April 27, 1965 H. MULCH 3,180,697

STORAGE CONTAINER FOR SLIDE MAGAZINES

Filed Sept. 3, 1963 4 Sheets-Sheet 1

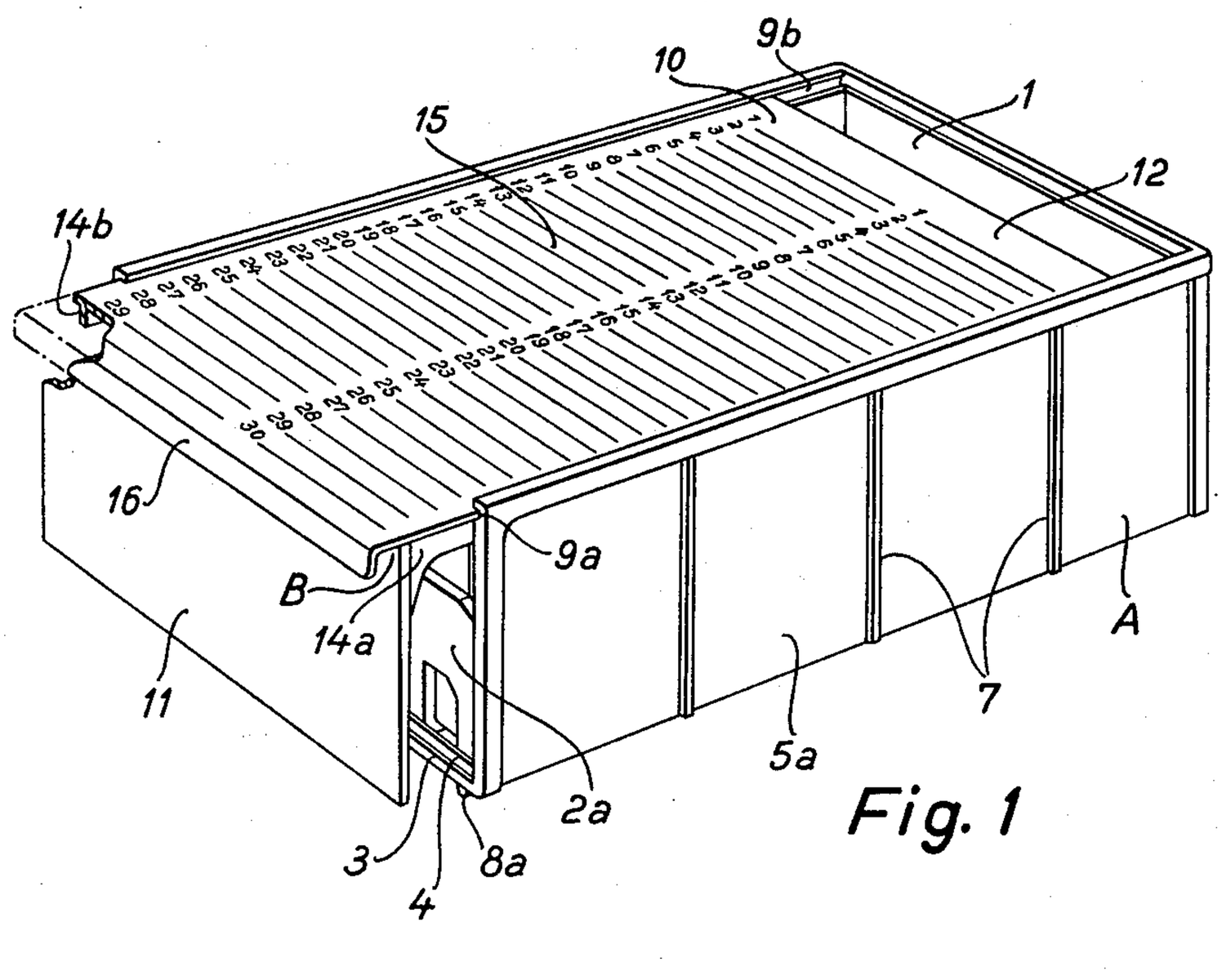
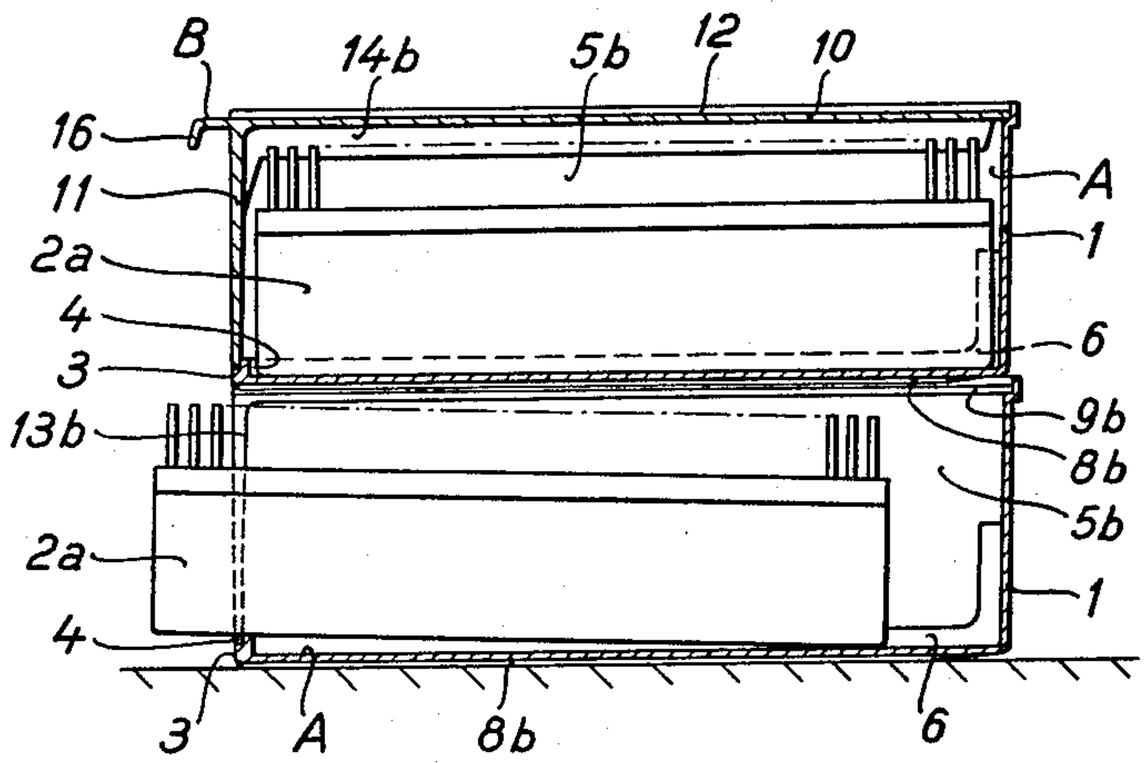


