N. C. NICOL.

SUPPORT.

APPLICATION FILED MAY 26, 1915.

1,281,060.

Patented Oct. 8, 1918.

3 SHEETS—SHEET 1.

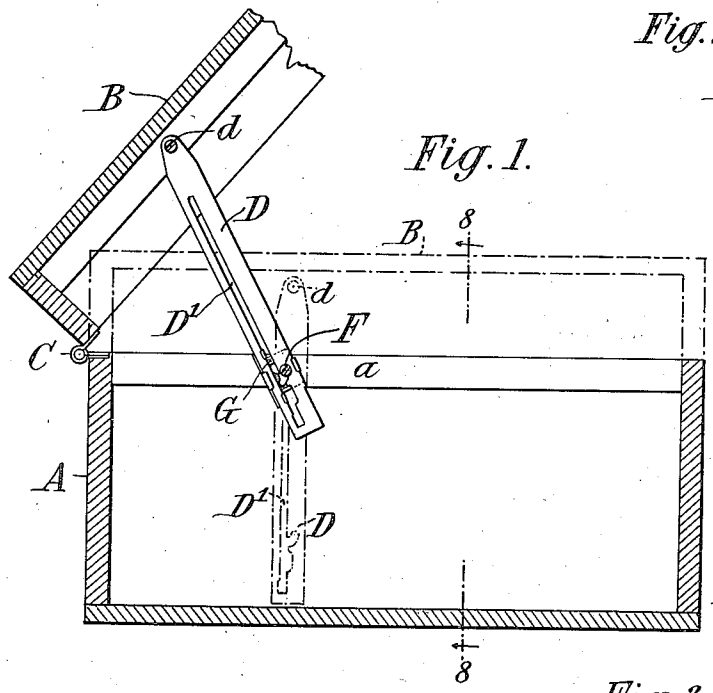


Fig. 1.

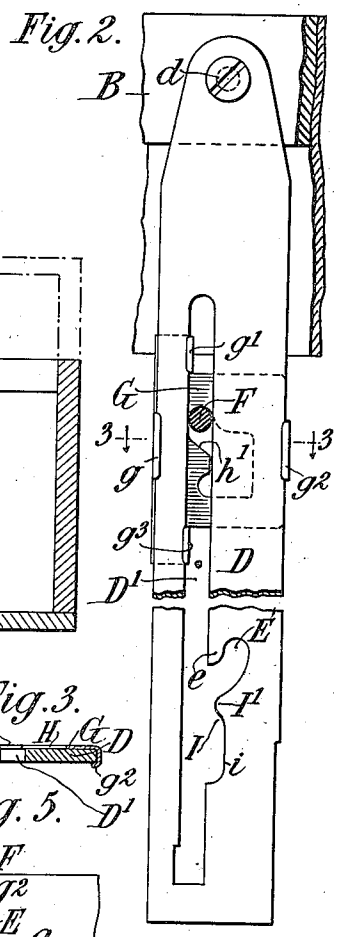


Fig. 2.

Fig. 3.

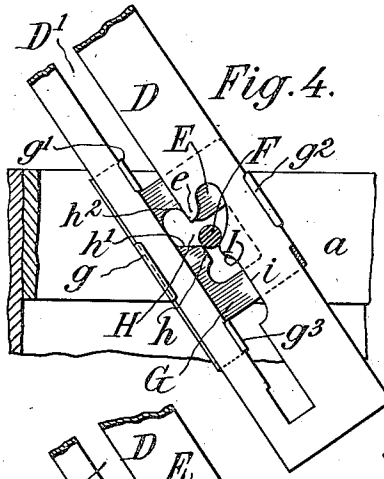


Fig. 4.

Fig. 5.

