

(No Model.)

H. A. BENNETT.  
TRANSOM LIFTER.

No. 434,910.

Patented Aug. 26, 1890.

Fig. 1

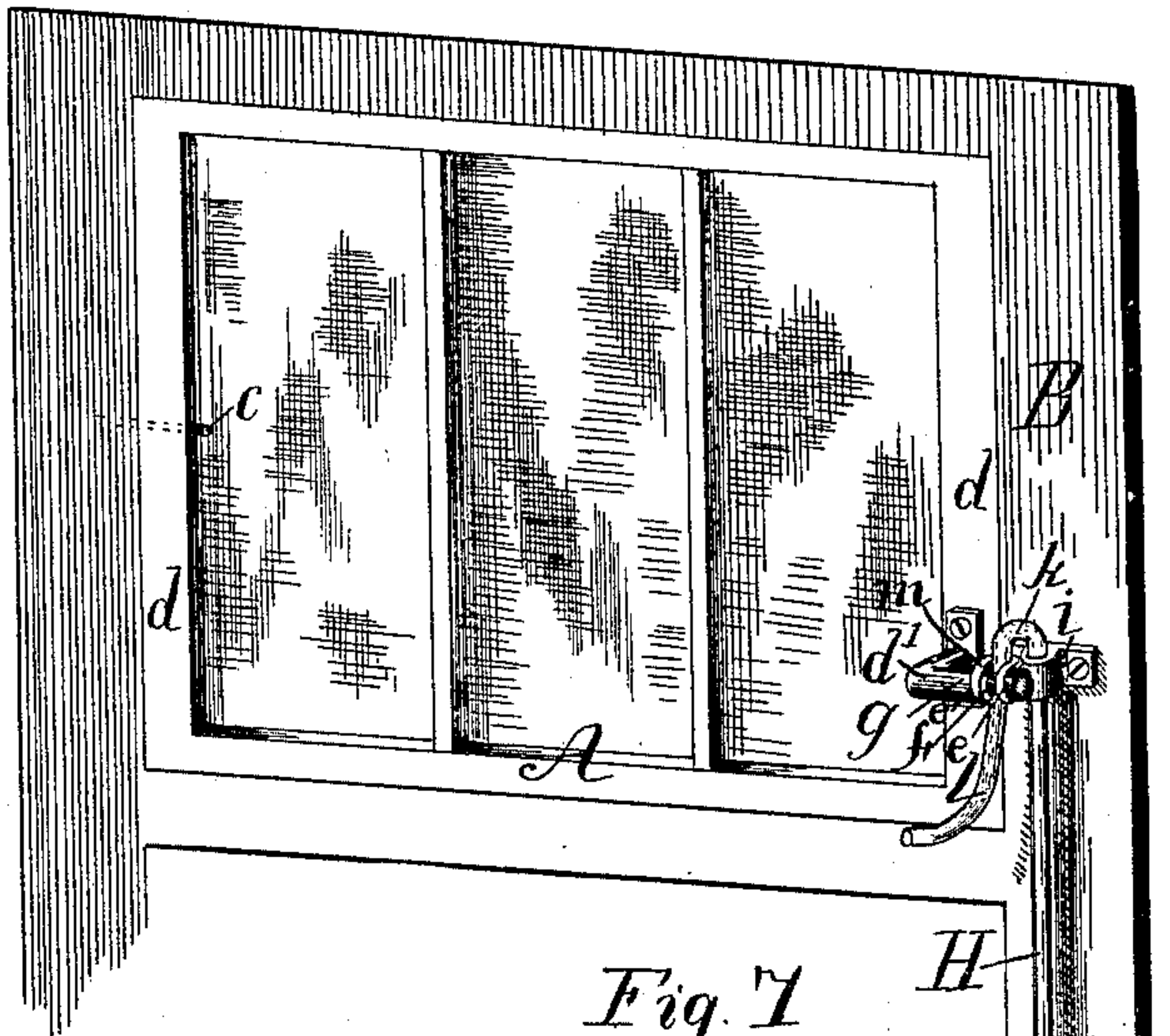


Fig. 2

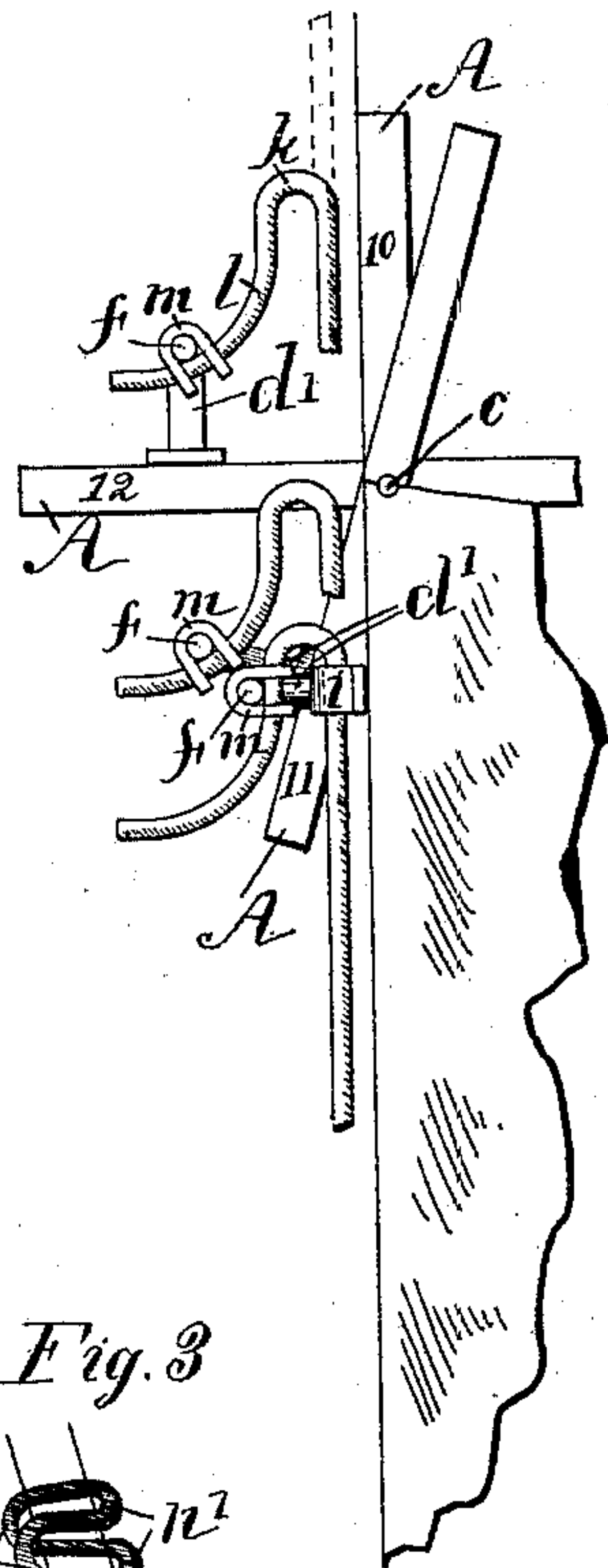