Fig. 1

Fig. 2



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STORAGE CONTAINER FOR SLIDE MAGAZINES

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Fig. 3

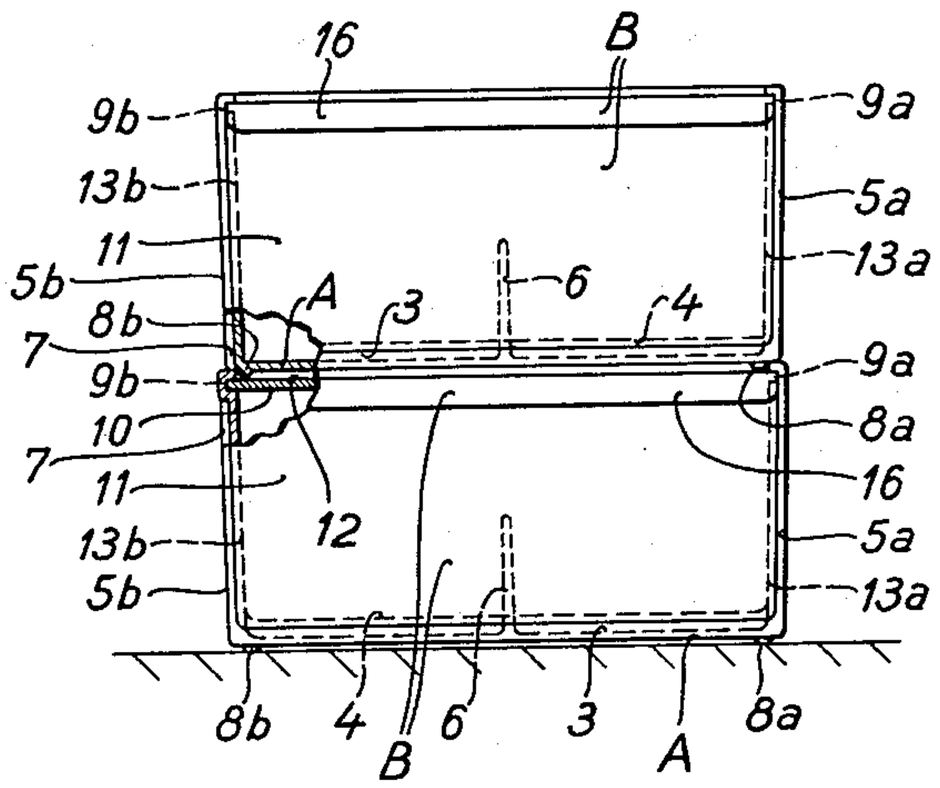
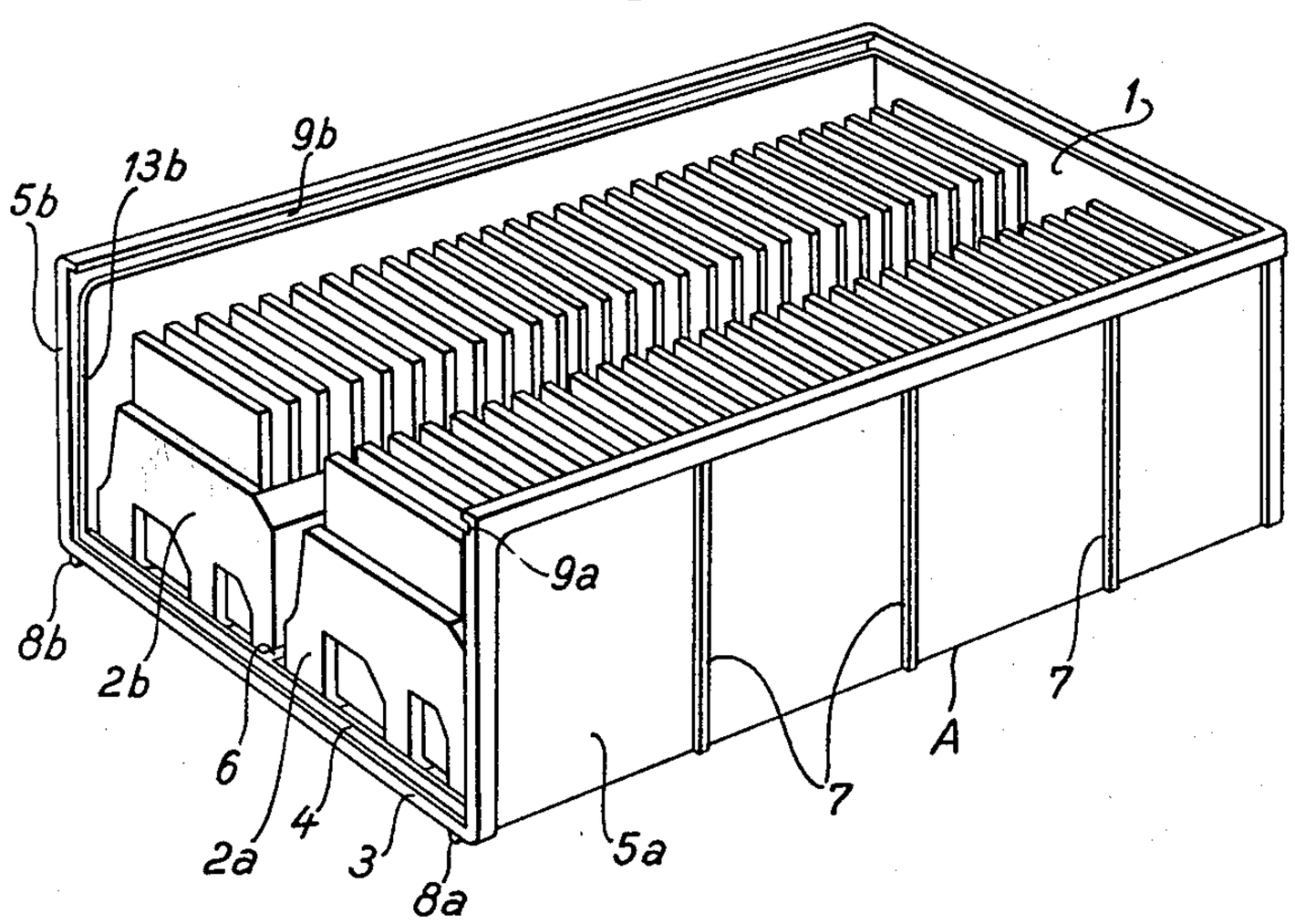


