Oct. 19, 1954 E. PENKALA 2,692,170

DOUBLE EXTENSION SLIDE

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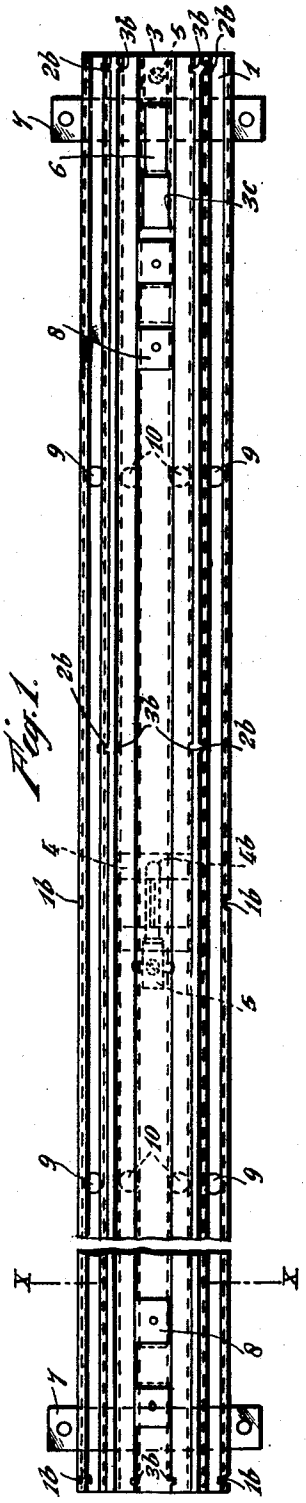

Fig. 1.

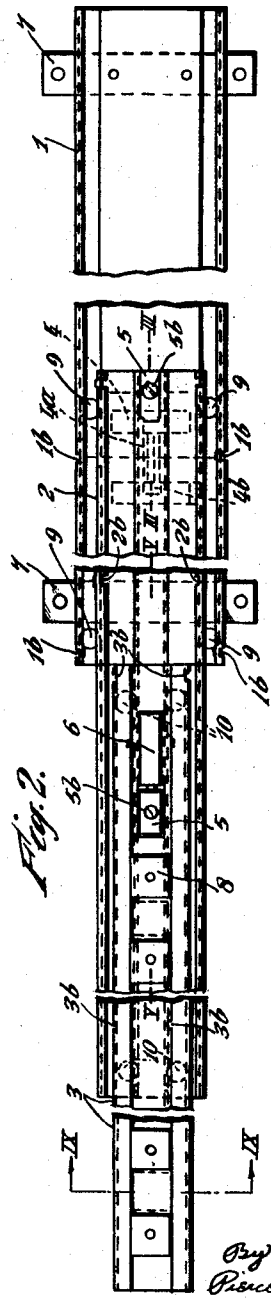

Fig. 2.

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Fig. 3.

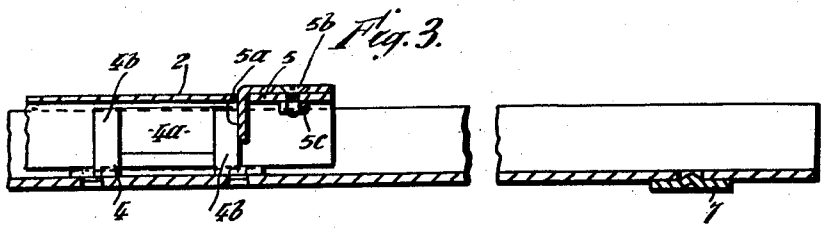


Fig. 4.

