

(Model.)

2 Sheets—Sheet 1.

W. E. SANDFORD.

SASH BALANCE.

No. 362,185.

Patented May 3, 1887.

Fig. 2.

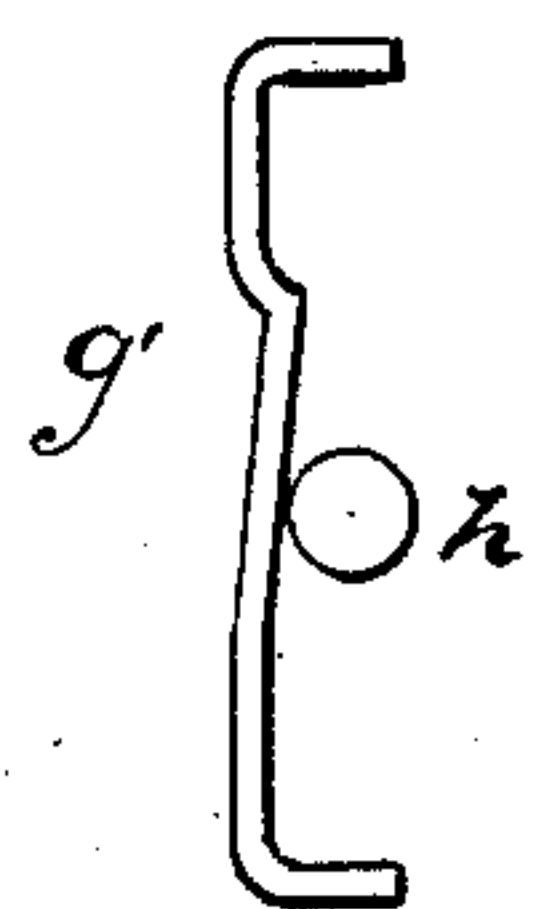
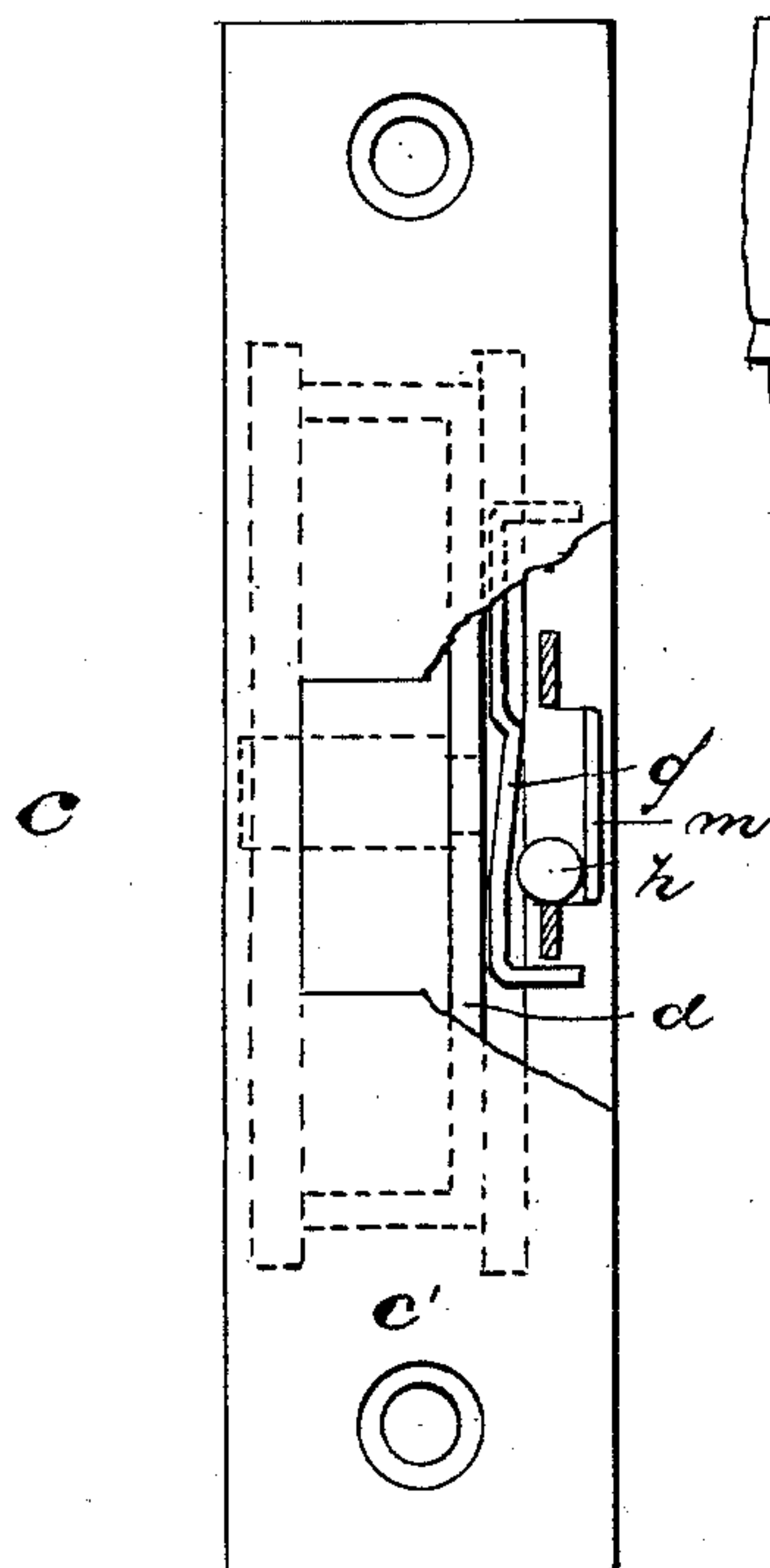


