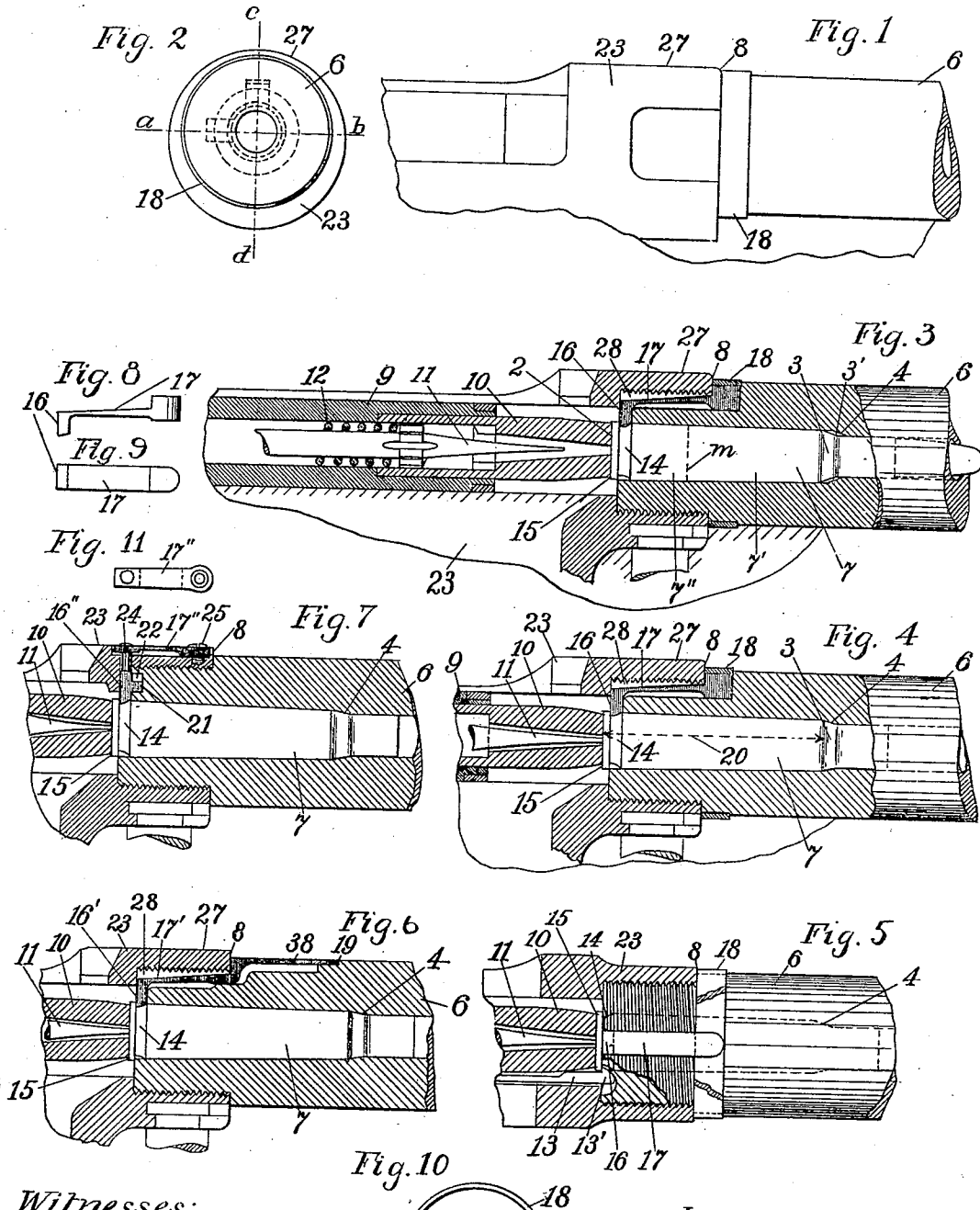


(No Model.)

M. H. DURST.
CARTRIDGE STOP FOR RIMLESS CARTRIDGES.

No. 514,450.

Patented Feb. 13, 1894.