Fig. 7

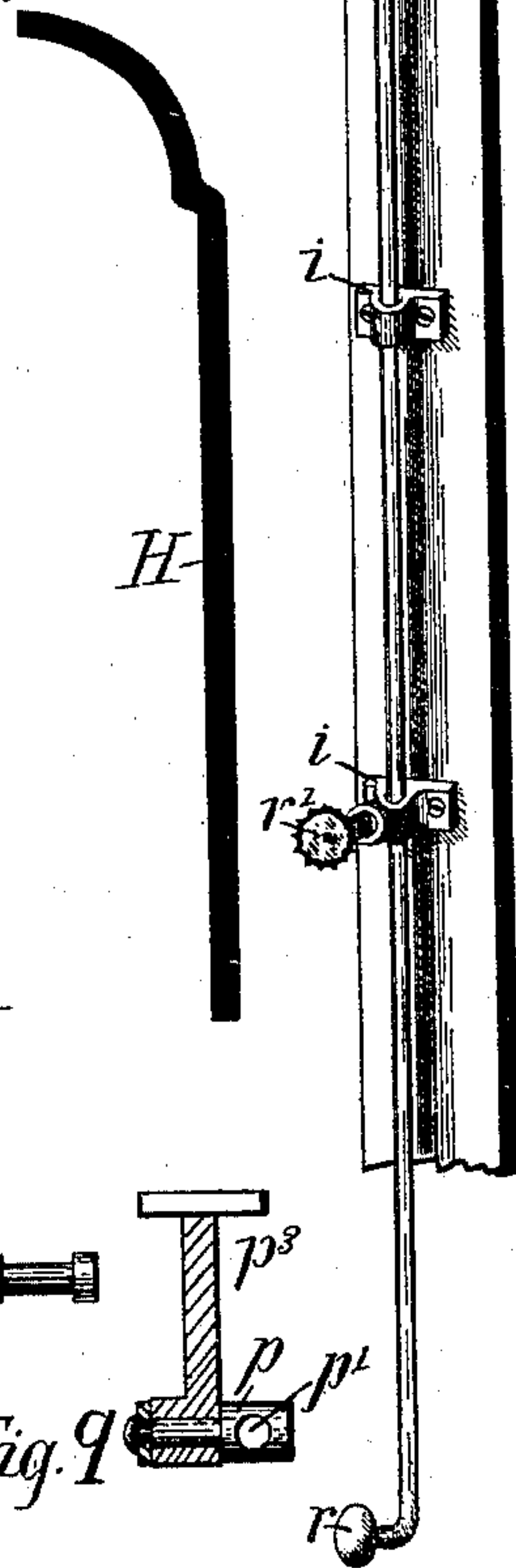


Fig. 6

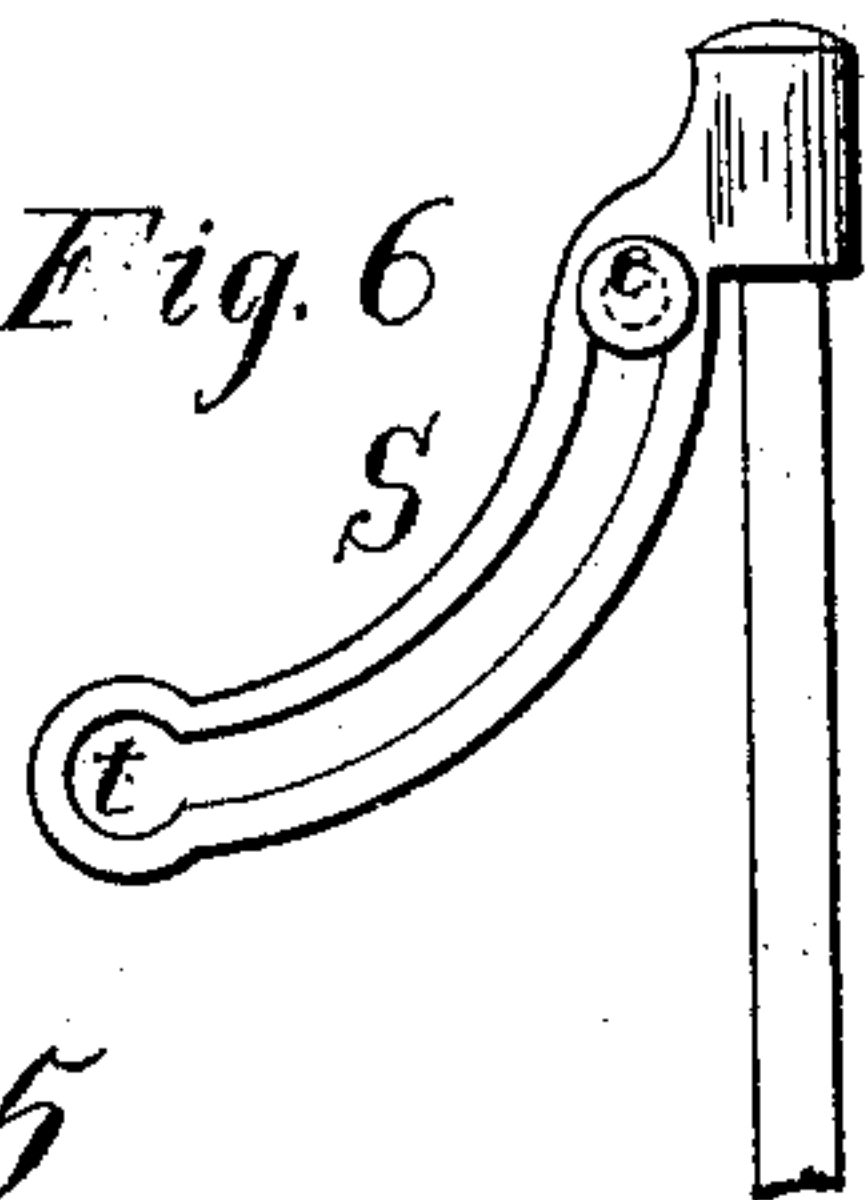