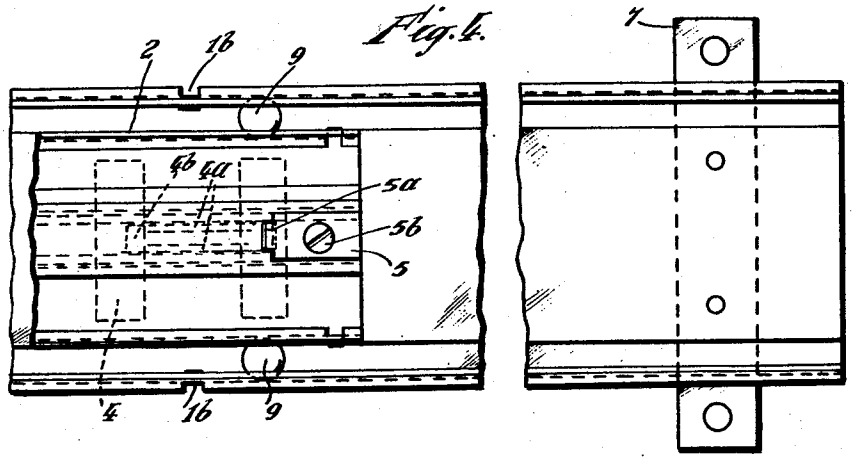


Fig. 7.

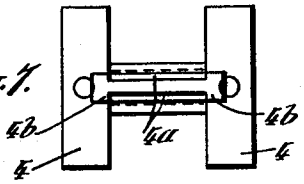


Fig. 8.

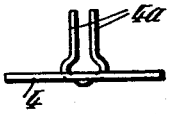


Fig. 9.

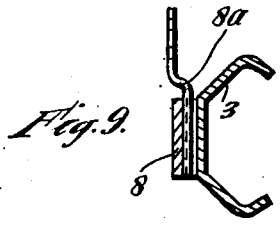
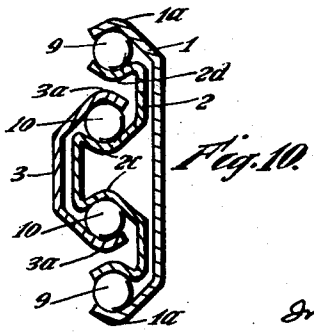


Fig. 10.



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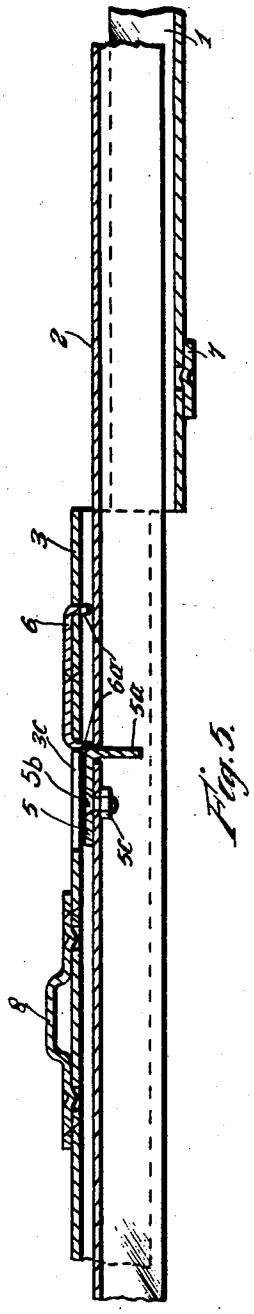

Fig. 5.

