April 16, 1968 H. L. SILK 3,378,293

BLOCKING ELEMENT FOR SLIDING CLOSURE

Filed Aug. 30, 1966 2 Sheets-Sheet 1

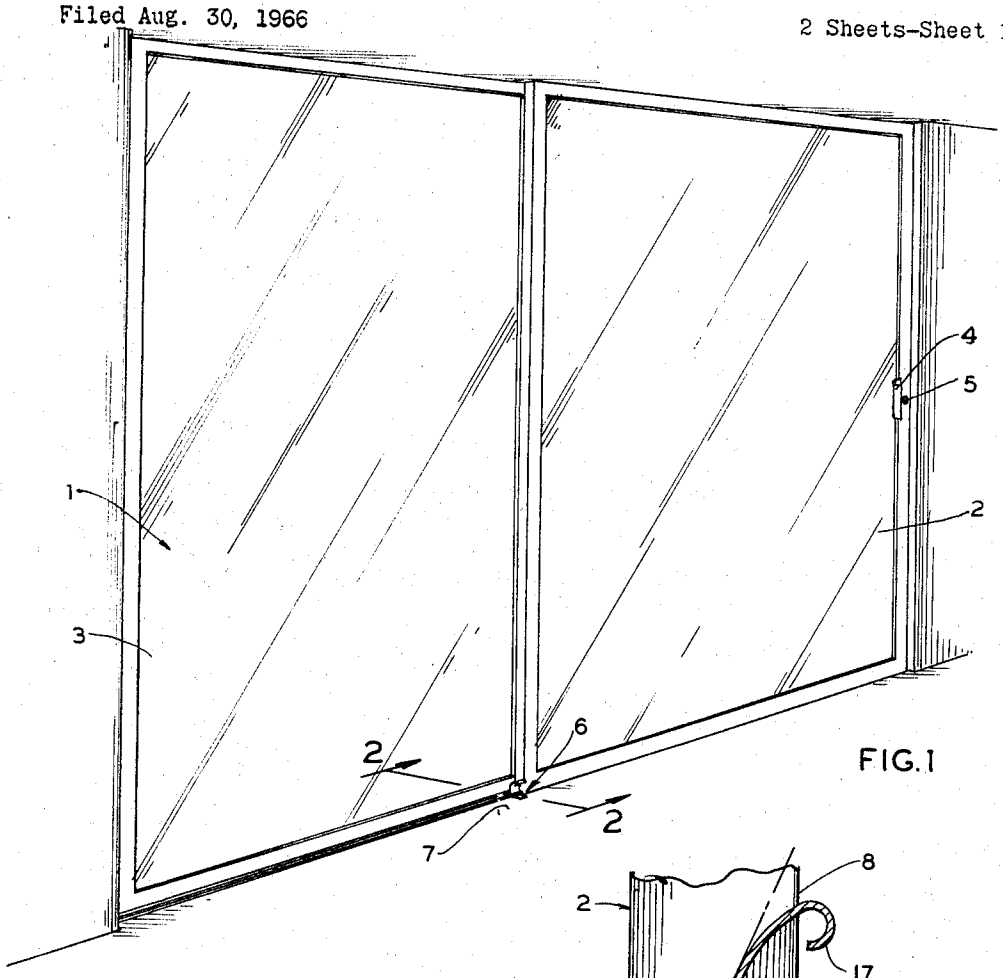


FIG. 1

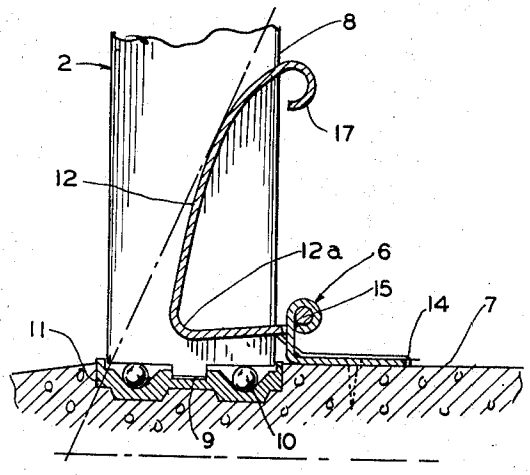


FIG. 2

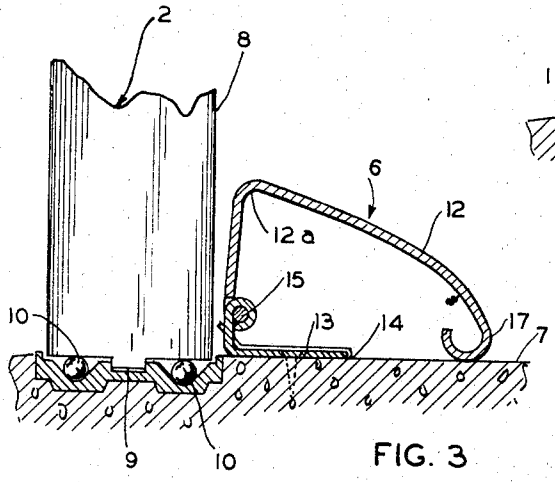


FIG. 3

INVENTOR
HERBERT L. SILK
BY James J. Mullen
ATTORNEY

April 16, 1968 H. L. SILK 3,378,293

BLOCKING ELEMENT FOR SLIDING CLOSURE

Filed Aug. 30, 1966 2 Sheets-Sheet 2

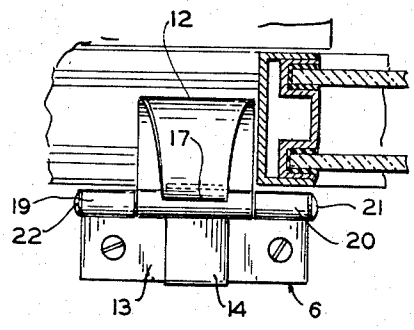


FIG. 4

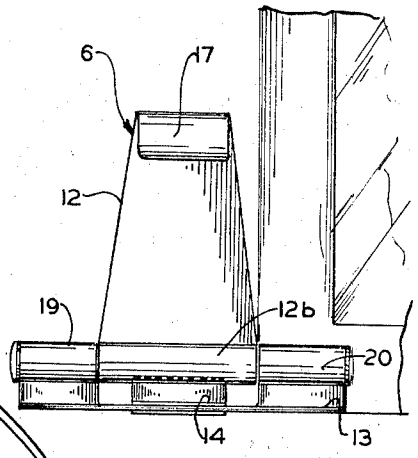


FIG. 5

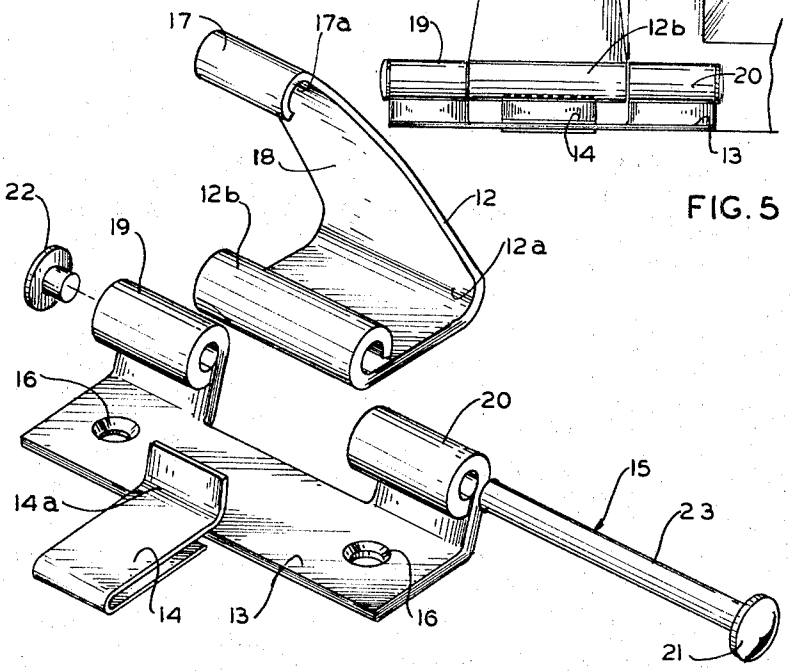


FIG. 6

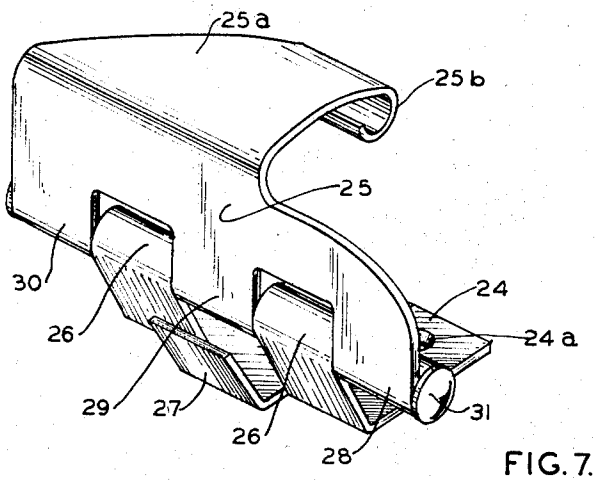


FIG. 7.

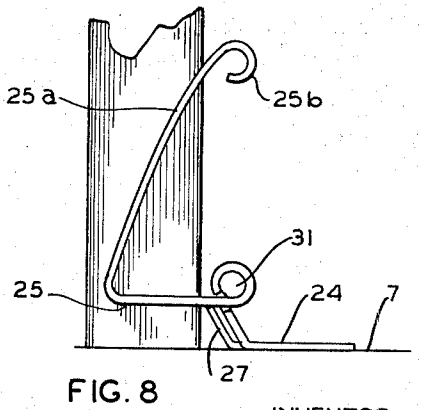


FIG. 8

INVENTOR
HERBERT L. SILK
BY
James J. Mullen
ATTORNEY

United States Patent Office 3,378,293
Patented Apr. 16, 1968

3,378,293

BLOCKING ELEMENT FOR SLIDING CLOSURE

Herbert L. Silk, 2716 Lakeport Drive,
Bridgeton, Mo. 63042

Filed Aug. 30, 1966, Ser. No. 576,104
8 Claims. (Cl. 292—202)

ABSTRACT OF THE DISCLOSURE

A blocking element in the form of an angular hinged leaf pivotable to a position preventing opening of a sliding closure. A second leaf is secured to the angular leaf adjacent the closure and is covered by the angular leaf when it is pivoted to unlatching position.

