

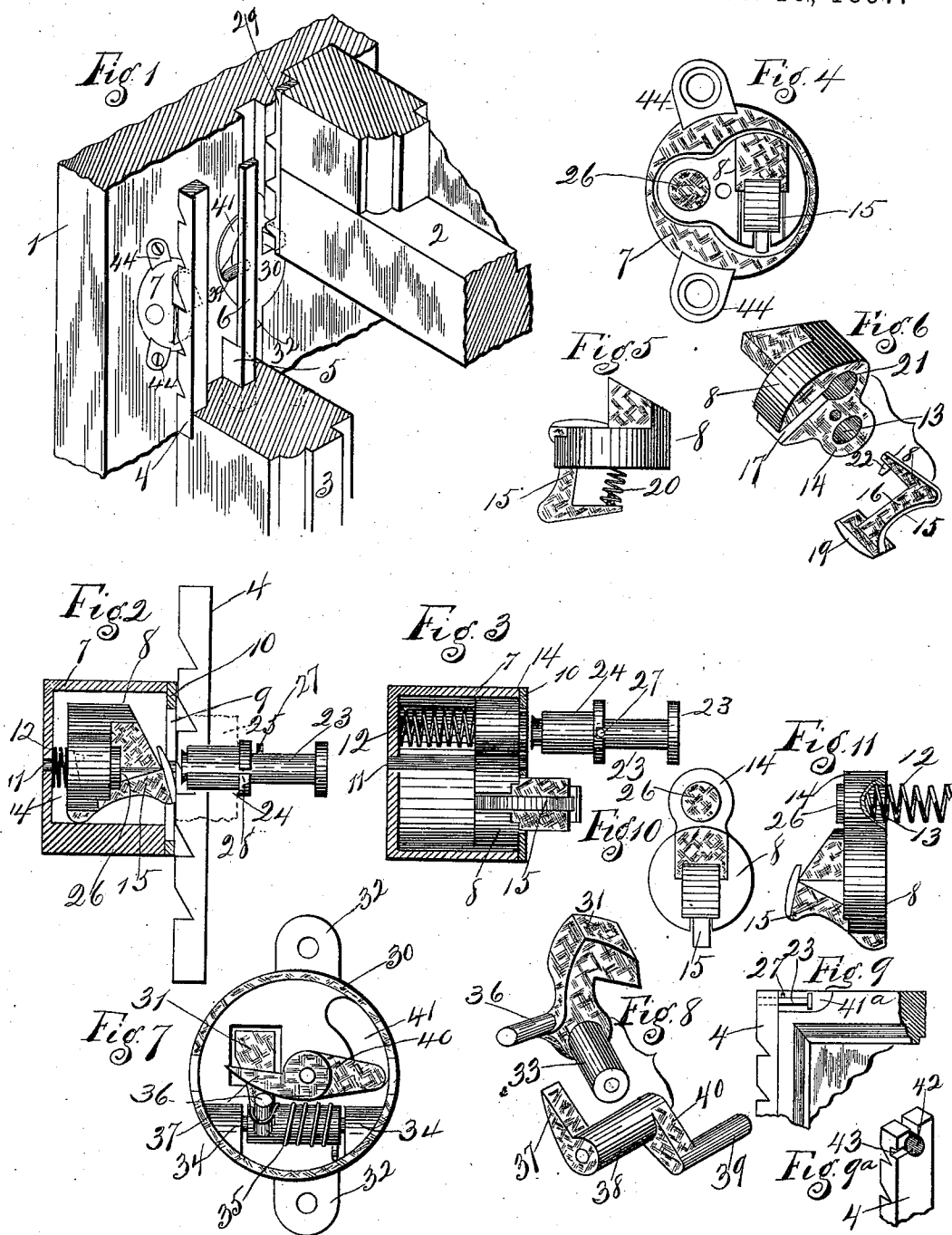
(No Model.)

