Aug. 29, 1933. J. H. SHEARD ET AL 1,925,059

WINDOW

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FIG. I.

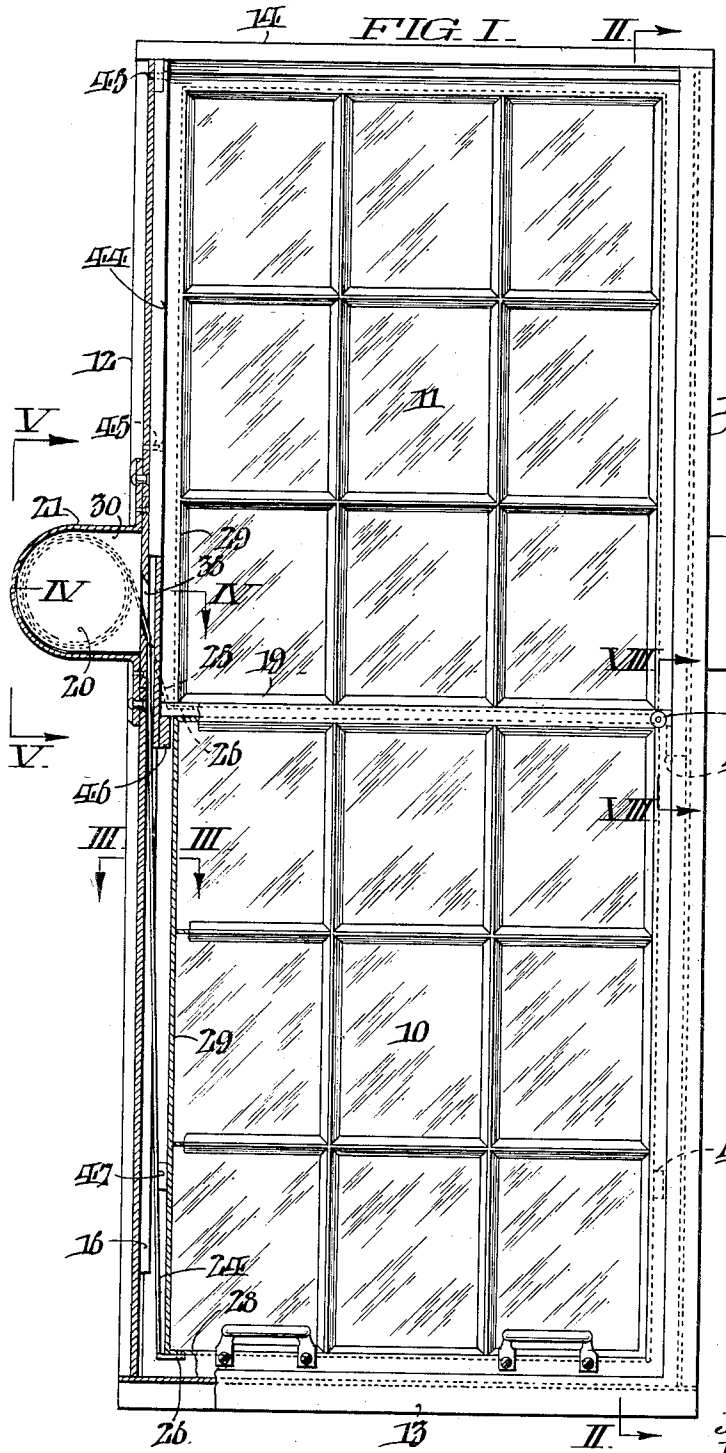
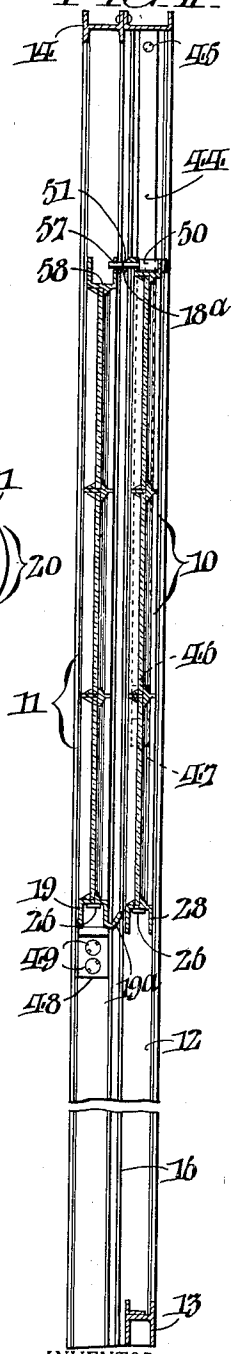


FIG. II.