Brief summary of the invention

The present invention relates to a novel type door or window "stop" and more particularly relates to a locking device for preventing the opening of a horizontally sliding glass door. The device is formed by two hinged leaves, one being secured to a support adjacent the door or window and having stop means thereon for abutting the other leaf in blocking position. The stop means may take the form of a spring clip secured around the one leaf, or may be integral therewith. The other leaf is curved, and covers the secured leaf when in non-blocking position.

Since 1945, the home construction business in the United States has enjoyed a tremendous boom and has brought with it various innovations in the type and design of the home constructed or fabricated. One of the innovations of the newer homes today is a family room which is usually separated from the living room and is generally physically located toward the rear of the house. One wall or side of the family room, usually the wall which faces the back yard, is provided with means for ingress and egress thereinto. This means for coming into and leaving the family room generally constitutes two glass doors one of which is stationary or fixed and the other of which is slidable in a horizontal plane and upon a track which is usually a metal, for example, aluminum, or wood track and frame, which also encloses the two doors. The slidable glass door is usually opened by means of a handle which is physically attached to the right-hand portion of said glass door, assuming said door opens from the right to the left. (The handle would be positioned on the left-hand portion of the opposite door if the left-hand door was slidable.) In addition to the handle attached to the door, there is also associated therewith a simple latch-lock type mechanism which permits the glass door to be in a locked position when closed and the latch is in, for example, a downward or upward position depending upon which way the lock is made in order to be locked. The lock per se is quite simple in construction and merely constitutes, in general, a piece of metal associated with the door handle mechanism and which is positioned in a slot or crevice located in the metal or wood frame immediately adjacent the sliding glass door; i.e., when said door is in a fully closed and locked position.