2 Sheets—Sheet 1.

L. C. MILLER.  
SASH FASTENER.

No. 577,385.

Patented Feb. 16, 1897.



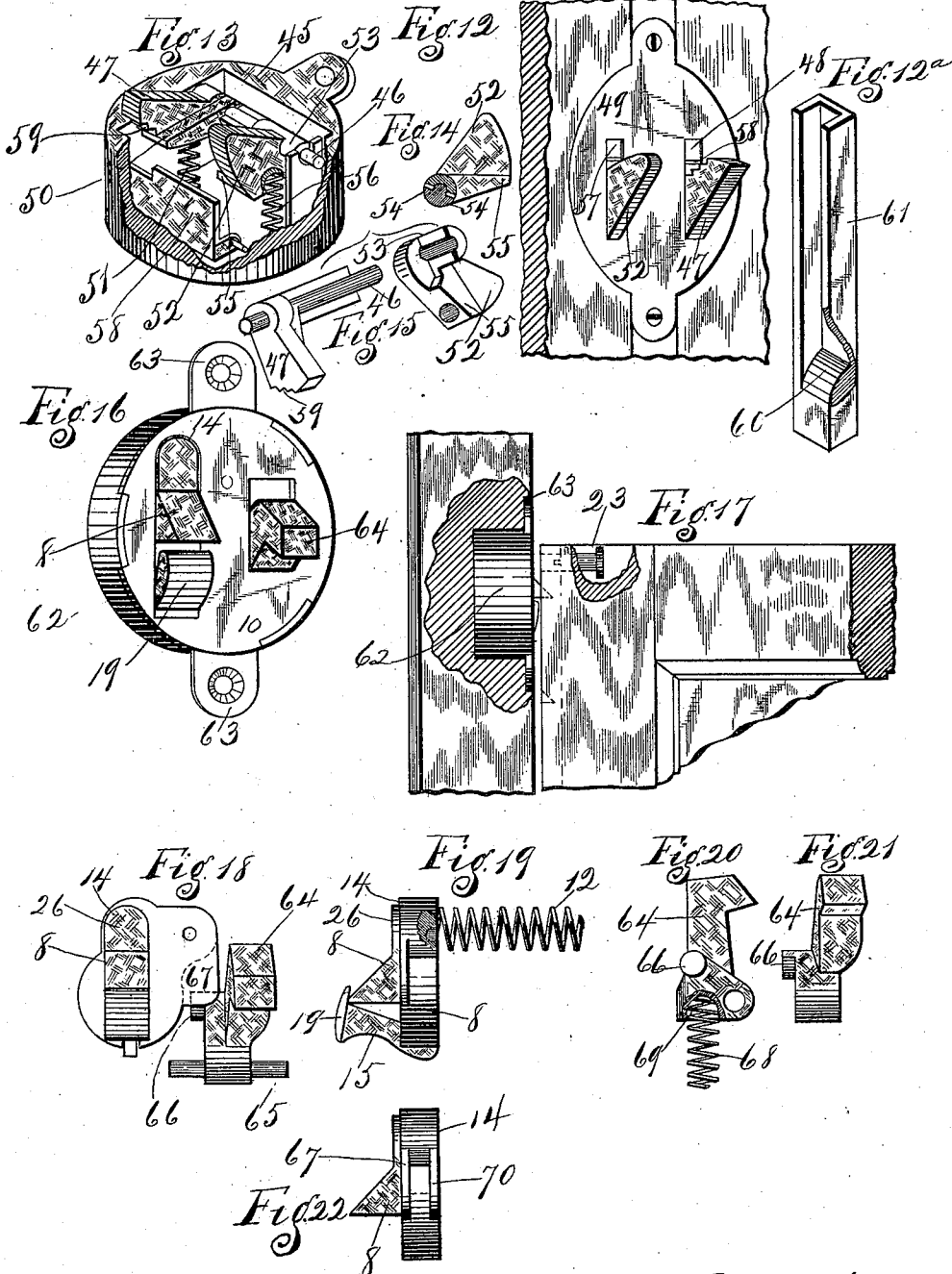
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# UNITED STATES PATENT OFFICE.