Fig. 4.

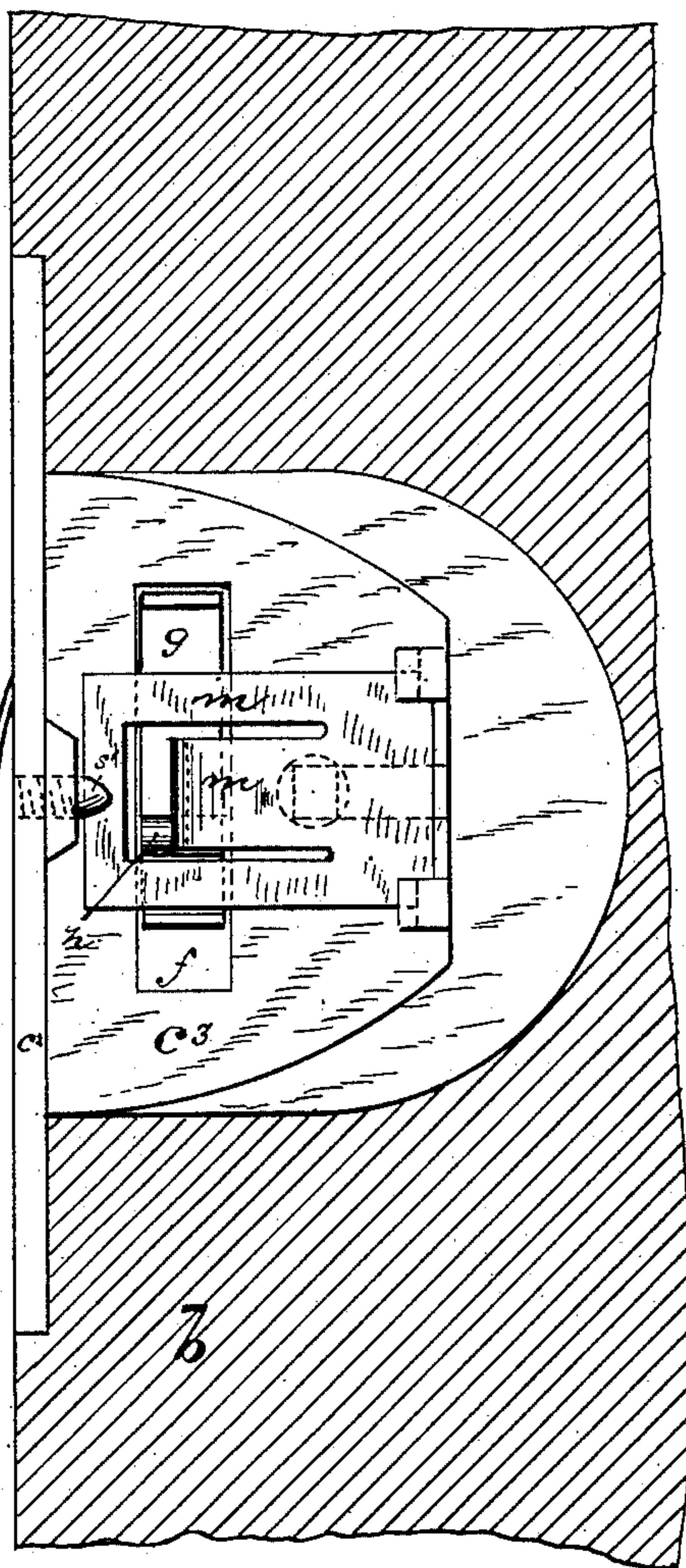
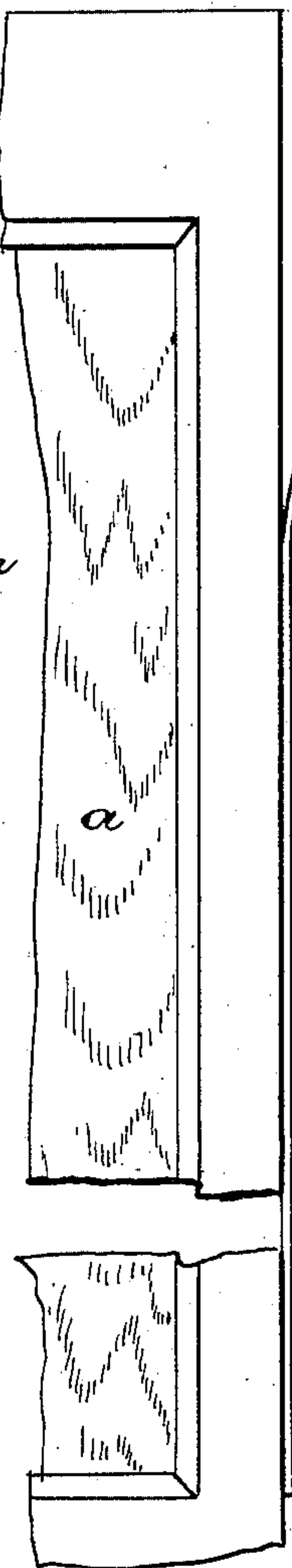