Fig. 5

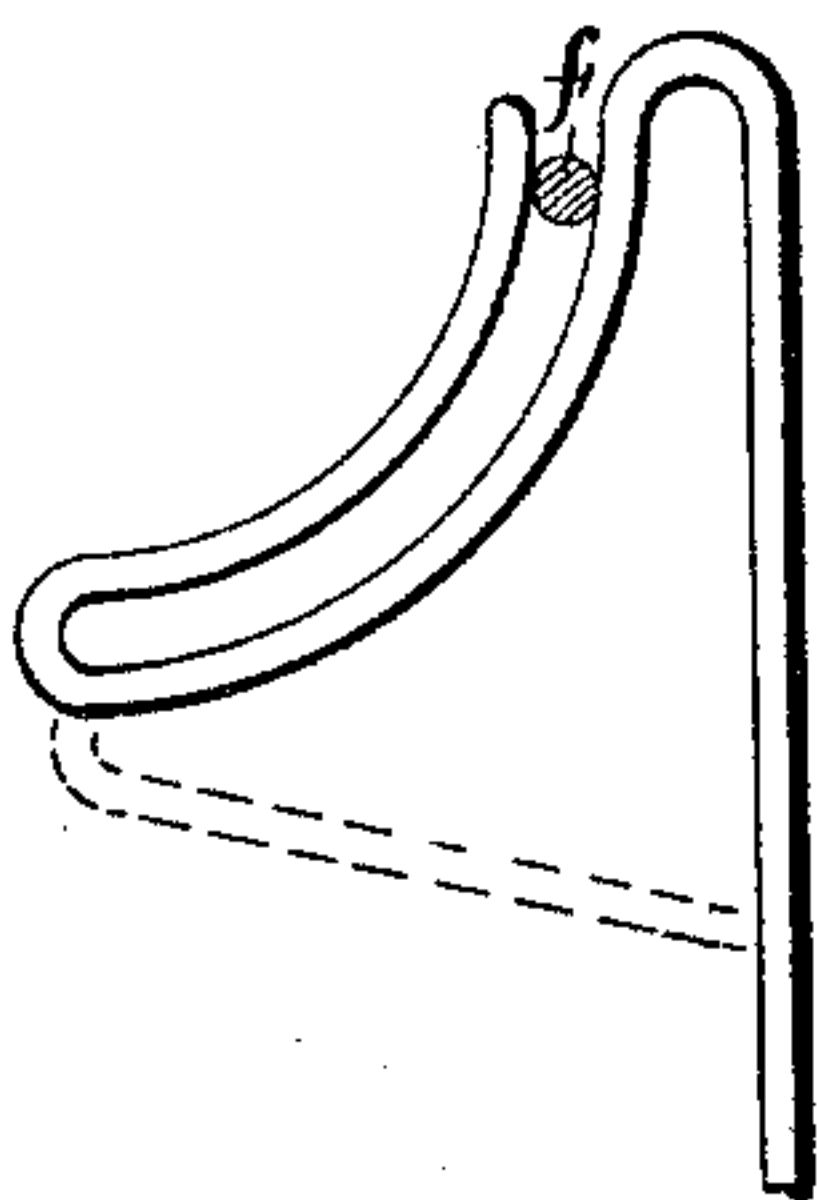


Fig. 4

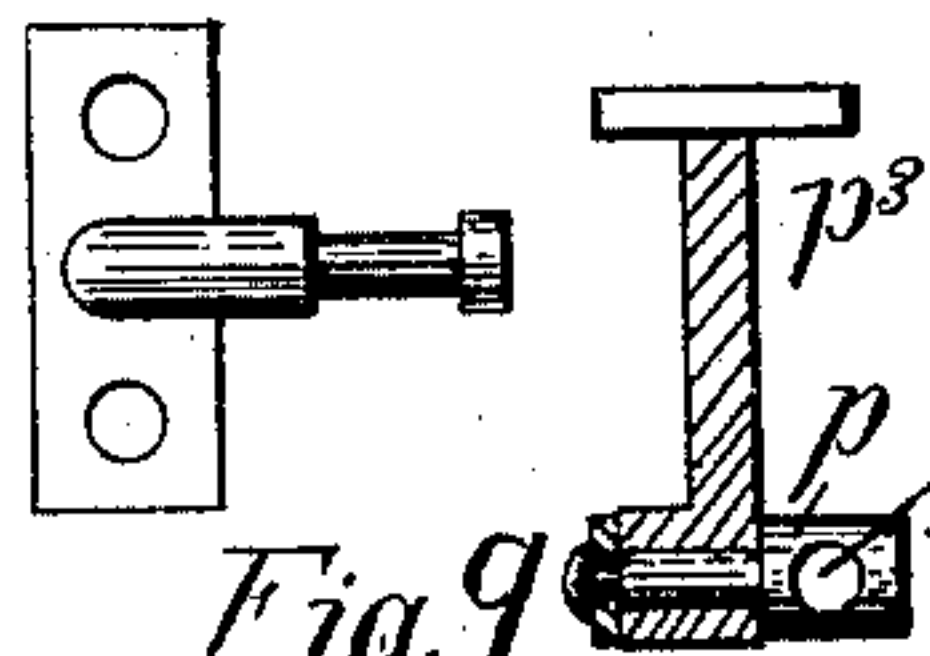
