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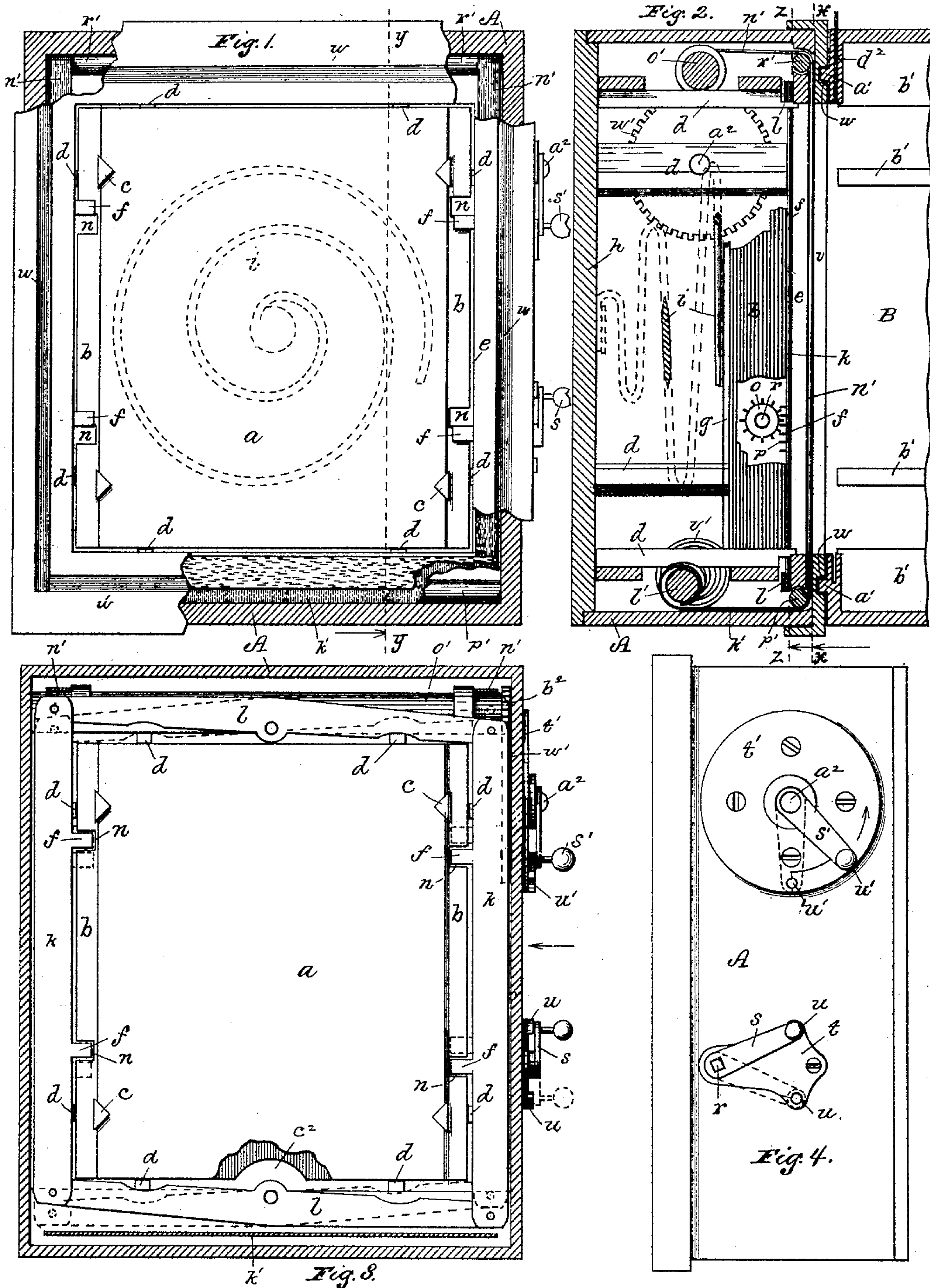
2 Sheets—Sheet 1.

E. E. ELLIS & A. L. LEHNKERING.

MEANS FOR HOLDING AND CARRYING PHOTOGRAPHIC FILMS.

No. 462,116.

Patented Oct. 27, 1891.



Attest:

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M. D. Phillips.

