

June 27, 1967

R. H. SODERBERG

3,328,060

CONCEALED SELF-OPERATING SASH LOCK APPARATUS

Filed June 23, 1965

2 Sheets-Sheet 1

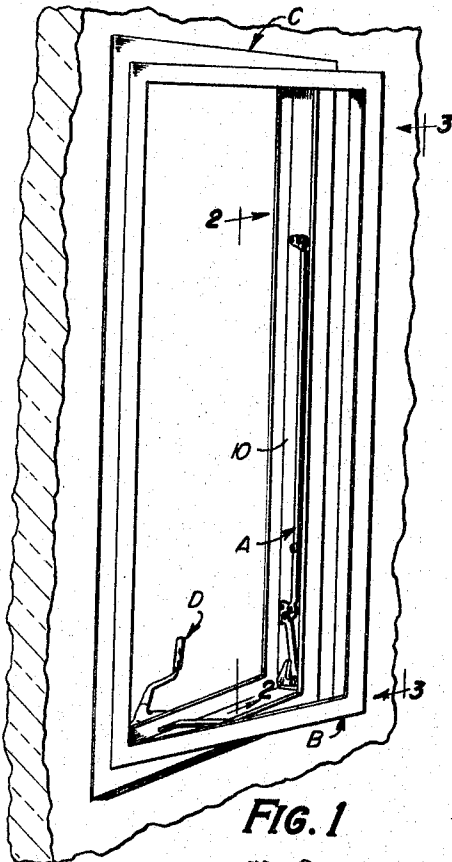


FIG. 1

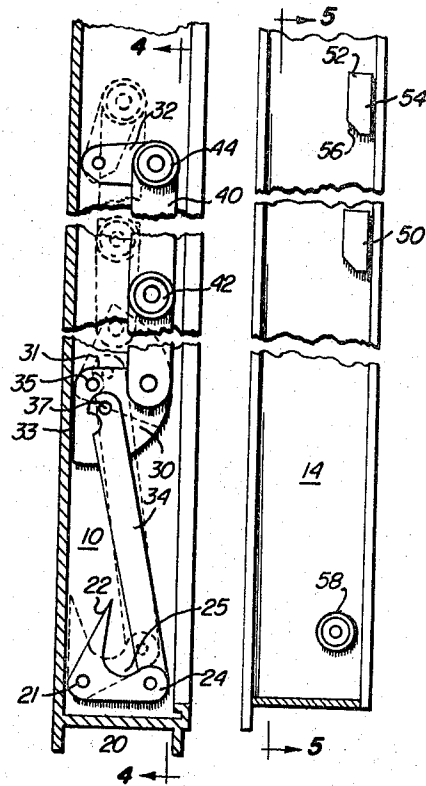


FIG. 2

FIG. 3

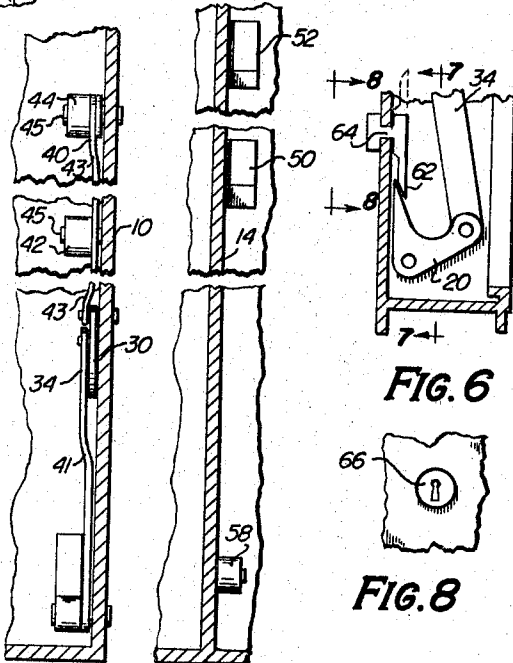


FIG. 4

FIG. 5

FIG. 6

FIG. 8

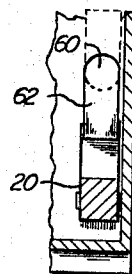


FIG. 7

INVENTOR.