Fig. 4



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STORAGE CONTAINER FOR SLIDE MAGAZINES

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Fig. 5

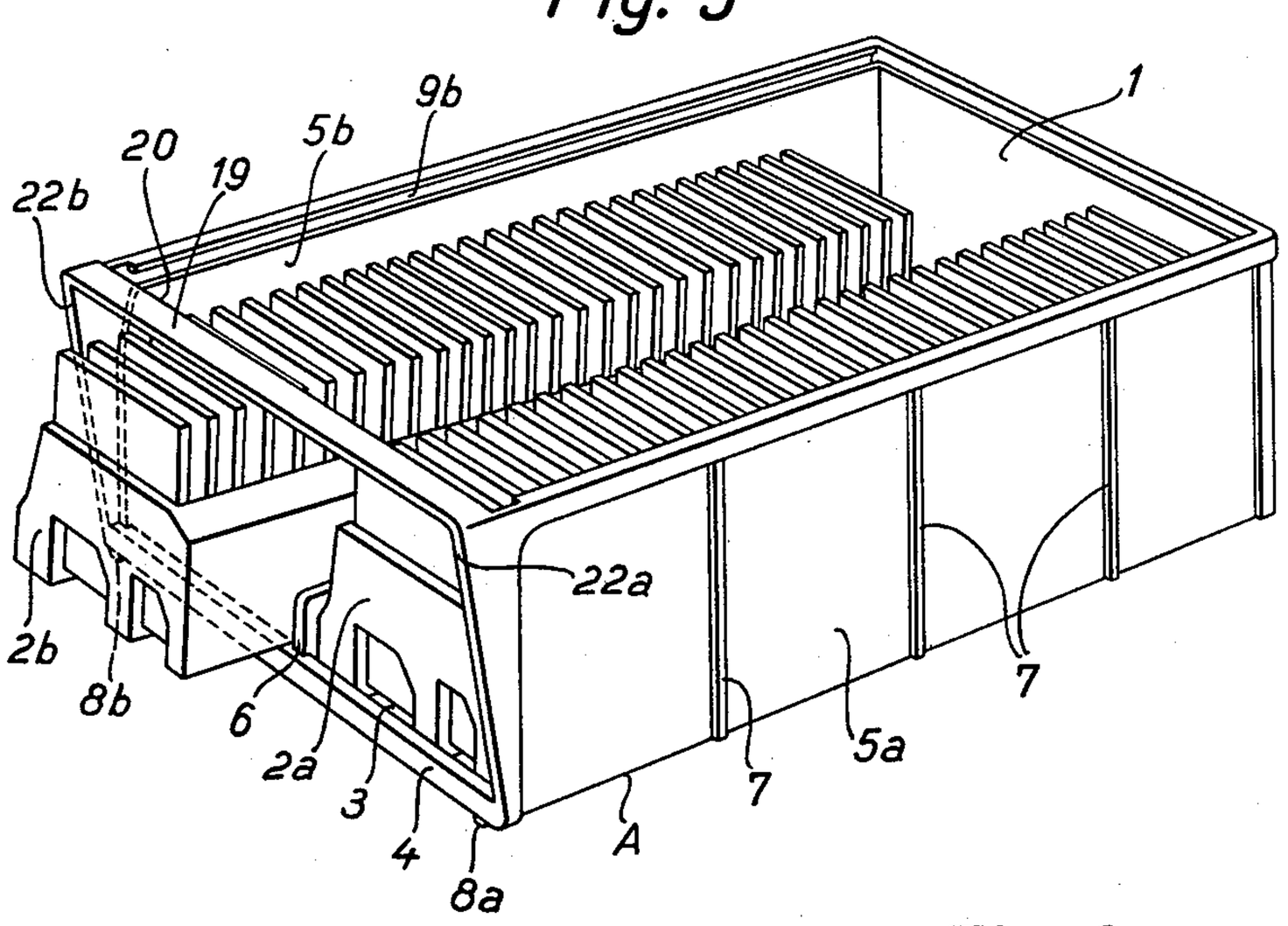
