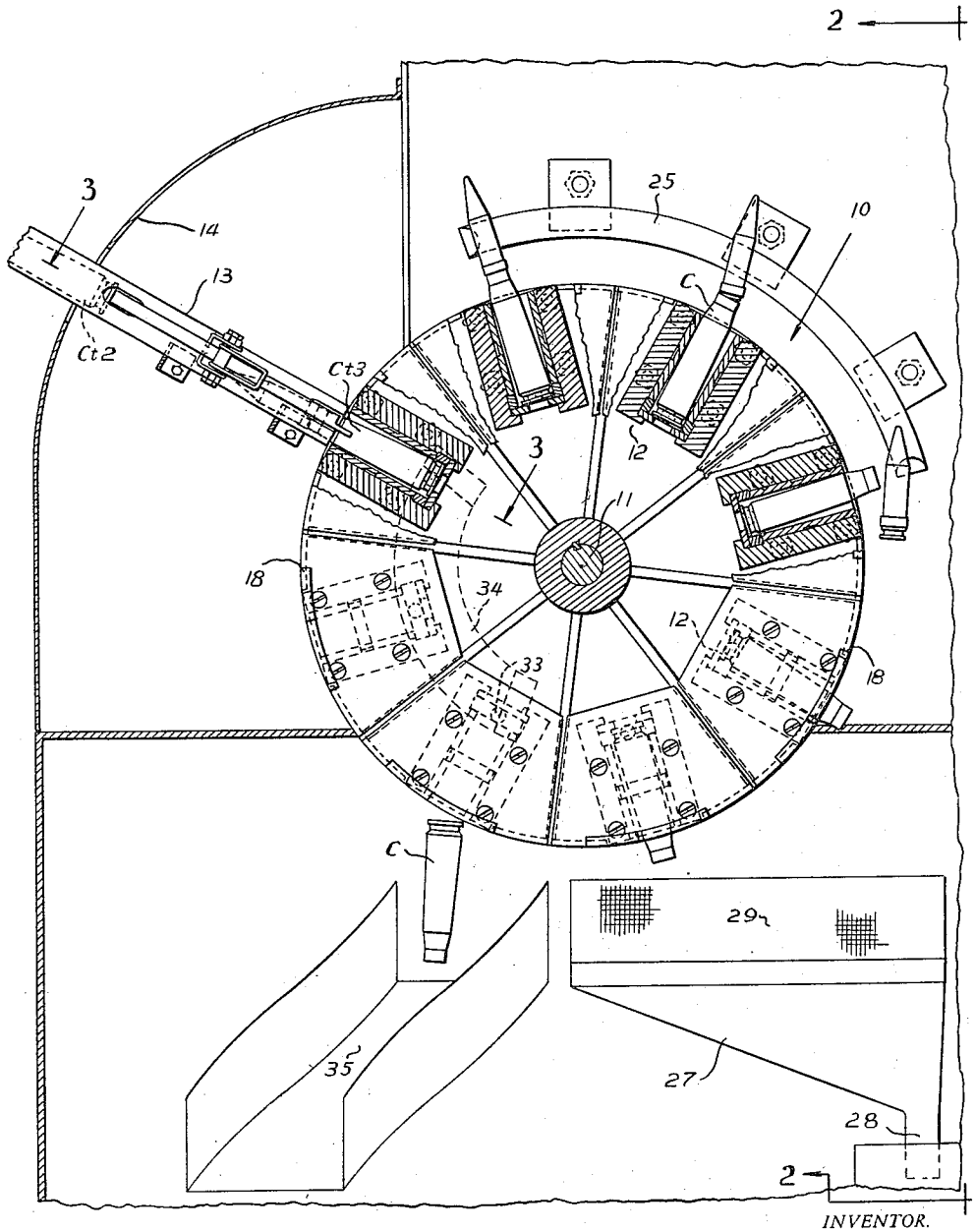


Fig. 1

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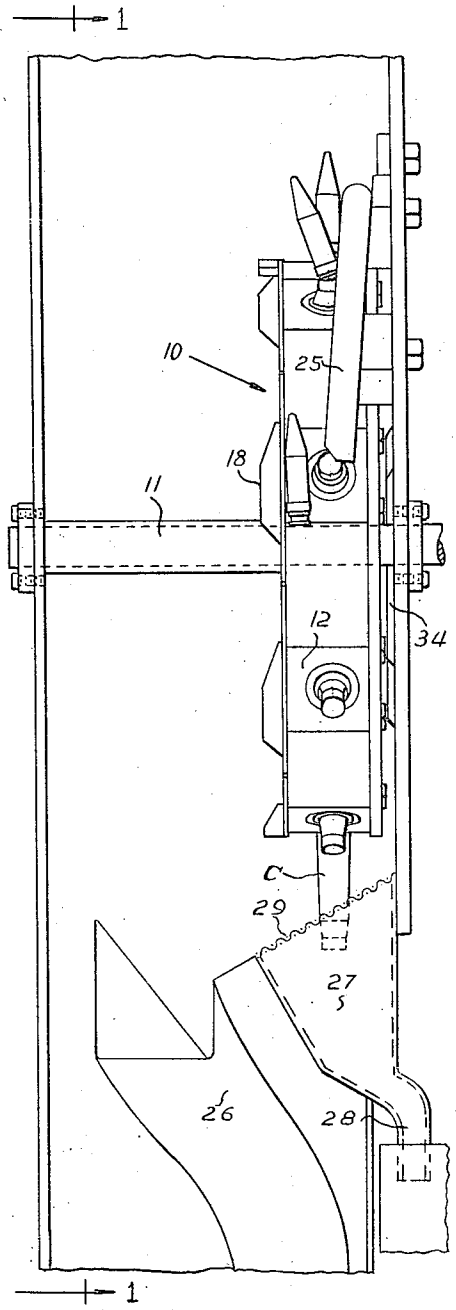


Fig. 2

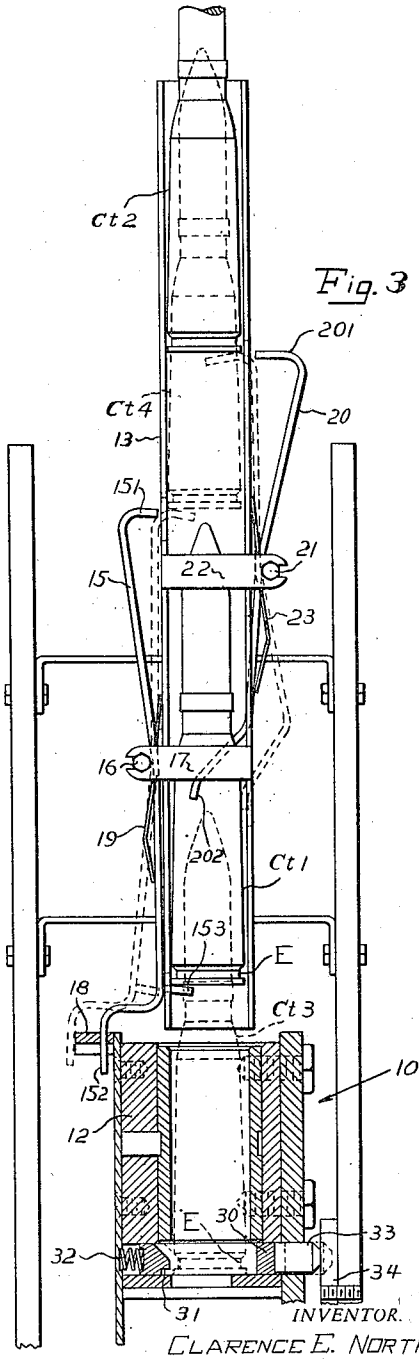


Fig. 3

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CARTRIDGE BREAKDOWN MACHINE

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Application November 12, 1953, Serial No. 391,499

2 Claims. (Cl. 86—1)

This invention relates to a machine for disassembling loaded cartridges, and contemplates apparatus in which the bullet, powder charge and case of a loaded cartridge are separated and delivered into different receptacles.