RICHARD H. SODERBERG

BY

William F. Woods
ATTORNEY

June 27, 1967

R. H. SODERBERG

3,328,060

CONCEALED SELF-OPERATING SASH LOCK APPARATUS

Filed June 23, 1965

2 Sheets-Sheet 2

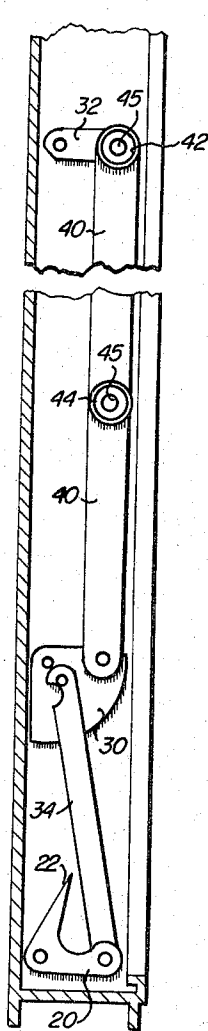


FIG. 9

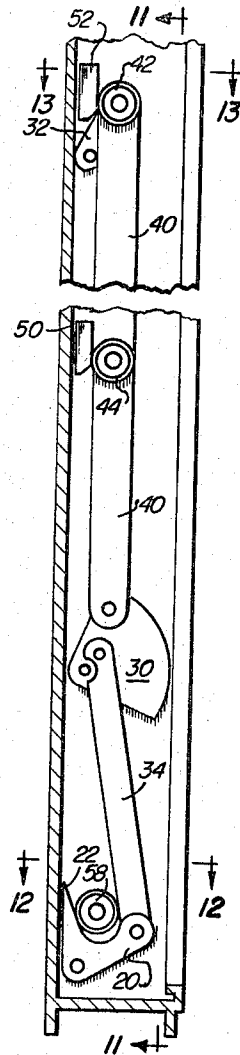


FIG. 10

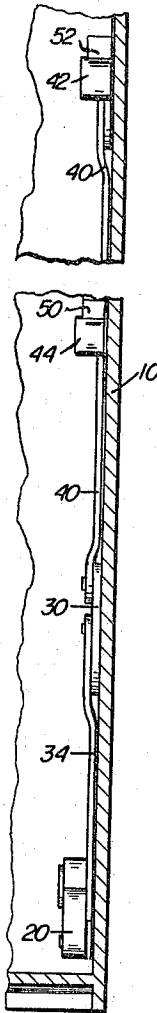


FIG. 11

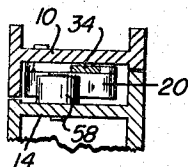


FIG. 12

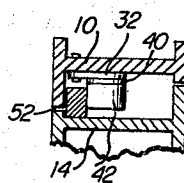


FIG. 13

INVENTOR.

RICHARD H. SODERBERG
BY

William F. Woods
ATTORNEY

1

3,328,060

CONCEALED SELF-OPERATING SASH LOCK APPARATUS

Richard H. Soderberg, 2111 21st Ave. S.,
Minneapolis, Minn. 55404

Filed June 23, 1965, Ser. No. 466,291

10 Claims. (Cl. 292-64)

This invention relates to improved apparatus for locking window sash and the like, and more particularly, but not necessarily exclusively to improved apparatus of this type including concealed self-operating means for effecting quick and efficient locking of a sash or the like in a closed position.

The general object of the invention is to improve sash lock apparatus. Other objects of the invention are: to provide improved sash lock apparatus including means for mounting the same in a concealed position between the sash and a jamb of the window frame; to provide in a sash locking device novel and improved linkage means for transmitting the force utilized in closing the sash to concealed locking mechanism operable to engage and hold the sash in a closed position; to provide in apparatus of this type novel means for selectively latching the sash in a closed position; to provide an improved concealed self-operating sash locking apparatus novel means that is operable in conjunction with a sash closer to effect locking of a sash; and, in general, to provide an improved concealed self-operating sash lock which is highly versatile and dependable in operation, simple and inexpensive to construct, and rugged and long wearing in service.