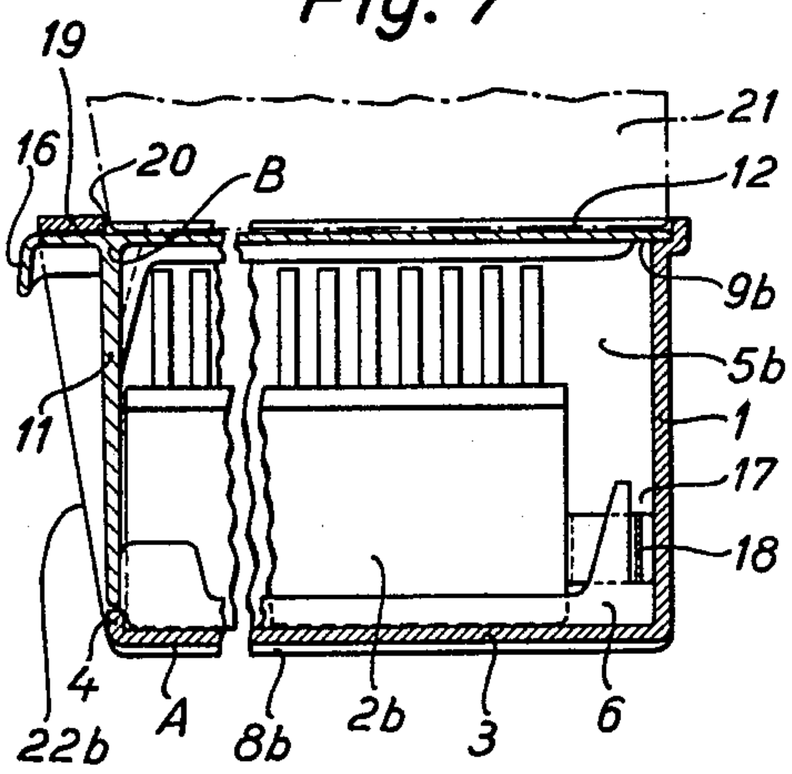
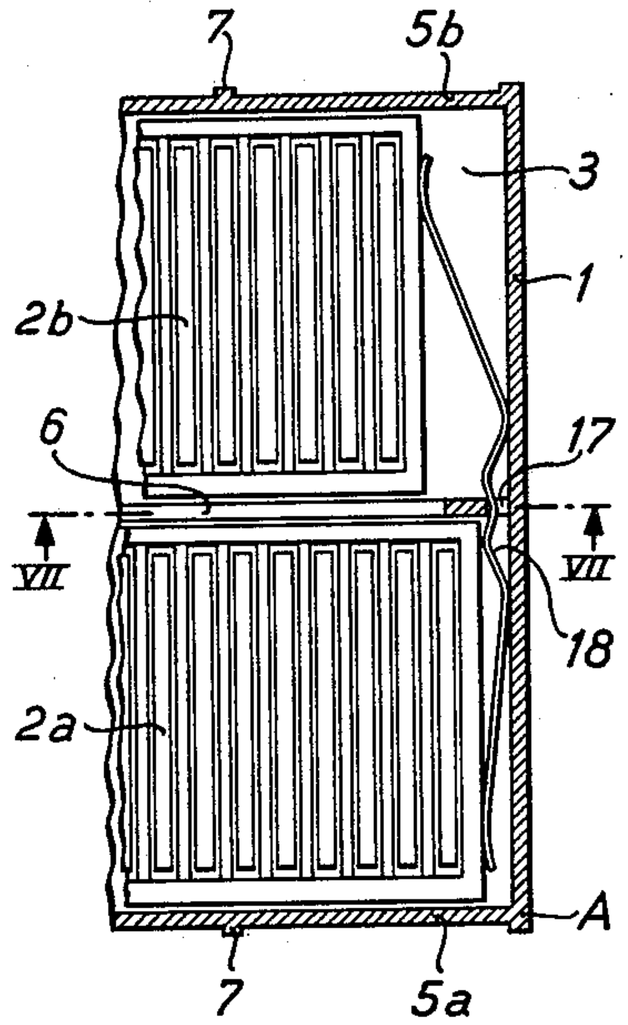


Fig. 6





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STORAGE CONTAINER FOR SLIDE MAGAZINES