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CARTRIDGE-STOP FOR RIMLESS CARTRIDGES.

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To all whom it may concern:

Be it known that I, MURRAY HAINES DURST, a citizen of the United States, residing at Wheatland, in the county of Yuba and State of California, have invented certain new and useful Improvements in Breech-Loading Fire-arms, of which the following is a specification.

This invention relates to breech-loading fire-arms especially adapted for using the so-called "rimless cartridges;" the object being to provide means for properly locating the cartridge within the barrel prior to firing the same, for overcoming the transverse breakage of the shells.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of a portion of a breech-loading gun embodying my present improvements. Fig. 2 is an end elevation of the parts shown in Fig. 1, as seen from the right-hand in said figure. Fig. 3 is a sectional side elevation, showing the rimless cartridge in place in the gun ready for firing. Fig. 4 is a view similar to a principal portion of Fig. 3, illustrating the operation of my improvement. Fig. 5 is a sectional plan view illustrating certain features of my invention. Fig. 6 is a sectional elevation similar to Fig. 4, illustrating a modification of the invention. Fig. 7 is a sectional elevation similar to Figs. 4 and 6, illustrating a further modification of the invention. Fig. 8 is a side view of the form of cartridge-stop shown in Figs. 3, 4 and 5. Fig. 9 is a plan view of the under side of said stop. Fig. 10 is an end view of a band for holding in place the cartridge-stop shown in Figs. 3, 4, 5, 8 and 9. Fig. 11 is a plan view of the stop-actuating spring shown in Fig. 7.

Similar characters designate like parts in all the figures.

It will be remembered that in using the so-called "rim cartridges" heretofore more generally employed, it has been customary to limit the entering movement of the cartridge into the chamber of the gun-barrel by means of the rim of the cartridge striking against the rearward end of the barrel, the cartridge being forced into the barrel by the bolt of the gun. According to that arrangement, of course, the cartridge is accurately located by the clamping of its rim between the rearward end of the barrel and the forward end of the

bolt, so that no space would exist, at the moment of firing, between the rearward face, or head, of the cartridge and the bolt. According to the old plan, therefore, the particular length of the cartridge, measured from the head thereof to the forward shoulder at the base of the projectile, was not important within moderate limits; nor could the firing-pin, when striking the cap, drive the cartridge forward in the barrel, since the rim of the cartridge positively limited the entering movement thereof. In using the rimless cartridges, however, since the diameter of the heads of the same is equal to, or less than, the diameter of the rearward end of the shell, it has been customary to rely upon the forward shoulder, 3, of the cartridge coming against the corresponding face, or shoulder, 4, of the barrel to prevent the cartridge from going too far into the bore of the gun. In practice, it has not been found practicable to precisely locate the cartridge in the barrel by means of said shoulder, since the length (Fig. 4) between the rearward face of the cartridge 2 and its shoulder 3 varies by an appreciable amount, so that, accurately speaking, the rimless cartridges are of various lengths. When the rimless cartridge is driven forward into the barrel, the obvious tendency of it is to go forward against the barrel-shoulder 4; and if the cartridge is shorter than its normal or proper length, 20, this will leave a corresponding space between the head of the cartridge and the bolt. Also, the effect of the firing-pin, when this is thrown forward, is to drive the cartridge its full length into the barrel, thereby increasing the space between the cartridge-head and the bolt to the maximum amount. If now the cartridge be fired, the first effect of the explosion is to expand the shell within the barrel until this bears against the inner surface of the chamber with such force that the pressure of the gases longitudinally of the shell, even after the bullet has been expelled, is not sufficient to slide the shell back in the chamber, but throws the entire longitudinal force of the explosion into the shell at a point near the rearward end thereof. In practice, this enormous force is sufficient to tear asunder the cartridge-shell at about the line *m*, Fig. 3, leaving the forward portion 7' thereof in the barrel when the bolt is retracted, only

the rearward portion 7" of the shell being extracted.