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FIG. V.

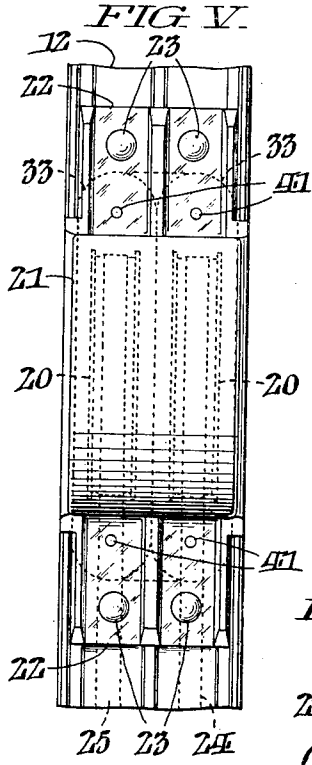


FIG. IV.

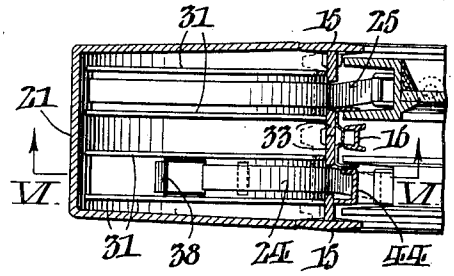


FIG. III

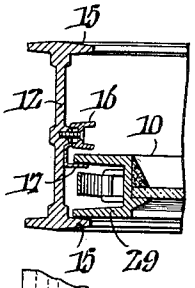


FIG. VI.

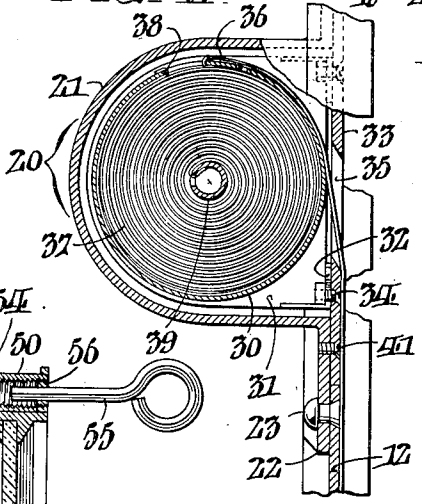


FIG. VII.

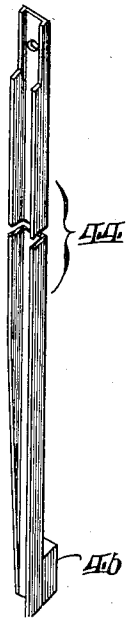


FIG. VIII.

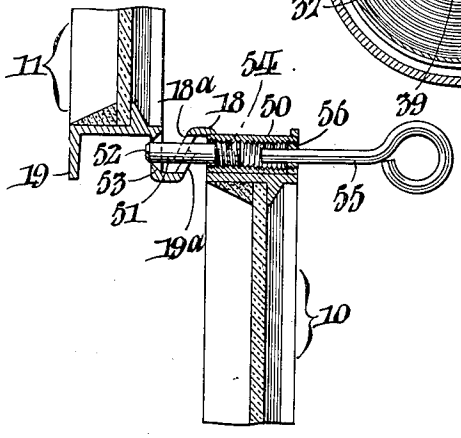
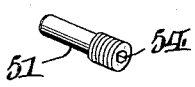


FIG. IX.



WITNESSES

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UNITED STATES PATENT OFFICE

1,925,059

WINDOW

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Application December 20, 1930
Serial No. 503,638

5 Claims. (Cl. 189—72)

This invention relates to windows, and aims at improving them in various ways. Amongst the advantages that can be realized through the invention are security against unauthorized opening of the window, either from within or from without; control over the extent to which the window may be opened; security of the window mechanism against tampering; and general good appearance. Windows constructed in accordance with the invention are specially suitable or adaptable to serve as detention windows, in hospitals and other institutions where criminal or mentally deranged persons may be confined.

In the drawings, Fig. I is an elevation, from the inside, of a window conveniently embodying our invention, with the left hand jamb and associated parts in vertical section in the plane of the lower sash.