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Fig. 8a

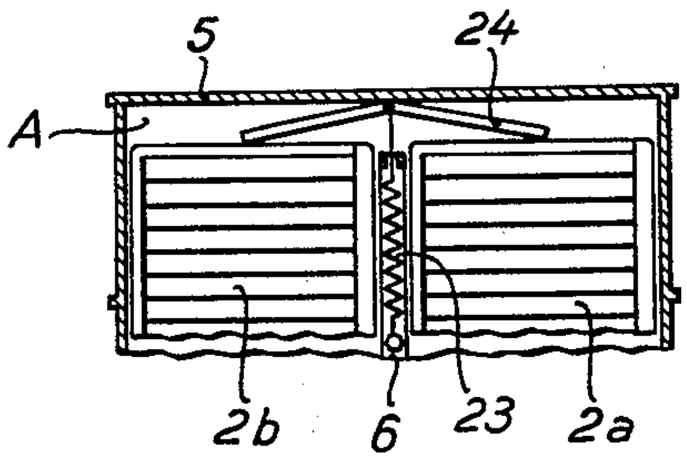


Fig. 8b

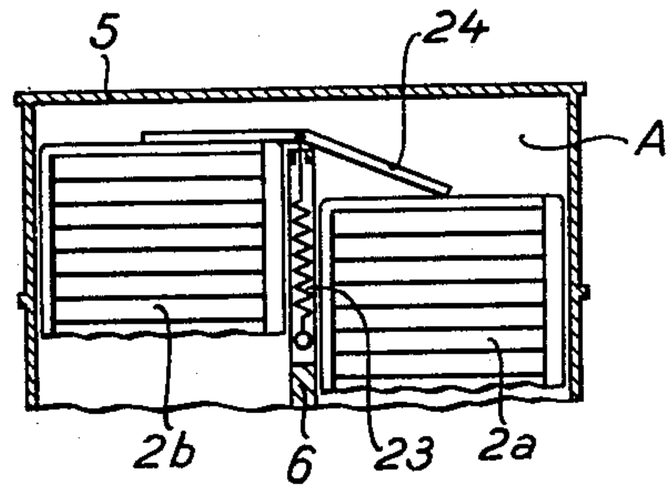


Fig. 9a

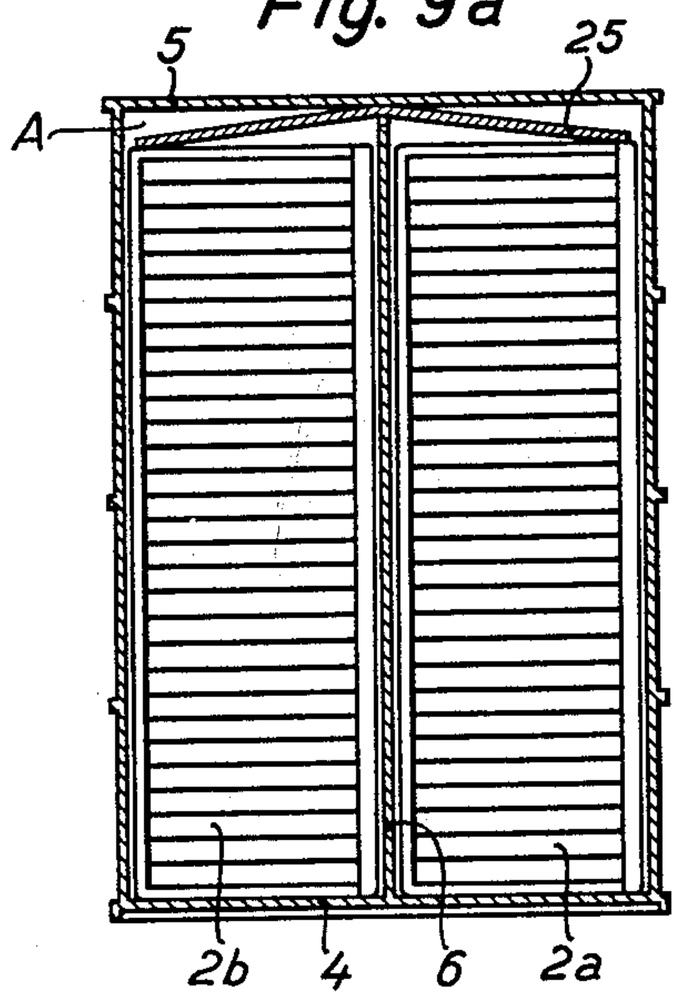


Fig. 9b

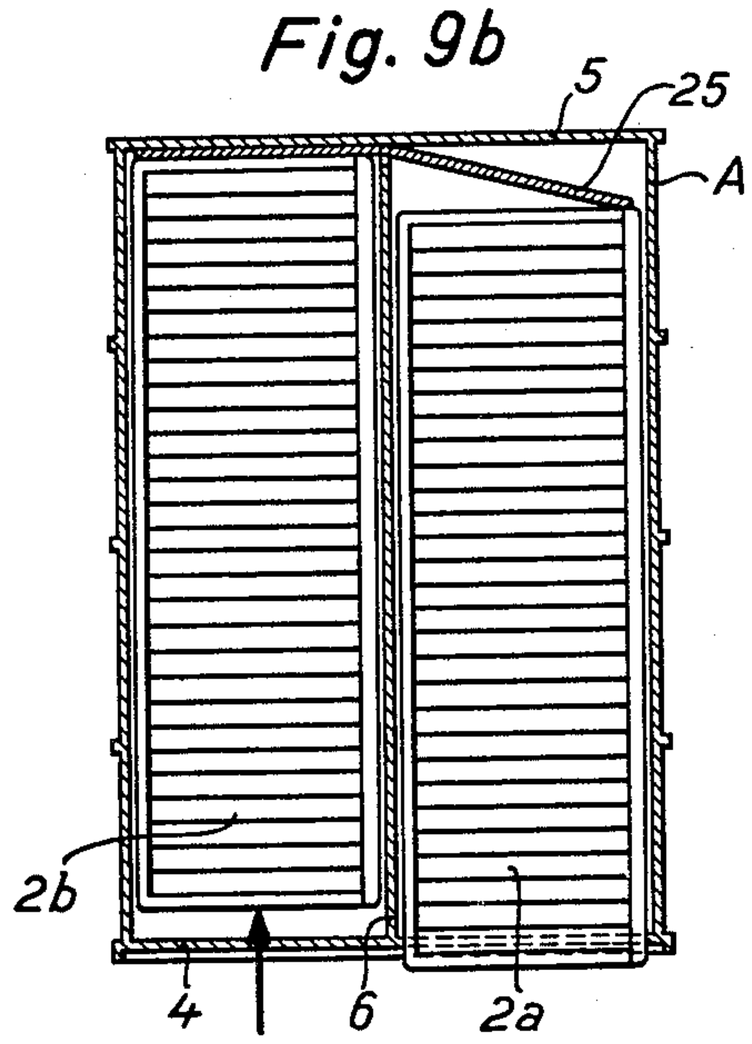


Fig. 10a

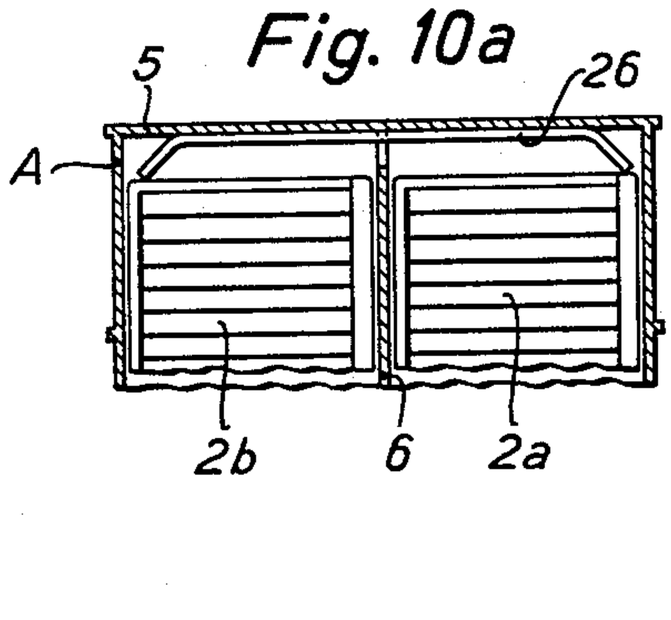
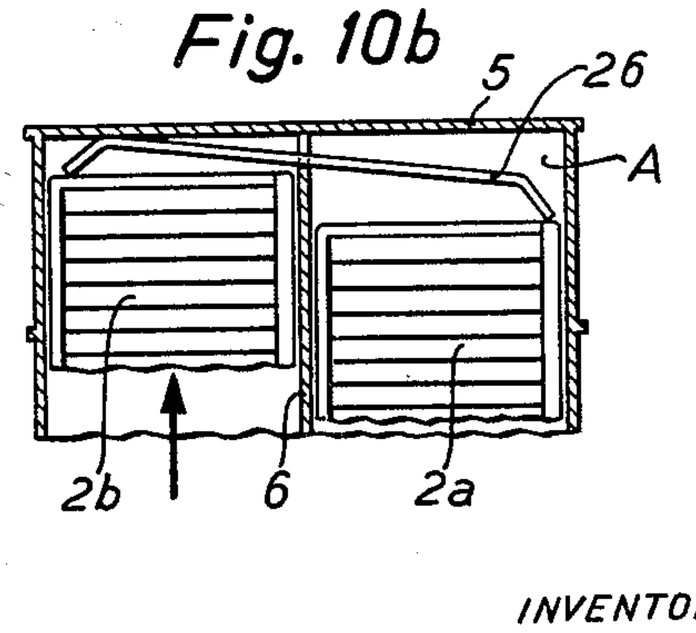


Fig. 10b



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United States Patent Office

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STORAGE CONTAINER FOR SLIDE MAGAZINES

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Claims priority, application Germany, Sept. 29, 1962, L 32,952; June 16, 1963, L 45,045
11 Claims. (Cl. 312—293)

The present invention relates to a container for storing slide magazines, more particularly, to such a storage container wherein a plurality of similar containers may be vertically stacked upon each other and slide magazines can be removed from individual containers without disturbing the stack thereof.

Various forms of containers have been devised for storing slide magazines wherein the containers are so shaped that a plurality of similar containers may be stacked upon each other. In order to remove individual slide magazine from a particular container, the front wall of the container is either pivotably mounted or mounted in some other manner so as to be opened to permit access to the interior of the container. The disadvantage of such containers, however, is that the front wall must be provided with some form of latching device in order to prevent the slide magazines therein from accidentally falling out of the container should the container be in an inclined position.

As an alternative to some form of latching arrangement a simple frictional fit has been proposed wherein in one form the removable front wall is provided with a beveled ledge. This ledge structure, however, has also been found to be unsatisfactory because such a beveled ledge will at times prevent the removal