The object of my present invention is effected by means of combinations comprising a cartridge-stop located in a recess at the rear end of the cartridge or firing chamber, and movable transversely of the barrel, but held in position longitudinally thereof to engage the forward side of the cartridge-head, and thereby hold the cartridges (when these are less than maximum length) back against the face of the bolt when this is in its closed position ready for firing the gun. Said stop, when of the preferred form thereof herein shown, is constructed to work in a recess designated as a slide-way, and which consists of a notch formed in the extreme rear end of the barrel, which notch is shown having on the rearward side thereof the inner face or shoulder of the receiver in close proximity to the end of the barrel.

The gun partially shown in the drawings, has the usual "receiver" or frame, 23, whose forward end 8 is bored and threaded to receive the correspondingly-threaded rearward end of the usual barrel 6. This barrel has therein the usual firing chamber for receiving the cartridge 7, and is fitted to be screwed into the end 8 of the receiver, which also carries some suitable reciprocating bolt, that may be of any well-known construction. As herein shown, the bolt consists of the principal portion or part 9 having the forwardly-extending part 10 fitted to drive the cartridge into the bore of the gun and support the same when fired. The bolt mechanism is shown provided with the usual firing-pin 11 actuated by a spring, 12, only partially herein shown.

In Fig. 3 the firing-pin is shown retracted, and in Figs. 4, 5, 6 and 7 it is shown thrown forward as when the gun has been fired.

In Fig. 5 the usual extractor, 13, is shown carried by the bolt 9, and having its hook 13' engaging in the recess, or groove, 14, forward of the head 15 of the cartridge. In this connection it will be observed that one of the advantages of my present improvements is that by limiting as set forth the entering movement of the cartridge into the barrel, the head 15 of the cartridge is prevented from going forward of the extractor-hook, which would thereby be rendered inoperative to extract the cartridge when the bolt is retracted. This feature also obviates the necessity, in manufacturing the ammunition, for so closely gaging the thickness of the cartridge-head; and in general, my improvements secure much more perfect results with the use of less perfectly made cartridges. For limiting the forward movement of the cartridge when this is driven into the bore of the barrel, I provide the fire-arm with a cartridge-stop operable transversely of the cartridge for engaging the same to limit the entering movement thereof. This stop, designated in a general way by 16, is shown in Figs. 3, 4, 5, 8 and 9 carried at the rearward end of the spring 17, whose forward

end is enlarged and held in place, by means of the engagement thereof between the forward end-wall of the spring-receiving channel and the outer face, or transverse shoulder, at the front end of the receiver; said enlarged end is shown covered by means of the band 18, in a recess in the gun-barrel. The stop 16 is shown in said figures fitting in a notch in the rearward end of the gun-barrel, and is adapted, by reason of its being carried by the spring as aforesaid, to have a movement transversely of the cartridge for permitting the body of the cartridge-shell to pass the same and to engage in the groove, or recess, 14, against the forward side of the head 2 of the cartridge when this is driven into place as in Figs. 3, 4, 5, 6 and 7. When the cartridge is started into the barrel, the side of the shell, impinging against the inner end of said stop, drives this outward; and when the recess comes to the stop, this is thrown in radially by the spring to firmly engage the cartridge-head, as also indicated in said figures.

In Fig. 6, the construction of the stop and its actuating-spring 17' is the same substantially as shown in Figs. 3, 4 and 5; but in this case said spring has connected thereto a forward extension or spring, 38, which fits closely between the forward end of the receiver and a notch at 19 in the barrel, whereby the stop-and-spring is held in place, and also a more free action thereof obtained by reason of the two connected springs 17' and 38. In this modification the transversely-movable stop is carried on the rearward end or portion of a double-length spring whose middle portion is enlarged and shaped, substantially as shown, to engage between the forward end of the receiver and the bottom of the spring-channel in the barrel; and whose forward end or spring bears upon and re-acts against the barrel at a point that is about the length of said spring-end forward of the receiver.

In the modification shown in Fig. 7, the stop 16" is constructed to slide radially of the gun-barrel in a notch at the rearward end thereof, being limited in its sliding movement transversely of the cartridge by the stop 21 working in the space or recess 22. For actuating this stop to engage the cartridge, the receiver 23 is provided with a spring, 17'', whose rearward end has a pin, 24, bearing upon the outer end of said stop, and whose forward end is attached to the receiver by means of a screw, 25. See Figs. 7 and 11. The operation of these modified forms of my improvement is substantially the same as the operation of the form thereof hereinbefore first described.

