No. 868,409.

PATENTED OCT. 15, 1907.

J. H. CARTLAND & J. LILLY.

WINDOW OPENER.

APPLICATION FILED DEC. 27, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

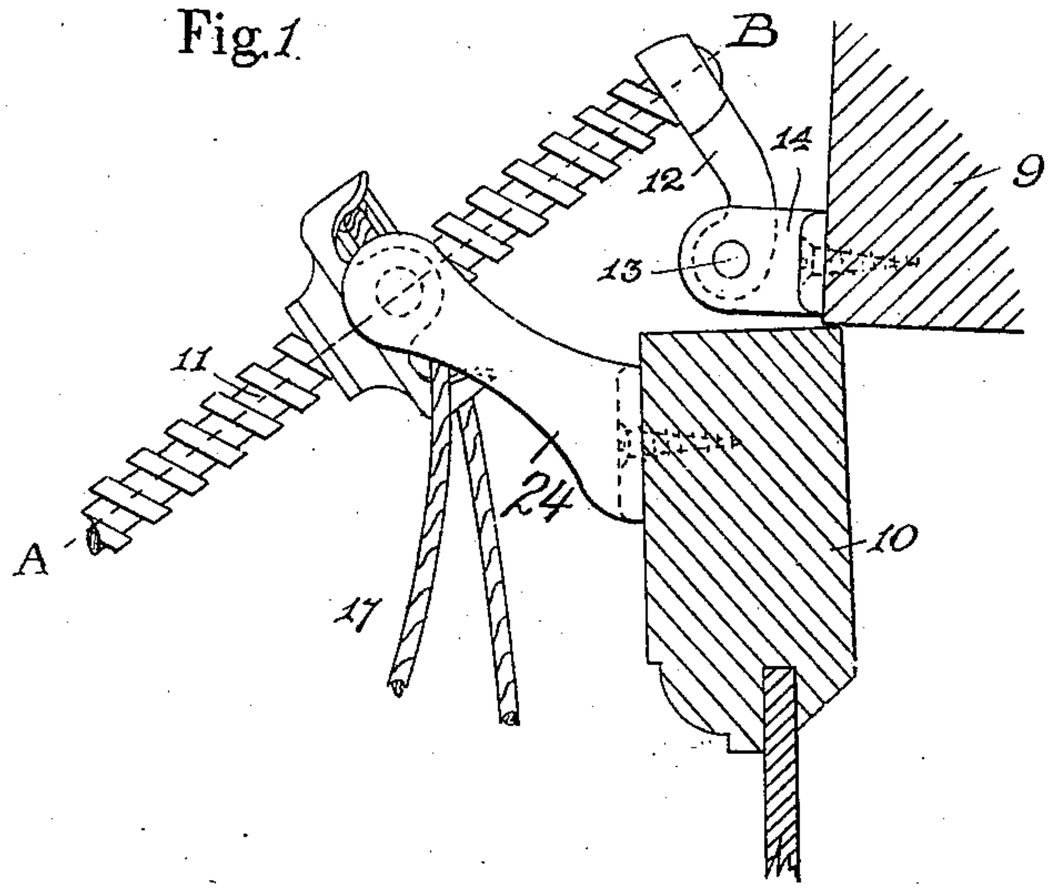


Fig. 2

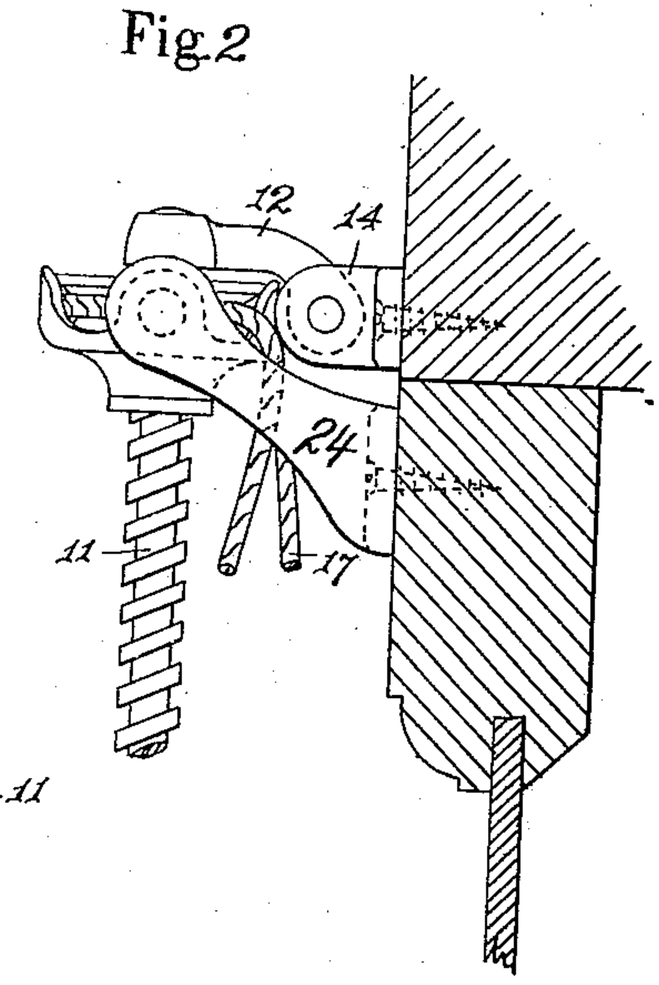
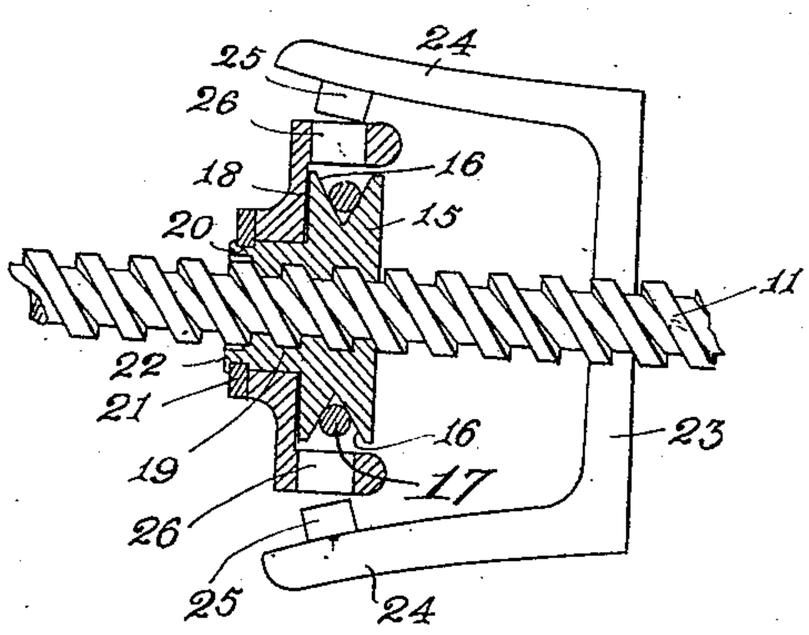


Fig. 3.



Witnesses.
J. Bernard Hayward.
L. Goodwin

Inventors
John Howard Cartland
Joseph Lilly
per Charles J. Powell
their Attorney

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2 SHEETS—SHEET 2.