of slide magazines from the container particularly when the slide magazine is to be removed from the lowermost container whose downwardly swinging front wall cannot be pivoted below the supporting surface. In this position the beveled ledge will obstruct the removal of the slide magazine from this container.

The above-mentioned disadvantages and the use of expensive hinges for a front wall were avoided in another form of container which was provided with a removable cover plate. However, this structure had the disadvantage that a slide magazine could not be removed from a container until all of these storage containers above the particular container were removed from the stack.

It is therefore a principal object of the present invention to provide a novel and improved storages container for slide magazines.

It is another object of the present invention to provide a storage container for slide magazines wherein a slide magazine can be removed from a particular container where a plurality of the containers are vertically stacked upon each other.

The objects of the present invention are achieved and the disadvantages of the prior art as discussed above are eliminated by the storage container of the present invention. This storage container essentially comprises a lower portion having a bottom wall, two side walls and an end wall and a cover or upper portion which defines both the top and front walls of the container with the top and front wall being in one integral unit. The cover portion is slidably received in guide grooves formed in the inner faces of the side wall of the lower portion. A ledge or abutment is provided along the front edge of the bottom wall and parallel to the front wall in order to prevent the slide magazines from accidentally dropping out of the container. Therefore, in order to insert a slide magazine in or remove them from a particular container, the upper portion is slidably removed from the portion, and the magazines are then slid over the ledge.