LEWIS CASS MILLER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE MILLER LOCK COMPANY, OF SAME PLACE.

## SASH-FASTENER.

SPECIFICATION forming part of Letters Patent No. 577,385, dated February 16, 1897.

Application filed June 15, 1896. Serial No. 595,557. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS CASS MILLER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Sash-Fasteners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to sash locks or fasteners, more particularly to that class for which I have heretofore obtained Letters Patent and in which provision is made for locking either the top or bottom sash, or both, in one or more positions, the locking means of both sashes being concealed from view.

The object of the invention is to provide simple and efficient means whereby the sashes may be locked in their various adjustments without liability of the locking means being tampered with from the outside for the purpose of moving either sash so as to give an entrance from the outside to the inside of the room.

It has also for its object to provide efficient means for causing the opening of the top sash to be dependent upon the operation of the lower sash, the top sash when closed being locked in that position and incapable of being moved without first moving the lower sash so as to unlock the top sash, the top sash being capable of movement up or down so long as the bottom sash holds the locking means out of engagement with the top sash and capable of movement in only one direction, that is, in the direction to close the sash, when the lower sash is out of operative connection with the locking means of the upper sash.

It has further for its object to provide efficient means under control of a person in the room for throwing and holding out of operative position the locking means for the lower sash, so as to permit that sash to be raised, said means being automatically thrown into operative position on the reverse movement or lowering of the bottom sash, so as to en-

gage a part of that sash and prevent it from being raised, yet at the same time permitting it to be lowered. These two features of the invention enable either or both of the sashes to be opened to the extent desired for ventilation without the possibility of either sash being further opened from the outside, although either sash can be moved in the direction to close the sash.

The invention has further for its object to generally improve the construction of the locking means, so as to make them comparatively simple in application and so that they will compensate for slight variations in dimensions of sashes and frames supposed to be a uniform size or standard.

To the accomplishment of the foregoing and such other objects as may hereinafter appear the invention consists in the construction, the combination, and the arrangements of parts substantially as hereinafter particularly described, and then endeavored to be particularly pointed out by the claims, reference being had to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is a perspective of side of sash-frame and two sashes in section. Fig. 2 is a side view of locking parts for bottom sash, shell in section, and parts of frame and sash omitted; Fig. 3, a detail view of bottom sash-lock with shell in section, looking from the bottom of Fig. 2; Fig. 4, a plan view of bottom sash-lock with face-plate removed and guard-catch engaging latch; Fig. 5, a detail of latch and guard-catch turned around; Fig. 6, a perspective of the same parts separated; Fig. 7, a plan view of lock for top sash with face-plate removed; Fig. 8, a perspective of latch and operating-fingers separated; Fig. 9, a perspective of one corner of sash, showing one form of attaching push-button; Fig. 9<sup>a</sup>, a perspective of portion of rack-bar shown in Fig. 9; Fig. 10, a front view of modified form of bottom sash latch and guard-catch. Fig. 11, a side view of the same parts; Fig. 12, a perspective of part of a window-frame, showing modified form of lock for top sash; Fig. 12<sup>a</sup>, a perspective of plate and cam used with the modified form; Fig. 13, a perspective of the modified lock with top plate removed and parts broken away, the lock being inverted

from position shown in Fig. 12; Fig. 14, a detail in cross-section through the pintle of parts shown in Fig. 13; Fig. 15, a detail perspective with parts separated to show more clearly the construction of pintle and attached parts; Fig. 16, a perspective of a modification showing lock for both top and bottom sashes combined in one shell; Fig. 17, a side view of parts of bottom sash and sash-frame with parts broken away, showing application of the form illustrated in Fig. 16; Fig. 18, a detail of the two latches and guard-catch removed from shell; Fig. 19, a side view of latch and guard-catch used in Fig. 16; Fig. 20, a side view of latch for top sash used in Fig. 16; Fig. 21, a front view of the same parts, and Fig. 22 a side view of modified form of latch for bottom sash.