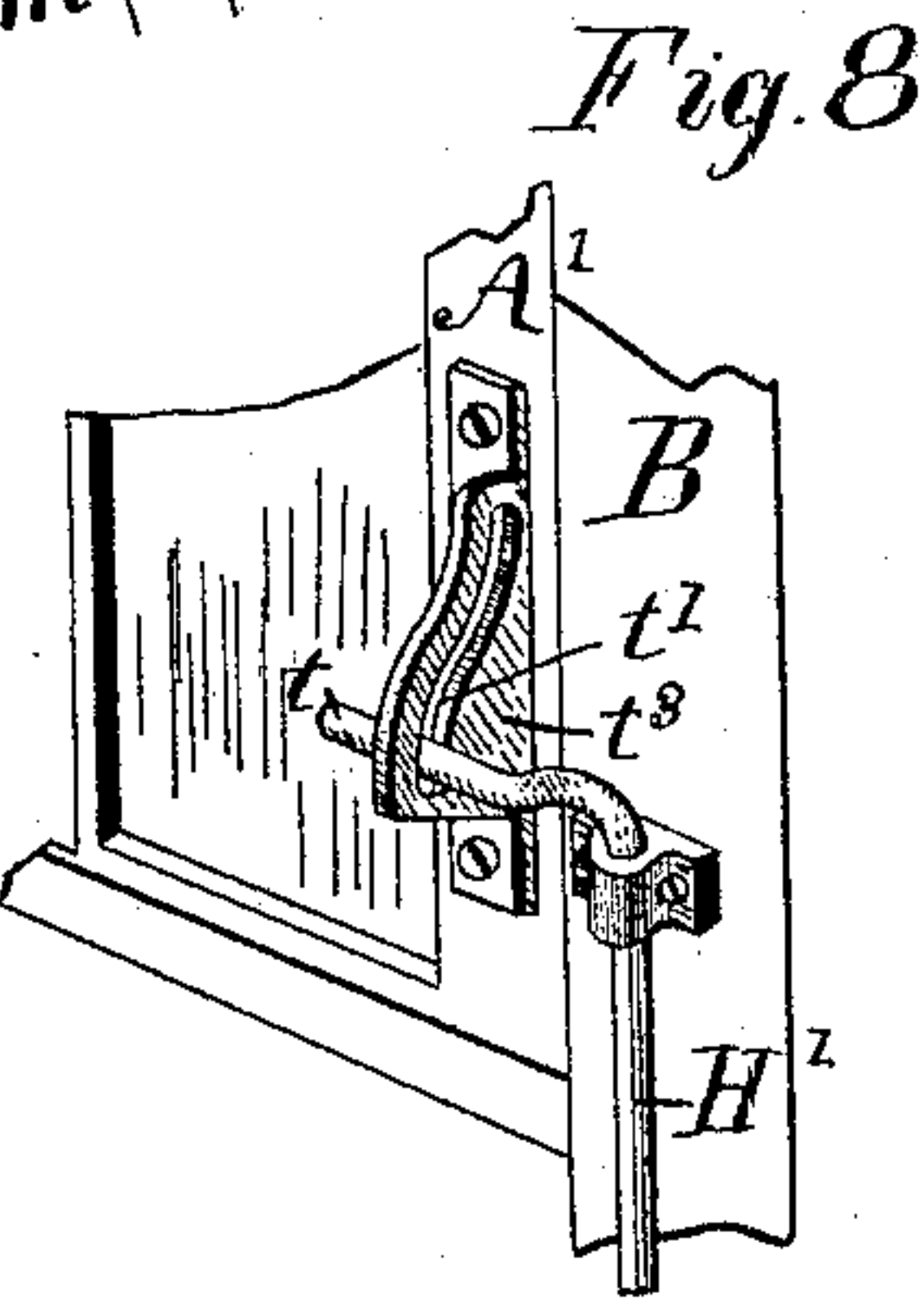
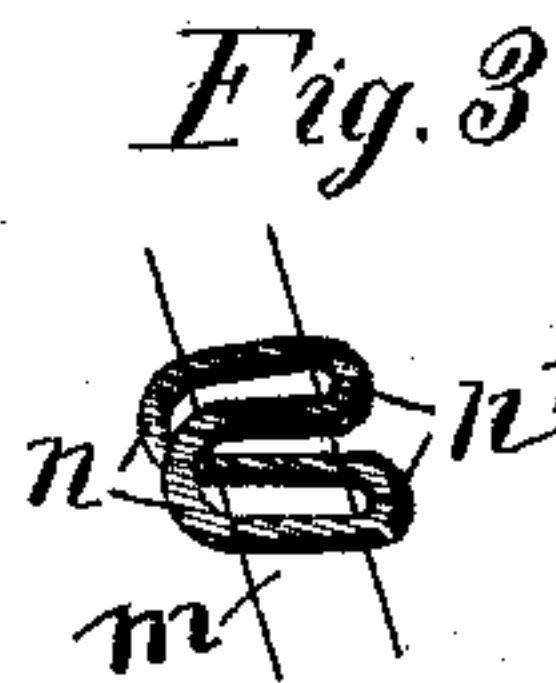


