March 24, 1970 W. R. BISHOP 3,501,932

WINDOW LOCK

Filed Jan. 6, 1967

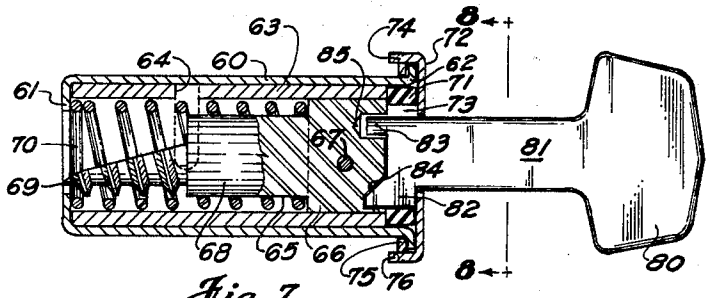


Fig. 7

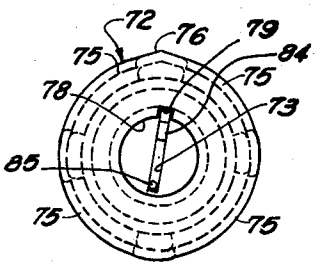


Fig. 8



Fig. 9

Fig. 6

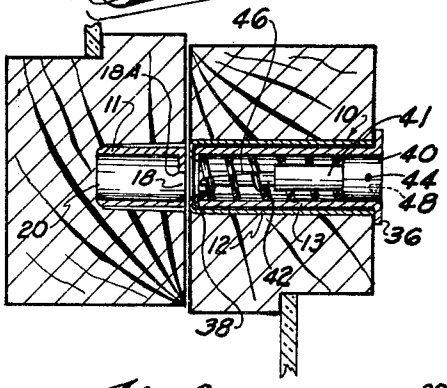


Fig. 2

Fig. 1

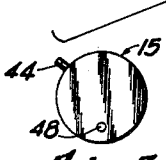


Fig. 3



Fig. 4

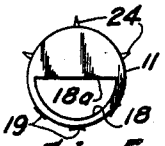


Fig. 5

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WINDOW LOCK

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U.S. Cl. 70—90 12 Claims

ABSTRACT OF THE DISCLOSURE

This invention relates to a lock of the type utilized in locking the upper and lower halves or sashes of sliding windows together, and includes a key operated plunger normally positioned in the lower sash of a window which may be partially inserted into a recess located in the upper sash to lock the sashes together.

Background of the invention

In the past, it has been common practice to lock the sashes of sliding windows together with a pivotal element connected to the upper surface of the lower sash of the window that engages a stationary element connected to the upper surface of the lower rail of the upper sash of the window. This conventional arrangement has proven unsatisfactory to some extent in that it is unsightly, tends to accumulate dust, tends to scar the upper sash if the lower sash is raised and the pivotal portion is not in its proper position, tends to bind when the pivotal portion of the conventional web is painted, and when the window is firmly locked a bending or torsion force is created between the upper rail of the lower inside sash and the lower rail of the upper outside sash. Furthermore, the conventional lock can be disengaged by unauthorized persons, or if a glass pane is broken from the window, the conventional lock can be disengaged from outside the window.

Summary of the invention

The present invention comprises a plunger type mechanism wherein a plunger is telescopically received in the upper rail of the inside lower sash and insertable into a receiving space located within the lower rail of the upper outside sash, to prevent relative movement of the upper and lower sashes with respect to each other. The locking element can be moved through the upper rail of the lower inside sash by means of a key that can be selectively retained in the lock or removed from the lock when the plunger is received in the lower rail of the outside upper sash. The plunger and the receptacle of the lower rail of the upper outside sash co-act with each other when the plunger is placed in its locked position so that the upper and lower sashes are drawn toward each other and are placed into alignment with each other.

Thus, it is an object of this invention to provide apparatus for locking together the sashes of a window whereby the window cannot be unlocked without a key.