The machine finds its greatest utility in breaking down newly loaded ammunition which has failed to pass final acceptance tests.

In the drawings:

Fig. 1 is a fragmentary sectional side elevation of apparatus embodying one form of the invention, the section being substantially on the line 1—1 of Fig. 2.

Fig. 2 is a fragmentary partially sectional rear elevation, the section being on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary transverse substantially horizontal section on the line 3—3 of Fig. 1.

The machine comprises a composite disk-like cartridge case holder identified generally by numeral 10 rigidly mounted on a horizontally disposed axle 11 arranged to be rotated by a suitable source of power (not shown). The holder 10 comprises a plurality of radially disposed cartridge-receiving pockets 12 opening through the periphery thereof. Means for delivering cartridges one-at-a-time to pockets 12 may comprise a trough-like member 13 which is radially disposed with respect to holder 10 and projects outwardly through a casing 14.

The cartridges to be disassembled contain live primers and are of some considerable weight; hence, it is desirable to provide devices which prevent dropping the primer of a following cartridge against the nose of the bullet of a preceding cartridge. The devices for this purpose which are illustrated are constructed as follows:

A lever 15 is pivoted at 16 on a bracket 17 secured to trough 13. The outer end of lever 15 is turned inwardly to form a stop finger 151 adapted to project through an opening into the interior of trough 13; while the end of said lever adjacent the holder 10 comprises a cam-engaging off-set 152 adapted for engagement by any one of several cams 18, associated respectively with pockets 12, mounted on the side of holder 10 and projecting laterally therefrom. Lever 15 is also provided with a second finger 153 which normally projects into the trough 13, as shown in Fig. 3, to stop a cartridge dropped into trough 13 in the C*t*1 position. A spring 19 biases the lever 15 to the position shown in full lines in Fig. 3, with the finger 151 in an outward ineffective position and the finger 153 in cartridge stopping position. A second lever 20, suitably spaced lengthwise of trough 13, is pivoted at 21 on a bracket 22 also secured to trough 13 and comprises an inturned finger 201 adapted to form a cartridge stop in the same manner as finger 151. The opposite end of lever 20 comprises an inclined portion 202 adapted to project through a slot into trough 13 for engagement by the case of a cartridge in said trough. Lever 20 is biased to the full line (Fig. 3) position by a spring 23, and is displaced to the dotted line position by lateral engagement with the case of a cartridge in trough 13 when the head of such cartridge is in contact with the finger 153.

The operation of this escapement device is as follows: Both stop fingers 201 and 151 being normally in ineffective position, as shown in full lines in Fig. 3, the first cartridge inserted in trough 13 slides to the lower end of said trough, coming to rest with its head against finger 153 of lever 15, as shown at C*t*1, Fig. 3. The engagement of the cartridge in this position with the portion 202 of lever 20 displaces finger 201 into effective position, and the next cartridge inserted in trough 13 comes to rest with its head against said finger 201, as shown at C*t*2. When the rotation of holder 10 brings one of the pockets 12 opposite the end of the cartridge at C*t*1, the cam 18 associated with such pocket engages offset 152 of lever 15, displacing stop finger 153, and the cartridge slides into said pocket, assuming position C*t*3 and clearing part 202 of lever 20. Lever 20, being thus freed, is displaced by spring 23 to its dotted line position, withdrawing finger 201 and freeing the cartridge at C*t*2 for movement to position C*t*4, where it is supported by finger 151. When cam 18 has cleared offset 152, finger 151 is withdrawn and the cartridge at C*t*4 drops to position C*t*1 with its head resting against finger 153.

