The present invention relates to improvements in repeating firearms, and relates more particularly to the portions thereof including and associated with the box-magazines.

One of the objects of the present invention is to provide a repeating firearm with a superior box-magazine construction whereby a box-magazine may be releasably coupled to the firearm-structure in a simple, reliable and effective manner.

Another object of the present invention is to provide a structure of the character referred to, whereby a box-magazine may be adequately coupled to the firearm-structure at one end of the box-magazine without requiring additional support at the opposite end of the said box-magazine.

A further object of the present invention is to provide a repeating firearm with a superior box-magazine construction whereby the bolt-stop-actuator of the follower may be adequately protected against accidental injury.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features which are novel over the prior art and which are not claimed in any separate application.

In the accompanying drawings, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a broken view partly in side elevation and partly in vertical central-longitudinal section of the intermediate portion of a firearm-structure embodying the present invention;

Fig. 2 is a broken horizontal sectional view taken on the line 2-2 of Fig. 1, but on a larger scale;

Fig. 3 is a similar view taken on the line 3-3 of Fig. 1;

Fig. 4 is a view of the box-magazine detached, shown partly in side elevation and partly in section;

Fig. 5 is a view in rear elevation of the box-magazine;

Fig. 6 is a top or plan view thereof;

Fig. 7 is a broken view in side elevation of the forward portion of the frame or trigger-plate;

Fig. 8 is a view thereof in front elevation;

Fig. 9 is a broken underside view of the forward portion of the frame or trigger-plate; and

Fig. 10 is a perspective view of the magazine-latch, detached.

The particular repeating firearm herein chosen for purposes of illustrating one embodiment of the present invention is of the gas-operated self-loading type of the general character shown in my co-pending application Serial No. 478,058, filed March 5, 1943. The said firearm includes, in the main, a frame or trigger-plate 15, a cylindrically-contoured receiver 16, a barrel 17, a stock 18 and a barrel-cover 19. The firearm-structure also includes a breech-bolt 20 and a box-magazine generally designated by the reference character 21.

The frame or trigger-plate 15 above referred to is mainly of plate-like form and is formed on its lower edge with an integral loop-like trigger-guard 22 extending around a trigger 23 which latter controls the firing mechanism of the firearm in any suitable manner not requiring detailed description herein. The said frame 15 is rigidly secured to the stock 18 in any suitable manner such, for instance, as by a bolt or stud 24 while the said frame 15 and receiver 16 are detachably secured together in any suitable manner.

In effect, the frame or trigger-plate 15 and the receiver 16 when united together, constitute what may be termed a frame-structure.

The barrel 17 above referred to is rigidly coupled at its rear end with the forward end of the receiver 16 in a manner common in firearms and extends through a suitable passage or cavity in the forward portion of the stock 18 and through a channel formed in the underside of the barrel-cover 19.

The receiver 16 is generally of cylindrical form exteriorly and is provided in its interior with an axially extending passage 25 in which the breech-bolt 20 operates. Immediately forwardly of the forward edge of the frame or trigger-plate 15, the receiver 16 is formed in its underside with a vertical magazine-receiving passage 26 into which normally projects the upper portion of the box-magazine 21 before referred to.

The box-magazine 21 includes complemental corresponding side-walls 27-27, a front-end-wall 28, a rear-end-wall 29 and a bottom wall 30. As is shown particularly well in Fig. 2, the side-walls 27-27 are formed integral with the respective opposite side edges of the front-end-wall 28 so that all of the said walls 27-27 and 28 may be conveniently produced by folding up sheet metal into substantially U-shaped form in cross section. The rear end of each of the side-walls 27-27 is bent inwardly toward the complementary side-wall to provide one of two vertical coupling-flanges 31-31. Each of the said coupling-flanges 31-31 is normally entered into the adjacent one of two vertical coupling-grooves 32-32. The said coupling-grooves 32-32 are respectively formed in the opposite side faces of the forward portion of the frame or trigger-plate 15 and respectively accommodate the coupling-flanges 31-31 with a free sliding fit.