Another object of this invention is to provide a window lock capable of locking together the sashes of a window without projecting beyond the limits of the surfaces of the window.

Another object of this invention is to provide a window lock having a key whereupon the key can be retained in the lock when the lock is in its locked or unlocked position and can be removed from the lock when the lock is in its locked position.

Other objects, features and advantages of the present invention will become apparent upon reading the following specification, taken in conjunction with the accompanying drawing.

Brief description of the drawing

FIG. 1 is an exploded perspective view of the lock and the manner in which it is associated with a window;

FIG. 2 is a side elevational view, in cross section, of the center rails of a window and the lock sleeve, plunger guide cylinder and outside sash cylinder;

FIG. 3 is an end view of the outside end of the lock plunger used with the lock of FIG. 1;

FIG. 4 is an end view of the inside end of the lock plunger;

FIG. 5 is an end view of the strike or outside sash cylinder;

FIG. 6 is an exploded perspective view, similar to FIG. 1, of another form of the invention;

FIG. 7 is a side view, in cross section of the lock of FIG. 6;

FIG. 8 is an end view of the lock of FIG. 7, taken along lines 8—8 of FIG. 7, with the key removed;

FIG. 9 is an end view of the outside end of the lock plunger used with the lock of FIG. 6.

Description of the invention

Referring now more particularly to the drawing, in which like numerals indicate like parts throughout the several views, the lock **10** of FIGS. 1–5 comprises a strike or an outside sash cylinder **11**, a sleeve **12**, a plunger guide cylinder **13**, a spring **14**, a locking plunger or bolt **15**, and a key **16**. The outside sash cylinder **11** is generally cylindrical in shape and defines a semi-circular opening **18** at one end. A pair of locking elements **19** are struck from the side wall of the cylinder **11** in such a manner that they are supported in cantilever fashion from the cylinder, with their free ends extending toward the semi-circular opening **18**. The locking elements **19** will lock the outside sash cylinder **11** inside the aperture **20** of the lower rail **21** of the outside sash **22** of a window. While the locking elements **19** will tend to prevent any movement of the outside sash cylinder **11** within its aperture **20**, the cylinder **11**, at the option of the manufacturer, can also be formed with a plurality of longitudinally extending ribs **24** disposed around its outside circumference to further insure that the cylinder **11** does not rotate in its aperture **20**.

Sleeve **12** may be received in the aperture **25** of the upper rail **26** of an inside sash **28** of a window. The sleeve **12** also has locking elements **29** struck from its sides so that they extend outwardly from the sides of the sleeve in cantilever fashion, similar to the locking elements **19** of the cylinder **11**, to lock the sleeve **12** in its aperture **25**. While the sleeve **12** is generally cylindrical in shape, it defines an axially extending slot **30** that extends its entire length. The slot allows the sleeve to be compressed when it is being inserted into the aperture **25**, so that the aperture **25** can be formed to its exact dimension, sleeve **12** slightly collapsed to be inserted into the aperture and then expand to be firmly connected to the upper rail **26**. The sleeve **12** and its slot **30** are formed so that the sleeve is slightly larger at its outer end, the inner end being slightly smaller than the dimensions of the aperture **25** to facilitate the insertion of the sleeve into the aperture. The sleeve **12** also defines an alignment port **31** to align the plunger guide cylinder **13**.

The plunger guide cylinder **13** is generally cylindrical in shape and of a size to be received within the sleeve **12**. The cylinder **13** includes a small projection **32** positioned along its length a distance approximately equal to the distance of the alignment port **31** from the end of the sleeve **12**. When the plunger guide cylinder **13** is inserted in the sleeve **12**, the projection **32** will be received in the alignment port **31** to properly align the cylinder within the sleeve.