These and other objects and advantages of the invention will become more fully apparent from a consideration of the following detailed specification and accompanying drawings wherein representative embodiments of the invention are shown by way of illustration and not by way of limitation.

In the drawings:

FIG. 1 is a fragmentary perspective view of an outswinging casement sash equipped with my sash lock;

FIG. 2 is an enlarged fragmentary elevational view, taken substantially along the line 2-2 of FIG. 1, showing the parts of my sash lock that are mounted in the side jamb of the window frame, the dotted lines indicating the parts in a locked position;

FIG. 3 is an enlarged fragmentary elevational view, taken substantially along the line 3-3 of FIG. 1, showing the parts of my sash lock that are mounted on the unhinged edge of the sash;

FIG. 4 is a view taken along the line 4-4 of FIG. 2;

FIG. 5 is a view taken along the line 5-5 of FIG. 3;

FIG. 6 is an enlarged fragmentary elevational view of the lower part of the side jamb illustrating alternate means used to lock the jamb latch member independently of the sash closer mechanism;

FIG. 7 is a view taken on the line 7-7 of FIG. 6;

FIG. 8 is a view taken on the line 8-8 of FIG. 6;

FIG. 9 is a view similar to FIG. 2 showing the sash lock parts, which are mounted in the side jamb of the window, in an unlocked position;

FIG. 10 is a fragmentary elevational view taken through the sash and the side jamb of the window illustrating the position of the sash lock parts when the sash is closed;

FIG. 11 is a view taken on the line 11-11 of FIG. 10;

FIG. 12 is a view taken on the line 12-12 of FIG. 10; and

FIG. 13 is a view taken on the line 13-13 of FIG. 10.

Briefly stated, according to the principles of my invention, I provide locking mechanism for sash of the casement of outswinging type or for projected windows consisting of a single or a series of sash equipped with hardware that allows the sash to be swung in at the top or

2

out at the bottom, or of sash that may be hinged at the bottom rail and swung in at the top. The following description deals with the use of my invention in connection with casement sash of the outswinging type although it should be understood that the invention can be effectively utilized with a variety of window mountings.

The apparatus includes a latch member that is pivotally mounted in the side jamb of the window frame opposite the hinged side of the sash. The latch member is engaged by a keeper mounted on the sash which pivots it from a lower open position to an upper locking position when the sash is closed. A linkage system, attached to the latch member moves simultaneously therewith to bring a pair of keepers mounted thereon into engagement with strikers carried by unhinged side of the sash to lock the sash into a closed position with respect to the window frame. The sash is normally kept in a closed position by a crank operated closer but absent such a device in the alternative, I provide alternate locking means including a rotatable pawl member that engages the latch member to lock it and the sash in a tightly closed position.

Referring now to the drawings, FIG. 1 illustrates the invention A mounted in combination with a casement sash B of the outswinging type which is pivotally hung in a frame C and operated by means of a crank operated closer D. The closer D pivots the sash B about a side hinge axis for opening and closing and pulls it into tight engagement with the frame C. The invention A is for the main part mounted in the side jamb 10 of frame C with the exception of a few parts that are mounted on or carried by the unhinged side 14 of the sash B, as will become apparent.