Fig. 1.



Fig. 3.

WITNESSES:

INVENTOR:

John C. Tunbridge.
Frank F. Campbell.

William E. Sandford,

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(Model.)

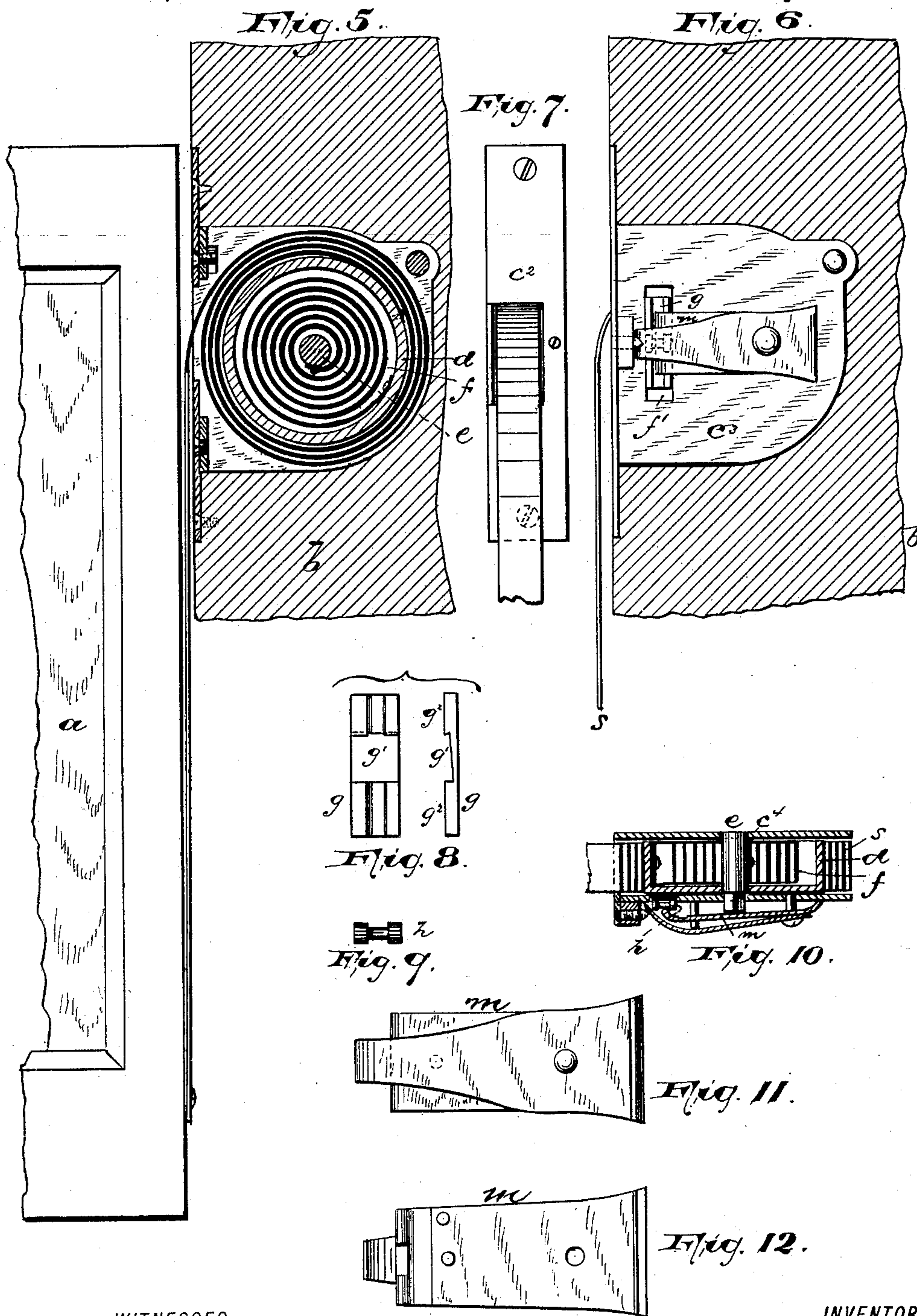
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UNITED STATES PATENT OFFICE.

WILLIAM E. SANDFORD, OF BELLEVILLE, NEW JERSEY.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 362,185, dated May 3, 1887.

Application filed April 12, 1886. Serial No. 198,595. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM E. SANDFORD, a citizen of the United States, residing at Belleville, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Sash-Balances; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a substitute for the ordinary sash cords and weights for windows that will in a general way overcome the objections arising from their use, and, more specifically, be more durable, slightly, and easily applied to the window.

The invention consists in the improved sash-balance, constructed and the parts thereof arranged and combined substantially as set forth, all substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying two sheets of drawings, in which like letters indicate corresponding parts in each of the several figures, Figure 1, Sheet 1, is a side elevation of the improved pulley or balance arranged in connection with the frame and sash. Fig. 2 is a front elevation of the same. Figs. 3 and 4 are side views showing certain parts in detail. Fig. 5, Sheet 2, is a sectional view through line *x*, showing the sheave, spring, and strap of the device. Fig. 6 is another side view, illustrating a modification in the construction of the device. Fig. 7 is a front view of the same. Fig. 10 is a horizontal section through line *y*; and Figs. 8, 9, 11, 12 are detail views, all of which will be hereinafter fully described.

In said drawings, *a* illustrates the sash, *b* the window-frame, and *c* a spring-actuated pulley or balance, resembling in some general features those heretofore used. Of said pulley, *c'* is a suitable frame or bed-plate, which may be either of sheet or cast metal. Said frame provides a suitable face-plate, *c''*, to lie flush with the jamb of the frame, and side plates, *c'''*, which extend back at right angles to said face-plate to enter slots in said jamb and provide bear-

ings for a hollow wheel or sheave, *d*, in which latter is arranged a spring, *f*, which serves as a counter-balance to the weight of the sash. Said spring is secured at one end to said wheel and at the other end to a stationary pivot, *e*, arranged in bearings *c'* of said side plates, and on which the said sheave turns. One end of the pivot is angular, and is arranged in a correspondingly angular perforation in the bearings *c'*, to prevent the pivot from turning under the influence of the spring.