In the drawings the numeral 1 designates a portion of a window-frame, and 2 and 3 portions of a top and bottom sash to the frame. The bottom sash is provided along one edge with a rack-bar 4 and along the same edge, but next to the rear face of the sash, with a cam 5, which is preferably made at the lower end of a plate 6, which forms a metallic face-plate along the edge of the sash just described.

In the sash-frame, at a point opposite the rack or stop bar 4, secured to the stile of the bottom sash, is set the shell 7, which contains the locking means which secures the bottom sash. The form of the locking means shown in Figs. 2 to 6 of the drawings consists of a movable latch 8, located in the shell 7 and adapted to be projected through an opening 9 in the face-plate 10 of the shell, so as to engage with the stop or rack bar 4 of the bottom sash. This latch is suitably supported in the shell so as to slide back and forth therein, for instance, by means of a pin 11, passed through the latch and having its bearings in the front and back walls of the shell, the latch having movement on that supporting-pin. The latch is normally held so as to project through the face-plate of the shell and engage the rack-bar 4, as shown in Fig. 1, by means of a spring 12, which may fit in a cavity 13, formed in an offset 14 of the latch, and have its other end bear against the rear wall of the shell, as shown in Fig. 2 of the drawings. In connection with this latch 8 there is employed what I will for convenience designate a "guard-catch" 15, which is illustrated as consisting of a shank 16, which plays in a slot 17 in the latch 8, a heel 18, which will lie back of the latch and play in the slot 17, and nose-piece 19, adapted when the latch is pushed inward to lie in front of the latch and engage the same so as to serve as a catch to hold the latch in its inward position and guard it from engagement with the rack-bar, as shown in Fig. 2 of the drawings.

The guard-catch is under the influence of a spring 20, which bears at one end against the heel 18 and lies at the other end in a cavity 21, formed in the latch, a stud 22 preferably

being formed on the heel so as to receive one end of the spring 20 and prevent it slipping from its place. The tension of this spring 20 serves to hold the guard-catch in place, and, exerting a pressure against the heel thereof, tends to press upward and inward the nose-piece against the end of the latch, as shown in Fig. 2, when the latch is pressed inward. When the nose-piece is pressed downward so as to move it from engagement with the front of the latch, the expansion of the spring 20 tends to draw the guard-catch backward beneath the latch at the same time that the latch is projected outward by the expansion of its spring 12. The position of the guard-catch in its retracted and normal position is illustrated in Fig. 5 of the drawings.

The normal position of the latch and its guard-catch is that illustrated in Figs. 1 and 5 of the drawings, in which position the guard-catch lies back of the face of the shell 7 and the latch projects beyond said face, so as to engage with the stop or rack bar 4, as shown in Fig. 1 of the drawings, thus preventing the bottom sash from being raised.

A push-button 23 passes through a sleeve 24, fitted in the front bead 25 of the sash-frame, and is in line with the offset 14 of the latch, so that when the push-button is pushed inward it will contact with the offset 14 or a boss 26, which may be formed thereon, and thus enable the latch to be pressed inward against the tension of spring 12 and so as to move the latch out of engagement with the stop or rack bar. As the latch is pressed inward its front end is carried back of the nose-piece 19 of the guard-catch and as soon as it passes to the rear thereof the tension of spring 20 throws the nose-piece up in front of the latch into the position shown in Fig. 2 of the drawings, thus holding back the latch and permitting the bottom sash to be raised, the face of the stop or rack bar 4 pressing against the nose-piece and the spring 12 permitting the latch and guard-catch to yield, so that there will be no binding between the rack-bar and nose-piece. In this way the bottom sash can be raised to the height desired without interference with its movement. As soon, however, as the bottom sash moves downward to any extent the pressure of the stop or rack bar 4 against the face of the nose-piece 19 presses down the guard-catch so as to move its nose-piece from in front of the latch, whereupon the expansion of spring 12 immediately projects the latch so that it will contact with the rack-bar 4, not, however, interfering with downward movement of the sash, because the yielding of the spring 12 allows the latch to yield backward in the movement of the sash. The sash, however, cannot be lifted, because the spring 12 is constantly pressing the latch outward, so that it engages the notches in the rack-bar, and the moment that the bottom sash is attempted to be lifted the latch, by reason of its engagement in a notch of the bar, prevents the lifting of

