E. E. BELL.

TRANSOM OPERATOR.

APPLICATION FILED AUG. 17, 1910.

1,046,545. Patented Dec. 10, 1912.

Fig. 1

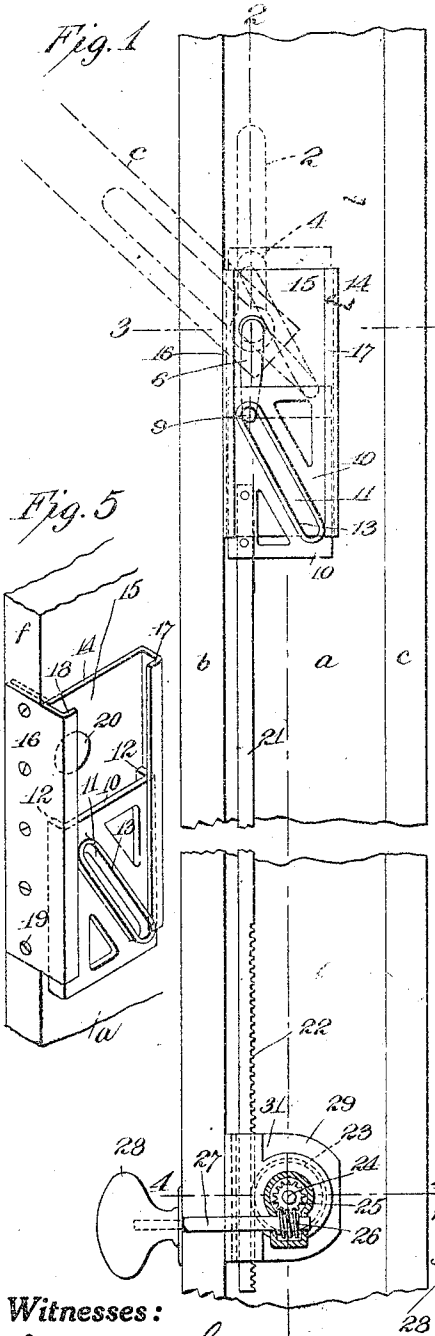


Fig. 2

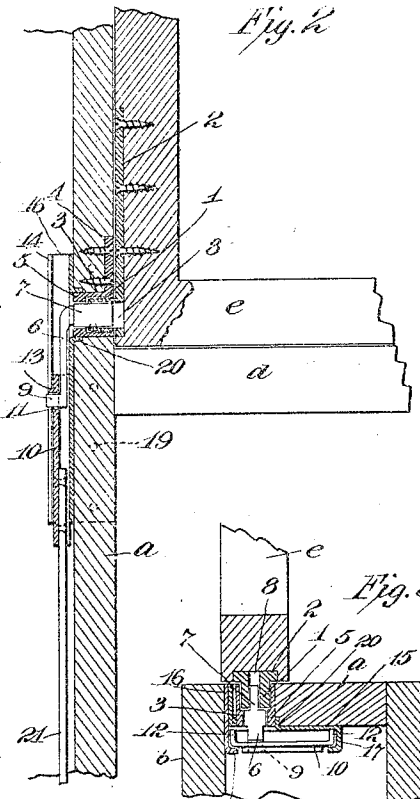
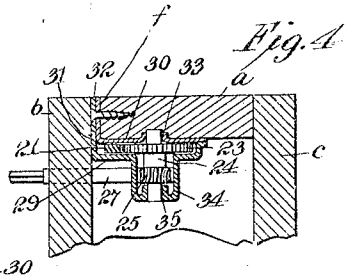


Fig. 5

Fig. 3

Fig. 4



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UNITED STATES PATENT OFFICE.

ERNEST E. BELL, OF GLEN RIDGE, NEW JERSEY, ASSIGNOR TO THE CONCEALED TRANSOM LIFT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TRANSOM-OPERATOR.

1,046,545. Specification of Letters Patent. **Patented Dec. 10, 1912.**

Application filed August 17, 1910. Serial No. 577,553.

To all whom it may concern:

Be it known that I, ERNEST E. BELL, a citizen of the United States, residing at Glen Ridge, in the county of Essex, in the State of New Jersey, have invented a certain new and useful Transom-Operator, of which the following is a specification.