One advantage of my present improvement in fire-arms for using the ammunition specified, is that the shoulder 4 of the barrel may be made somewhat in advance of the normal position of the shoulder 3 of the cartridge, leaving a space, 3', Fig. 3, for the disposal temporarily of any dirt which may be upon the

cartridge-shells or which may be carried forward in the barrel on the insertion of the shell. On firing the gun, the pressure of gases within the shell expands the same to fill said space 31, as indicated in Fig. 4; but this action of the shell does not ordinarily, in practice, burst the same or otherwise interfere with the extraction thereof.

In the combinations shown in Figs. 1 to 6, inclusive, the stop 16 and its carrier-spring are covered by the forward end of the receiver into which the barrel is fixed, said stop and spring lying in the recess, 28, formed therefor in the barrel. By means of this construction the stop is safely held from being blown out of the gun while firing cartridges having defective shells, the outward movement of the stop being, in such cases, limited by the upper wall, 27, of the receiver, or frame, of the gun.

Having thus described my invention, I claim—

1. In a breech-loading gun for using rimless cartridges, the combination with the receiver having a forward shoulder, and with the barrel fixed in the receiver and having the firing-chamber, having a stop-receiving recess communicating with, and located at, the rear end of the firing-chamber in position for holding the cartridge-stop in its required position longitudinally of the barrel, and having in the outer side thereof a spring-receiving channel extending from said recess to a point forward of said receiver-shoulder, a cartridge-stop in said recess and movable therein transversely of the barrel, and a stop-carrying spring in said channel and carrying the stop at its rearward end and at its forward end held in place by engagement between the end-wall of said channel and said forward shoulder of the receiver, substantially as described.

2. In a breech-loading gun for using rimless cartridges, the combination with the receiver bored to receive the rear end of the barrel and having the transverse face at the extreme rearward end of the bore, and with the barrel removably-fixed in the receiver and extending near to said face and having the firing-chamber, and having the transverse stop-receiving notch in its extreme rearward end, which notch has on its rearward side the said receiver-face forming the rear wall of a recess for holding a transversely sliding cartridge-stop, of a transversely-sliding carriage-stop carried in said recess and sliding be-

tween the forward side thereof and said receiver-face, and means normally projecting the stop into the firing-chamber, whereby the stop is actuated in said recess, and is released from between the receiver and the barrel on removing the barrel from the receiver.

3. In a breech-loading gun for using rimless cartridges the combination with the receiver having the threaded bore adapted to receive the rear end of the barrel and having an inner transverse face at the rear end of said bore and an outer transverse face forward of said thread, and with the barrel threaded to screw into the receiver-bore with its end in close proximity to said inner face, and having a transverse stop-receiving notch in its end, which notch has on its rearward side (when the parts are assembled) the said inner receiver-face to form a slide-way for a cartridge-stop, and a spring-receiving channel in one side of its threaded portion and extending from said notch to a point forward of said outer receiver-face, of a combined cartridge-stop and stop-carrying spring consisting of a stop adapted to slide transversely of the barrel in said slide-way, and a spring adapted to work in said spring-receiving channel and carrying said stop at its rearward end and supported at its forward end by engagement between said barrel and said outer receiver-face, whereby said combined stop-and-spring is locked in place on assembling the barrel and receiver, and is released on removal of the barrel from the receiver, substantially as described.

4. In a breech-loading gun for using rimless cartridges, the combination with the receiver, and with the barrel removably-fixed in the receiver and having the firing-chamber, the stop-recess at the rearward end of said chamber, and the spring-channel in the outer side of the barrel extending from said recess to a point forward of the receiver, of the transversely-movable cartridge-stop in said recess, and a double-length stop-spring in said channel, and whose rearward end or spring connects with said stop, whose middle portion engages the forward end of the receiver, and whose forward end or spring bears on and reacts against the barrel at a point forward of the receiver, substantially as described.

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