the sash, as is apparent from inspection of Fig. 1 of the drawings.

If it is desired to raise the sash, the push-button 23 must be pressed inward, so as to force the latch back out of engagement with the rack-bar, as before mentioned, which movement brings the parts into the position shown in Fig. 2. The push-button 23 being located near the upper part of the bottom sash it cannot be reached from the outside. The push-button 23 is adapted to be turned in its sleeve or collar 24, and is provided with a lateral pin 27, so that when the button is to be pressed inward that pin is brought into alignment with a slot 28, formed in the sleeve 24, the push-button at other times being turned so as to bring the pin to one side of the slot and thus prevent the button being pressed inward.

If desired, the push-button 23 might be provided with a spring adapted to retract the button as soon as its pressure on the latch is released; but as this forms no part of the invention and is a well-known mechanical construction it is not illustrated.

For the purpose of locking the top sash 2 that sash is provided along one of its stiles with a rack or stop bar 29, and a shell 30, containing a latch 31, is set into the side of the sash-frame, so that the latch will engage the teeth of the stop or rack bar. This shell, like the shell 7, is set in the frame so that its face will be flush with the frame, and it is located adjacent to the two sashes, the shell preferably being formed with ears 32, which may lie in the groove made for the parting-bead between the two sashes, the parting-bead being cut away at the point where the ears lie in the grooves, as indicated in Fig. 1, the parting-bead being omitted from that figure for clearness of illustration. One form of the latch for the top sash and its operating parts is clearly illustrated in Figs. 7 and 8 of the drawings, and as there shown the locking means consists of the latch 31, having a pintle 33, journaled in bosses 34, formed on the inside of the shell 30, the end of the latch which engages the rack-bar 29 normally projecting through an opening in the face-plate of the shell, so as to engage the rack-bar, and being held in that position preferably by a spring 35, which in Fig. 7 of the drawings is shown as coiled around the pintle 33. The latch 31 is formed with a heel piece or extension 36, which is adapted to be engaged by a finger 37, the shank 38 of which is suitably journaled in the shell 30, and has a pin 39 connected to it, for instance, by an extension 40, the pin 39 extending through a curved slot 41 in the face-plate of the shell, so that the pin may move therein. Inasmuch as the finger 37 bears against the heel-piece 36 of the latch and the latch is normally thrown outward by the spring 35, said spring, through the heel-piece 36, will exert a pressure on the finger 37, so as normally to hold its pin 39 in

the position indicated in Fig. 1 of the drawings.

The pin 39 lies in the path of the cam 5, secured to the bottom sash 3, so that when that sash is raised the cam comes in contact with the pin 39 and turns the finger 37 so as to press on the heel-piece 36 against the tension of spring 35 and throw back the latch 31, so that the top sash may be lowered. It will thus be observed that the bottom sash must be raised for a certain distance in order to permit the top sash to be lowered. Consequently when the bottom sash is closed, or even when it is lowered sufficiently that the cam 5 is out of contact with the pin 39, the top sash is locked in its position against downward movement and consequently cannot be moved from the outside for the purpose of making an entrance over the top sash. It is to be observed, however, that if the top sash is lowered entirely or partially it can be raised without the necessity of first operating the bottom sash, for the reason that when the top sash is moved upward the teeth on the rack-bar will press against the under side of the latch and thus throw the latch backward or inward against the tension of the spring 35, said spring, however, pressing the latch outward after the passage of each tooth of the rack-bar, so that the top sash cannot be lowered, although it may be raised. The advantage of this is apparent to any one having occasion to close the top sash. It will thus save labor, while at the same time affording security and protection against manipulation of the sash from the outside for the purpose of gaining an entrance either while the sash is open for ventilation or entirely closed.