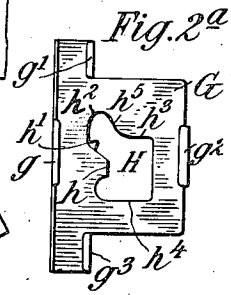


Fig. 2a

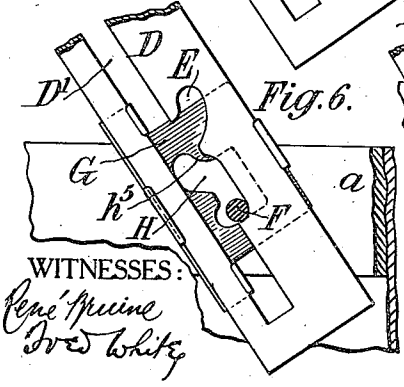


Fig. 6.

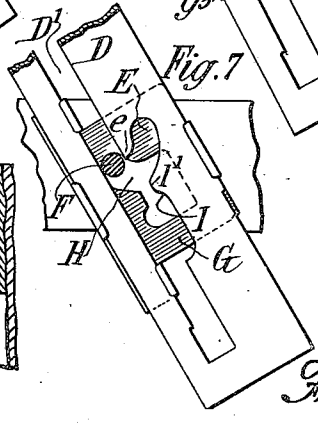


Fig. 7.

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Fig. 8.

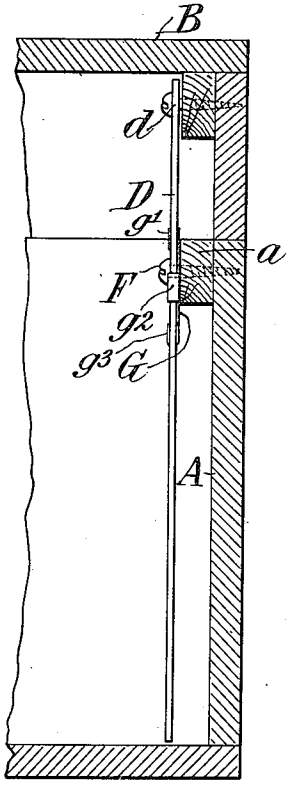


Fig. 9.

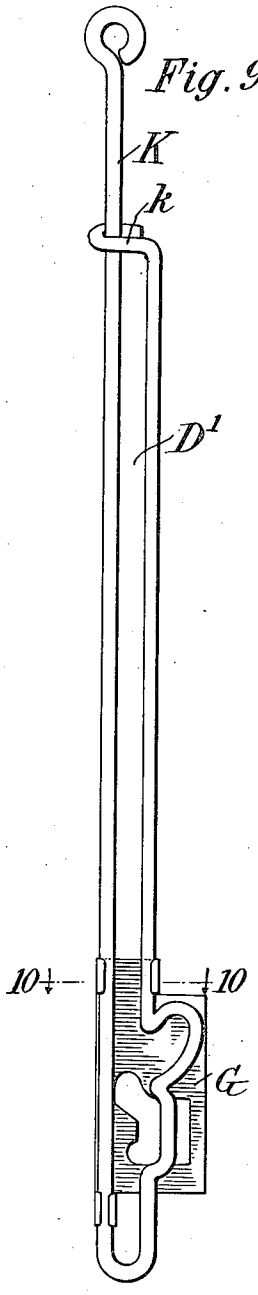


Fig. 10.

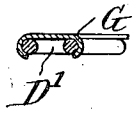
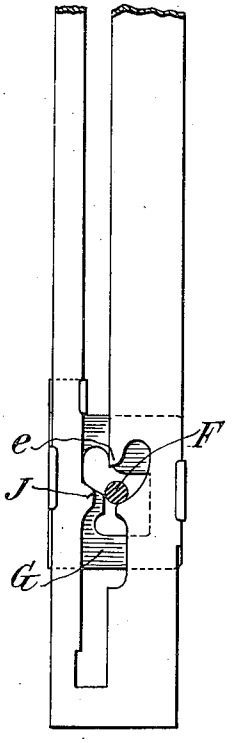


Fig. 11.



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3 SHEETS—SHEET 3.

Fig. 13.