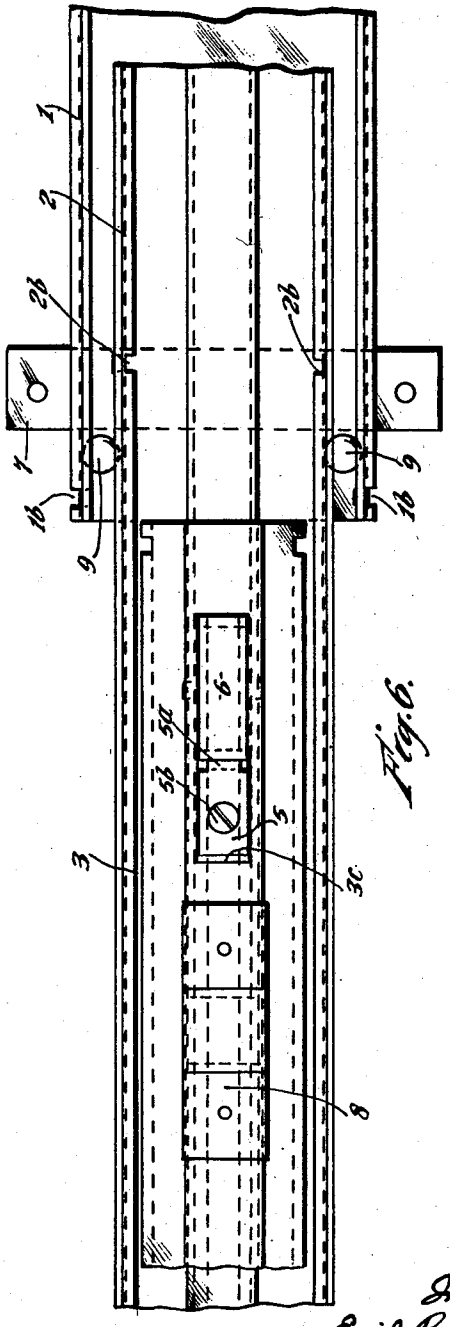

Fig. 6.

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UNITED STATES PATENT OFFICE

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DOUBLE EXTENSION SLIDE

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Claims priority, application Great Britain January 3, 1950

5 Claims. (Cl. 308—3.8)

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This invention relates to double extension slides applicable for various purposes, such as the slidable support of drawers of filing cabinets or like furniture or of turntable units of radiograms, and is particularly concerned with improvements in the construction of such double extension slides of the kind comprising inner, outer and intermediate slide elements formed with longitudinally extending channels or runways for engaging balls or rollers interposed between the respective elements.

The present invention has for its object to provide an improved construction of double extension slide wherein the arrangement of stops for determining the limiting terminal positions of the elements in relation to one another is simplified and adapted to facilitate assemblage and dismantling of the slide unit, and generally to provide an improved construction in which the slide elements and necessary fittings therefor are of simplified form capable of economical production.

According to the present invention, in a double extension slide of the kind referred to, the intermediate element is provided with stop means projecting at both sides thereof for co-operation with stop means on the inner and outer elements.

The invention, furthermore, includes a double extension slide of the kind referred to, wherein the inner and outer elements are each provided with a single double-acting stop at an intermediate position in the length, and the intermediate element is provided with spaced stop means adapted to project at both sides of the intermediate element for co-operation with the double-acting stops on the inner and outer elements.

By such an arrangement of the stop means on the respective slides, the number of stops may be reduced to a minimum and may be of a simple form adapted for ready attachment to the respective elements.

According to a further feature of the invention, the stop means on the intermediate element is detachably secured thereto. Thus, after assembly of the slide elements with the intervening balls or rollers, the stop means on the intermediate element can be subsequently fitted and serves as a locking means for retaining the assembly. Moreover, if it should be required, for any reason, to dismantle the assembly, this is very quickly and easily effected by removing the said stop means on the intermediate element, where after the slide elements can be disengaged

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from one another. The inner slide element may be apertured at a suitable position or positions to facilitate the insertion and removal of the stop means on the intermediate element.

In such double extension slides it is desirable to provide resilient buffer means acting at the extreme limit of extension and of closing movement, and in accordance with the invention, the said double-acting stop on the outer element comprises a fitting projecting at the inner side thereof, and a double-ended rubber or other resilient buffer supported therein.

Each of the said spaced stop means on the intermediate element may comprise an L-shaped fitting, one part of which lies upon the outer side of the intermediate element and is fixed thereto, while the other part, in the form of a tongue, projects through an aperture in the element for co-operation with the double-acting stop on the outer element. The stop means on the inner and outer elements may be permanently secured thereto as by spot welding.

The inner element may be provided with brackets spot welded thereto and adapted to provide slots for the reception of downwardly projecting lugs fixed to a drawer or other member to be carried by the slide.