The rotation of holder 10 brings the projectile of each cartridge in a pocket 12 into contact with a fixed cam 25, which cam is so inclined that as each projectile traverses it the projectile is thrust laterally with respect to the case C, the case being held against lateral displacement by engagement with the wall of pocket 12. Each projectile is thus freed from its case as the projectile traverses cam 25 and falls free, being received in a passageway indicated at 26 by which it is conducted to a suitable receptacle.

The removal of a projectile from a case exposes the powder therein, and in the continued rotation of holder 10 the cases in pockets 12 assume a downwardly inclined and finally a completely inverted position, thus enabling the powder to fall out of the case by gravity. The powder is received in a funnel-like entrance 27 to a passage 28 by which it is conducted to an appropriate receptacle. A suitable screen 29 may be placed over the funnel-like passage 27 to insure that projectiles are properly deflected and do not enter the powder delivery passage.

Means for retaining cartridge cases C in the pockets 12 and releasing them at the proper time may comprise an apertured retaining plate 30 mounted for transverse movement at the bottom of each of the pockets 12. Each plate 30 comprises an aperture of such dimensions as to readily receive the head portion of a cartridge case, and a marginal portion of each aperture comprises a projection 31 adapted for engagement in the extractor groove E of a cartridge case. As shown in Fig. 4, each plate 30 is biased to position projection 31 in a case extractor groove by suitable means such as spring 32. Secured to or integral with each plate 30 is an outwardly extending pin or cam follower 33 adapted for displacement by a fixed cam 34. Thus, when a pin 33 engages the lower margin (Fig. 1) of cam 34, projection 31 is withdrawn from engagement with the extractor groove and the empty case is dropped into a trough 35 by which it is conducted to an appropriate receptacle.

The operation is summarized as follows:

Cartridges to be unloaded are inserted through the trough 13 which is provided with suitably controlled stop fingers 151 and 201 to prevent bullet and primer engagement. From trough 13 the cartridges are received in pockets 12 in revolving disk-shaped holder 10. As the projectile of each cartridge in turn traverses cam 25, it is dislodged and falls into a suitable receptacle.

While traversing the lower right (Fig. 1) quadrant, the powder in the case is poured out into another receptacle, leaving the case empty.

As each pocket 12 in turn comes opposite the lower end of cam 34, the empty case is released and delivered to a third receptacle. It will be noted that the cam 34 extends across the point at which cartridges are received

from trough 13 so that the head of each cartridge delivered to a pocket 12 passes into the apertured end plate 30 in position to be engaged and held by projection 31, said plate being freed for movement to cartridge-engaging position by spring 32 as the pocket leaves cartridge-receiving position.

What is claimed is:

1. Apparatus for disassembling cartridges, consisting of a case, a powder charge in said case, and a projectile secured to said case in axial extending relation, said apparatus comprising a frame, a wheel mounted in said frame for rotation in a vertical plane, a plurality of radial cartridge receiving receptacles in said wheel disposed to receive individually cases of said cartridges and position the projectiles of said cartridges outward of the periphery of said wheel, a fixed cam on said frame extending about a portion of the circumference of said wheel and having a cam surface angularly disposed to the plane of rotation of said wheel and extending transversely across the path of travel of said projectiles, whereby projectiles traversing said cam surface are transversely displaced thereby from engagement with said cases, a powder receiving receptacle on said frame below said wheel and advanced in the direction of rotation of said wheel with respect to said cam, and releasable cartridge case holding means in said wheel comprising a spring loaded latch in each of said cartridge receiving receptacles disposed to engage the base rim of a cartridge case, a latch releasing rod disposed adjacent each of said receptacles for engagement with an associated latch and projecting outwardly from the face of said wheel; and a second fixed cam on said frame disposed in the path of said rods and advanced in the direction of rotation of said wheel from said powder receiving receptacle, whereby each of said cases is released from said wheel as the respective latch releasing rod traverses said second fixed cam.

2. Apparatus according to claim 1, comprising cartridge feed means on said frame disposed to be traversed by said cartridge receiving receptacles and means on said wheel for releasing cartridges one at a time from said feed means.

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