If desired, the push-button 23 instead of being passed through the front bead, as before described, may be located, as indicated in Fig. 9, at the top rail of the bottom sash, a portion of the rail being cut away, as indicated at 41<sup>a</sup> of that figure. In this case the push-button will play through a hole 42 made in the top of the rack-bar 4, and a slot 43 may be made in that bar to receive the pin 27 of the push-button when turned to register therewith. In this form the construction and operation of the latch and the connecting parts will be the same as described in connection with Figs. 1 to 6 with the exception that the offset 14 and the position of the spring 12 will be shifted about one-quarter around or brought to the top, as shown in Figs. 10 and 11, instead of to the side, as shown in Figs. 1 to 6, and a slight shifting of the ears 44 of the shell 7, as will be obvious to those skilled in the art from the illustration given.

In Figs. 12 to 15 is illustrated a modified form of locking means that may be employed for the top sash. In this form the shell is designated by the numeral 45. In this shell is suitably journaled a pintle 46, which has attached to one part thereof, so as to turn

therewith, a latch 47, normally projecting through an opening 48 in the face-plate 49 of the shell, so as to engage the rack-bar 29 of the top sash. This latch may have a side flange or projection 50 on its side adapted to contact with the rear of the face-plate, so as to limit the outward throw of the latch against the tension of the spring 51. On the same pintle 46 is mounted a pin 52, preferably of the form illustrated, said pin having a segmental hub 53, which fits to the pintle 46, so that the pin will have a slight movement across the pintle, the pintle being formed with a shoulder 54 on each side, so as to limit the movement of the hub of the pin on the pintle and cause the pin to turn the pintle when the edge of the hub is brought into engagement with said shoulder on the pintle. The pin 52 has formed on one side a flange or projection 55, adapted to contact with the back of the face-plate 49, so as to limit the outward movement of the pin against the tension of a spring 56, which normally presses the pin through a slot 57 in the face-plate 49. A pawl 58, preferably of the form illustrated in Fig. 13, is pivoted inside of the shell 45, so as to hang down and normally contact with the rear of the latch 47, which is formed with a number of serrations 59 for the pawl to engage with, so as to prevent the backward movement of the latch when the pawl is in engagement therewith, and thus hold the latch in such projected position that it will engage with the teeth of the rack-bar 29 and thus prevent the top sash from being lowered. This pawl 51 extends across the shell, so as to be in the path of the pin 52, in order that when the pin is pressed back it may lift the pawl from engagement with the latch and allow the latch to be pressed back into the shell when the hub of the pin comes in contact with the shoulder on the pintle 46 and thus permit the top sash to be lowered. The initial movement of the pin 52 permits the pawl to be disengaged from the latch before the pin exerts its pressure on the pintle for throwing back the latch. The moment that pressure is taken off the pin the spring 56 will throw the pin into its normal position and the spring 51 will throw the latch 47 outward into engagement with the rack-bar, the pawl 58 at the same time dropping so as to engage with the ratchet-teeth on the rear of the latch 47 and thus hold the same in its adjusted position and in engagement with the rack-bar, so that the sash cannot be lowered. The pin 52 is pressed inward by a cam 60, formed as a part of a channel-plate 61, which will be secured to the stile of the bottom sash in the same position that the plate 6 with the cam 5 is shown attached thereto in Fig. 1 of the drawings. It will thus be seen that the bottom sash must be lifted far enough to bring the cam 60 into engagement with the pin 52, so as to move the same in order to throw the latch 47 out of engagement with the rack-bar before the top sash can be low-