Where the number of such containers are stacked upon each other, difficulties may be encountered in grasping a slide magazine within the container to withdraw the slide magazine because of the lack of space above the magazine. Accordingly, the present invention provides the spring element in each container adjacent the rear wall thereof for exerting a force against slide magazines in the container to urge the slide magazines in the direction of the ledge. Thus, in order to remove the slide magazine the magazine need only be lifted over the ledge and the spring will force the magazine outwardly a sufficient distance so it may be grasped by hand. The force of the spring is adjusted in such a manner that the magazine will be projected outwardly at a distance of about ½ to 1 inch.

When the magazines are stored within the container, the spring element will urge the magazines against the abutment or ledge to tightly position the slide magazines and thus to eliminate any moving around of the magazines within the container.

If the rear wall is made thin, it may sometimes bulge out under the pressure of the spring. To avoid this, the construction can be modified by mounting a tensile spring on one of the side walls or in the middle wall of the holder, the free end of the spring being connected to a structurally rigid bent lever. Such a rigid bent lever can also be used by itself as a tilting member between the rear wall of the holder and the magazines. In the latter case, if a magazine is to be withdrawn, the adjacent magazine would have to be pushed further in. The bent lever can be in two sections, and/or can have end portions of unequal length.

Other objects and advantages of the present invention will be apparent upon reference to the accompanying description when taken in conjunction with the following drawings wherein:

FIGURE 1 is an overall perspective view of a storage container according to the present invention wherein the storage container comprises a removable upper portion;

FIGURE 2 is a longitudinal sectional view through two stacked storage containers of the type illustrated in FIGURE 1;

FIGURE 3 is a front elevational view of two stacked storage containers as shown in FIGURE 1, and partially in section to illustrate the relationship between adjacent stacked containers;

FIGURE 4 is an overall perspective view of the lower portion of a storage container of the present invention showing a pair of slide magazines therein;

FIGURE 5 is a perspective view similar to that of FIGURE 4 but showing a modified lower portion wherein a reinforcing bar is provided across the front;

FIGURE 6 is a horizontal sectional view through a portion of the container as shown in FIGURE 5, and illustrating the spring for pushing the slide magazines outwardly;

FIGURE 7 is a partial vertical sectional view taken longitudinally of FIGURE 6 and along the line VII—VII thereof;

FIGURES 8*a* and 8*b* show the rear portion of the holder provided with a tensile spring in its normal and retracted positions;

FIGURES 9*a* and 9*b* show the holder with the tilting member in its normal and tilted positions; and

FIGURES 10*a* and 10*b* show the rear portion of the holder with a double tilting member in the normal and tilted positions.

With reference to the drawings wherein like reference symbols indicate the same parts throughout the various views, a specific embodiment and modifications of the present invention will be described in detail.

With particular reference to FIGURE 1 there is illustrated a storage container according to the present invention, which comprises a lower portion A and an upper portion B, each of which portions will be described in detail. The lower portion A comprises a rear wall 1, a bottom wall 3, side walls 5*a* and 5*b*, and receives two slide magazines 2*a* and 2*b*. Theere is a ledge or abutment 4 along the front edge of the bottom wall 3 and parallel to the front thereof. A partition 6 is upstanding from the bottom wall 3 and positioned perpendicular to the ledge 4 so as to extend from the ledge 4 to the rear wall 1. The partition 6 is positioned midway between the side walls 5*a* and 5*b* so as to define two compartments within the lower portion A. The side walls 5*a* and 5*b* are provided on their outer faces with vertically extending reinforcing ribs 7. The bottom wall 3 is provided on its outer face with two longitudinally extending ribs 8*a* and 8*b* which are positioned slightly inwardly of the outer edges of the bottom wall.

Longitudinally extending grooves 9*a* and 9*b* are provided in the inner faces of the side walls 5*a* and 5*b* adjacent the top edges thereof. Portions of the front edges of the side walls 5*a* and 5*b* are removed to form shoulders 13*a* and 13*b* which together with the ledge 4 function as abutments for the front wall of the upper portion B, and thus limit the inward movement of the cover portion B.

The upper or cover portion B comprises a top wall 10 and a front wall 11 both of which are formed in an integral piece with the outer edges of the top wall 10 being slidably received within the longitudinal grooves 9*a* and 9*b*. Positioned on the inner face of the top wall 10 of the upper portion B are two longitudinally extending rails 14*a* and 14*b* which not only reinforce the upper portion B but also function as guides.

The upper surface 12 of the top wall 10 may be provided with labels or markings 15 for identifying the contents of the respective slide magazines. To facilitate handling of the upper portion B the top wall 10 is extended forwardly of the front wall 11 and bent downwardly to form a grip 16.

The guideways for the removal of upper portion B are constructed so that the upper portion will be freely movable with a minimum of friction. Since both the upper and lower portions are preferably constructed of a plastic and accordingly have only a little weight, the upper portion will not readily slide out of the container when the container is in an inclined position.

When a plurality of similar containers are vertically stacked as may be seen in FIGURE 3, the lower ends of the vertical ribs 7 rest upon the upper edges of side walls 5*a* and 5*b* and thus prevent the stacked containers from dropping into each other. The longitudinal ribs 8*a* and 8*b* on the bottom wall 3 assure lateral positioning of the stacked containers with respect to each other.