The plunger guide cylinder **13** defines a pair of guide slots **34** and **35** which extend through its exterior surface. Slot **34** includes an axially extending portion **34***a* and a circumferentially extending portion **34***b*, while slot **35** includes an axially extending portion **35***a* disposed adjacent the axially extending portion **34***a* of slot **34**, a circumferentially extending portion **35***b* disposed adjacent the circumferentially extending portion **34***b* of slot **34** and a second axially extending portion **35***c*. Circumferentially extending portions **34***b* and **35***b* of slots **34** and **35** are approximately equal in length and are offset about the circumference of the cylinder **13** a distance sufficient to offset axially extending portions **34***a* and **35***a* of slots **34** and **35** from each other. The axially extending portions **34***a* and **35***a* are approximately equal to each other in length, while axially etxending portion **35***c* of slot **35** is longer than portions **35***a* and **34***a*, and extends to the end of the cylinder **13**.

Plunger guide cylinder **13** includes a flange or bezel **36** at one of its ends that extends radially outwardly thereof and about its circumference. The flange **36** helps to properly position the guide cylinder **13** inside the sleeve **12** and also covers any ragged or unsightly portions of the upper rail **26** surrounding the aperture **25** that might have been caused when the aperture **25** was formed in the upper rail **26**.

The plunger guide cylinder **13** also includes a radially inwardly extending flange **38** (FIG. 2) at its inner end. Coil spring **14** is constructed so that it has a diameter slightly smaller than the inside diameter of the guide cylinder **13** but larger than the inside diameter of the radially inwardly extending flange **38**. Accordingly, the spring **14** can be inserted inside the guide cylinder **13**, against the flange **38**.

Locking plunger **15** is adapted to be telescopically received in the guide cylinder **13** and includes a head portion **40**, a body portion **41** and a locking element **42**. The head portion **40** is of a diameter slightly smaller than the inside diameter of the guide cylinder **13** while the body portion **41** is of a diameter smaller than the head portion **40**. The spring **14** normally surrounds the body portion **41** and abuts the head portion **40**. Spring **14** occupies the space defined between body portion **41** of plunger **15** and guide cylinder **13** and acts to center plunger **15** in guide cylinder **13** and forms a bearing surface for plunger **15**. A pin or projection **44** extends radially outwardly from head portion **40** of the plunger **15** and normally extends through slot **34** of the plunger guide cylinder **13**. Since spring **14** would normally urge the locking plunger **15** outwardly of the plunger guide cylinder **13**, pin **44** rests against the end of the axially extending portion **34***a* of the slot **34** to retain the locking plunger **15** inside the guide cylinder **13**. Of course, when the locking plunger **15** is moved axially of the guide cylinder **13**, pin **44** will slide through the axially extending portion **34***a* of the slot **34** until it reaches the circumferentially extending portion **34***b*, whereupon the locking plunger **15** can be rotated and the pin **44** received in the circumferentially extending portion **34***b* of the slot **34**. Of course, when the pin **44** is received in circumferentially extending portion **34***b* of the slot **34**, the locking plunger **15** will be retained inwardly of the guide cylinder **13**.