Fig. 4

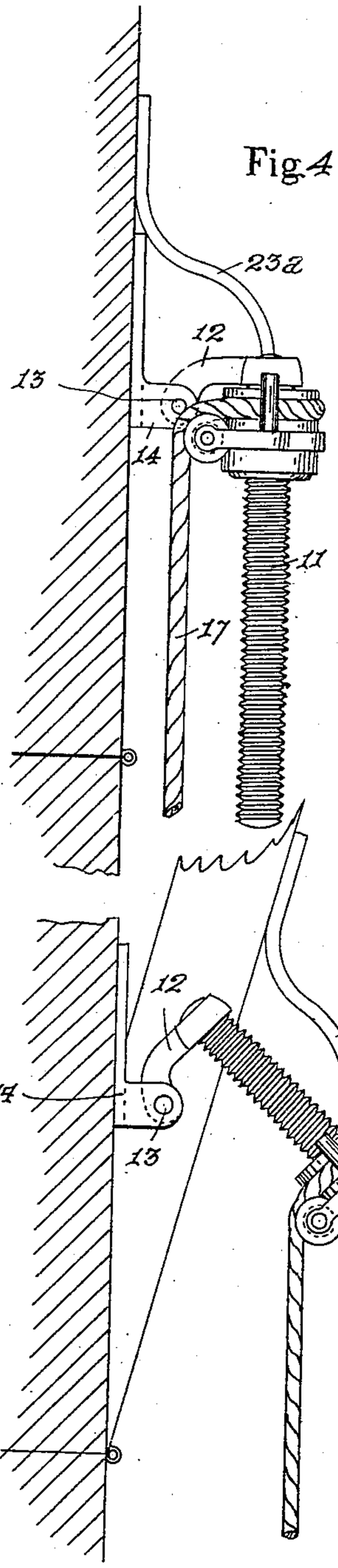


Fig. 5

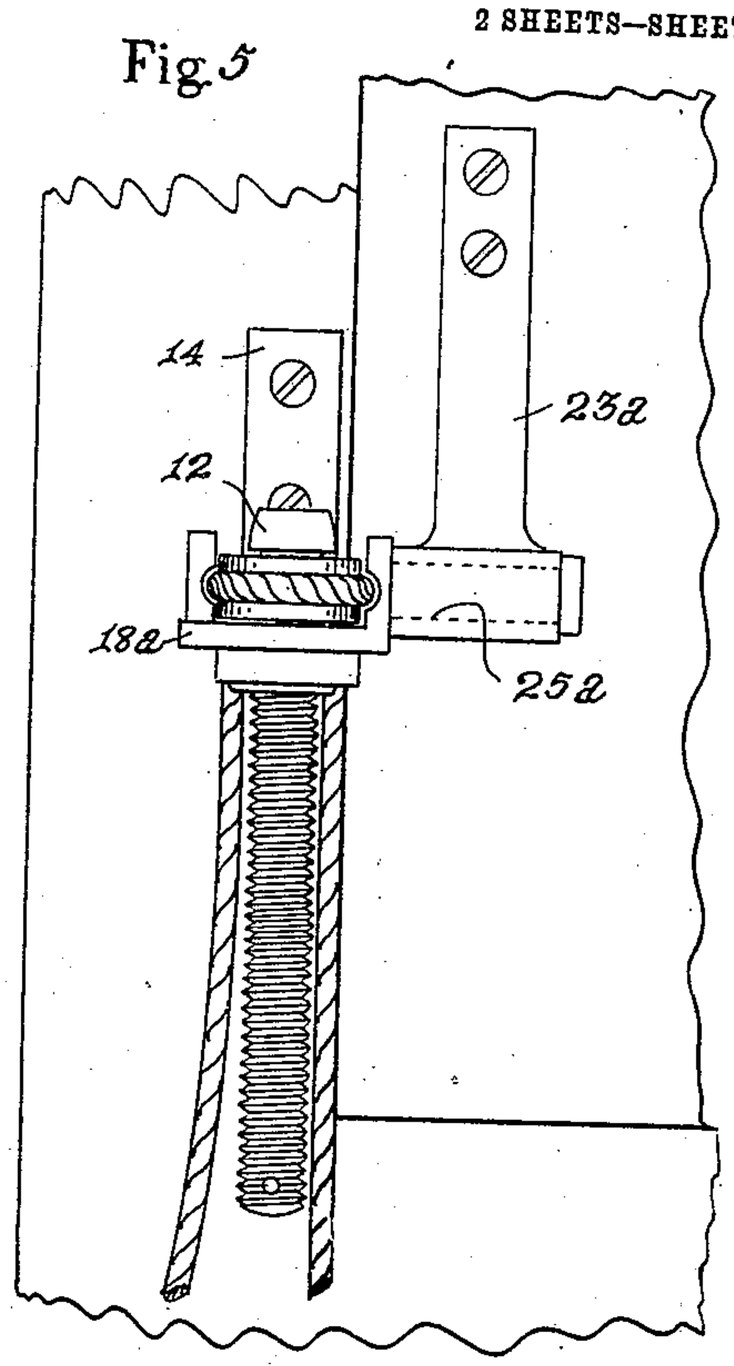
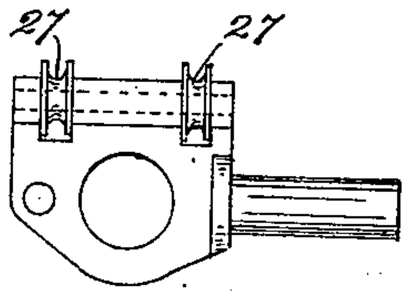


Fig. 6

Fig. 7



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UNITED STATES PATENT OFFICE.

JOHN HOWARD CARTLAND AND JOSEPH LILLY, OF BIRMINGHAM, ENGLAND.

WINDOW-OPENER.

No. 868,409. Specification of Letters Patent. Patented Oct. 15, 1907.

Application filed December 27, 1906. Serial No. 349,704.

To all whom it may concern:

Be it known that we, JOHN HOWARD CARTLAND, a subject of the King of Great Britain, residing at the "Priory," Vicarage Road, King's Heath, Birmingham, England, and JOSEPH LILLY, a subject of the King of Great Britain, residing at 135 Waverley road, Small Heath, Birmingham, England, have invented certain new and useful Improvements in Mechanism for Opening and Closing Swinging Windows or the Like Casements, of which the following is a specification.

This invention relates to improvements in mechanism for opening and closing swinging windows, ventilators, or the like, and its object is to provide improved means whereby the arm or rod employed in such mechanism shall automatically assume a position as near as possible to the casement when the latter is closed; also improved construction of pulley; also improved means for carrying said pulley. These improvements are effected by the mechanism herein illustrated upon the drawings, upon which are figures and reference numbers, similar numbers referring throughout the several views to the same part, and in which:—

Figure 1 shows a side view of our invention as applied to a screw rod gearing, in which the casement is seen to be partly open. Fig. 2 shows the same arrangement in its closed position. Fig. 3 is a sectional plan view on line A—B (Fig. 1) showing the construction of the pulley and the arrangement of mounting same. Figs. 4, 5, and 6, show our invention as applied to the side of a hinged casement. Fig. 7 shows a detail plan view of the bracket for carrying the pulley when so applied to the side of the casement.

