June 26, 1945. J. D. STEEL 2,379,383

GRENADE RELEASING APPARATUS

Original Filed March 17, 1941

Fig. 3.

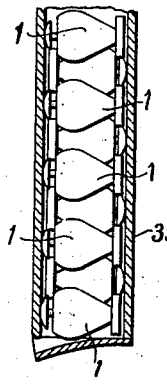
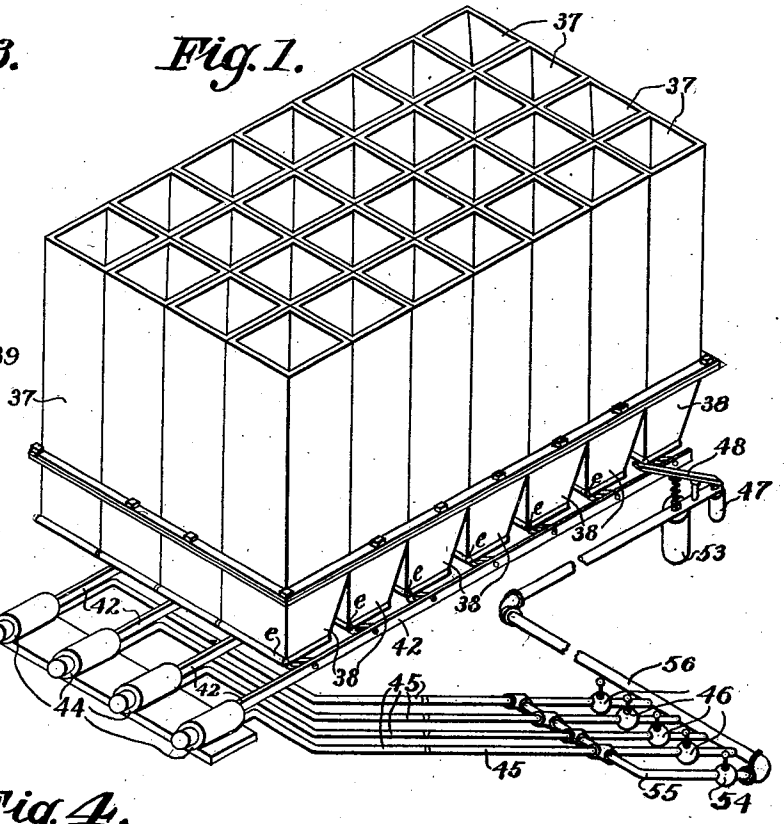


Fig. 1.



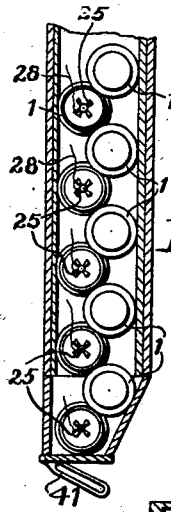
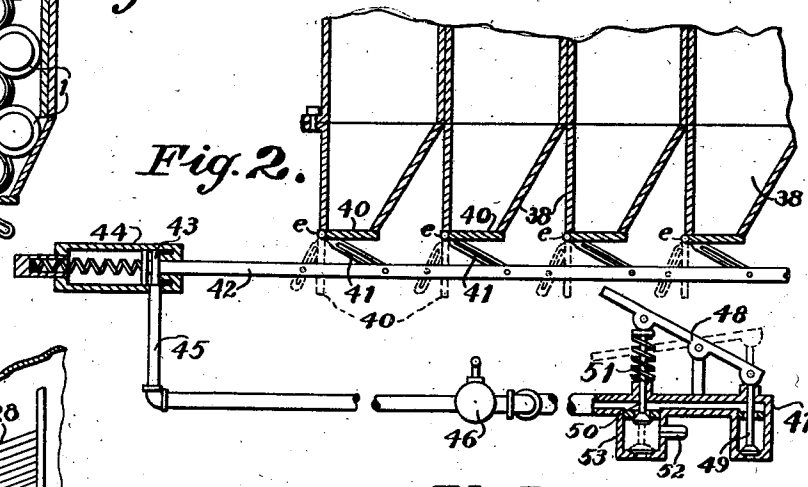


Fig. 4.

Fig. 2.



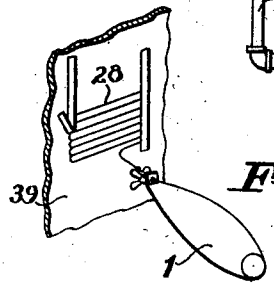


Fig. 5.

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UNITED STATES PATENT OFFICE

2,379,383

GRENADE RELEASING APPARATUS

John Dawson Steel, Fort Worth, Tex.

Original application March 17, 1941, Serial No. 383,800. Divided and this application July 14, 1944, Serial No. 544,861

1 Claim. (Cl. 89—1.5)

This invention relates to grenade releasing apparatus and is more especially a division of an application filed by me on March 17, 1941, Serial No. 383,800 (Patent No. 2,372,689, granted April 3, 1945).

An object of the invention resides in the provision of apparatus for distributing the grenade from an airplane adapted to be installed in such a manner as to afford collective and selective releasing of the grenades from the air either singly or in groups, depending upon the circumstances and conditions under which the explosives are employed, such an arrangement consisting of a series of magazines compactly assembled to adapt the mechanism for installation in the fuselage of an aircraft.

