E. M. STRONG.

FASTENER.

APPLICATION FILED OCT. 31, 1914.

1,154,074.

Patented Sept. 21, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

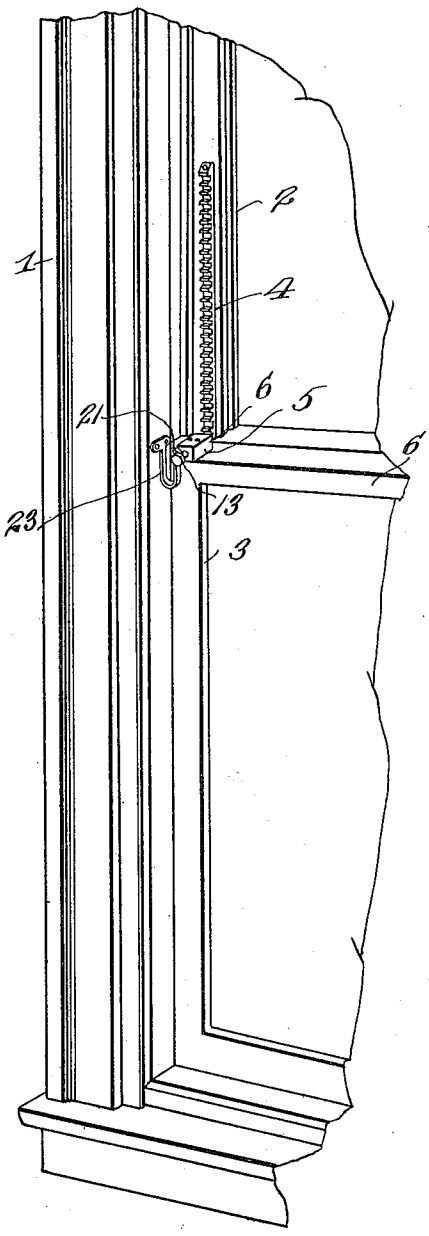


Fig. 2.

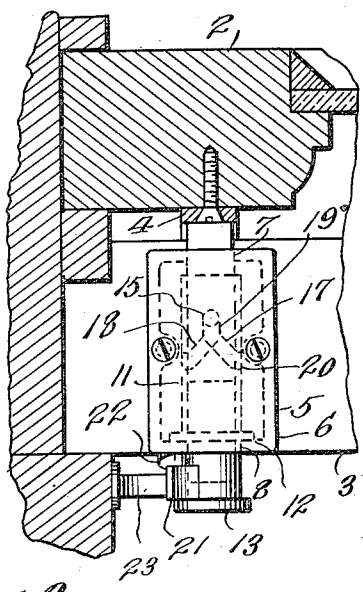
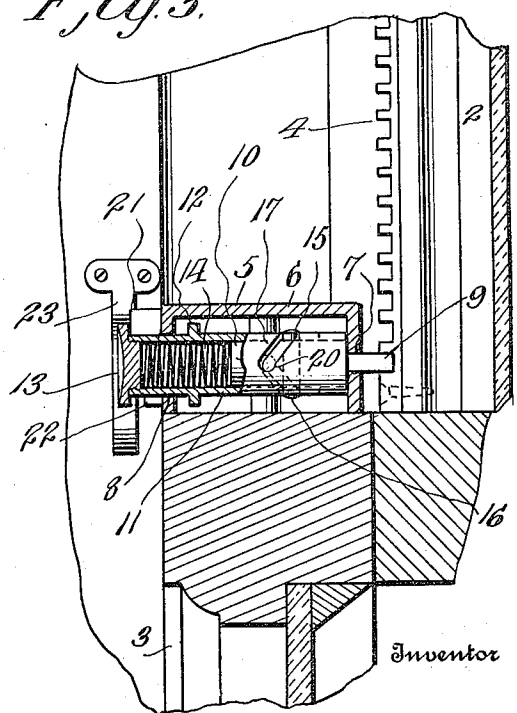


Fig. 3.



Witnesses

Frank Hough

C. C. Hines.

Inventor

E. M. Strong,

By Victor J. Evans

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 4.

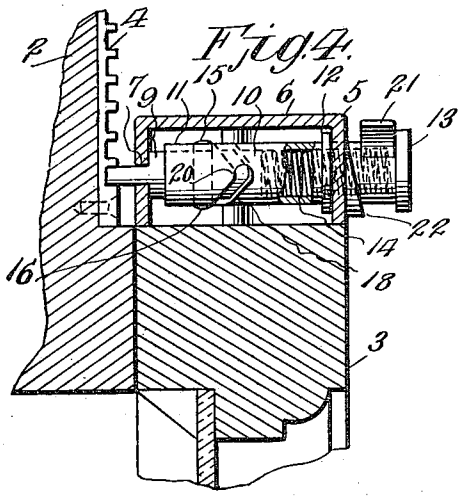


Fig. 5.