Fig. 9



Witnesses

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# UNITED STATES PATENT OFFICE.

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## TRANSOM-LIFTER.

SPECIFICATION forming part of Letters Patent No. 434,910, dated August 26, 1890.

Application filed April 7, 1890. Serial No. 346,966. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY A. BENNETT, a citizen of the United States, residing at New Haven, in the town and county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Transom Lifters and Locks, of which the following is a specification.

My invention relates to transom-lifters, and has for its object to provide a combined transom lifter and lock adapted to lift and operate the transom-window and clamp it tightly to place in its closed position positively locked and incapable of being swung open except by the normal action of the operating-rod.

The invention consists in the novel arrangement and combination, with the transom-sash and operating-rod, of an actuating and locking cam and its co-operating part or engaging fixture, one of the said parts being mounted upon the transom-sash and the other carried by the operating-rod, and adapted by their engagement and coaction to open and close the transom-window and securely lock it in the closed position, as hereinafter more particularly described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of a transom-window fitted with my improved lifter and lock. Fig. 2 is an end elevation of the same, showing the window in open, closed, and intermediate positions. Fig. 3 is a view of the swivel which retains the operating parts in engagement. Fig. 4 is a view of the arm or crank fixture upon which the actuating-cam acts to operate the sash, and Figs. 5, 6, and 7 show modifications of the actuating-cam. Fig. 8 shows a converse arrangement of the invention in which the cam is mounted upon the sash and the engaging arm is carried by the operating-rod. Fig. 9 is a modification.