The main disadvantage associated with the aforementioned prior art lock type apparatus is that one may easily insert a small object such as a screwdriver in between the metal frame and the sliding glass door and force the latch into an open position; in other words, pry said latch into an open position. The "unlocking" of a sliding glass door in the aforementioned manner is well known and the entry of numerous homes has been committed by the forcible opening of the sliding glass door in the aforementioned manner. Thus, there has been a need for a simple, inexpensive, and relatively easily installable apparatus which would prevent such a sliding glass door from being forcibly opened without a complete breakage of the door, which in the case of a burglary would be highly undesirable from the intruder's point of view since the noise would then attract another party's attention.

Accordingly, it is one object of the present invention to provide a locking device which will securely lock a sliding glass door when in a closed position, and which may be operated only by means of one being positioned inside the home and not by one standing on the outside and tampering with the door frame.

It is another object of the present invention to provide a novel type of locking device that is urged into abutting relationship with respect to said door but which may be manually released and which is retractable to permit the opening of the door in a direction opposite to which it was closed.

It is a still further object of the present invention to provide a novel type of door stop apparatus that is inexpensive to manufacture.

It is a salient object of the present invention to provide a door stop that is efficient in operation and requires no keys or complicated release mechanisms for operation of the same.

It is an additional object of the present invention to provide a door stop apparatus that may be easily installed immediately adjacent the sliding glass door.

These and other objects and advantages of the present invention will be apparent from the following detailed description and drawing wherein like numerals are used to designate similar parts throughout, and wherein:

FIGURE 1 is a perspective view of a door assembly incorporating the present invention mounted immediately adjacent the bottom most portion of the sliding glass door and showing the said door in a closed relationship relative to the door frame and being locked thereby with the novel door stop of the present invention;

FIGURE 2 is an enlarged view taken along lines 2—2 of FIGURE 1 and shows the novel door stop of the present invention in a closed or locking position;

FIGURE 3 is an enlarged sectional view also taken along lines 2—2 of FIGURE 1 but with the exception that the door stop is in a retractable or non-locking position;

FIGURE 4 is an enlarged top view of the door stop apparatus;

FIGURE 5 is an enlarged vertical front view of the novel apparatus;

FIGURE 6 is an exploded perspective view showing the components of the novel door stop apparatus in disassembled relationship;

FIGURE 7 is a modified version of the novel locking device shown in FIGURES 1 through 6; and

FIGURE 8 is a cross-sectional view taken along the middle section of FIGURE 7.

Referring now more particularly to FIGURE 1 of the drawing wherein 1 represents the overall glass door assembly and includes the sliding glass door 2 and a stationary glass door 3, the sliding glass door 2 has mounted thereon means 4 for opening said door and means 5 for demonstrating the position of the old type of locking mechanism used by the prior art. The door stop 6 is mounted immediately adjacent the lowermost portion of sliding glass door 2 and is mounted by any conventional means such as screws, nails, and the like on floor 7.

While the present description will generally be directed to sliding glass doors, it should be noted that other types of materials such as a transparent or clear plastic material can be used for the door and the door construction, in addition to any type of material for the door frame. Consequently, the present invention is not limited

to any particular type of materials of construction. It will also be understood that the scope of the present invention includes other types of configurations than the rectangularly shaped glass doors 2 and 3 shown in FIGURE 1, said doors and the mountings therefor being of standard type construction. Furthermore, the locking device of the present invention is not restricted to sliding doors but may also be used on sliding windows, panels, closet doors, and the like.