9 represents the frame to which the lower part of the moving casement 10 is hinged, and in Figs. 1, 2, and 3 our invention is shown as it would be applied to the center or thereabout of the casement 10, while as before intimated, Figs. 4 to 7 inclusive show its application to the side of such a casement.

11 is the arm or rod which is formed at one end with a short cranked part 12, which is pivoted at 13 to any suitable bracket 14, said bracket being secured to the frame 9. The main part of the rod 11 is formed with a screw thread to accommodate the gearing as hereinafter explained, but may be formed with rack teeth to accommodate other forms of gearing if required.

15 is a pulley having the circumferential groove 16 to accommodate the manipulating cord 17, and said pulley being internally screw threaded to suit the rod 11.

18 is the swivel box having a central hole in which the boss 19 of the pulley 15 freely revolves, that is, said hole forms a bearing for the boss 19. At the outside of said boss the said pulley is reduced somewhat in diameter at 20 to receive a washer 21, the extreme part of the boss being then turned over at 22 so as to fix the pulley 15 in the box 18, but free to revolve therein.

23 is the bracket for carrying the swivel box 18, having arms 24 upon which are formed pivots or trunnions 25, with bearings 26 formed upon the box 18. The arms 24 of the bracket are sprung open so as to permit the box 18 passing between trunnions 25, when the arms 24 are then closed, so that the said trunnions permanently occupy the bearings 26 ready for use.

Referring now to Figs. 4 to 7 it will be seen that in order to adapt our invention for use at the side of the casement, we modify the bracket which carries the swivel box, and which is attached to the moving casement as shown at 23^a, and in agreement therewith we provide upon the one side of the box 18^a a long pivotal arm 25^a, which is revolubly secured in the said bracket 23^a. We further provide upon the said box 18^a guide pulleys 27 for the cord 17. Beyond these minor modifications in detail it will be seen that the principle and action is precisely as before described in reference to Figs. 1, 2, and 3.

It will be seen that the short crank 12 of the arm 11 is so arranged that the centers of movement at 13 and at 25 are horizontally level with each other (or thereabout) when the mechanism is in the closed position, by reason of which not only does it enable us to keep the two said centers of movement comparatively close to each other, so that as little projection occurs as possible from the casement, but it also effectually prevents any backlash or movement of the casement when closed. By these means when the casement is closed the long part of the arm 11 lies parallel to the said casement, but as the cord or other medium is operated to rotate the pulley the arm is first raised towards the outstanding position with but a slight movement of the casement, and as it proceeds, so the casement opens, the position of the said arm continuing to assume the position convenient for the continuation of such opening movement. Upon the closing of the casement, as it nears such a position the arm or rod is automatically moved into the before named down hanging position lying parallel to the said casement.

Although we have described and illustrated our invention as applied to casements hinged top or bottom, it will be readily seen that it may be also equally applied to casements hinged at one side.

We are aware that in mechanism of this kind it has already been proposed that the arms shall be made to more or less fall down somewhat out of the way by the bending or curving of such arms, but in such cases the said arm has been provided with a pivot joint which has stood forward or upward of the gearing mechanism when the window has been closed, and therefore much more in the way than in the case of our invention.

What we claim as our invention and desire to secure by Letters Patent is:—

1. Mechanism of the class described, involving a feed screw member having a crank part fixed thereto and pivot-

ally connected to a window frame, a pulley rotatable on said feed screw and movable throughout the longitudinal extent thereof, means for pivotally supporting the pulley and fixed to a window sash, and means for actuating the pulley for moving the same longitudinally on the feed screw member.

2. Mechanism of the class described, involving a fixed bracket carried by a window frame, a crank part connected with the bracket, a screw threaded rod fixed to said crank part, a pulley rotatable on the rod and movable throughout the longitudinal extent of the same, means for rotatably supporting the pulley, a bracket for the said means fixed to a window sash, and means for actuating the pulley.

3. In a window frame and sash, a bracket fixed to said frame, an arm pivotally connected with said bracket, a rod carried by the arm, a pulley longitudinally movable on the rod, a bracket fixed to the sash, a box for rotatably supporting the pulley and swiveled to the latter bracket, and flexible means associated with the pulley for rotating the same on the rod.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JOHN HOWARD CARTLAND.
JOSEPH LILLY.

Witnesses:
J. BERNARD HAYWARD,
W. GOODWIN.