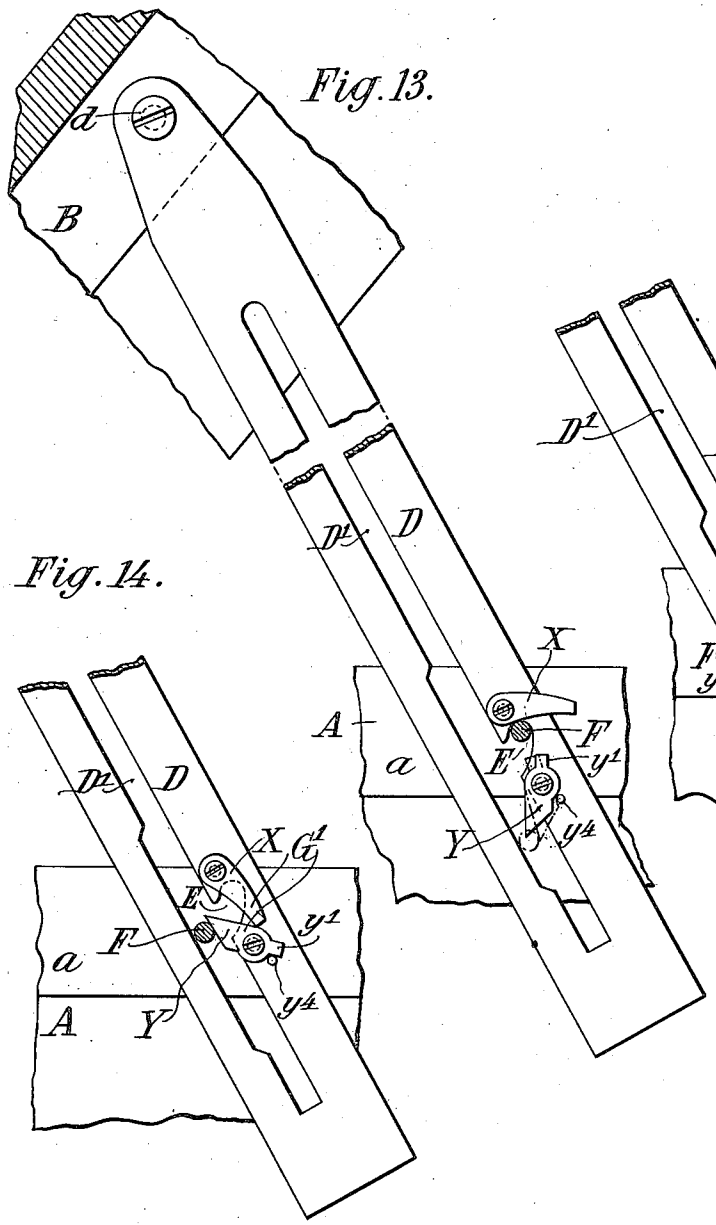


Fig. 12.

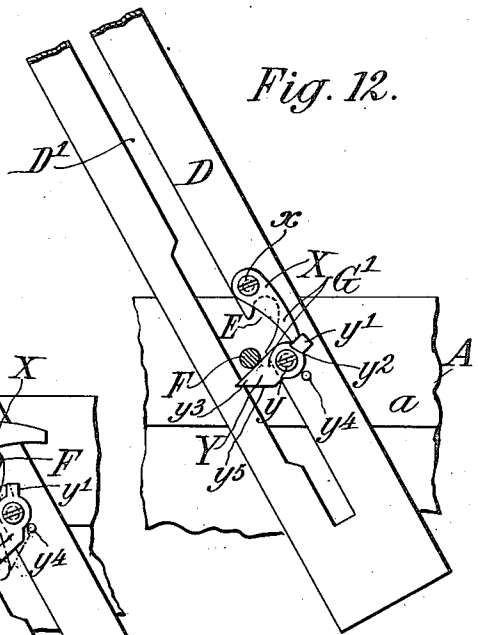


Fig. 14.

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UNITED STATES PATENT OFFICE.

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SUPPORT.

1,281,060. Specification of Letters Patent. Patented Oct. 8, 1918.