Fig. II is a fragmentary vertical section, taken as indicated by the line and arrows II—II in Fig. I.

Fig. III shows a horizontal section through the window jamb and associated parts, taken as indicated by the line and arrows III—III in Fig. I, on a larger scale.

Fig. IV shows a horizontal section through the counterbalance housing, taken as indicated by the line and arrows IV—IV in Fig. I, on a larger scale.

Fig. V is a fragmentary edge view of the jamb and the counterbalance housing from the left of Fig. I, on a larger scale.

Fig. VI is a fragmentary vertical section through the counterbalance casing, taken as indicated by the line and arrows VI—VI in Fig. IV.

Fig. VII is a tilted or perspective view of a sash cable cover.

Fig. VIII is a fragmentary vertical section through the window sashes and their meeting rails at the sash lock, which also appears in section, and,

Fig. IX is a tilted or perspective view of a part of the sash lock.

As shown in Figs. I and II, the window comprises lower and upper sashes 10, 11, arranged to slide vertically in a window frame consisting of vertical jambs 12, 12, a sill 13, and a head 14. In Fig. III, each of the jambs 12, 12 is shown as of a general I-section, including flanges 15, 15 that form the inner and outer stops or guides for the sashes 10, 11 and engage in the masonry of the wall, and also a thickened central portion to which is secured an I-shaped parting strip 16, associated with resilient weathering 17, and cooperating with the flanges 15, 15 to form the sash ways of the jamb. The sill 13 is shown as of a channel section, and the head 14 is composed of an inner channel section and an outer I-section, with their flanges riveted or otherwise suitably secured together. The rails that form the sashes 10, 11 are of a channel section. As shown in Figs. II and VIII, the meeting rails 18, 19 of the sashes 10, 11 have sloping flanges 18*a*, 19*a* that overlap vertically and make contact with one another to form a tight joint.

The counterbalances 20, 20 for the sashes 10, 11 are located behind the jambs 12, 12 and, as here shown, are of a coil spring type. These counterbalances 20, 20 are arranged side by side and are enclosed in a common casing or housing 21 having feet 22, 22 which are secured to the outer face of the jamb 12 by suitable fastenings, such as rivets 23. The counterbalances 20, 20 are connected to the sashes 10, 11 by flexible metal tape connections 24, 25 extending out through the jamb wall to the sashes 10, 11. As shown in Fig. I, the lower ends of these tape connections 24, 25 are attached to hooks 26 secured inside the channeled bottom rails 28, 19 of the sashes 10, 11 and projecting into the channeled side rails 29. Each counterbalance 20 may be of any suitable or preferred type, here shown as comprising a drum 30 mounted to rotate in a frame formed by spaced plates 31 interconnected by angular corner members 32 which are secured to a base plate 33 by suitable fastenings, such as bolts 34. The tapes 24, 25 enter the housing 21 through slots 35 in the jamb wall and have their ends hooked through openings in the drum 30, as shown at 36. A spiral counterbalance spring 37 within the drum 30 has one end hooked on the drum wall as indicated at 38 and the other end hooked into a stationary central hub 39 mounted in the plates 31.

As shown in Figs. I, IV, V and VI, the jamb wall directly in front of the counterbalances 20, 20 is formed by the counterbalance base plates 33, 33, which lie in and fill corresponding openings in the webs of the jamb 12. These plates 33, 33 are secured to the lugs or feet 22 of the counterbalance housing 21 by suitable fastenings, such as screws 41, so that the counterbalances 20, 20 can be conveniently attached and removed. The housing 21 not only encloses and supports the counterbalances 20, 20, and protects them from dirt, plaster, grout, etc., but also interconnects the portions of the jamb 12 above and below the area of weakness where the jamb web is cut away to receive the plates 33, 33, in which are the tape openings 35, and reinforces this portion

of the jamb 12. Without such reinforcement, it would be impracticable to locate the two counterbalances 20, 20 side by side, owing to the great weakening of the jamb member 12 entailed by cutting away practically its entire web.

