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I. ÅSLUND ET AL  
NON-RECOILING GUN

2,983,195

Filed June 5, 1958

2 Sheets-Sheet 1

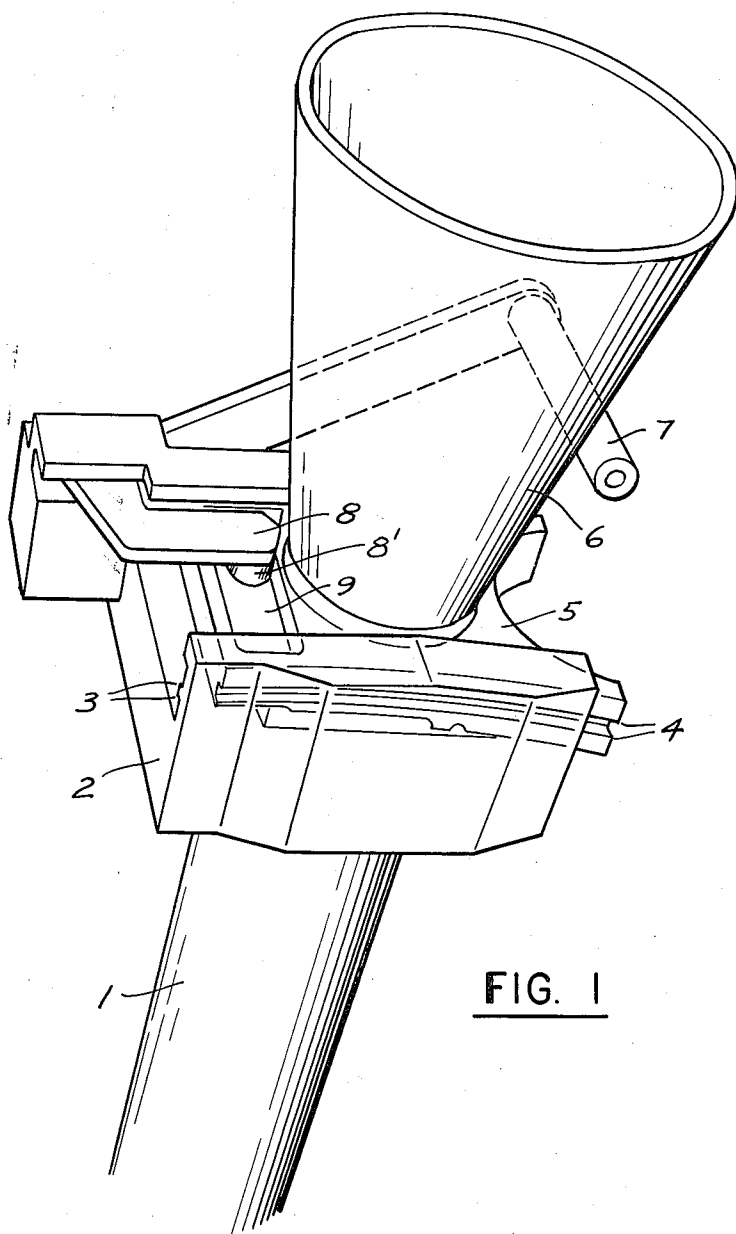


FIG. 1

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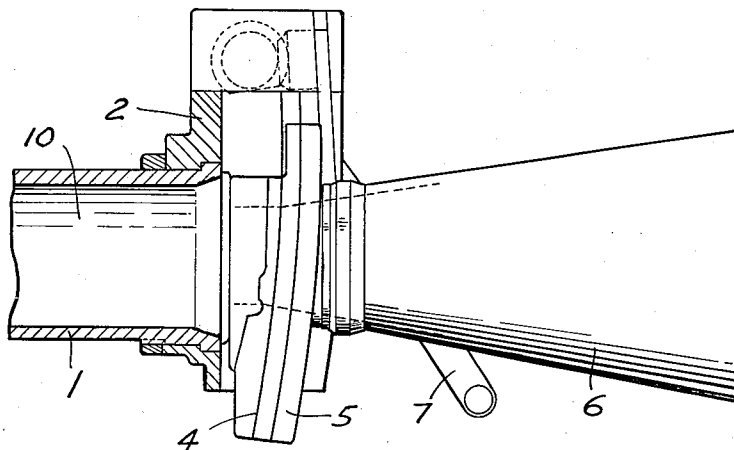


FIG. 2

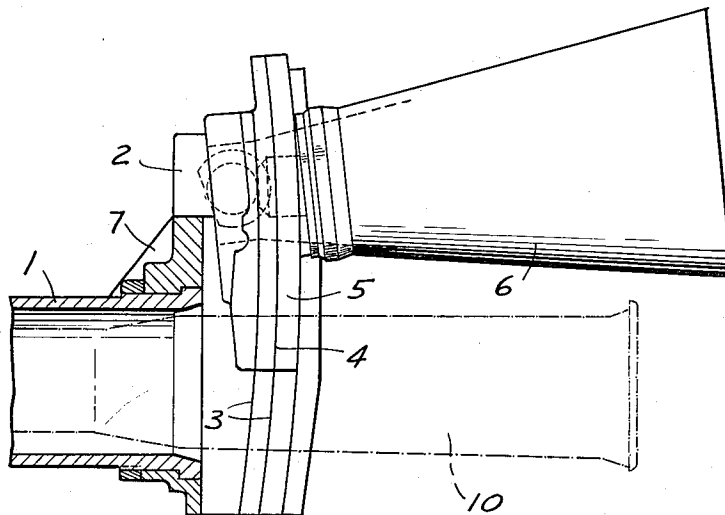


FIG. 3

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## NON-RECOILING GUN

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3 Claims. (Cl. 89—1.7)

The present invention relates to guns, and more particularly to non-recoiling guns.