Application filed May 26, 1915. Serial No. 30,523.

To all whom it may concern:

Be it known that I, NORMAN C. NICOL, a citizen of the United States of America, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Supports, of which the following is a specification.

My invention relates to supports for holding in separated position a part which is separable from another, such as the cover of a box or phonograph, or the lid of a trunk or chest, and for many other purposes wherein it is desired that one part which may be pivoted upon the other should be supported in extended position. The invention consists in the provision of means whereby the supporting elements, when the lid or cover is raised, will automatically lock the same in such position, and by a further movement of the lid or cover the lock will be released and prevented from reëngaging while the lid is approaching the body.

The invention will be found particularly useful in connection with the support of a lid or cover wherein the supporting means are not easily accessible, as it only requires that the lid be lifted beyond the supporting position, whereupon the supporting parts will be prevented from reëngaging during the closing of the lid.

Some of the forms in which my invention may be embodied are illustrated in the accompanying drawings, wherein,—

Figure 1 is a section through a box and cover illustrating my invention in side view, with the cover supported in raised position.

Fig. 2 is a side elevation, partly broken, of my invention in use with the cover closed, on an enlarged scale.

Fig. 2ª is a detached view of the guard plate.

Fig. 3 is a cross-section on the line 3—3, Fig. 2.

Fig. 4 is a detailed side elevation, partly broken, showing the parts in position to lock.

Fig. 5 is a similar view showing the parts located in supporting position.

Fig. 6 is a position assumed by the parts when the cover is raised, for the purpose of preventing the locking means from reëngaging during the closing movement.

Fig. 7 is a similar view of the parts after the lid is partly closed and the locking parts being prevented from engaging have passed beyond the engaging point.

Fig. 8 is a cross-section on an enlarged scale on the line 8—8, Fig. 1, with the box closed.

Fig. 9 is a side view of a modified form of my invention.

Fig. 10 is a cross-section thereof on the line 10—10, Fig. 9.

Fig. 11 is another modification of my invention applicable to the forms illustrated in Figs. 1 to 8 inclusive, in the modification of Fig. 9.

Figs. 12, 13 and 14 illustrate a further modified form showing the guard in various positions.

My invention is illustrated as applied to a box having a body A and a cover B pivoted thereto at C, but the invention is not necessarily limited in application to a box nor to a structure having separable parts which are pivoted together. According to my invention the supports for the box comprise two elements, one of which is movable relatively to the other to cause them to pass to locking position. Such relative motion is capable of accomplishment by making either one part or the other part move. The moving part may be actuated by gravity or by equivalent means. If the prop D is the movable part, the pin F will be preferably fixed, but this arrangement may be reversed without departing from the principle of my invention which consists in the provision of means whereby upon a further separation of the parts D, F, the lock between these parts may be released and prevented from reëngaging upon the closing movement. I have illustrated the prop D as pivoted to the cover at *d*, and this enables me to employ a straight prop. If the prop were curved and fixed in position the relative movements of the part would not be obtained by the gravital movement of the prop as in the form illustrated, but for such arrangement a movable pin, spring actuated, could be employed.

According to my invention the prop D is

provided along its longitudinal edge with a locking recess E which constitutes a socket for the reception of the locking pin F, which is illustrated as a screw threaded into a rib *a* at the top of the box A, and when the cover B is raised the gravital action of the prop D causes it to ride over the pin F until the pin comes opposite the recess E, whereupon the pin will drop into the said recess and hold the parts in supported position.

The means provided by my invention for enabling the closing movement of the parts to be accomplished without reëngaging the locking pin and recess, include a guard G illustrated as a plate which is slidably mounted upon the prop D and is desired to have frictional contact therewith so as to interpose a slight frictional resistance to movement thereon, and this is obtained by providing the said plate with spring-fingers g, g^1, g^2, g^3, which embrace longitudinal edges of the prop and permit the guard to move relatively thereto.