Referring to the drawings, A designates an ordinary transom sash or window arranged to swing in the casing B on pins c, which pass through the end portions d of the sash-frame and are inserted in the casing. The transom-sash may be hung in any well-known manner, with the axis at either the upper or lower edge of the sash, or in any intermediate horizontal plane, and it is here shown

pivoted centrally in position to balance or hang in equilibrium on its journals; but my improvements may be applied with equal advantage whether the sash is hinged to the casing at its upper or lower edge or at any intermediate point between such positions.

At one end of the transom-sash and preferably secured to the end part d thereof is mounted a fixture or arm d', which projects out from the face of the sash at right angles therewith, and has a terminal part g, extended parallel with the axis of the transom-sash past the end thereof, so that it projects in front of or overhangs the adjacent casing B. The arm is fastened to the sash between the center and lower edge thereof or in position to hang the said part g below the axis of the sash as the transom is closed, and a journal f is formed on the part g near its extremity, which provides opposite shoulders e e at each end of the journal, as shown. The journal therefore is substantially a crank-pin formed integral with its arm and arranged parallel with the axis of the sash below the horizontal axial plane thereof and overhanging the casing B, somewhat offset therefrom, the arm and journal thus being a crank fixture of which the sash-axis is the center of the rotation thereof.

In the vertical plane of the pin of the crank or journal f is an operating-rod H, which is guided in suitable perforated bearings or guides i, secured to the casing B, and through which the rod is fitted to slide freely up and down. The upper end of the rod is bent over and outward from the casing and recurved or bent downward in a return-bend k, the bent-over portion l being arranged about parallel with the main or straight part of the rod near the return-bend K thereof at that point, forming with those parts a U-shaped fold or bend, but gradually curving outward and inclining and diverging from the straight part of the rod until at its lower end or terminal point the curved part l projects nearly at right angles to the main straight part of the rod, as fully shown in Figs. 1 and 2, forming an inclined cam and arm. The said curved part l of the operating-rod is arranged interior to and in engagement with the journal f of the arm d' and is held against or



connected to the journal by a suitable swivel or connecting part *m*, which loops or extends around both the journal and the rod on the sides or portions that face away from each other, so that both of the opposite working faces or inclines of the cam *l* are held in operative relation or connection with the journal *f*. The said swivel consists of a link, which is bent into U-shape, as shown in Fig. 3, to provide two opposite pairs of loops *nn'*, each pair having their axis at right angles to the opposite pair, as shown, one pair of loops being adapted to pass around the outer side of the journal *f* and the other pair to extend around the cam *l*, thus forming a swivel-connection, which holds the rod in engagement with the journal of the crank fixture, the loops of the swivel being between and held in place by the shoulders *e e*.

In place of a swivel, a pin *p*, having an eye *p'* for the reception of the rod *l*, and fitted to turn in an arm *p<sup>3</sup>* on the sash, as shown in Fig. 9, may be used, the requirements of the said device being to hold the rod *l* in engagement with the crank fixture or arm on the sash, while permitting the sliding movement or travel of the rod and the swinging motion of the window.

On the lower end of the operating-rod *H* is a knob or handle *r* for operating it, and a clamping-screw *r'* is screwed into one of the guide-bearings *i* in position to be screwed in against the rod to clamp it in any desired position.

In the operation of this improved transom lifter and lock as the cam or bent part *l* of the operating-rod is moved over the journal of the crank fixture the said fixture will be actuated in a swinging path, the working-surface of the rod being inclined to the plane of its movement. Thus the rod *l* forms an inclined cam or wedge, the inclination of which to its plane of motion is very slight or absolutely lacking at the upper part of the rod or extremity of the travel of the swivel thereon, but increases toward the lower end of the incline until the said lower portion becomes a plain lifting-arm, the action of which is to push directly or vertically on the journal with only a slight sliding action thereon. These actions are illustrated fully in Fig. 2, where the window is shown in closed, partly-open, and fully-open positions, as designated, respectively, by the reference-figures 10, 11, and 12. In the position 10, also represented in Fig. 1, the window is shown closed, and the position of the cam-rod *l*, which is engaged with the journal *f*, is parallel with its plane of motion, and any force exerted on the window to open it will be directed at right angles to the surface of the cam and resisted thereby, and the window consequently will be held securely locked in that position; but as the cam-rod *l* is raised by means of the operating-rod *H*, the cam, in traveling over the journal *F*, will wedge it outwardly and open the window to the position indicated