Locking element **42** is generally circular in cross section at its base, of a substantially smaller diameter than the body portion **41** of the plunger **15**, and eccentrically attached to the body portion in such a manner that a portion of its circumference is coextensive with a portion of the circumference of the body portion **41**. The portion of the locking element **42** adjacent the exterior surface of the body portion **41** of the plunger is threaded with helical threads **45**, while the portion thereof disposed adjacent the interior portion of the plunger is truncated at an angle from its base toward its exterior portion to form a flat wedge surface **46**. The locking element **42** is arranged to project from the end of the plunger guide cylinder **13** when the plunger **15** is telescopically moved through the cylinder **13** so that it is received in the outside sash cylinder **11**. The flat wedge surface **46** faces the flat surface **18***a* of the semi-circular opening **18** of cylinder **11**, so that when the locking element **42** is received in the cylinder **11** the wedge surface **46** urges the cylinder and outside sash **22** upwardly with respect to the inside sash **28**, if the sashes are not in alignment with each other. When the plunger **15** has been inserted far enough into the guide cylinder **13** so that its pin **44** is in the proximity of the circumferentially extending portion **34***b* of the slot **34**, the locking plunger **15** is then turned or rotated in a clockwise direction (FIG. 1) and the locking element **42** tends to pivot around the inside surface of the outside sash cylinder **11**. Of course, when the locking element **42** engages the flattened surface **18***a* of the semi-circular opening **18**, further rotation of the locking plunger **15** causes the threads **45** of the locking element **42** to engage the flattened portion **18***a* to further move the outside sash **22** upwardly with respect to the inside sash **28** and to draw the outside sash **22** and the inside sash **28** toward each other. While flattened portion **18***a* is illustrated as extending normally to the axis of plunger **15**, it should be understood that flattened portion **18***a* may be constructed to extend at an angle corresponding to the angle of the threads **45** of plunger **15** so as to form a better gripping surface for the plunger.

The head portion **40** of the locking plunger **15** defines a blind bore **48** offset from the center of the plunger. The key **16** includes a projection **49** of a size slightly smaller than the blind bore **48** which fits into the blind bore. The key also includes a cylindrical shank **50**, a pin or projection **51** extending radially outwardly from the shank **50** adjacent one end thereof and the finger tab **52** projecting axially away from the shank **50** at the other end thereof. The pin **51** is adapted to ride in slot **35** of the plunger guide cylinder **13**. Of course, since the axially extending portion **35***c* of the slot **35** opens outwardly of the guide cylinder **13**, the key **16** can be selectively withdrawn from the guide cylinder **13**.

Referring now to FIGS. 6 and 7, wherein a modified form of the invention is shown, a sleeve or outer cylinder **60** is arranged to be inserted into the aperture **25** of the upper rail of the lower sash. The sleeve **60** includes a radially inwardly extending flange **61** at its inner end and a radially outwardly extending flange **62** at its outer end. A plunger guide cylinder **63** of an outside diameter slightly smaller than the inside diameter of sleeve **60** is arranged to be received within the sleeve **60**. The plunger guide cylinder **63** is cylindrical and formed in two sections, bearing section **63***a* and index section **63***b*, which, when assembled in abutting relationship, define an L-shaped slot **64** similar to slot **34** of plunger guide cylinder **13**.

A locking plunger **65**, similar to locking plunger **15** of FIG. 1 is sized and shaped to be received within the plunger guide cylinder **63**. The locking plunger includes a head portion **66**, body portion **68**, and locking element **69**. The head portion **66** has an outside diameter slightly smaller than the inside diameter of plunger guide cylinder **63** while body portion **68** is of a smaller diameter. Coil spring **70** is positioned within the plunger guide cylinder **63**, one of its ends bearing against the radially inwardly extending flange **61** of the sleeve **60** and the other of its ends bearing against the head portion **66** of plunger **65**. Spring **70** occupies the space defined between body portion **68** of plunger **65** and guide cylinder **63** and acts to center plunger **65** in guide cylinder **63** and forms a bearing surface for plunger **65**.

A disc **71** of a diameter slightly smaller than the inside diameter of sleeve **60** and defining a slot **73** therein is positioned within sleeve **60**, abutting plunger guide cylinder **63** and locking plunger **65**. A positioning cap or bezel **72** abuts the end of sleeve **60** and includes an annular, axially extending flange **74** disposed about the

radially outwardly extending flange **62** of sleeve **60**. The positioning cap **72** is rigidly connected to the sleeve **60** by tabs **75** struck from flange **74** of the positioning cap **72**; tabs **75** being bent inwardly to positively lock the flange **62** of sleeve **60** within the positioning cap **72**. Tabs **75** are located at spaced intervals around the circumference of the positioning cap **72** and the portion of the flange **74** remaining after the tabs **70** have been struck therefrom constitute positioning spikes **76**.