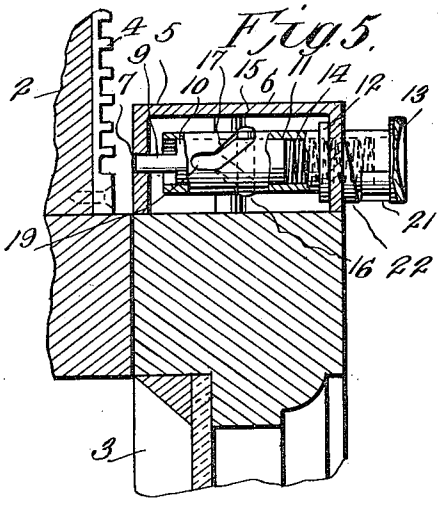


Fig. 6.

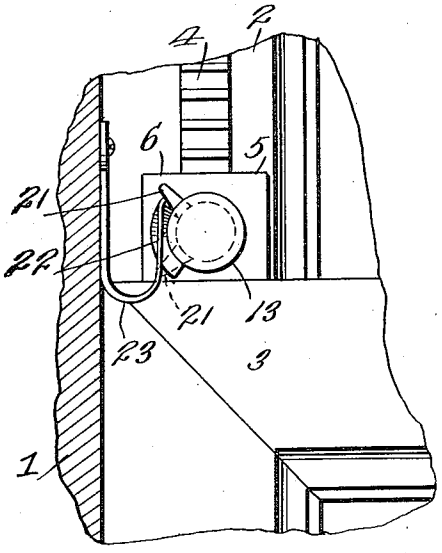


Fig. 7.

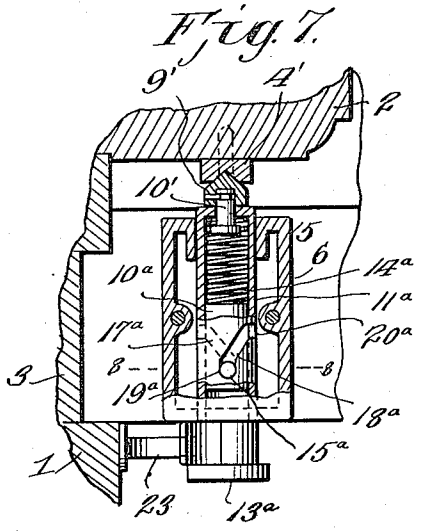
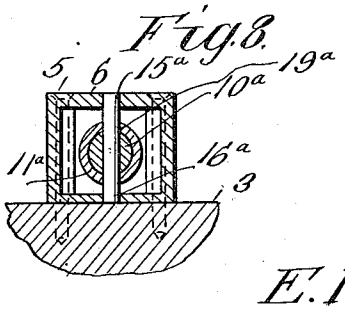


Fig. 8.



Witnesses

Frank Hough

C. C. Hines.

Inventor

E. M. Strong,

By Victor J. Evans

Attorney

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EUGENE M. STRONG, OF BOISE, IDAHO.

FASTENER.

1,154,074. Specification of Letters Patent. Patented Sept. 21, 1915.

Application filed October 31, 1914. Serial No. 869,687.

To all whom it may concern:

Be it known that I, EUGENE M. STRONG, a citizen of the United States, residing at Boise, in the county of Ada and State of Idaho, have invented new and useful Improvements in Fasteners, of which the following is a specification.

This invention relates to fasteners for sliding closures, such as window sashes, sliding car and show case doors, etc., the object of the invention being to provide a fastener which is simple of construction, positive, reliable, and efficient in action, susceptible of use as either a right hand or left hand fastener, and adapted to be manufactured and installed at a comparatively low cost.

The invention consists of the features of construction, combination and arrangement of parts herein fully described and claimed, reference being had to the accompanying drawings in which:—

Figure 1 is a perspective view showing the application of the device as a sash fastener. Fig. 2 is an enlarged sectional plan view showing the fastener in locked position. Fig. 3 is a vertical front-to-rear section through the sashes and fastener, looking toward the right hand side of the fastener. Fig. 4 is a similar view looking toward the left hand side of the fastener. Fig. 5 is a view similar to Fig. 4, showing the fastener bolt retracted. Fig. 6 is a front elevation showing in full and dotted lines different positions of the lug or finger. Fig. 7 is a sectional plan view showing a modified form of fastener. Fig. 8 is a vertical transverse section on line 8—8 of Fig. 7.

Referring to the drawings, wherein, for purposes of example, I have shown the application of my invention as a sash fastener, 1 designates a window frame, 2 and 3 the upper and lower sashes, 4 a rack bar secured to one of the side rails of the sash 2, and 5 my improved fastener secured to the upper cross bar or rail 6 of the sash 3.