The object I have in view is the production of a transom operator which may be concealed in the trim, and which will be of minimum depth and will thereby be locatable within many different varieties and sizes of trim, which may be attached to the trim, by simply removing the front trim, without removing the jamb, which will be strong and rigid, and will hold the transom open in the position that it is left. These and other objects will appear from the following specification and accompanying drawings.

In the drawings: Figure 1 is an elevation of an embodiment of my invention looking toward the inside of the jamb and showing the edges of the front and rear trims, and also illustrating the position of the transom in broken lines. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a section on the line 4—4 of Fig. 1, and Fig. 5 is a perspective view of the guide for the cam plate.

In all the views, like parts are designated by the same reference characters.

In the drawing *a* is the jamb; *b* is the front trim; *c* is the rear trim; *d* is the lintel; *e* is the transom, and *f* is the front edge of the jamb.

Only one end of the transom is shown, the other end being supported on the ordinary hook pintle, which is not illustrated.

The transom is supported upon a boss 1, which is formed with a base plate 2. This plate is shown as countersunk in the end of the transom, and is attached thereto by screws as shown. The boss is cylindrical and of less length than the thickness of the jamb *a*. This boss turns within a bearing 3, said bearing lying within a suitable opening in the jamb. This bearing is provided with a flange 4, which is recessed at the outer face of the jamb and secured thereto by screws. (See Fig. 2.) The bearing has an opening for the boss to play in, the portion of the bearing which extends beyond the free extremity of the boss being reduced in diameter, forming a second, and smaller bearing 5, in alinement with the first bearing. This boss and bearing 3 constitute the support for the transom.

The transom is rotated by means of a crank 6, having a stem 7. This stem, which is illustrated in side view in Fig. 2 and in plan view in Fig. 3, is flattened as shown, and enters a keyway or slot 8 in the center of the boss. The portion of the crank which lies outside of the boss is cylindrical and plays within the bearing 5, and is supported by the latter. The crank is provided with a pin 9 on its extremity. This described mechanism constitutes the device for rotating the transom in connection with the boss which supports it.

The crank is rotated by means of a vertically movable cam plate 10 having an inclined slot 11 with which the pin 9 engages. This plate moves up and down within suitable guideways secured to the jamb. The shape of the plate is best shown in Fig. 5. The edges of the plate are turned over at 12—12 in order to give increased bearing surface and to impart strength to the plate. The edges of the cam slot 11 are flanged at 13 so as to get an augumented bearing surface for engagement with the crank pin 9. The drawings illustrate triangularly shaped openings in the plate, which are made for lightness.

The guide 14 is attached to the jamb *a*, and comprises two plates, 15 and 16. The plate 15 lies against the face of the jamb and is bent over the edge *f* of the jamb and is countersunk therein. The other edge of the plate is flanged at 17, producing a way or slot for one of the turned edges 12 of the cam plate 10. This flange prevents the cam plate from lifting, due to pressure of the crank pin, and therefore constitutes a means for preventing the pin from binding in the slot. The flange incloses the edge of the cam plate, and as it is sufficiently long to engage the cam plate, irrespective of the position of the latter, is constitutes an offsetting means for the lateral thrust of the crank applied in line with the thrust. The

other plate 16 is flanged at 18, in order to form a bearing for the opposite edge of the cam plate. These two plates, 15 and 16, are secured together and also to the jamb *a* by screws 19, which pass through both the plates and into the jamb. This produces a simple, cheap and very strong guide for the cam plate. The cam plate is adapted to be moved up and down by suitable mechanism to engage the crank pin with its inclined slot, and thereby open and close the transom.

As the pressure on the crank is considerable, owing to the fact that the transom is usually heavy, there is considerable strain between the cam plate and the bearings of the transom.

In order to provide for this strain I use the following device: The plate 15 is provided with a circular opening 20. The edges of this opening are flanged inward, as shown in Fig. 2. This opening is adapted to surround the bearing 3 (see Fig. 2) and snugly engage therewith. This produces a rigid connection between the guide 14 and the bearing 3, and as the connections between the crank and transom are rigid, and the connections between the cam plate and guide are also rigid, the whole device possesses great rigidity.