In order to introduce or remove slide magazines with respect to a particular container, the entire upper portion B is first removed by pulling the gripping bar 16 to slide the entire upper portion outwardly from the lower portion. The inside of the container will then be accessible and the magazines can be lifted and then pulled out over the ledge 3. This will be possible even if a number of containers are stacked as shown in FIGURES 2 and 3, since after the upper portion B is removed there will still be sufficient vertical space to permit removal of the slide magazine. The ledge 3, however, will prevent individual magazines from accidentally sliding out of the containers.

In the modification illustrated in FIGURES 5 through 7, the intermediate wall or partition 6 is provided with a slot or recess 17 adjacent the rear wall 1. A leaf spring 18 is inserted in the slot 17 and is so shaped that its central portion abuts the rear wall 1 and the two ends of the leaf spring will project into the slide compartments so as to engage the ends of slide magazines therein as shown in FIGURE 6. The leaf spring 18 will urge the slide magazines forwardly and in the direction of the ledge 4.

In the construction shown in FIGURES 8*a*, 8*b* a coiled spring 23 has one of its ends connected to the middle wall 6, the other end being connected to a structurally rigid bent lever 24. If the front wall of a magazine 2*a* that is to be removed is pushed up by pressing against it with the finger, the spring 23 will actuate one end of the bent lever 24 to push the magazine 2*a* forwards while the other end of the bent lever will seat against and pivot upon the rear wall of the adjacent magazine 2*b*.

In FIGURES 9*a*, 9*b*, and 10*a*, 10*b*, a structurally rigid tilting member 24 or 26 is interposed at the rear end of the middle wall between the magazines 2*a* and 2*b* on the one hand and the rear wall 5 of the holder on the other hand. The member 25 is in the form of a singly bent lever, whereas the member 26 is in the form of a doubly bent lever. In each case in order to remove one of the magazines such as 2*a* after pushing it upwardly with finger pressure, the other magazine is pushed further in by another finger in the direction of the arrow, so that the tilting member 25 or 26 will push the magazine 2*a* further outwards.

The two side walls 5*a* and 5*b* are interconnected by a bar 19 which extends from the top front corners of each of the side walls. This bar considerably increases the rigidity of the lower portion A. The bar 19 is positioned above the longitudinal grooves 9*a* and 9*b* and forward of the front edge of the bottom wall 3. The bar 19 thus provides a shoulder or abutment 20 which, as can be seen in FIGURE 7, prevents accidental dislodging of the second stacked container 21.

The front edges 22*a* and 22*b* of the side walls 5*a* and 5*b* incline outwardly toward the top thereof and the connecting bar 19 is joined to the upper front corners of these side walls. This arrangement of the bar and inclined side walls facilitates tacking of the containers and also facilitates the molding of these containers from plastic.

When a slide magazine is being introduced into an empty container, the leaf spring is first pressed rearwardly by means of the entering slide magazine. If the slide magazine is then pushed beyond the ledge 4 over the entire length of the magazine, the spring will be released somewhat to firmly press the slide magazine against the ledge 4. Thus, the slide magazines are securely retained in position within the containers. In order to remove a slide magazine, it is pressed slightly rearwardly into the interior of the container.

Not only can the operations of introducing and removing slide magazines as described above be carried out in individual containers, but these operations can be readily carried out from a particular container located in a stack of such containers. The removal of or insertion of slide magazines in one of the stacked containers is readily carried out without disturbing the stack in any manner.

Thus it can be seen that the present invention provides a simple yet effective storage container for slide magazines where the slides can be readily withdrawn from or inserted into storage containers even when the containers are stacked upon each other.

It will be understood that this invention is susceptible to modification in order to adapt it to different usages and conditions and, accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said top wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on

said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, and ejection means adjacent said rear wall adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

2. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said top wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, and resilient ejection means adjacent said rear wall adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

3. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said top wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, means in said lower portion for defining compartments extending parallel to said side walls to receive slide magazines, and a spring in each of said compartments adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

4. The storage container of claim 3, wherein said spring in each of said compartments is a single leaf spring.

5. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, a partition on said bottom wall and extending from said ledge to said rear wall to define two compartments for slide magazines, there being a slot in said partition adjacent said rear wall, and a leaf spring positioned in said slot with the ends of said leaf spring adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

6. The storage container of claim 1, wherein said ejection means is a bent lever.

7. The storage container of claim 6, wherein said bent lever is formed with two spaced apart bends, the intermediate portion of the lever adapted to normally lie against the rear wall of the container while the free ends bear respectively against the two magazines.

8. The storage container of claim 3, wherein said ejection means is a coiled spring with one end connected to a compartment separator and the other end is connected to a bent lever.

9. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said top wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, a bar across the top front edge of said side walls to reinforce said lower portion, and ejection means adjacent said rear wall adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

10. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said top wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, a bar across the top front edge of said side walls, said bar being positioned above said longitudinally extending grooves, and ejection means adjacent said rear wall adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

11. A storage container for slide magazines comprising a lower portion having a bottom wall, two side walls having inner faces and longitudinally extending grooves in said inner faces adjacent to the top edges thereof, and a rear wall, an upper cover portion having a top wall defining the top of the container, said top wall slidably received in said longitudinally extending grooves and a front wall defining the front of the container, a ledge on said bottom wall at the front thereof and parallel to said front wall adapted to retain slide magazines, a bar across the top front edges of said side walls and positioned above said longitudinally extending grooves to reinforce said lower portion, said bar being forward of the front edge of said bottom wall, and ejection means adjacent said rear wall, adapted to engage the outward end of said slide magazines in rest position against said ledge and to eject said slide magazines when said outward end is lifted from said rest position against said ledge.

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THERON E. CONDON, *Primary Examiner*.