As shown in Figs. I and II, there is a cover 44 of channeled section (Fig. VII) for each flexible tape counterbalance connection 24 of the lower sash 10, extending from a point within the recess or groove afforded by the channeled side rail 29 of the lower sash above the tape opening 35, and, in fact, all the way up to the top of the window frame. This cover 44 is secured to the jamb 12 by any suitable fastening means, such as screws or rivets 45. This cover 44 encloses and protects the sash connection 24 from the opening 35 down into the channeled side rail 29, and is itself overtravelled by the side rail 29 and accommodated therein when the lower sash 10 is raised. The protection thus afforded the counterbalance connection 24 permits of placing the counterbalances 20, 20 above the lower sash, where access can be had to them by removing the cover 44; whereas without such protection, it would be necessary to place the counterbalances 20, 20 at a position where the connection 24 would always be covered by the lower sash 10, even when raised to its limit of upward movement.

Upward movement of the lower sash 10 is limited by stop means which are always enclosed within its side rail 29, and thereby protected against tampering. As shown in Fig. I, this stop means consists of a projection or block 46 on the lower end of the cover 44, and a cooperating stop block 47 welded or otherwise fastened inside the channel side rail 29. Downward movement of the upper sash 11 may be limited by any suitable means, such as a stop block 48 of angle shape suitably fastened in the outer sash way of the jamb web 12, as by screws or rivets 49.

As shown in Figs. I, II and VIII, there is a lock for securing the sashes 10, 11 together, comprising an internally screw threaded socket 50 mounted in openings in the flanges of the meeting rail 13 of the lower sash 10, and welded or otherwise suitably secured to said meeting rail. In the socket 50 is a round screw bolt 51 with a plain bevel-ended engaging portion 52. When the bolt 51 is turned its end 52 is projected, through openings in the edges of the meeting rail flanges 13*a*, 19*a*, into a socket opening 53 in the flange of the meeting rail 19 of the upper sash 11. The threaded end of the bolt 51 has a polygonal socket 54 to receive the correspondingly shaped end of a key 55 which can be inserted through a suitable opening in a face plate 56 welded or otherwise secured over the end of the socket 50. The bolt 51 can be used not only to lock the sashes 10, 11 together in closed position, as shown in Figs. I and VIII, but also to lock them together in overlapping relation, by projecting said bolt into a socket opening 57 in the flange of the top rail 58 of the upper sash 11, as shown in Fig. II. When the sashes 10, 11 are thus locked together in overlapping relation as shown in Fig. II, they are rendered practically immovable, since downward movement of the upper sash 11 is prevented by its stop 48, and upward movement of the lower sash 10 is prevented by its stop means 46, 47.

Having thus described our invention, we claim:

1. A window of the character described, comprising a jamb and vertically sliding sashes, spring balances for said sashes arranged side by side behind said jamb with tape connections therethrough to said sashes, and a common casing structure completely enclosing said spring balances with provision for access thereinto when desirable, said casing being attached to said jamb above and below its area of weakness where the tape connections pass through it, and thus reinforcing this portion of the jamb.

2. A window of the character described, comprising a jamb and a vertically sliding sash with recessed edge, a counterbalance for said sash behind said jamb with a flexible connection issuing therethrough to said sash, the point of issuance of said connection through the jamb being exposed by said sash when at one extreme of its movement and overtravelled by the sash in its movement the other way, and a cover for said flexible connection in front of the jamb accommodated in the recessed edge of the sash when overtravelled by the latter, and always extending thereinto.

3. A window of the character described comprising a jamb and vertically sliding sashes with channelled edges, spring counterbalances for said sash behind said jam with flexible connections issuing therethrough and extending downward in the sash edge channel to an attachment at the lower portion of the sash, said counterbalances being completely enclosed in a common casing having provision for access thereinto when desirable and the point of issuance of the flexible connections through the jamb being exposed by the sash when lowered, and a channel-section cover for each flexible connection in front of the jamb extending from above its point of issuance down into the sash edge channel when the sash is lowered, and accommodated in said channel when the sash is raised.

4. A window of the character described, comprising a jamb and a vertically sliding sash with recessed edge, a motion-limiting stop on the sash in its edge recess, and a cooperating stop on the jamb always housed in said sash edge recess.

5. A window of the character described, comprising a jamb and a vertically sliding sash with recessed edge, a counterbalance for said sash behind said jamb with a flexible connection issuing therethrough to said sash, the point of issuance of said connection through the jamb being exposed by said sash when at one extreme of its movement and overtravelled by the sash in its movement the other way, a cover for said flexible connection in front of the jamb accommodated in the recessed edge of the sash when overtravelled by the latter, and always extending thereinto, and a motion-limiting stop on the sash in its edge recess cooperating with a portion of said cover that is always housed in said recess.

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