Positioning cap or bezel **72** is centrally apertured at **78**, as shown in FIG. 8, and the internal surface of the aperture **78** includes a bight **79**.

Key **80** is constructed to be inserted through the positioning cap **72** in order to operate the plunger **65**. The key **80** includes a shank **81**, web **82**, and pin **83**. The head portion **66** of the plunger **65** includes a web cavity **84** of a size and shape corresponding to the web **82** of the key **80** and a pin cavity **85** of a size and shape corresponding to pin **83** of key **80**. Head portion **66** of plunger **65** also includes a projection **67**, similar to projection **44** of the plunger shown in FIG. 1, which is adapted to ride through the L-shaped slot **64** of plunger guide cylinder **63**.

The bearing section **63***a* and index section **63***b* of the plunger guide cylinder **63** are fitted together and maintained in fixed relationship with each other by means of the tongue **88** of the index section **63***b* extending into slot **89** of bearing section **83***a*. Bearing section **63***a* is maintained in fixed relationship with sleeve **60** by means of tongue **90** of bearing section **63***a* extending through bight **91** defined in the inner perimeter of inwardly extending flange **61**.

Operation

The lock **10** of FIGS. 1–5 is inserted in the sashes of the window by first closing the window so that the upper rail **26** of the inside sash and lower rail **21** of the outside sash are in their desired position, in alignment with each other. The aperture **25** is bored in the upper rail **26** by a drill of conventional design and the aperture **20** is bored in a similar manner, with the bit of the drill extending through the aperture **25** so that the apertures **20** and **25** are in perfect alignment with each other. Of course, the aperture **20** is not a through bore (FIG. 2) while aperture **25** extends through the upper rail **26**. The cylinder **11** is inserted into the aperture **20** by tapping from a hammer, or like instrument. The locking elements **19** prevent the cylinder **11** from being removed from its aperture **20** or rotated therein. The sleeve **12** is partially collapsed and at least partially inserted into the aperture **25**. The plunger guide cylinder **13**, spring **14** and locking plunger **15**, having been previously assembled with each other, are then inserted within the sleeve **12** so that the small projection **32** of the cylinder **13** extends through the alignment port **31** of the sleeve **12**. The cylinder **13** and sleeve **12** are then tapped into the aperture **25** until the flange **36** of the cylinder **13** prevents further movement of the plunger guide cylinder **13** into the aperture **25**. With this arrangement, the sleeve **12** surrounding the cylinder **13** provides a smooth surface in the vicinity of the slots **34** and **35** so that the pins **44** and **51** of the plunger and key can slide through the slots **34** and **35**, respectively, without encountering any loose wood or rough surfaces of the interior surface of the aperture **25**.

Key **16** is normally retained in the plunger guide cylinder **13** by its pin **51** extending through the axially extending portion **35***a* of the slot **35**. When the key **16** is in this position, its projection **49** is received in the blind bore **48** of the plunger **15**. When it is desired to lock the window sashes together, the key **16** is urged inwardly of the plunger guide cylinder **13** until the pins **44** and **51** of the plunger **15** and key **16**, respectively, reach the circumferentially extending portions **34***b* and **35***b* of the slots **34** and **35**, respectively. Key **16** is then turned or rotated within the plunger guide cylinder **13**, which tends to turn the locking plunger **15** an equal amount because of the offset of the projection **49** and its blind bore **48** of the key and plunger, respectively. When the key **16** is turned in this manner, so that the pins **44** and **51** are received in the circumferentially extending portions of the slots, the spring **14** will not be able to urge the plunger and key outwardly of the guide cylinder **13**.