by the reference-figures 11. The continued upward motion of the rod will open the window farther, the lower end of the cam-rod *l* at last lifting directly upward on the journal with but little travel thereon until the window is fully open, as shown in position 12. The reverse or downward travel of the operating-rod and its cam will swing the window closed and clamp it locked in such position, the cam sliding through and pressing on the swivel to draw the journal *f* downward, the outer side of the cam being its working-face as the cam is moved upward and its opposite side the operating-surface as the cam descends or is moved downward. If the window is counterweighted, so that it tends to remain in its open position, then the inner side only of the cam would be the working-surface. It is immaterial whether the cam is placed on the inner or outer side of the journal *f* if a swivel is employed; but if the window is weighted, then the swivel could be dispensed with if the cam is placed on the side of the journal to resist or act against the force of the weight. The swivel may be dispensed with by arranging the journal between opposite inclines or camming-surfaces, as shown in Figs. 5 and 6, the rod in Fig. 5 being bent back or recurved upward parallel with the part *l*, with the journal between the two said portions, and Fig. 6 shows a slotted casting *S* secured on the upper end of the operating-rod. In the said casting an opening *t* is left at the lower end of the slot to admit the shoulder *e* on the outer end of the journal *f*. If the window is hinged at the bottom or below its center so as to open from the top, then the mechanism will simply need to be reversed or turned upside down, as will be represented by viewing the drawing upside down; but the operating-rod, however, in such case, if the window is to be operated from below, must be extended in the opposite direction, as shown in Fig. 7 and by the dotted lines in Fig. 2.

If the outer end of the cam-rod *l* is insufficiently strong to support a heavy window which is hinged above the center and tends to press heavily down on the rod, the rod may be bent under, with its end resting against the operating-rod *H*, to brace the lifting ends of the part *l*, as shown by the dotted lines in Fig. 5.

The clamping-screw *r'* is adapted by being screwed against the rod *H* to secure it in any desired position; but when the window is closed it is securely locked if the operating-rod is not fastened, the object of the screw being to hold the window open when it is hinged, as shown, or above the center.

Fig. 8 shows a converse arrangement of the hereinbefore-described mechanisms, the cam in this case being screwed on the sash *A'* and the operating-rod *H'* carrying a pin or horizontally-projecting end *t* engaging the cam. In this case a cam-slot *t'* is formed in a metal part *t<sup>3</sup>*, secured on the sash, and the end part



5 of the operating-rod is passed through the said slot, the slot being of such shape that the rod in traveling along it will wedge the window firmly to place in its closed position and lift it substantially directly as it approaches its open position.

10 My improved lifting and locking mechanism may be applied to any swinging door or shutter other than a transom-window, the conditions to be observed being that the cam and its engaging fixture shall be arranged one mounted and carried on the window or door and the other guided on the face-casing or stationary part of the structure, the part 15 which is on the casing being guided in the swinging plane of the engaging part which is on the window, the swinging fixture overhanging or being offset out of the swinging plane of the door, but substantially parallel therewith.

I therefore claim—

1. In mechanism for operating and locking transoms or swinging windows, the combination of a fixture secured and carried upon the window and provided with a horizontal crank pin or journal, a lifting-rod guided vertically in bearings on the casing, and a cam fixture secured to and carried by the operating-rod in engagement with or movably connected to the said fixture and having oppo-

site working-faces of varying inclination to the rod in the swinging plane of the fixture, said inclination being least or naught at the end engaged by the crank fixture when the window is in closed position and greatest or at right angles to the rod at the opposite end, whereby in the travel of the said cam fixture it is adapted to operate the window directly and without camming action near the open position and to close it with increasing wedging action and lock it securely shut, as specified.

2. The combination of a transom-window, an arm mounted thereon provided with a journal, an operating-rod guided in bearings in the casing and having its upper end bent to form a combined cam and lifting arm *l*, having a varying inclination to the operating-rod, being least or substantially vertical at the end joined to the operating-rod and greatest or nearly horizontal at the opposite end, a swivel *m*, connecting the said cam and arm in engagement with the journal, and a clamp for securing the rod in its position, all arranged substantially in the manner and for the purpose specified.

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