ered. To this extent the principle operating the two sashes is the same as in the form first described. The difference between this form and the form first described is that in the present case the top sash cannot be lifted without first lifting to some extent the bottom sash, where, as in the first form, the top sash is at all times free to be lifted, although not to be lowered; but the pawl in this second form may be omitted entirely, and in that event the operation will be just the same as under the first form, that is, the top sash can be lifted at any time, so as to close the same without moving the bottom sash at all, although it cannot be lowered without first lifting the bottom sash. The pawl, therefore, is not an essential element and may be omitted, except where for any reason it might be wanted to lock the top sash against upward movement.

In Figs. 16 to 22 of the drawings I illustrate a form of the same invention in which the locking means for both the top and bottom sashes are embodied in a single case or shell, the operation, however, being the same in principle as in the first form described, and the construction of the parts being the same, except as the differences are pointed out. In this form of the invention the numeral 62 designates the shell or case containing the parts and provided with the ears 63, the shell to be inserted in the part of the sash-frame beneath the parting-bead which will separate the two sashes, which is the position occupied by one of the shells illustrated in Fig. 1 of the drawings. In the present form the latch 8, the guard-catch 15, and their operating-springs are all constructed and applied and operate in the same manner as the same parts shown in Figs. 1 to 6 of the drawings, the only difference being that the offset 14, against which the push-button bears and back of which is the spring 12 for pressing the latch outward, is made at the top of the latch instead of to one side, as shown in the first form, these changes being made merely that the push-button may be applied in the top face of the stile to the bottom sash, as shown in Fig. 17. These are purely changes within the skill of the mechanic, and as the construction is the same the same reference-figures are used for those parts. In the same shell with the latch for the bottom sash I mount the latch for the top sash, which in this illustration of the invention is designated by the numeral 64. This latch is mounted so as to turn on a pintle 65, which will have its bearings in bosses formed on the inside of the shell. This latch is formed on its side next to the latch 8 with an offset or shoulder 66, in front of which lies a flange 67, which extends from the side of the latch 8 and which is adapted to press against the offset or shoulder when the latch 8 is pressed in by the push-button 23, so as to throw the latch 64 out of engagement with the rack-bar 29 of the top sash in order to permit that sash to be lowered. For

the purpose of normally holding the latch 64 outward under a yielding pressure and in engagement with the rack-bar 29, so that the top sash cannot be lowered when the latch 64 is pressed outward, I employ a spring 68, which fits at one end in the cavity 69, made in the under part of the latch 64, and which at the other end will bear against the wall of the shell 62. When this form of the invention is used, the metal plate 6 and its cam 5 (illustrated in Fig. 1) are omitted and the stop or rack bar 4 is put in its place, so as to bring it opposite to the latch 8, the function of the cam 5 being served by the flange 67 on the latch 8, so that when it is pressed against the offset on the latch 64 by the push-button that latch will be pressed back to allow the top sash to be lowered, as just previously described. It will be observed, however, that the mode of operation of the parts and the function which they serve and the manipulation of the top and bottom sash and the security afforded by the invention are the same as that set forth in describing the particular form shown in Figs. 1 to 6 of the drawings, this particular form having the advantage that both latches are contained within a single shell, which in some instances may be preferred over the employment of two shells. In this form, however, it is to be noted that it is not necessary to lift the bottom sash in order to unlock the top sash, so that it may be lowered as the top sash is unlocked by simply pressing in the push-button, so that it will force the locking-latch backward, as already described. The moment, however, that pressure is taken off the push-button the latch 64 is thrown outward, so as to engage the rack-bar 29. It may also be noted that the parts will be so proportioned that the latch 64 will be thrown out of engagement with its rack-bar by pressure on the push-button before the other latch 8 has been pressed so far backward as to have its guard-catch engage with the same, thus avoiding the engagement of the guard-catch with its latch and the consequent holding of its latch out of engagement with its rack-bar in the manipulation of the other latch 64 for the top sash. It will also be observed that when the guard-catch is in engagement with its latch, so as to permit the bottom sash to be raised, the latch for the top sash is not necessarily out of engagement with its rack-bar.