The fastener 5 comprises a casing 6 suitably constructed for attachment to the sash 3 by proper fastening means and having its outer and inner end walls formed with guide openings 7 and 8. The opening 7 is designed for the reception and passage of a bolt 9 which is adapted to engage the teeth of the rack bar 4 to secure the sashes in proper relative positions. This bolt is formed by the reduced end of a plunger 10 which is slidably mounted in a reciprocatory and oscillatory actuating and guide sleeve or tube 11 disposed within the casing and projecting at its outer end through the opening 8 and provided with a stop flange 12 to limit its outward or rearward movement, its forward movement being limited by contact of its forward end with the front wall of the casing 6.

The outer end of the tube or sleeve 11 is closed by a screw plug or cap 13 forming a push button and knob, and inclosed within the sleeve or tube between this plug or cap and the plunger 10 is a coil spring 14 normally exerting its expansive pressure against the plunger 10 to project the bolt 9 for engagement with the rack bar. It is to be understood, of course, that while the fastener is herein shown as applied to a sliding sash member to engage a rack bar or keeper element on another sash member, the invention may be applied to any kind of sliding sash, door or other closure, and employed for fastening such a closure fully opened or closed or partially opened to any desired degree. It will be evident that in the present illustration the fastener may be employed for holding both sashes closed against relative movement, for holding both sashes open to a desired degree, or for holding either sash open while the other is closed.

The plunger 10 is provided with diametrically disposed and projecting pins or studs 15 and 16 to engage reverse spiral or cam slots 17 and 18, which slots terminate at their forward ends in straight longitudinal keeper notches or recesses 19 and at their rear outer or rear ends in keeper notches or recesses 20. The said slots and notches receive the pins or studs 15 and 16, and when the said studs are disposed in the notches 19 it is evident that the sleeve and plunger will be held from independent rotation and the bolt permitted to have its full extent of projection under the action of the spring 14 for engagement with the rack bar 4, while said spring at the same time permits the sleeve to have outward or rearward movement as well as rotary movement to effect the retraction of the bolt and its retention in retracted position.

Attached to the outer end of the sleeve or tube is a lug or trip arm 21, and formed or applied to the front end of the casing at one side of the opening 8 is a cam member 22. The lug or arm 21 lies in the path of a U-shaped trip member 23 secured to the adjacent jamb of the window frame 1, the up-

turned free end or spring arm of which trip member is adapted for coöperation with the lug 21 to effect the projection of the retracted bolt. By reference to Fig. 2, which shows the studs or pins 15 and 16 engaged with the notches 19, which are equal in length to the distance between the lug 21 and upper portion of the cam member 22, it will be evident that upon pressing inwardly on the push button 13 the sleeve may be slid forward a distance allowed by the lug 21 and cam member 22 so as to bring the studs 15 and 16 out of engagement with the notches 19, so that said sleeve may be revolved in one direction, that is toward the left, to bring the studs into the grooves 17 and 18 and finally seat them in the notches 20, by which, through the travel of the studs in said slots, the plunger 10 will be given an outward endwise movement and the bolt 9 retracted or released from locking engagement with the rack bar.

Figs. 2 and 4 show the parts as they appear when the bolt is in fastening position, Fig. 3 the position of the parts as they appear when the sleeve is adjusted to release the studs from engagement with the notches 19, and prior to the rotary movement of the sleeve, while Fig. 5 shows the position of the parts when the bolt is fully retracted and fastened in retracted position. When so turned to the left, the lug or arm 21 will pass between the spring trip member 23 and the cam member 22, and in such action, the studs will travel in the slots 17 and 18 and slide the plunger and bolt to retracted position, while at the same time the cam surface 22 will permit the return of the sleeve to normal position, under the action of said cam surface as well as the pressure of the spring 14. The studs 15 and 16 will thereupon be brought into engagement with the notches 20, whereby the bolt will be held against projection and the sleeve against accidental rotary movement and release of the bolt, while the sleeve is at the same time permitted when positively turned to be adjusted for the bolt releasing action.

It will thus be understood that the bolt when projected and engaged with the rack bar will hold the sashes in a relatively fixed position of adjustment, and that while the bolt is held in engagement with the rack bar and permitted to have a certain degree of longitudinal movement limited by the length of the notches 19 to conform to any irregularities in the position of the teeth of the rack bar, said bolt can not be unfastened without positive actuation of the combined reciprocatory and rotary sleeve. By adjusting this sleeve, however, the bolt may be freed for retraction and positively retracted against the resistance of the spring and fastened in retracted position, thus preventing its casual projection whenever it is desired to leave the sashes free for opening and closing movements. When the bolt is retracted and the sash 3 closed, however, it will be evident that as the spring trip 23 lies in the path of the lug or finger 21 the latter will be swung to the right thereby, thus turning the tube or sleeve to a releasing position so that the spring 14 will automatically project and shoot the bolt.