In FIGURE 2, the novel door stop apparatus 6 is shown in an enlarged view and in a locking position to secure the sliding glass door 2, thereby preventing said door 2 from opening. As can readily be seen in FIGURE 2, door stop 6 is fixably attached, i.e. secured in a stationary position, to floor 7 by means of screws, nails, or other clamping devices, such as those shown in the dotted lines.

The rear or back edge 8 of sliding glass door 2 is shown in partial cross-section mounted on track 11 which is part of the overall door frame assembly. The door 2 rests on ball bearings 10 and nipple 9, the track 11 being grooved to permit the nipple 9 to be situated therein and thus prevent any lateral movement of said door.

Locking device or door stop 6, both terms being used interchangeably herein, consists of a movable and/or retractable leaf 12 having therein bend 12*a* and a stationary leaf 13, which is shown as being non-movable or stationary in FIGURE 2 because it is attached to floor 7. Positioned around a portion of leaf 13 is a stop grasp 14 which provides means for restricting the rotation of leaf 12. Pintle 15 provides the means for connecting leaves 12 and 13 together at a common junction and the means also for said leaf 12 to rotate in a manner hereinafter described. It has been found desirable that leaf 12 be restricted in its rotation in that it not lie on the track 11 in order that the sliding glass door edge 8 can receive the fullest structural support from leaf 12 when said door 2 is attempted to be forcibly opened. Consequently, the shape of leaf 12 is in a quasi-lazy L shape, i.e. ∠, and the angle at bend 12*a*, which is more adequately shown by the dotted lines, is preferably less than 90° and more preferably from about 40° to about 85°. If the angle is greater than 90° then leaf 12 offers less resistance in structural strength to the opening of door 2 and likewise if leaf 12 has an angle less than 40° the same conditions are characteristic thereof. Furthermore and as an added advantage as shown in FIGURE 3, when leaf 12 has been retracted or rotated about pintle 15, the leaf occupies a small vertically extending area and thus would not be projected into a curtain if such were positioned about said door and thus not cause said curtain to be wrinkled.

FIGURE 4 shows a top view of door stop 6 when the novel locking device of the present invention is in a closed position thereby preventing sliding glass door 2 from being opened. As previously mentioned, leaf 13 is provided with means to permit, for example, screws or nails to be placed therethrough and thus fixably attach leaf 13 to floor 7. These means in leaf 13 are provided in the form of a series of apertures or holes 16. These means may be one hole or several holes in order to fixably mount said leaf in a stationary position above the floor. Leaf 13 also is provided with a horizontally extending slot 13*a* which permits stop grasp 14 to contact the underside of leaf 12 and thus restrict, if desired, the rotation of leaf 12 about the axis of pintle 15. As was mentioned with reference to FIGURES 2 and 3, leaf 12 is so constructed in design and shape to have a reversely bent portion having in turn a reversely bent portion 17 at the outermost end thereof, which bend is designated as 17*a*. Member 17 is so shaped as to provide means by which one may retract leaf 12 by applying the bottom of his shoe to any part of the curved portion 17.

The novel door stop or lock apparatus 6 of the present invention should be made out of a rigid material which will supply sufficient strength thereto to restrict and/or prevent the opening of slidng glass door 2 by means of substantial force. Examples of a rigid type material of construction include structural steel, galvanized iron, stainless steel, aluminum, copper, glass, glass-on-steel, ceramic-on-steel, polyester-glass fiber, epoxy, phenolic, or melamine resins, and the like.

FIGURE 5 is a front view of the door stop apparatus 6 and more fully shows the position, in relative size, of the horizontally extending slot which, as previously mentioned, permits the stop grasp 14 to contact the underside of leaf 12 and thus restrict the rotation thereof. Furthermore, it will be noted in FIGURE 5 that stop grasp 14 is positioned in the center portion of said door stop or lock apparatus 6. However, this is not critical and said grasp 14 may be positioned in any manner along the horizontal plane of leaf 13 and the only requirement thereof being that it partially restrict the full circular rotation of leaf 12. Furthermore, the said slot may be located anywhere along the vertically inclined portion of leaf 13 to permit the grasp 14 to project through leaf 13 and thus restrict the movement of leaf 12.