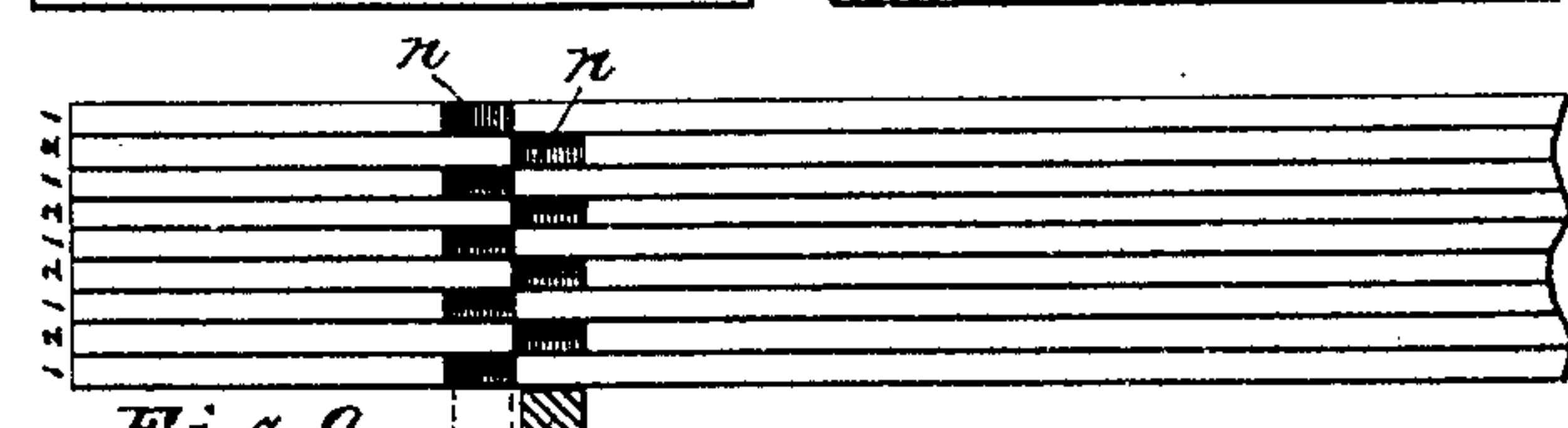
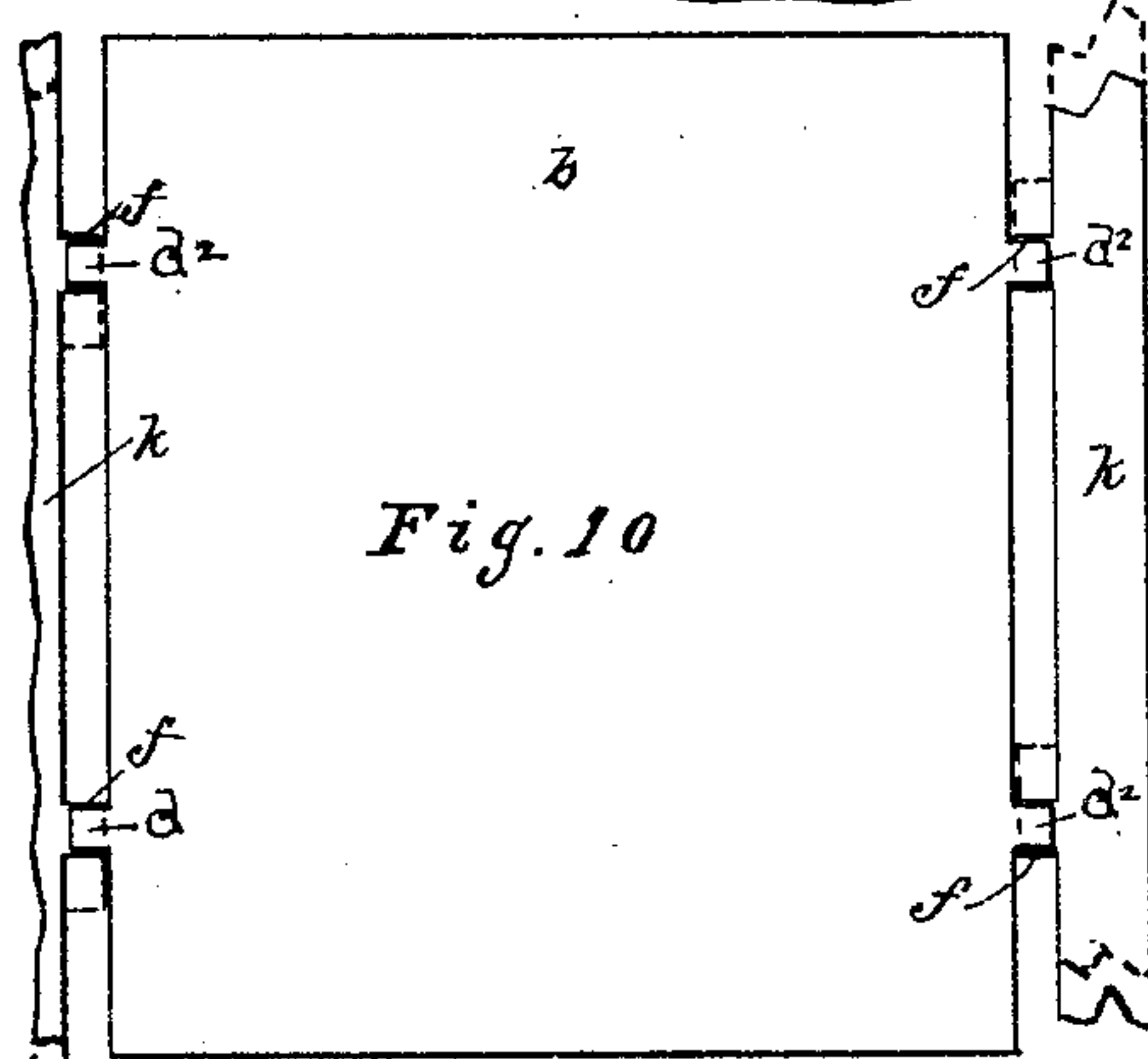