The inward movement of the plunger **15** compresses spring **14** and causes locking element **42** to be projected outwardly of the cylinder **13**, into the outside sash cylinder **11**. Since the flat wedge surface **46** of the locking element **42** is tapered, movement of the locking element **42** into the cylinder **11** will cause surface **46** to engage the flat surface **18***a* of the semi-circular opening **18** if the lower rail **21** of the outside sash **22** is not in alignment with the upper rail **26** of the inside sash **28**. When the key **16** is rotated, the locking element **42** tends to ride around the inside surface of the cylinder **11** until it engages the flat surface **18***a* of the semi-circular opening **18**. At this point, the threads **45** of the locking element **42** engage the flat surface **18***a* of the cylinder **11** to urge the outside sash upwardly with respect to the inside sash. Further rotation of the locking element **42** causes the threads **45** to pull the cylinder **11** and the outside sash **22** toward the inside sash **28**. Spring **14**, in its compressed state, forms a bearing surface for body portion **41** and head portion **40** of plunger **15**, whereby no play or lost motion will be encountered between the elements of the lock **10** or sashes of the window.

If it is desired to remove the key **16** from the lock, the key is rotated until its pin **51** is received in the axially extending portion **35***c* of the slot **35**, whereupon the key can be withdrawn from the guide cylinder **13**. Of course, the locking plunger **15** will remain inserted inside the guide cylinder **13** and the window lock will remain in its locked position. Since the locking plunger **15** will be in a position so that its head portion **40** is located near the central portion of the plunger guide cylinder **13**, it will be virtually impossible for a person to rotate the plunger **15** to withdraw the locking element **42** from outside sash cylinder **11**.

Referring to FIGS. 6–9 of the drawing, the modified form of the invention operates in a manner similar to the invention shown in FIGS. 1–5. The apertures **20** and **25** of the sashes are bored as previously described and the outside sash cylinder **11** inserted. The elements retained in the bore of the inside sash are completely assembled, as is shown in FIG. 7, and inserted within bore **25** by tapping with a hammer, or like instrument. When the elements are received within the bore **25** of the inside sash **26**, the positioning spikes **76** will gouge into the wood of the sash to rigidly position the elements within the aperture **25** of the sash.

Key **80** is inserted through the opening **78** of the positioning cap so that its web **82** extends through the bight **79** of the positioning cap **72**. The shank **81** of the key **80** extends through the positioning cap and the slot **73** of the slotted disc **71** and the web **82** of the key is received in the web cavity **84** of the head portion **66** of the locking plunger **65**, while pin **83** is received in the pin cavity **85**. As the key **80** is further inserted into the sleeve **60**, the plunger **65** is moved against the bias of its spring **70**; the projection **67** of the plunger **65** riding in the axially extending portion of the slot **64** of the plunger guide cylinder **63**. When the projection **67** reaches the circumferentially extending portion of the slot **64**, the key **80** can be turned and the projection **67** will ride through the circumferentially extending portion of the slot **64**. Of course, inward movement of the plunger **65** causes its locking element **69** to function as previously described. If it is desired to remove the key **80** from the lock when the sashes are locked together, the key may be moved away from the plunger **65**, rotated until its web **82** mates with the bight **79** of the positioning cap **72**, and withdrawn from the window lock. Of course, in order to unlock the

sashes the key **80** is reinserted through the positioning cap **72**, rotated until its web **82** and pin **83** engages the corresponding cavities **84** and **85** of the plunger **65**, whereupon the key and plunger are rotated until the projection **67** of the plunger rides through the axially extending portion of the slot **64** of the plunger guide cylinder **63**.

If it is decided to leave the key **80** inside the lock when the sashes are not locked together, the key **80**, plunger **65**, plunger guide cylinder **63** and slotted disc **71** can be rotated so that the web **82** of the key is not aligned with the bight **79** of the positioning cap **72**, whereupon the positioning cap prevents the key from being withdrawn from the lock.