The guard plate G is centrally apertured at H and the locking pin F passes through this aperture. The aperture is large enough to permit of play of the guard plate relative to the pin, and the inner walls of the guard are formed to facilitate the entrance of the pin into the locking recess in the prop, and further, when the prop is lifted out of position to obstruct the entrance to the locking recess so that in the closing movement of the prop the pin will pass the said locking recess without entering therein. In order to accomplish these objects the central aperture H of the guard is provided with an inwardly projecting boss h, the upper wall of which at h^1 is inclined in a direction leading to the entrance of the locking recess E. The top of the guard is formed with a slot h^2 which is engaged by the locking pin during the closing movement of the prop, and below this and at the side thereof opposite the boss h, the wall h^3 of the plate is at a lower level than the end of the slot h^2, providing for the movement of the plate so as to raise the boss h^1 out of the way when the pin enters the locking recess E. The portion of the perforation H below the boss h and the wall h^3 is cut away so as to offer no obstruction to the performance of the functions stated. The end wall h^4 is located relative to an inclined wall h^5 of the slot h^2, so that upon a further lifting movement of the prop the pin F will engage against this end wall h^4 and move the said inclined wall h^5 in position to close the entrance to the locking recess, as shown in Fig. 7.

I have illustrated the prop D as formed with a longitudinal slot D^1 which receives the pin F and permits the free movement of the slot on the pin, and when the prop is provided with such slot some of the spring-fingers, as for instance g^1 and g^3, may embrace a wall of the slot.

It will be seen that in use in the particular form of my invention illustrated, the prop D will be held by gravity in a position so that the pin F will engage the right-hand edge of the slot D^1, as illustrated in Fig. 1, and that the said prop will have a tendency to receive the pin in the locking recess E when the entrance thereto comes opposite the pin. The passage of the pin through the aperture H in the plate G maintains the plate in position relative to the pin, but the size of the aperture H permits of a certain play of the plate relative to the pin, and the grip of the spring-fingers upon the plate on the prop causes the plate to remain in position on the prop until moved by the pin, and accordingly will maintain the said plate in the position to which it is adjusted by the pin until again moved.

The prop D is illustrated as formed with a deflecting edge I below the locking recess E, and this is inclined away from the said locking recess so that as the prop is lowered and the pin relatively raised, the said inclined wall I will have a tendency to cause the pin to pass away from the mouth of the recess. In the particular instance shown, the inclined wall is formed as the upper wall of a recess *i*.

The operation of this form of my invention is as follows: In the closed position, Fig. 2, the pin F is illustrated as engaging the end of the slot h^2, which is the position assumed by the parts in closing. When the cover is lifted the plate will be lifted with the prop until the pin is brought into contact with the inclined wall h^1, whereupon the pin will move the plate on the slide until the entrance to the slot E is sufficiently uncovered by the projection h to enable the prop to fall and admit the pin into the said recess, this action being facilitated by the inclination of the wall h^1. The parts will thereupon be in the position of Fig. 4, in which position further pulling upward on the prop D will cause the prop to wedge or bind the pin F between the end of the projection h and the boss I^1 and prevent further lifting of the prop. The cover being then released, the prop will drop so that the pin F will pass to the end of the locking recess E. This will cause the wall h^3 of the plate to hit against the pin, moving the guard upward so that the plate is moved to the position of Fig. 5, wherein the boss h is raised. The lid is then supported in locked position and will remain in this position as long as desired. When it is wished to close the lid the cover is simply given an additional lifting movement causing the raising of the prop so that the pin F is removed from engagement with the locking recess and travels

below the boss I^1 formed above the deflecting edge I. Thereupon the guard will be lifted with the prop until its lower wall h^4 is engaged by the pin on the prop for a suitable distance, as for instance, until the pin strikes the end of the recess i which provides a convenient stop for this purpose. The wall h^5, which may be inclined for this purpose, thereupon covers the entrance to the locking recess E and obstructs the further entrance of the pin therein. The prop being then lowered, it will travel on the pin until the pin strikes against the deflecting edge I, which will give it a tendency to move away from the entrance to the locking recess E. The guard will have been moved upward by the pin until the pin strikes against the said edge I, whereupon the wall h^5 being in substantial alinement with the said edge I, the pin F will pass into the end of the slot h^2, in which position it will remain while the locking recess E is passed and until the lid is closed to the position illustrated in Fig. 2.