As shown in FIGS. 2-5, the side jamb 10 of frame C is equipped with a latch member 20 that is pivotally mounted, as at 21, near the bottom of the jamb 10. Latch member 20 includes a bifurcated body having an upper operating arm 22 and a lower crank arm 24. Arms 22, 24 are on opposite side of and extend outwardly from the pivot axis 21 of latch member 20. An upwardly curved bearing section 25 joins arms 22, 24. Also mounted on side jamb 10 of frame C is a sector shaped plate 30, having radially extending edges 31, 33, which is pivotally carried, as at 35, above latch member 20, and an upper lever 32 that is pivotally mounted on jamb 10 near the top thereof. The outer end of crank 24 of latch member 20 is pivotally connected to the lower end of a lower link 34 which is pivotally connected at its upper end, as at 37, to plate 30 slightly outwardly and below pivot point 35. Connection between the upper lever 32 and plate 30 is accomplished by means of an elongated upper link 40 which is pivotally connected at its upper end to the outer end of lever 32 and at its lower end to plate 30 adjacent its upper radial edge 33 and radially outwardly of the connection 37 between lower link 34 and plate 30. Link 40 carries a pair of longitudinally spaced cylindrical rollers or keepers 42, 44 which extend toward the sash B. The keepers 42, 44 are preferably made of nylon and rotate about pins 45 which secures them to the link 40. The upper keeper 44 is mounted on the same pin that connects the end of lever 32 with the link 40. As shown in FIG. 4, the links 34 and 40 are offset, as at 41 and 43, respectively, to provide clearance when latch member 20 is pivoted about its axis to cause the entire latching assembly described to rise from the solid line unlocked position of FIG. 2 to the raised locking position illustrated therein by the dotted lines. The edge 33 of plate 30 abuttingly engages the side of the jamb 10 to limit the downward rotation of latch member 20.

The latching assembly illustrated in FIG. 2 is actuated by the parts attached to the unhinged side 14 of sash B and illustrated in FIG. 3. These include a pair

of spaced strikers 50, 52 which are mounted on side 14 of sash B in operative register with the keepers 42, 44, respectively, of the latching assembly. Each striker 50, 52 is characterized by an upper straight sided body 54 which terminates in a downwardly and inwardly inclined lower section 56. Further included is latch engageable roller 58 which is carried by side 14 of sash B in register with the latch member 20 and is operable to engage the curved section 25 thereof to rock latch member 20 about its pivot axis 21. Thus, when the sash B is operated by the closure D to swing inwardly from the position shown in FIG. 1, the roller 58 rides over the outer end of the crank arm 24 of latch member 20 and engages curved section 25 to pivot operating arm 22 and the latching assembly upwardly. Simultaneously with the upward movement of the latching assembly, the inclined sections 56 of strikers 50, 52 engage keepers 42, 44 to guide and bring the strikers 50, 52 into locking engagement with and behind the keepers 42, 44, as shown in FIGS. 10-12. When the sash is brought tight against the frame by the closer D the parts assume the position illustrated in FIGS. 10-13, opening of the sash is accomplished by reversing the operation of the closer D and the latching assembly assumes the positions illustrated by the solid lines of FIG. 2 and FIG. 9.

The structure described may be used without a closer D if required; in such a case, locking of the sash in a closed position can be accomplished by providing a locking device of the type set forth in FIGS. 6-8. As shown therein, this locking device, indicated in its entirety by the reference character 60, includes a pawl 62 which is rotatably mounted on the inner wall of the frame A and is engageable with the upper part of the operating arm 22 of latch member 20. The mounting means 64 for pawl 62, which extends through the wall of frame A, may be equipped with a key operated lock control 66 for rotating the pawl 62 into and out of locking engagement with the latch member 20.

The invention has been tested and found to be satisfactory for its purposes and while there has been disclosed a preferred embodiment and alternate locking means therefor it should be specifically understood that the same is capable of considerable modification without departure from the scope and spirit of the appended claims. In many instances, features may be added; in others, features may be omitted.

It is intended that the patent shall cover, by summarization in the appended claims, all features of patentable novelty in the invention.