According to a further feature of the invention, the inner and outer slide elements are of different widths but of similar profile in section with flanged lateral edge portions adapted to form runways engaging the balls or rollers at the outer side thereof, while the intermediate element is constituted by a single profiled section of such shape as to provide inner and outer channels for engaging the respective series of balls or rollers at the inner side thereof.

The invention is hereinafter described, by way of example, with reference to the accompanying diagrammatic drawings, in which:

Fig. 1 is a side elevation illustrating one embodiment of double extension slide in accordance with the invention;

Fig. 2 is a view similar to Fig. 1 showing the slide elements fully extended;

Fig. 3 is an enlarged detail section on the line III—III of Fig. 2;

Fig. 4 is a detail side elevation corresponding to Fig. 3;

Fig. 5 is a detail section on the line V—V of Fig. 2;

Fig. 6 is a detail side elevation corresponding to Fig. 5;

Fig. 7 is an enlarged detail view of the double-acting resilient stop on the outer element;

Fig. 8 is an end elevation corresponding to Fig. 7;

Fig. 9 is an enlarged detail section on the line IX—IX of Fig. 2;

Fig. 10 is an enlarged detail section on the line X—X of Fig. 1.

In carrying the invention into effect according to one embodiment and with reference to the accompanying diagrammatic drawings, the improved double extension slide comprises an outer slide element 1, an intermediate slide element 2 and an inner slide element 3 adapted to slide with respect to one another on intermediate balls 9, 10. The outer slide element 1 is provided with a single double-acting stop 4 which, as shown particularly in Figs. 7 and 8, comprises a rectangular blank having intermediate tongue portions 4a pressed up to form a channel for the location and support of a rubber or other resilient buffer element 4b having an enlarged head portion at each end. The inner element 3 also is provided with a single double-acting stop 6 which, as shown more particularly in Fig. 5, consists of a strip having down-turned end portions 6a projecting through slots in the element 3. The intermediate element is provided with two stops 5 suitably positioned and spaced at a suitable distance apart, each of such stops 5 comprising a strip adapted to be detachably fixed. as by means of a counter-sunk screw 5b and nut 5c, to the inner side of the element 2, i. e. on the face thereof adjacent the element 3, and having a tongue 5a projecting through a slot in the element 2, as shown in Figs. 3 and 5.

It will be seen that the stops 5 are adapted to provide projections at opposite sides of the element 2, the part of the stop 5 lying at the inner side of the element 2 co-acting with the projecting end part 6a of the stop 6, while the tongues 5a co-act with the buffer stop 4b. The inner element 3 is apertured at 3c to permit the insertion and removal of the stops 5. The stops 4 and 6 may be permanently secured to the respective elements as by spot welding.

It will be understood that the arrangement of stop means described above reduces the number of separate stop elements to a minimum and also simplifies production and assembly. The inner and outer elements can be completed fabricated and, after assembly of the three slide elements with the intervening balls 9 and 10, it is only necessary to bolt the stops 5 in position on the intermediate element 2 to retain the assembly. Similarly, if it is desired to dismantle the assembly at any time, it is only necessary to remove the stops 5, whereafter the slide elements can be disengaged from one another.

Brackets 7 may be fixed, as by spot welding, to the outer element 1 for mounting the slide on the wall of a cabinet, frame or other support, while the inner element 3 may have brackets 8 spot welded or otherwise fixed thereto, said brackets being shaped as shown in Fig. 5 to afford slots for the reception of lugs 8a fixed to and projecting downwardly from a drawer or other member to be supported on the slide.

The slide elements 1, 2, 3 are provided in a manner known per se with pressed-out projections 1b, 2b, 3b respectively, suitably positioned in the length of the channels or runways for the purpose of correcting the spacing of the balls, if necessary, when the slide is fully extended or closed, and thereby eliminate the necessity for ball caging means.

As shown particularly in Fig. 10, the slide elements 1, 2 and 3 are of simplified construction, the inner and outer elements 1 and 3 being of different widths but of similar profile, affording flanged marginal parts 1a, 3a respectively, providing channels or runways for engaging the respective balls 9, 10 at the outer side thereof. The intermediate element is profiled as shown in Fig. 10 so that a single profiled section provides inner and outer channels or runways 2c, 2d, respectively for engaging the balls at the inner side thereof.