In Fig. 11 I have illustrated a modification applicable to all forms of my invention, which consists in providing the prop D with a boss J, the upper wall of which is located a suitable distance from the wall of the prop at e above the locking recess E to permit of the free passage therebetween of the pin F, and this upper wall is inclined for the purpose of guiding the pin toward the locking recess E.

In the main form of my invention the prop D is illustrated as made of a plate, for which purpose sheet metal is preferred, which is slotted. It is not necessary, however, that the invention should be embodied in a plate, as it may well be formed of wire, as illustrated in Fig. 9, wherein I have illustrated the employment of a single piece of wire K, one end of which is bent into an eye and passed around the other part of the wire at k, forming an eye by which the parts are held in proper relative position, and between which the slot D^1 is formed. The construction corresponds to that illustrated in my main form, with the exception of the spring-fingers which are somewhat differently positioned.

In the modified form of my invention illustrated in Figs. 12, 13 and 14, the guard, in place of being slidably mounted on the prop D, is directly mounted thereon and is moved in position by relative movement between the pin and prop, as in the previous forms of my invention. The guard, which I shall here letter G^1, serves the functions of the sliding guard G in that it provides a stop by which the prop is held when it arrives at its position opposite the locking recess E, and this stop is removed by the passage of the prop over the pin, and then upon a further separation of the prop and pin a portion of the guard is moved across the entrance to the slot so that the slot is blocked and the reëntrance of the pin therein obstructed and prevented. I have here illustrated the guard as formed of two parts, to wit, a stop member X which is pivoted to the prop at x, and a deflecting member Y which is similarly pivoted to the prop at y. The deflecting member Y is provided with a tail-piece y^1 and with a shoulder y^2.

When the prop is lifted and the slot D^1 is moved relative to the pin F, the stop member X drops freely on its pivot under the influence of gravity until its toe abuts against the shoulder y^2 on the deflecting member Y, and thereupon, by engaging against the tail-piece y^1 it holds the forward end y^3 which drops by gravity across the slot D^1 in position to engage against the pin F and prevent the further movement of the prop. Thereupon the box cover may be dropped and the action of gravity will cause the locking recess E to pass over the pin F. This will throw the stop X away from the tail-piece y^1, permitting the deflecting member Y to pass to the position shown in Fig. 13. Thereupon a further opening movement of the lid will cause the prop to be lifted until the point y^3 of the deflecting member Y passes the said pin. At this time a fixed pin y^4 prevents the point y^3 from passing entirely away from the slot. The prop being then lowered, the pin F engages against the inclined face y^5 of the deflecting member Y and lifts the same to the position shown in Fig. 14, where it guards the entrance to the locking recess E and enables the pin and prop to pass without reëngaging.

In this form of my invention, while I have illustrated the guard as working by gravity, I do not preclude myself from the employment of other equivalent means for obtaining or assisting this action.

In my invention, when the cover has been closed sufficiently so that the pin has passed the entrance to the locking recess, the guard is restored to initial position by the pin engaging against the slot h^2, which, in the construction illustrated, is shown as a slot which is closed at one end but which is not necessarily so. Thereafter the cover may be moved to any desired extent without changing the guard from such initial position relative to the locking recess. No matter how far the cover is moved, when it is opened again, the guard will always be in proper operating position. This presents the important advantage that the prop and pin may be placed in any desired position on the box, as the extent of movement does not affect the operation of the locking parts.

I have illustrated in the accompanying drawings the most desirable form of constructing my invention now known to me,

but the same may be modified or rearranged and equivalent devices substituted for those illustrated, within the limits of the appended claims.