It is known to eliminate the recoil of the barrel of a gun by exhausting part of the powder gases at the rear end of the barrel through a funnel of rearwardly expanding cross section.

This principle has been applied to gun barrels with breech ring by hinging an exhaust funnel to the breech ring so that the funnel can be tilted either into a firing position co-axially aligned with the gun barrel or into a position lateral of the barrel for ramming a new round into the barrel. However, it has been found very difficult, if not impossible to provide a mounting sufficiently strong and gas tight to withstand the impact of the gases and to confine the gases during firing, especially when the gun is of a comparatively heavy caliber.

There are also known recoiling guns, the breech ring of which is closed and opened respectively by displacement of a breech block in the breech ring. Attempts to apply the aforementioned principle to guns of this kind by securing the exhaust funnel to the breech block have failed so far, due to the fact that the distance through which the block must be moved to reach a position in which the funnel thereon does not obstruct the ramming of a round is rather considerable. The required large block movement entails a large breech ring which as a result becomes very heavy thereby increasing correspondingly the total weight of the gun. This is contrary to the demand that non-recoiling weapons should be as light as possible.

Accordingly, it is an object of the invention to provide a novel and improved non-recoiling gun of the general kind above referred to, the exhaust funnel of which is mounted strong and gas tight enough to withstand the impact of the gases and to prevent escape of the gases except through the exhaust end of the funnel.

Another object of the invention is to provide a novel and improved non-recoiling gun with breech ring and breech block which permits mounting the exhaust funnel on the block without the need of materially increasing the size and weight of the breech ring.

Still another object of the invention is to provide a novel and improved gun with breech ring and breech block, the total weight of which is not materially increased and which permits a strong and gas tight mounting of the exhaust funnel.

A further object of the invention is to provide a novel and improved non-recoiling gun with breech ring and breech block so designed that the exhaust funnel, more specifically the exhaust end thereof which has the widest diameter, moves through a longer distance than its front portion when the breech block is moved into the position opening the breech ring. As a result of this difference in movement, the breech ring can be kept comparatively small and light and yet will accommodate the required wide movement of the breech block.

Other and further objects, features and advantages of

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the invention will be pointed out hereinafter and set forth in the appended claims forming part of the application.

In the accompanying drawing a preferred embodiment of the invention is shown by way of illustration and not by way of limitation.

In the drawing:

Fig. 1 is a perspective rear end view of a non-recoiling gun according to the invention.

Fig. 2 is an elevational view of the rear part of the gun showing a round rammed home and the breech block closed, and

Fig. 3 is an elevational view similar to Fig. 2 but showing the breech block open for ramming a round.

Referring now to the figures in detail, there is shown part of the gun barrel 1 the rear end of which mounts a breech ring 2 to be closed or opened by displacement of a breech block 5 transversely of the axis of the gun barrel. The breech block is in slidable engagement with the breech ring by means of curved guide tracks and shoes 3 and 4 on the breech ring and the breech block respectively. The guide tracks define part of a circular outline and the concave side of the tracks faces the gun barrel. The narrow end of a conically shown exhaust funnel 6 is secured gas tight to the breech block by any suitable means such as riveting or welding.

The breech block 5 is moved relative to the breech ring and the axis of the barrel by means of a suitable linkage system shown as including a handle 7 and a lever 8 mounting a roller 8' sliding in a recess 9 of the breech block.

Figs. 2 and 3 show the arcuate movement performed by the breech block and the funnel when the breech ring 2 is moved from the breech block closing position of Fig. 2 into the open position of Fig. 3 in which a round 10 may be rammed into the barrel. As is evident from these figures, the wide end of funnel 6 moves through a materially greater arc than the narrow end of the funnel due to the curvature of the guide tracks and shoes 3 and 4. In other words, the short movement of the narrow funnel end together with the breech block relative to a breech ring of about standard size is sufficient to bring the wide end of funnel 6 out of the ramming path of round 10.

While the invention has been described in detail with respect to a certain now preferred example and embodiment of the invention it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended therefore, to cover all such changes and modifications in the appended claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. A non-recoiling gun comprising, in combination, a gun barrel, a breech ring at one rear end of said barrel, a breech block for opening and closing said breech ring, a powder gas exhaust funnel of expanding diameter secured upon said breech block with its smaller end facing said one end of said barrel, curved guide tracks on said breech ring slidably supporting said breech block for arcuate movement relative to the breech ring transversely to the longitudinal axis of said barrel, said curved guide tracks forming a curved guide path for the breech block lying in a plane substantially parallel to said longitudinal axis of said barrel and directing the wide end of said funnel for arcuate movement through an arc wider than the arc through which said narrow end of said funnel is moved in response to arcuate displacement of said breech block relative to said breech ring.

2. A non-recoiling gun comprising, in combination, a gun barrel, a breech ring mounted upon one rear end of

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said barrel, a breech block supported upon said barrel for opening and closing said breech ring, a powder gas exhaust funnel of expanding diameter secured upon said breech block at its narrow end facing said one end of said barrel, curved guide tracks carried on said breech ring slidably supporting said breech block for arcuate movement relative to said breech ring in a direction transversely of the longitudinal axis of said barrel, and said guide tracks having a concave side facing toward said one end of said barrel.

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3. A gun according to claim 2 wherein said guide tracks define a segmental circular path.

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