Referring now more specifically to FIGURE 6, which is an exploded perspective view showing the parts of the door stop in disassembled relationship, leaf 12 is provided with knuckle 12*b*. The overall leaf 12 is shown as an unitary member being shaped in the manner shown by having bends at points 12*a* and 17*a* to form reversely bent portions 17 and 18. While leaf 12 is only shown with one knuckle, it is to be understood that it is within the scope of the present invention that a series of knuckles can be provided therefor and so positioned as to be interwoven with the knuckles 19 and 20 or other knuckles on leaf 13; note FIGURE 7 hereinafter described. It will be noted that the novel door stop apparatus includes two leaves 12 and 13 which are substantially trapezoidal in shape and rectangular in shape, respectively. These leaves are preferably made of sheet metal but may be cast iron if one so desired. The leaves are also provided with integral knuckles adjacent one of the longitudinal edges thereof, the knuckles on leaf 13 being designated by the numerals 19 and 20. The knuckle, as previously mentioned, on leaf 12 is designated as 12*b*. As readily seen in FIGURE 6, the knuckles are arranged in such a manner that they may be interleaved or interwoven; the axis 23 of pintle 15 extending through the apertures or bores therein when said leaves are so interwoven. The pintle 15 includes a cap or head portion 21 and an elongated shaft or axis 23. The external diameter of the elongated shaft 23 is almost the same as the inside diameter of the knuckles.

In assembling the parts shown in FIGURE 6 prior to installing the overall apparatus 6 on the floor adjacent sliding glass door 2, the knuckles of the two leaves 12 and 13 are first aligned after which the elongated tubular member or axis 23 is then inserted through the apertures in the knuckles until the head 21 of the pintle 15 rests immediately adjacent and contacting knuckle 20. An end plug or closure cap 22 is then inserted into the left-hand portion of knuckle 19 and projects into the aperture or bore of knuckle 19. The plug 22 may either be threaded into the aperture of knuckle 19 or may be frictionally forced therein. Also shown in FIGURE 6 is stop clasp 14 which is generally in a U shaped configuration with the top or uppermost portion thereof in an outward flared manner at 14*a*. The stop grasp 14 is then positioned around leaf 13 wherein the flared portion 14*a* fits up underneath, i.e. is concentric with, knuckle 12*b* and is so positioned as to prevent said knuckle from rotating around to the underside of the leaf 13. It will be noted that while the overall door stop apparatus may only rotate around a 90° angle when positioned on the floor adjacent the sliding glass door 2, said leaf 12 may be rotated approximately 225° when not attached to the floor.

The door stop or locking apparatus, after having been assembled in a manner heretofore described, is then affixed to the floor immediately adjacent the lowermost end of sliding glass door 2 but sufficiently in front of said door and to the rear thereof to permit the leaf 12 to rotate in front of rear edge 8, generally in a forward and backward manner. Thus, when leaf 12 is in an upright manner, door 2 is prevented from being forced or pried open. Furthermore, when leaf 12 is in an upright manner as shown in FIGURES 2, 4, and 5, the reversely bent portion 17 may be used as a leverage to permit one to step on and thus cause the leaf 12 to rotate in a forward manner thus permitting the sliding glass door to be opened. Consequently, when the door stop or locking apparatus 6 is in a position as shown in FIGURE 2, it is impossible to tamper from the outside of the house or from the opposite side of doors 2 and 3 with said novel locking device unless the glass door is broken and one causes leaf 12 to rotate in a forward manner.