What I claim is:—

1. The combination with a prop having a recess therein, a pin adapted to enter said recess, and a guard shifted in position by the relative movement of the said parts and alternately enabling the pin to enter said recess and preventing the pin from entering said recess, said guard having a projection and said prop having a projection below said recess and said pin adapted to bind between said projections on the opening movement of the cover and prevent further opening movement, and said guard shifted by the pin in said locking recess to permit a further opening movement.

2. The combination with a cover, a slotted prop pivoted thereto having a locking recess, a guard plate frictionally supported in said prop and adapted to slide thereon, a body, a pin thereon passing through a perforation in said guard plate and entering said slot, said guard plate shifted in position by the movement of said prop relative to the pin and alternately enabling the pin to enter said recess and preventing the pin from entering said recess, said guard having a projection and said prop having a projection below said recess and said pin adapted to bind between said projections on the opening movement of the cover and prevent further opening movement, and said guard shifted by the pin in said locking recess to permit a further opening movement.

3. The combination with a body and a cover of supporting devices for the cover acting automatically to lock the cover in position when opened and upon a further movement of the cover to render such locking devices inoperative in closing the cover comprising a slotted prop on one of said parts, said prop having a locking recess in a longitudinal edge of said slot, a pin on the other one of said body and cover adapted to enter said recess, a guard adapted by the emergence of the pin from said recess upon a further movement of said prop to be moved to position to obstruct the entrance to said recess and said guard having a stop engaged by the pin when it has passed said locking recess to restore the initial position of the guard and the prop being capable of further movement after such engagement.

4. The combination with a body and a cover of supporting devices for the cover acting automatically to lock the cover in position when opened and upon a further movement of the cover to render such locking devices inoperative in closing the cover comprising a prop having a locking recess in a longitudinal edge thereof on one of said parts, a pin adapted to enter said recess on the other part, a guard slidingly mounted on said prop and caused to move thereon by engagement with said pin when the prop is moved, said guard having a slot and adapted upon a further lifting of the cover to be moved by the pin so that a side wall of the slot in said guard obstructs the entrance to the recess, and when the cover is lowered the pin is caused to pass the locking recess.

5. A body, a cover, a prop pivoted to one of said parts and having a locking recess in a longitudinal edge, a pin on the other part, a guard plate mounted on said prop and adapted to move longitudinally therein and having frictional resistance to movement, said plate having an opening through which said pin passes, and a slot communicating with the upper end of said opening and having an inclined edge to assist in entering the pin in said locking recess and a deflecting edge to said prop below said locking recess, and said plate moved relative to the prop by a further lifting of the cover so that the edge of said slot obstructs the entrance to the locking recess when the cover is lowered and guides the pin into the slot.

6. A body, a cover, a slotted prop on one part having a recess communicating with the slot, a guard mounted to slide relative to the prop, and a pin on the other part passing through a perforation in the guard and through said slot in the prop, said guard having a slot communicating with said perforation and the wall of said perforation having an oblique edge adapted to assist the entrance of the pin into the locking recess during the opening movement of the cover, said pin adapted upon emergence from said recess by the lifting of the cover to move the guard whereby a wall of the slot in said guard is moved to position to obstruct the entrance to the recess as the prop is lowered.

7. A body, a cover, a slotted prop on one part having a locking recess, a guard plate slidably mounted on said prop, a pin on the other part passing through a perforation in said plate, said plate having a slot communicating with the upper part of said perforation with an oblique entrance, the lower wall whereof is adapted to assist the entrance of the pin into said recess, and the opposite wall is adapted when the plate is moved to close the entrance to said recess.

8. A body, a cover, a slotted prop on one part having a locking recess, and said prop having a deflecting edge below said recess, a guard plate slidably mounted on said prop, a pin on the other part passing through a perforation in said plate, said plate having a slot communicating with the upper part of said perforation and said perforation having an inclined wall adapted to

assist the lateral movement of said prop when the pin comes opposite the recess, and the pin binds between the end of said inclined wall and the opposite wall of the prop preventing further opening movement of the prop until the pin enters the recess, and said plate being moved by further opening movement of the cover so that a portion of the wall of said perforation in said guard blocks the entrance to the recess and when the cover is lowered guides the pin into the slot.