The rear end-wall 29 of the box-magazine has its vertical center bent up to provide a hollow rib 33, the interior of which latter opens forwardly into the hollow interior of the box-magazine structure in which is accommodated a plurality of cartridges 34. The respective opposite side edges of the plate-like rear end-wall 29 are
bent rearwardly and slightly-inclined inwardly to respectively provide flanges 35—35 having their respective outer faces snugly fitting against and preferably brazed to the adjacent inner faces of the rear portion of the side-walls 27—27 of the box-magazine. The vertical rear edges of the flanges 35—35 of the rear end-wall 29 abut and assist in supporting the inturned coupling-flanges 31—31 formed at the rear of the side-walls 27—27, as is shown in Fig. 2. The hollow rib 33 of the rear end-wall 29 is accommodated in a vertical forwardly-opening groove 36 formed in the forward edge of the frame or trigger-plate 15.

To the rear of its vertical groove 36, the forward portion of the frame or trigger-plate 15 is formed with a vertical guideway 31 in which vertically reciprocates the depending stem 38 of a vertically-reciprocating bolt-stop generally designated by the reference character 39.

The bolt-stop 39 above referred to includes a head 40 having a downwardly-facing surface 41 for purposes as will hereinafter appear. The said bolt-stop 39 functions in a manner well understood in the art to stop the breech-bolt 20 in its rearmost position when the box-magazine 21 is empty, and does not require further discussion save as will hereinafter appear.

The respective upper edges of the side-walls 27—27 of the box-magazine 21 are bent inwardly toward each other to respectively provide retaining-lips 42—42 which serve to limit the direct upward travel of the cartridges 34. Located below the cartridges 34 within the space in the box-magazine 21 defined by its four walls 27—27, 28 and 29 is a cartridge-follower 43 (Fig. 4) of inverted U-shaped form in side elevation and pressed upwardly by a magazine-spring 44 resting at its lower end upon the bottom wall 29.

The cartridge-follower 43 is provided with a lifting-finger 45 projecting rearwardly from the said cartridge-follower into the hollow interior of the vertical rib 33 located centrally of the rear end-wall 29 of the box-magazine 21. As the cartridge-follower 43 moves forwardly following the sequential removal of cartridges from the upper end of the box-magazine, the said follower will ultimately reach its uppermost position when all cartridges have been removed from the box-magazine and during the last portion of its movement, the lifting-finger 45 of the cartridge-follower 43 will engage with the downwardly-facing surface 41 of the bolt-stop 39 to thereby lift the said bolt-stop. "The lifting of the bolt-stop 39 as just described will cause the same to interpose itself in the path of forward travel of the breech-bolt 20, in a manner usual in repeating firearms. Each of the coupling-flanges 31—31 at the rear end of the box-magazine 21 is formed with one of two rearwardly opening latching-notches 46—46 respectively receiving the adjacent one of two latching-flanges 47—47 forming a feature of a magazine-latch 48. The said magazine-latch 48 is preferably formed of sheet metal and is of U-shaped form in cross section, as is shown especially well in Fig. 10. The latching-flanges 47—47 of the magazine-latch 48 are bent outwardly along a forwardly-and-downwardly-inclined path from the respective upper side-walls of the said magazine-latch and the entry of the said latching-flanges 47—47 into the latching-notches 46—46 of the box-magazine 21 serves to releasably retain the latter in connected relationship with the firearm-structure. The said magazine-latch 48 is mounted for swinging movement upon a pivot-pin 49 extending transversely through the said magazine-latch and through the adjacent portion of the frame or trigger-plate 15 embraced by the said magazine-latch.

Interposed between the lower portion of the rear end-wall of the magazine-latch 48 and the adjacent portion of the frame 15, is a helical latch-spring 50. The latch-spring 50 just referred to serves to yieldingly urge the magazine-latch 48 to turn in a clockwise direction around the pivot-pin 49 so as to normally project the forward ends of the latching-flanges 47—47 into the latching-notches 46—46 in the box-magazine 21. The clockwise turning movement of the said magazine-latch 48 is limited by providing the latter at the upper edge of its rear end, to be considered inwardly-curved stop-finger 51 engageable with the underside of the adjacent portion of the frame 15.

By providing the box-magazine 21 with coupling-flanges 31—31 or their equivalent, the said box-magazine may be fluidly, though releasably coupled to the firearm-structure by the entry of the said coupling-flanges 31—31 into coupling-grooves 32—32 or their equivalent.