To the periphery of the wheel is secured a metallic strap, *s*, which latter is secured at the other end to the sash at its lower end, as indicated in Figs. 1 and 5, to elevate said sash under the influence of the spring on the hollow sheave.

To co-operate with the spring in holding the sash stationary after the same has been raised, so that it will not fall after the support of the hand has been removed, and yet relieve the sheave from a constant pressure that would counteract the power of the spring in uplifting the sash, I have provided a friction-brake which acts on the sheave to retard its motion only when there is a downward pressure from the sash brought to bear on the sheave.

To secure the desired result, I form a vertical slot, *f'*, in one of the side plates of the frame or bed of the pulley, and into the same arrange a sliding piece or plate, *g*, which bears against or enters into frictional contact with the side of the sheave, and is thereby influenced to move therewith. Said piece or plate *g* has a wedge-like portion, *g'*, (shown more clearly in Figs. 2, 4, and 8,) the smaller end of which lies or may lie upward. At the ends of the wedge-like portion of the sliding piece are formed stop projections *g''*, and between the same is arranged a roller, *h*, which bears on the wedge-like portion and has a play from the larger to the smaller end of the same as the sliding piece moves in the slot from the corresponding end to the other, as will be understood. On the outside of the slotted plate is secured a binding or resisting plate, *m*, of stiff spring metal, which extends over the slot and bears on the roller on the side thereof opposite that which bears on the wedge-like portion.

In the upward movement of the sash and the

corresponding movement of the sheave the latter causes the sliding piece to engage in frictional contact therewith to move upward and the roller to pass to the small end of the wedge-like portion, so that the resisting-plate will not exert its power to any considerable degree to retard the action of the sheave and counteract the power of the spring. In the reverse movement of the sash, or when the sash tends to move in the opposite direction, the sliding plate having a wedge-like portion and roller move oppositely, and the roller, passing into contact with the thicker end of the wedge-like portion, binds against the binding or resisting plate, so that its power is exerted to cause the sliding plate or piece to more closely engage the sheave or roller and stop its movement, so that the sash is prevented from falling, except it be influenced by extraneous power, such as that of the hand. To regulate and control the power of the binding or resisting plate, I have provided an adjusting-screw, s' , which has its bearings in the face-plate, as shown in Figs. 1, 6, and 10, the head of the screw being on the outside, so that it may be manipulated without disturbing the pulley. The inner end of the screw is pointed, as shown in Figs. 1 and 3, and engages the resisting-plate, so that by turning the screw the said plate may be forced toward the wedge-like portion, or be allowed to spring therefrom to reduce or enlarge the space therebetween and enable the frictional contact to be more or less effective.

In arranging the balance in operative relation with the sash and frame, I prefer to place the first at a point on the frame about midway between the top and bottom of the same, where it will be concealed by the sash and will not mar the appearance of the window.

Having thus described the invention, what I claim as new is—

1. In a sash-balance, the combination, with

the spring-actuated sheave, of a friction-brake having a sliding piece or plate adapted to enter into frictional contact with the sheave automatically as the latter moves in one direction and allowing a free movement in the opposite direction, substantially as herein described.

2. In a sash-balance, the combination, with a spring-actuated sheave, of a sliding plate or piece having a wedge-like portion arranged at the side of said sheave and adapted to be brought into frictional contact with said sheave as the latter moves in one direction, and to allow a free movement in the opposite direction, and a binding or resisting plate, m , all said parts being arranged and combined substantially as and for the purposes set forth.

3. In combination with the spring-actuated sheave of a sash-balance, a plate having a wedge-like portion to enter into frictional contact with the sheave, a roller, and a resisting or binding plate in lieu thereof bearing on said roller, all said parts being arranged and adapted to operate substantially as and for the purposes set forth.

4. In combination, a bed, a spring-actuated sheave, a strap, and a friction-brake consisting, essentially, of a sliding piece or plate, g , having a wedge-like portion, g' , and stop projections g'' , a roller, h , bearing on said wedge-like portion, a binding or resisting plate, m , of spring metal, and an adjusting-screw, all said parts being arranged and combined substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of March, 1886.

WILLIAM E. SANDEFORD.

Witnesses:

OLIVER DRAKE,
FREDK. F. CAMPBELL.