At this point, it should be understood that the window lock disclosed herein tends to align and tighten the center rails of a window to insure that any weather stripping between the center rails is effective for a positive weather seal. Since spring **14** insures that the locking plunger **15** is totally disposed within the plunger guide cylinder **13**, the elements of the window lock **10** are completely enclosed within the confines of the center rails of the window when the lock is in its unlocked position. This feature makes the lock eye appealing, prevents any inadvertent scarring of the wood of the window sash, presents no dust trap on the upper surfaces of the center rails, and provides no working surfaces subject to being painted which would otherwise impair the function of the lock. Also, the security feature of the lock is especially desirable since the lock can be engaged and the key removed so that the window cannot be opened either from the outside or the inside of the dwelling. However, as explained above, the key can be retained in the lock when in its unlocked position, if desired.

While lock **10** has been illustrated as being positioned within the center rails of a window, it should be understood that the lock may be positioned in a side or vertical rail of the window and several strikes or outside sash cylinders **11** be inserted at spaced distances along the vertical rail of the outside sash so that the window can be locked in various opened positions. Furthermore, the lock may be utilized with various other arrangements: i.e., sliding doors, or any structure having at least one slidable panel juxtaposed either another slidable panel or a stationary structure.

The use of the locks disclosed herein is not limited to wooden structure. The locks have been successfully used with aluminum and plastic structure, and it is anticipated that they can be utilized with various other materials. Of course, other attachment means, such as external screw threads, may be used in place of locking elements **19**, **24** and **29** of cylinders **11** and **12**, or positioning spikes **76** of bezel **72**. The configuration of these elements will be determined by the structure with which the lock is to be used.

It will be obvious to those skilled in the art that many variations may be made in the embodiments chosen for the purpose of illustrating the present invention without departing from the scope thereof.

What is claimed as invention is:

1. The combination of a window lock and key wherein said lock comprises:

a tubular member defining a semi-circular opening,

a second tubular member including an outwardly extending flange means at one end and an inwardly extending flange means at its other end, an L-shaped slot formed in said second tubular member and including a portion extending axially of said second tubular member and a portion extending circumferentially of said second tubular member, a U-shaped slot formed in said second tubular member having one leg disposed adjacent to and parallel to said axially extending portion of said L-shaped slot and its base portion disposed adjacent to and parallel to said circumferentially extending portion of said L-shaped slot.

spring means disposed in said second tubular member and abutting said inwardly extending flange means,

plunger means telescopically and rotatably received within said second tubular member against the bias of said spring means and including a projecting means extending through said L-shaped slot and a locking element adpated to engage said semi-circular opening, and

said key including projecting means extending through said U-shaped slot.

2. The combination of a window lock and key wherein said lock comprises:

a first tubular member defining a semi-circular opening in one of its ends for placement in the center rail of the outside sash of a window,

a second tubular member for placement in the center rail of the outside sash of a window in alignment with said first tubular member and including an inwardly extending flange means at one of its ends for juxtaposition with the semi-circular opening of said first tubular member and an outwardly extending flange means at its other end,

a cylindrical sleeve coaxially positioned within said second tubular member and defining an L-shaped slot in its sidewall,

a plunger telescopically received within said cylindrical sleeve and including a projection extending at least partially through said L-shaped slot,

biasing means disposed between the inwardly extending flange means of said second tubular member and said plunger to urge said plunger away from said first tubular member, and

a positioning cap connected to the outwardly extending flange means of said second tubular member for maintaining said plunger within said cylindrical sleeve.

3. The invention of claim **2** and further including a slotted disc disposed between said positioning cap and said plunger.

4. The invention of claim **2** wherein said plunger includes at its end adjacent said first tubular member a locking element of smaller diameter than the largest diameter of said plunger and eccentrically mounted thereon, and defines at its other end a detent offset from its centerline.