By providing the box-magazine 21 or its equivalent, with a hollow rib such as 33 not only in the said box-magazine stiffened and reinforced, but two additional advantages are achieved inasmuch as the said rib 33 acts as a guard for the lifting-finger 45 and at the same time assists in stabilizing the box-magazine by its entry into the clearance-groove 36 in the forward portion of the frame 15.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments and modifications as in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A box-magazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemental side-walls; one of the said end-walls constituting a unit physically-distinct from and non-integral with the said side-walls and embrace the former the same, and both of the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a chamber for the accommodation of cartridges; each of the said complemental side-walls of the box-magazine having a portion extending outwardly beyond the non-integral one of the said end-walls and the outwardly-extendong portion of each of the said side-walls being provided with a vertically-extending coupling-portion projecting inwardly toward the coupling-portion of the complemental side-wall at a location spaced outwardly with respect to the said non-integral end-wall.

2. A box-magazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemental side-walls; one of the said end-walls constituting a unit physically-distinct from and non-integral with the said side-walls and embrace the former the same, and both of the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a chamber for the accommodation of cartridges; each of the said complemental side-walls of the box-magazine having a portion extending outwardly be-
yond the non-integral one of the said end-walls and the outwardly-extending portion of each of the said side-walls being provided with an integral vertically-extending coupling-flange bent inwardly toward the coupling-flange of the complementary side-wall at a location spaced outwardly with respect to the said non-integral end-wall.

3. A boxmagazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemen
tal side-walls; one of the said end-walls constituting a unit physically-distinct from and non-integral with the said side-walls and embraced between the same, and both of the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a cham-
ber for the accommodation of cartridges; each of the said complemen
tal side-walls of the boxmagazine having a portion extending outwardly beyond the non-integral one of the said end-walls and the outwardly-extending portion of each of the said side-walls being provided with a vertical-
ly-extending coupling-portion projecting toward the coupling-portion of the complementary side-wall at a location spaced outwardly with respect to the said non-integral end-wall; the non-
integral end-wall of the boxmagazine being provided with two outwardly-projecting reinforcing-portions each extending outwardly therefrom to ward one of the said coupling-portions and respec-
tively adjacent to and in reinforcing relationship with the outwardly-extending portion of one of the said side-walls.

4. A boxmagazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemen
tal side-walls; one of the said end-walls constituting a unit physically-distinct from and non-integral with the said side-walls and embraced between the same, and both of the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a cham-
ber for the accommodation of cartridges; each of the said complemen
tal side-walls of the boxmagazine having a portion extending outwardly beyond the non-integral one of the said end-walls and the outwardly-extending portion of each of the said side-walls being provided with an integral vertically-extending coupling-flange bent inwardly toward the coupling-flange of the complementary side-wall at a location spaced outwardly with respect to the said non-integral end-wall; the non-integral end-wall of the boxmagazine being provided on each of its respective opposite sides with one of two integral reinforcing-flanges extending toward the said vertical coupling-flanges and respective-
ly in reinforcing relationship with the outwardly-
extending portion of one of the said side-walls.

5. A boxmagazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemen
tal side-walls; the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a chamber for the accom-
modation of cartridges; one of the said end-walls being provided with a vertical outwardly-extend-
ing hollow rib for the accommodation of a mov-
able interior member of the boxmagazine; each of the said complemen
tal side-walls of the boxmagazine having a portion extending outwardly beyond the end-wall provided with the said hollow rib and each of the outwardly-extending portions of the said side-walls being provided with a vertically-extending coupling-portion located outwardly with respect to the said hollow rib and projecting toward the coupling-portion of the complementary side-wall.

6. A boxmagazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemen
tal side-walls; the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a chamber for the accom-
modation of cartridges; one of the said end-walls being provided with a vertical outwardly-extend-
ing hollow rib for the accommodation of a mov-
able interior member of the boxmagazine; each of the said complemen
tal side-walls of the boxmagazine having a portion extending outwardly beyond the end-wall provided with the said hollow rib and the outwardly-extending portion of each of the said side-walls being provided with an integral vertically-extending coupling-flange bent toward the coupling-flange of the complementary side-wall and located outwardly with respect to the said hollow rib.

7. A boxmagazine for repeating firearms comprising: a vertical front end-wall; a vertical rear end-wall; and two vertical complemen
tal side-walls; the said end-walls being spaced from each other and the said side-walls being spaced from each other to provide a chamber for the accommodation of cartridges; one of the said end-walls being provided with a vertical outwardly-
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