FIGURES 7 and 8 show a modified form of the novel locking device as exemplified in FIGURES 1 through 6. In FIGURES 7 and 8, there is shown leaves 24 and 25, which latter leaf has two reversely bent portions 25*a* and 25*b*. Leaf 24 has two knuckles designated 26 which are interwoven with knuckles 28, 29, and 30 positioned on leaf 25. All of these knuckles are connected to each other by means of pintle 31. The stop grasp 27 in FIGURES 7 and 8 is a stationary or fixed and integral part of leaf 24 and thus is different in form from the detachable stop grasp 14 shown in FIGURES 4, 5, and 6. As previously mentioned, it is desirable to have this stop grasp in order to limit the rotation of either leaf 12 or leaf 25 and thus prevent any damage to tracks 11. Furthermore, in such a position, the leaf would present a great surface area for contact with the edge 8 and thus apparently require greater strength on one's part to try to pry open closed door 2.

In conjunction with FIGURES 7 and 8, it should be noted that leaf 25 has been provided with a knuckle by the extension of the right-hand portion of vertically extending portion thereof. Furthermore, additional strength is created thereby.

As previously mentioned, these leaves can be in various configurations, for example, triangular, oval, circular and the like and are thus not restricted to the shapes shown and disclosed therein. Furthermore and, for example, the rotating leaf may be designed whereby there is provided a series of "paddles" or "blades" like those positioned on a water wheel; however, of course only a section of a water wheel, with the knuckle forming the common connecting member, would be operational within the scope of the present invention. It is to be understood then, that the term leaf, particularly the rotating leaf, as used herein connotates and encompasses either one member per se in unitary construction (e.g. members 12 and 25 in FIGURES 1 through 8) or one member having a series of elements attached thereto and which constitutes a unitary member, for example, the aforementioned "water wheel" type section.

It will be apparent from the foregoing, that the novel door stop or locking apparatus of the present invention is efficient in operation and requires no complicated release mechanisms or keys to operate the same. Furthermore, it is quite inexpensive to manufacture. Whereas the particular structure herein has been described in detail, it will be apparent that departures may be made from the exact structure shown which will be within the scope and intention of the present invention.

What is claimed is:

1. A blocking device comprising two leaves hinged together at one end; one of said leaves being formed for attachment to a support adjacent a sliding closure and having stop means thereon; the other leaf, when engaging said stop means, extending from the hinged end in a direction for blocking sliding movement of the closure, and having a lateral bend formed with an inwardly curved portion shaped to effectively cover said one leaf when said other leaf is moved to a non-closure-blocking position.

2. The structure of claim 1, wherein said other leaf has a free end of roundly curved shape formed to engage the support when in said non-closure-blocking position and to facilitate manual manipulation thereof.

3. The structure of claim 1 wherein said lateral bend forms, generally, an angle between 40 degrees and 85 degrees.

4. The structure of claim 1 wherein said stop means is in the form of a clip secured around said one leaf and has a part thereof which forms the stop.

5. The structure of claim 1 wherein said stop means is in the form of a part integral with said one leaf.

6. The structure of claim 1, and including, in combination, the sliding closure adapted to be blocked by said device; and the support, to which said one leaf is attached.

7. The structure of claim 6 wherein said closure, when blocked by said device, is in a closed position.

8. A blocking device comprising two leaves hinged together at one end; one of said leaves being formed for attachment to a support adjacent a sliding closure and having stop means thereon in the form of an outwardly-extending finger; the other leaf, when engaging said stop means, extending from the hinged end in a direction for blocking sliding movement of the closure, and having a lateral bend, forming, generally, an angle between 40 degrees and 85 degrees and formed with an inwardly curved portion shaped to effectively cover said one leaf when said other leaf is moved to a non-closure-blocking position, and having a free end of roundly curved shape formed to engage the support when in said non-closure-blocking position and to facilitate manual manipulation thereof.

References Cited

UNITED STATES PATENTS

305,681	9/1884	Drake	292—238
407,366	7/1889	Mix	16—191
1,707,867	4/1929	McGee	292—194 X
1,607,897	11/1926	Koons	16—191 X
1,740,866	12/1929	McBarron	16—191 X
2,035,666	3/1936	Parkins	292—202
2,402,939	7/1946	Auslander et al.	292—204 X

FOREIGN PATENTS

584,396	10/1959	Canada.

RICHARD E. MOORE, *Primary Examiner.*