In Fig. 22 of the drawings in addition to the flange 67 on the latch 8 for pressing against the front of the offset 66 of the latch 64 I have shown a second flange 70, located back of the flange 67, so that the offset 66 will fit between the two flanges, and thus move the latch 64 back and forth in the back-and-forth movement of the latch 8, thus enabling me to dispense with a separate spring 68 for the latch 64, as under the construction just described the spring 12 to the latch 8 may be made to serve the purpose of the two springs.

I have illustrated and described the preferred details of construction in each one of

the different forms of the invention illustrated; but changes can be made in each without departing from the essential features of the invention.

Having described my invention and set forth its merits, what I claim is—

1. In a sash lock or fastener, the combination with mechanism for locking a top sash against downward movement while permitting it to move upward, of mechanism for locking the bottom sash against upward movement while permitting it to move downward, and means for unlocking the top and the bottom sash so that while unlocked they may be moved, respectively up and down, the portion of said means which operates in connection with the bottom sash being mechanically held out of operative relation with said sash in the upward movement of the sash and released by the bottom sash acting thereon in the downward movement of the sash so as to be thrown into operative relation, substantially as and for the purposes described.

2. In a sash lock or fastener, the combination with mechanism for locking a top sash against downward movement while permitting it to move upward, of mechanism for locking the bottom sash against upward movement while permitting it to move downward, means for unlocking the mechanism of the bottom sash to permit it to be raised, and means carried by the bottom sash and in the upward movement of said sash brought in contact with a part of the locking mechanism of the top sash for actuating the same to permit the top sash to be lowered, substantially as and for the purposes described.

3. In a sash lock or fastener, the combination with mechanism for locking a top sash at various adjustments and in a closed position, of mechanism for locking the bottom sash at various adjustments and in a closed position, said mechanism of the bottom sash comprising a latch to engage a stop or rack bar on the sash, a guard-catch adapted to fit over the end of the latch when retracted to hold it out of engagement with said stop or rack bar, and to be moved from the end of the latch in the downward movement of the sash to permit the latch to engage the stop or rack bar, and means for unlocking the locking mechanism respectively of the top and bottom sashes, substantially as and for the purposes described.

4. A sash lock or fastener, comprising a stop or rack bar for the sash, a latch to engage said stop or rack bar, a guard-catch adapted to fit over the end of the latch when retracted to hold it out of engagement with said stop or rack bar and to be moved from the end of the latch by the sash in its movement in one direction, and means for retracting the latch from the stop or rack bar, substantially as and for the purposes described.

5. A sash lock or fastener, comprising a stop or rack bar for the sash, a spring-actuated latch to engage said stop or rack bar, a spring-

actuated guard-catch having a shank, a heel,  
and a nose-piece to fit over the end of the  
latch when retracted to hold it out of engage-  
ment with the stop or rack bar, and means  
5 for retracting the latch from the stop or rack  
bar, substantially as and for the purposes de-  
scribed.

6. In a sash lock or fastener, the combina-  
tion with mechanism for locking one sash, of  
10 mechanism for locking the other sash and  
comprising a stop or rack bar attached to said  
other sash on the side next to the sash-frame,

a spring-actuated latch adapted to be thrown  
in and out from the sash-frame next to said  
stop or rack bar, a finger to engage a part of 15  
said latch and having a pin projecting into the  
path of a cam carried by the other sash, sub-  
stantially as and for the purposes described.

In testimony whereof I affix my signature  
in presence of two witnesses.

LEWIS CASS MILLER.

Witnesses:

WILBUR F. BOYLE,  
LON. O. HOCKER.