The slide elements 1, 2, 3, being of simple profile, are readily produced from strip material by a rolling operation, while the fittings comprising the stops 4, 5 and 6 and the brackets 7 and 8 are of a simple form adapted for economical production by rolling and/or pressing operations. Only two screw and nut fastenings are required, and if it is not desired to provide for subsequent dismantling of the slide, these fastenings may be replaced by rivets or other permanent fastening means.

As shown in Fig. 1, the three slide elements 1, 2, 3 are of the same length, but if desired, the outer element 1 may be made shorter so as to terminate at the point A in Fig. 1 and provided with suitably disposed projections 1b for cooperating with the balls 9.

It will be understood that the invention is not limited to the particular embodiment hereinbefore described.

What I claim and desire to protect by Letters Patent is:

1. In a double extension slide comprising an inner slide element, an intermediate slide element, and an outer slide element, said slides being slidable longitudinally of each other, stop means comprising a single double-acting stop on the inner slide element, a single double-acting stop on the outer slide element, said stops projecting into spaces between the inner and outer elements and the intermediate element, and two spaced stops on the intermediate element, each of said spaced stops projecting at each side of the intermediate element so as to be engageable with said double-acting stops.

2. In a double extension slide for supporting a drawer or the like in sliding relation to a cabinet or the like, the combination comprising an inner slide member and an outer slide member parallel with said inner member, one of said members being adapted to be secured in a stationary manner on the cabinet and the other of said members being adapted to have the drawer secured thereto, an intermediate slide member disposed in parallel spaced relation between said inner and outer slide members, all of said slide members being slidable longitudinally of each other between contracted and extended positions, a single double-acting stop on said outer slide member and which extends inwardly from the inner face thereof in the direction of said intermediate slide member, a single double-acting stop on said inner slide member spaced longitudinally from the stop on said outer slide member when said slide members are in their contracted position and which stop extends inwardly from the inner face thereof in the direction of said intermediate slide member, and a pair of spaced stops on said intermediate slide member each of which stops includes portions extending outwardly from opposite sides of the intermediate slide member for engagement respectively with the stops on said inner and outer slide members and which latter

stops are located between the spaced stops on said intermediate slide member.

3. A double extension slide as defined in claim 2 wherein the stops on said intermediate slide member are detachably secured thereto and said inner slide member is provided with an aperture for insertion and removal of said stops detachably secured to said intermediate slide member.

4. A double extension slide as defined in claim 3 wherein each of the stops on said intermediate slide member is comprised of an L-shaped fitting, one part of which lies on the outer side of said intermediate slide member and is fixed thereto for engagement with the stop on said inner slide member while the other part, in the form of a tongue, projects through an aperture in said slide member for engagement with the stop on said outer slide member.

5. In a double extension slide for supporting a drawer or the like in sliding relation to a cabinet or the like, the combination comprising inner and outer slide members, said outer member including bracket means for attachment to said cabinet, and said inner member including means adapted to have the drawer secured thereto, an intermediate slide member disposed between said inner and outer slide members, all of said members being arranged horizontally on edge in parallel spaced relation, said intermediate slide member including longitudinally extending channels confronting similar channels on said inner and outer slide members and roller members disposed between said confronting channels for spacing said slide members vertically from each other and allowing longitudinal movement of said slides between contracted and extended positions, a single double-acting stop on said outer slide member and which extends inwardly from the inner face thereof in the direction of said intermediate slide member, a single double-acting stop on said inner slide member spaced longitudinally from the stop on said outer slide member when said slide members are in their contracted position and which stop extends inwardly from the inner face thereof in the direction of said intermediate slide member, and a pair of spaced stops on said intermediate slide member each of which stops includes portions extending outwardly from opposite sides of said intermediate slide member for engagement respectively with the stops on said inner and outer slide members and which latter stops are located between the spaced stops on said intermediate slide member.

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