9. A body, a cover hinged thereon, a prop on the cover having a locking recess, a locking pin on the body adapted to enter said recess on the opening movement of the cover, and a guard controlling the engagement of said pin in said recess, said guard having means for preventing said pin passing beyond said recess on the initial opening movement and being displaceable to obstruct the entrance to said recess and positioned by the relative movement of the prop and pin when the cover is given a further lifting movement to occupy such obstructing position and permit the closing of the cover without engagement of the locking means.

10. A body, a cover hinged thereon, a prop hinged to the cover and having a locking recess in an edge, a locking pin on the body adapted to enter said recess, said pin caused to enter said recess by the gravital movement of the prop when the cover is opened, a guard slidably mounted on the prop, said guard having an opening through which the pin passes and which provides play for the pin whereby the guard may assume different positions relative to the pin, said guard having a projection and said prop having a projection below said locking recess and said pin adapted to bind between said projections on the opening movement, and said guard moved by the pin when in said recess to cause said projection thereon to be moved from such binding position to permit the lifting of the cover preliminary to closing, said guard opening having an edge adapted to obstruct the opening to said locking recess and moved by the pin when the cover is lifted to such obstructing position, whereby the pin is caused to pass such locking recess without entering therein during the closing of the cover.

11. Separable parts, a prop on one having a locking recess, a locking projection on the other adapted to enter said recess, a guard plate caused to occupy different positions relative to said prop and projection by the relative movement of the parts and said guard plate having an inclined edge against which said projection is adapted to bear in the opening movement and which tends to guide said projection into the locking recess, and said guard plate moved relative to the locking projection by the entry thereof in said recess, whereby said inclined wall is shifted and said pin is permitted to pass same, and said guard plate having a portion extending across the further path of movement of the pin relative to the slot, whereby the guard plate is moved by a further opening movement and a portion of its wall is caused to obstruct the entrance to the locking recess permitting the free closure of the cover.

12. Separable parts, a slotted prop having a locking recess pivoted to one part and a pin fixed in the other part and entering said slot, and a projection on the prop opposite said recess adapted to cause relative movement of said pin and prop in the direction of said locking recess.

13. Separable parts, a slotted prop having a locking recess pivoted to one part and a pin fixed in the other part and entering said slot, a projection on the prop opposite said recess and a guard slidably mounted on the prop and apertured for the reception of said pin, said aperture permitting movement of the plate relative to the pin, said plate adapted to be moved by the pin when the prop is raised from locked position so that a part of said guard obstructs the entrance to said locking recess.

14. Separable parts, a slotted prop having a locking recess pivoted to one part and a pin fixed in the other part and entering said slot, and a projection on the prop opposite said recess adapted to cause relative movement of said pin and prop in the direction of said locking recess, and the wall of the prop below said locking recess being inclined away from said recess.

15. Separable parts, a slotted prop having a locking recess pivoted to one part and a pin fixed in the other part and entering said slot, and a projection on the prop opposite said recess, the wall of the prop below said locking recess being inclined away from said recess, and a guard slidably mounted on the prop and apertured for the reception of said pin, said aperture permitting movement of the plate relative to the pin, said plate adapted to be moved by the pin when the prop is raised from locked position so that a part of said guard obstructs the entrance to said locking recess.

16. The combination of two supporting members having means for engaging when moved relative to each other in operating, and a guard controlling the engagement of said engaging means, said guard being shiftable and having means in one position thereof to prevent said engaging means passing beyond their engaging position, said engaging means, upon engagement, shifting said guard, said guard in said shifted position having means permitting movement of said relatively movable engaging means beyond said initial engaging position, and

said guard having means which when said guard is further shifted by said further relative movement of said engaging means prevents the reëngagement of said supporting members in closing.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NORMAN C. NICOL.

Witnesses:
HENRY M. TURK,
FRED WHITE.