5. A lock bolt comprising:

a head portion of circular cross sectional configuration two indentations defined in a first end of said portion, one indentation being a slot and the second being a bore,

an elongated body portion of circular cross sectional configuration coaxially connected to said head portion, said body portion being smaller in diameter than said head portion and defining an annular exterior surface,

an elongated locking projection of smaller cross sectional area than said body portion eccentrically connected to the end of said body portion remote from said head portion, said locking projection defining an elongated convex surface of smaller radius than said body portion in tangential relationship with said annular exterior surface of said body portion and a substanially flat surface sloping outwardly from the central portion of said body portion toward said convex surafce, said convex surface including a series of angled threads.

6. The invention of claim **5** wherein said head portion includes a projection extending in a radial direction therefrom.

7. Locking apparatus comprising

at least one locking cylinder for placement in a first window sash,

a protective sleeve for placement in an adjacent window sash including an internally extending flange at a first end and an externally extending flange at a second end,

a plunger guide sleeve telescopically received within said protective sleeve,

spring means telescopically received within said said protective sleeve,

a lock bolt telescopically received within said plunger guide sleeve and including an enlarged head portion and a locking projection, said spring biasing said lock bolt in a first direction.

bezel means attached to said externally extending flange of the protective sleeve to enclose said plunger guide sleeve, spring means and lock bolt within the protective sleeve.

8. The invention of claim **7** wherein said plunger guide sleeve comprises a bearing section surrounding at least a portion of said spring means and an index section surrounding said enlarged head portion of the lock bolt, said bearing section defining a groove and said index section including a tongue extending into said groove, said plunger guide sleeve defining an L-shaped slot, and said enlarged head portion of the lock bolt including a projection extending through said slot.

9. The invention of claim **7** wherein said bezel includes a series of tabs folded around said externally extending flange of the protective sleeve, and positioning spikes dispersed intermediate said tabs.

10. The invention of claim **7** and further including a slotted disc positioned between the bezel and said head portion of the lock bolt.

11. The invention of claim **7** wherein said bezel is centrally apertured and a bight is defined in the perimeter of the central aperture.

12. A locking device for selectively precluding relative movement between the sashes of a window comprising:

a locking cylinder received in one of said sashes and defining an opening therein facing said other sash;

a sleeve assembly received through said other sash and in selective alignment with said opening in said locking cylinder;

a locking bolt telescopically received within said sleeve assembly and including an enlarged head portion slidably positionable within said sleeve assembly, a body portion having a diameter smaller than said head portion integral with said head portion at one end thereof, and a locking projection integral with the opposite end of said body portion, said locking bolt positioned in said sleeve assembly so that said locking projection extends toward said locking cylinder and is selectively extendable into said locking cylinder to fix said sashes against relative movement by each other:

a coil spring slidably received in said sleeve assembly around said body portion of said bolt and engaging said head of said bolt, said sleeve assembly including a stop member at that end of said sleeve assembly facing said locking cylinder for engaging said

spring and causing said spring to urge said bolt and said locking projection away from said locking cylinder;

said sleeve assembly defining an L-shaped slot therein including a first portion extending axially of said sleeve assembly and a second portion communicating with said first portion and extending circumferentially of said sleeve assembly, and said bolt including a guide projection slidably extending through said slot, said slot, said guide projection and said bolt constructed and arranged to cause said locking projection of said bolt to extend into locking engagement with said locking cylinder when said guide projection is positioned in said second portion of said slot and to permit said locking projection to be retracted from said locking cylinder when said guide projection is positioned in said first portion of said slot;

a key rotatably received in said sleeve assembly and including a driving projection and a retaining projection, said head of said bolt defining a driving recess therein complementary shaped to said driving projection for receiving said driving projection of said key to selectively slide said bolt along said sleeve assembly toward said locking cylinder and rotate said bolt, and said cylinder assembly defining a retaining slot therein for receiving said retaining projection of said key to retain said key in said sleeve when said guide projection of said bolt is positioned in said first portion of said L-shaped slot, said retaining slot including an opening through said sleeve assembly in alignment with said retaining projection of said key when said guide projection of said bolt is in a predetermined position in said second portion of said L-shaped slot to allow said key to be removed from said sleeve assembly.

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