The fastener may be made in rights and lefts so as to be applied to either side of the window frame, and it will be seen that the part 13 serves not only as a push button by which longitudinal movement may be imparted to the sleeve, but also as a knob by which rotary movement may be imparted to the sleeve. The slots are so arranged that a releasing or retracted motion and retention of the bolt in retracted position may be secured upon turning the sleeve to the right, which action will be employed when the fastener is applied at the right hand side of the frame, a simple change in the arrangement of the cam 22 being necessary for a left side or right side action. The trip device 23 may be dispensed with in the application of the fastener to a closure where the circumstances are such that its use is not required.

In Figs. 7 and 8 I have shown a modified form of my invention wherein a conical form of bolt 9′ is provided for use in connection with a keeper member 4′ having conical seats or sockets to receive said bolt, and this bolt is swiveled to a plunger stem 10′, between which and a second plunger member or block 10^a a spiral spring 14^a is disposed, said spring being arranged within a tube or sleeve 11^a having at its outer end a closure plug or cap 13^a. This tube or sleeve is slidably and rotatably mounted in the casing, as in the structure previously described, and is provided with cam slots and notches of like structure, except that the cam slots and notches 17^a and 18^a and 19^a and 20^a are arranged reversely to the structure previously described in that the notches 19^a are at the outer ends of the slots while the notches 20^a are at the inner ends thereof, while these notches receive the ends 15^a and 16^a of a pin or stud which is fixed to the top and bottom walls of the casing and passes through the slots and also through the block 10^a, thus holding the latter from movement within the tube or sleeve, while permitting the latter to both revolve and reciprocate. In the operation of this type of fastener for the retraction of the projected bolt, the finger piece is drawn outwardly, whereby the tube or sleeve is slid outwardly, thereby releasing the pins or studs from engagement with the notches 19^a, whereupon the sleeve may be turned to the left, thus sliding it outwardly and retracting the bolt in an obvious manner. It will be understood that the swiveled con-

nection between the sleeve and bolt permits the sleeve to have a preliminary longitudinal releasing motion without affecting the bolt, and a rotary motion under which the bolt does not rotate, but is moved longitudinally in one direction under the permitted action of the spring and in the other direction under the pull of the sleeve, as will be readily understood. The spring trip member and lug may be employed in this construction or dispensed with, as may be deemed necessary or desirable under different conditions of service.

I claim:—

1. A fastener, including a casing, a sliding bolt, a sleeve receiving said bolt, said sleeve being slidably and rotatably mounted and provided with reverse spiral grooves, and studs carried by the bolt and engaging said grooves and adapted on rotation of the sleeve to transmit sliding motion to the bolt.

2. A fastener including a casing, a sleeve slidably and rotatably mounted therein and provided with reverse spiral grooves, a bolt slidably mounted in said sleeve, a spring inclosed within the sleeve for normally projecting the bolt, and studs carried by the bolt and engaging the slots in the sleeve for transmitting sliding motion to the bolt upon the rotation of said sleeve.

3. A fastener including a casing, a sleeve slidably and rotatably mounted in the casing and provided with reverse spiral slots and notches communicating with the ends thereof, a bolt slidably mounted in said sleeve, a spring within the sleeve to hold the bolt and sleeve in projected and normal positions, and studs carried by the bolt and engaging said slots and adapted to interlock with said notches.

4. A fastener including a casing, a sliding and rotary sleeve provided with reverse cam slots and notches communicating with the terminal portions thereof, a sliding bolt, a spring for normally projecting the bolt and retracting the sleeve, studs carried by the bolt and engaging said slots for transmitting the rotary motion of the sleeve into rectilinear motion to effect projection and retraction of the bolt, and means for turning the sleeve.

5. A fastener including a casing, a sliding and reciprocating sleeve, a sliding bolt, means, including cam elements upon one of the last-named parts, for imparting sliding motion to the bolt when the sleeve is rotated, a spring for normally projecting the bolt and retracting the sleeve, a projection upon the sleeve, and means adapted for engagement with said projection for rotating said sleeve.

6. A fastener including a casing, a sliding and reciprocating sleeve provided with reverse cam slots and notches at the ends of said slots, a sliding bolt within the sleeve, studs carried by said bolt and engaging said slots and notches, a knob for turning the sleeve, and a spring inclosed within the sleeve for retracting said sleeve and projecting said bolt.

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

EUGENE M. STRONG.

Witnesses:

B. M. WALKER,

C. L. STEWART.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."