I claim:

1. In combination with a sash and its frame, a latch member pivotally mounted on the frame, fixed roller means carried by the sash and engageable with said latch member to pivot the same from a lower open position to an upper locking position, keeper means rockably mounted with respect to said frame, linkage means connecting said keeper means with said latch member, said linkage means and said latch member being operable to rock said keeper means from a lower open position to an upper locking position, and striker means carried by said sash engageable with said keeper means when the sash is closed against the frame to lock the sash against the frame.
2. In a concealed self-operating sash lock apparatus, the combination with a sash and its frame of: a latch member pivotally mounted on the frame adjacent its lower end, said latch member having an operating arm and a crank arm, the said arms having ends facing the sash and being connected by a central generally curved bearing section,

a plate pivotally mounted on the frame above said latch member, a lower link pivotally connecting the end of the crank arm of said latch member with said plate, a lever pivotally carried by the frame above said plate, an upper link pivotally connecting the end of said lever with said plate, at least one keeper mounted on said upper link, roller means carried by said sash engageable with said latch member to pivot the same from a lower open position to an upper locking position, and striker means carried by said sash engageable with said keeper to lock said sash against said frame when the sash is closed.

3. In a concealed self-operating sash lock apparatus, the combination with a sash and its frame of:

a latching assembly including:

a latching member having a bifurcated latch member pivotally mounted adjacent the lower end of the frame, said latch member having an upper operating arm and a lower crank arm, said arms being joined by an upwardly curved bearing section,

a sector shaped plate pivotally mounted on the frame above said latch member, a lower link connecting said plate with said operating arm of said latch member, a lever pivotally mounted on the frame above said sector shaped plate, an upper link connecting said lever with said sector shaped plate, a pair of longitudinally spaced keepers mounted on said upper link, and striker means mounted on said sash and engageable with said latching assembly when said sash is closed operable to cause said latch member to pivot and said link members to rise whereby to lock said sash mounted means with respect to said latching assembly.

4. The combination described in claim 3 wherein said sector shaped plate is abuttingly engageable with the frame to limit the rotation of said latch member about its axis.

5. The combination described in claim 3 wherein said sash mounted means includes a pair of longitudinally spaced strikers each lockingly engageable with one of said keepers when said sash mounted means is swung into engagement with said latching assembly and a latch member engageable roller operable to engage the upwardly curved bearing section of said latch member to rock the same about its pivot axis.

6. The combination described in claim 5 wherein said strikers are each characterized by an upper straight sided body and a lower inclined section, the lower inclined section of said strikers being adapted to guide said strikers into locking position against the inner circumference of said keepers when the sash is closed.

7. In a concealed self-operating sash lock apparatus for use with a sash and its frame, the combination of:

a latch member pivotally mounted adjacent the lower edge of the frame, said latch member having an operating arm and a crank arm,

a sector shaped plate having an edge abuttingly engageable with the frame, a lower link member connecting the crank arm of said latch member with said sector shaped plate, a lever pivotally mounted on the frame above said sector shaped plate, an upper link member connecting said sector shaped plate with said lever, a pair of keepers carried by said upper link member, said latch member, sector shaped plate, lever and link members constituting a latching as-

5

sembly rockably movable from a lower position with said keepers and the arms of said latch member in outwardly spaced relation to the frame to an upper locking position with said keepers and the arms of said latch member inwardly displaced with respect to their lower position,

and striker means carried by the unhinged edge of the sash engageable with said latching assembly operable to cause said assembly to rotate from a lower position to an upper position and lock the sash into closing engagement with the frame.

8. The combination described in claim 7 wherein said last mentioned means includes a pair of strikers each engageable with one of said keepers and a roller engageable with said latch member operable to impart a thrust to the operating arm thereof whereby to cause said latching assembly to pivot into a locking position.

6

9. The combination described in claim 7 wherein means are provided for locking said latch member in an upper position.

5 10. The combination described in claim 9 wherein said locking means includes a pawl member rotatably mounted in the sash and selectively engageable with the operating arm of said latch member.

References Cited

UNITED STATES PATENTS

2,864,640 12/1958 Mattinson ----- 292—158 X

MARVIN A. CHAMPION, *Primary Examiner*.

15 EDWARD C. ALLEN, *Examiner*.

J. R. MOSES, *Assistant Examiner*.