Another object is to provide apparatus of this character adapted to contain cartons in each of which a number of explosive grenades is packed, these cartons being so positioned in the apparatus that the grenades therein can be dispensed without unpacking and rearranging them.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred form of the invention has been shown.

In the drawing

Figure 1 is a perspective illustration schematically showing an assembly of magazines each having a trap door at its lowermost end adapted to be operated by compressed air, or the like, and controlled by a foot lever and valve, the assembly being suitably adapted for installation in aircraft.

Figure 2 is a fragmentary cross sectional illustration of the lower ends of one row of the magazines, illustrated in Figure 1, showing the releasing mechanism for the trap doors in the lower ends of the said magazines and depicting, in cross section, the valves operating the said releasing mechanism.

Figure 3 is a fragmentary cross sectional illustration of a carton showing a number of the grenades nested therein and by which manner the magazines can be filled without unpacking and rearranging the grenades.

Figure 4 is a fragmentary cross sectional illustration of one of the magazines showing a carton of the grenades arranged therein and ready to be released through the releasing mechanism illustrated in Figure 2, and

Figure 5 depicts, fragmentarily, the manner in which each of the grenades is attached to the inside of the carton in which they are packed by a cord attached to the safety pin which is withdrawn by the weight of the grenade when dropped.

The apparatus constituting the present invention is designed to distribute grenades of the type shown in my application hereinbefore mentioned and which have been indicated generally at 1, each of these grenades being provided with propellers or air operated wheels 25 whereby, when the grenades are dropped from the distributing apparatus, the rush of air will cause the wheels to rotate and ultimately effect the explosion of the grenade.

The grenade dispensing apparatus constituting the present invention comprises a battery of magazines 37, preferably rectangular in form, as illustrated in Figure 1, and arranged in parallel rows so that the assembly can be made compact and disposed within the fuselage, or some other part, of an airplane. Each of the magazines 37 is provided with a discharge hopper 38 at its lowermost end. This arrangement is illustrated in greater detail in Figures 2 and 4. The hoppers 38 are preferably tapered on one side forwardly of the assembly so that the opening in the bottom of each magazine is narrowed to the extent that only one of the grenades can be discharged at a time.

It is desirable that the invention be arranged within a packing case 39, as illustrated in Figures 3 and 4, which may be of cardboard, or similar material, and nested in such a manner as to expedite the proper dispensing of the grenades singly or collectively. Each of the grenades 1 should be properly anchored within the carton 39 by the cord 28 arranged in the manner illustrated in Figure 5 so that no difficulty will be encountered in allowing the grenade 1 to drop safely out of any of the magazines 38 and the pin 26 withdrawn to permit the propeller 25 to function. It is desirable that the packing case 39 be of such character that the same may be inserted into the magazine 37 in the manner illustrated in Figure 4 and the bottom of the case removed to allow the grenades 1 to pass on down into the hopper 38 ready to be released.

Each of the magazines 37 is provided with a

closure 40 hinged at *e* and having a slotted lever 41 rigidly connected therewith, as shown in Figure 2, which is in turn connected to a horizontal bar 42 connected at one end to a piston 43 within a cylinder 44, the said piston 43 adapted to be operated by air pressure, or the like, admitted through a conduit 45 communicating with one end of the cylinder 44. A valve 46 is arranged in each of the conduits 45 between the cylinder 44 and a master operating valve 47 designed to admit air pressure to the cylinder 44 to operate the piston 43 at desired intervals.

The master valve 47 is provided with a pedal 48, pivotally attached to each end of which are valves 49 and 50, as illustrated in Figure 2, adapted for alternate operation. As the pedal 48 is depressed forwardly against a tension spring 51 the valve 50 is opened, as illustrated in dotted lines in Figure 2, while the valve 49 is closed. The opening of the valve 50 will admit air pressure from a source (not shown) through a conduit 52 entering the casing 53 in which the valve 50 operates. The operation, however, of the master valve 47 will not affect the piston 43 to operate the closure 40 at the bottom of each of magazines 37 unless the valve 46 is manipulated. It is pointed out, by reference to Figure 1, that each of the conduits 45 leading to each of the cylinders 44 is provided with a valve 46. Thus, it is possible to select any given series of the magazines 37 for operation as they are arranged in the manner shown in Figure 1.

If it is desirable to operate all of them at one time a valve 54 is provided in a by-pass conduit 55 connecting the main conduit 56 leading from the master valve 47 into the several conduits communicating with the several cylinders 44, as previously described.

It is manifest that any arrangement for selective or collective operation of the closure 40 of the magazine 37 may be employed which might include an electrical arrangement comprising a series of solenoids, or the like, providing one to each of the closures 40 enabling the operator to manipulate these by closing selected circuits. Thus, either the switches or the valves 54 may be arranged in a convenient manner for the operator providing him with free access thereto.

What is claimed is:

A grenade distributing mechanism including a row of magazines open at the bottom, a closure hingedly connected to the bottom of each magazine and constituting a support for grenades stacked one above the other within the magazines, an arm extended from each of the closures and movable therewith, a bar movably connected to the arms of all the closures of said row, spring means for holding the bar normally in one extreme position and for maintaining all of the closures shut, means under the control of an operator for shifting the bar against the action of said spring means to simultaneously open the closures and release grenades supported thereby.

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