The cam plate is moved up and down in a vertical direction by a rod 21. This rod I prefer to operate by the following mechanism: The lower extremity of the rod is provided with a rack 22. A gear 23 engages with this rack. This gear is carried upon a shaft 24. A worm gear 25 is also upon the shaft, and turns the same. This worm gear engages with the worm 26 which is mounted upon a shaft 27 at right angles to the shaft 24, said shaft 27 also carrying the handle 28. By rotating the handle 28, then through the agency of the worm and the worm gear, the gear 23 is rotated and the teeth of this gear, engaging with the teeth of the rack, move the latter up or down and open or close the transom.

The various gears are inclosed within a box 29, which is attached to the jamb. The construction of this box is very similar to the guide 14. It is made up of a plate 30, and a second plate 31. These plates have each a bent edge 32 which is countersunk in the edge *f* of the jamb and are secured thereto by screws, as shown in Fig. 4. The said screws also secure the two plates together. The plate 30 is provided with a flanged opening 33 which forms a bearing for the inner end of the shaft 24. The plate 31 is provided with an enlargement 34, to provide a chamber to contain the worm gear and worm, and is also provided with an inwardly flanged opening 35 to form a bearing for the outer end of the shaft 24.

The shaft 27 is mounted in bearings formed by making openings in opposite sides of the enlargement 34. This produces a cheap, rigid device which is easily assembled and put together.

In assembling the device, the constituent portions of the guide and box can be taken to pieces to permit the introduction of the cam plate and the rack and pinion and gears.

In accordance with the provisions of the patent statutes I have described the principle of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is merely illustrative and that the invention can be carried out in other ways.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A transom operator, having in combination with a frame; and a transom; a bearing for the transom, in the frame; a crank turning in time with the transom; a cam plate, engaging with the crank, to turn the latter; a guide plate for the cam plate, said guide plate having an opening with which the bearing engages; and means for moving the cam plate.

2. A transom operator, having in combination with the jamb; a vertically movable cam plate; a guide therefor, said guide being formed of two plates, which engage with and are secured to the edge of the jamb; means, for moving the cam plate; and connections, between the cam plate and the transom.

3. A transom operator, having in combination with a jamb; a cam plate; connections, between the cam plate and the transom; means, for moving the cam plate; a guide for the cam plate, said guide being formed of two plates, each having a bent edge, which engages with the edge of the jamb; and common screws, which pass through both plates, and enter the jamb, and thereby serve to hold the two plates together, and to the jamb.

4. A transom operator, having in combination with a frame; and a transom; a vertically movable cam plate, carried on the frame; connections between the cam plate and the transom; a rack, connected to the cam plate; a gear engaging with the rack; a worm gear, turning the gear; a worm, engaging with the worm gear; a handle, turning with the worm; and a box, inclosing the gears and worm.

5. A lifting gear for the cam plate of a transom operator, inclosed in a box, said box being formed of two plates, each having a turned edge; and attaching means for the two plates, said means also securing the plates to the edge of the jamb.

6. The combination of a frame and a transom; a crank, turning the transom; and a cam plate, said cam plate engaging with the

crank; means for moving the cam plate; and guides, engaging with the plate, for taking the weight of the transom, when open, and compelling its movement in a rectilinear path.

7. A transom operator, having in combination with a frame; and a transom; a crank; a plate, having a slot, for engaging and actuating the crank; means, for moving the plate; and guides, coöperating with the plate, to offset the lateral thrust of the crank.

8. A transom operator, having in combination with a frame; and a transom; a crank; a plate, having a slot, for engaging and actuating the crank; means, for moving the plate; and means, for preventing the crank from binding in the slot.

9. A transom operator, having in combination with a frame; and a transom; a crank; a plate, having a slot, for engaging and actuating the crank; means, for moving the plate; guides coöperating with the plate, to offset the lateral thrust of the crank; and means, for preventing the crank from binding in the slot.

10. A transom operator, having in combination with a frame; and a transom; a crank; a plate, having a slot, for engaging and actuating the crank; means, for moving the plate; and means, for resisting the lateral thrust of the crank, said means being applied in line with the thrust.

This specification signed and witnessed this 26th day of July, 1910.

ERNEST E. BELL.

Witnesses:

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