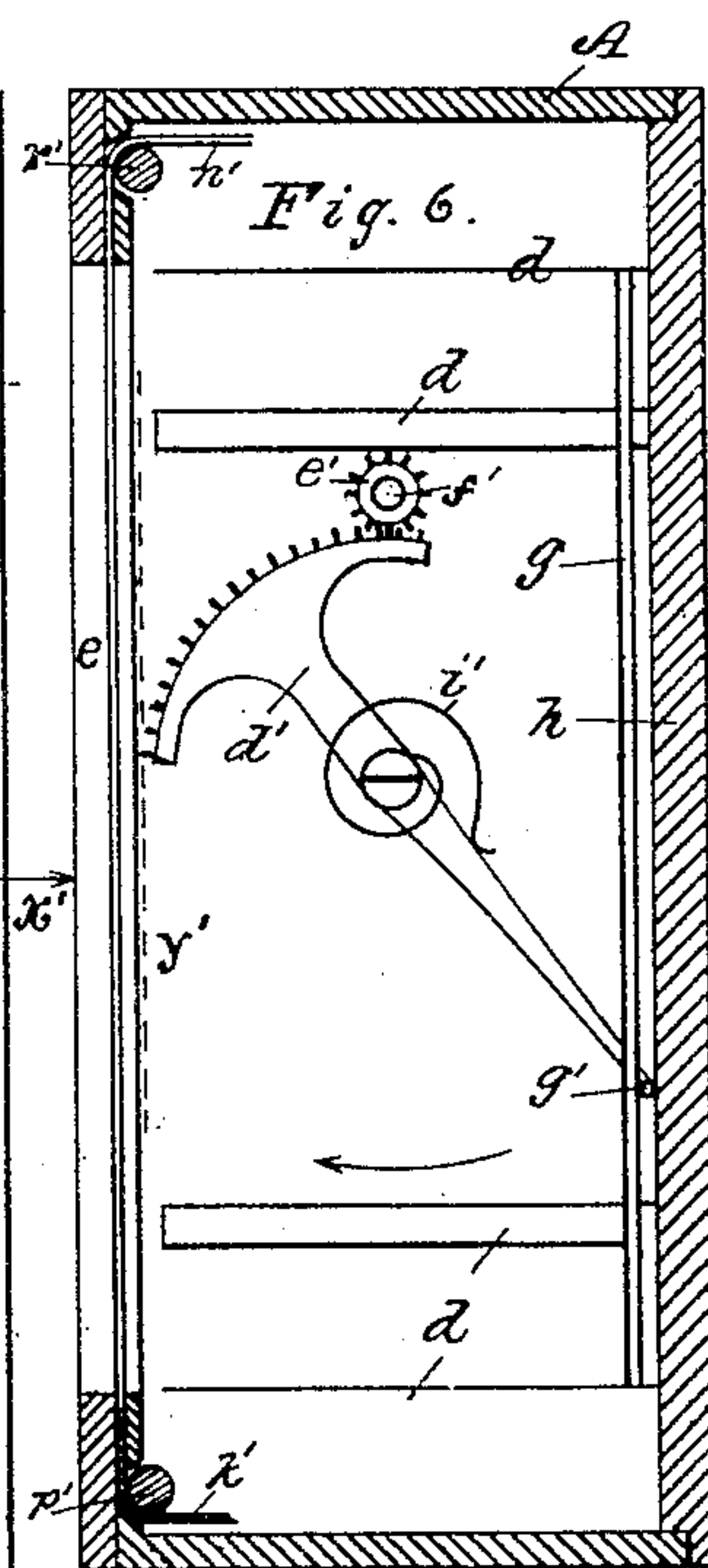
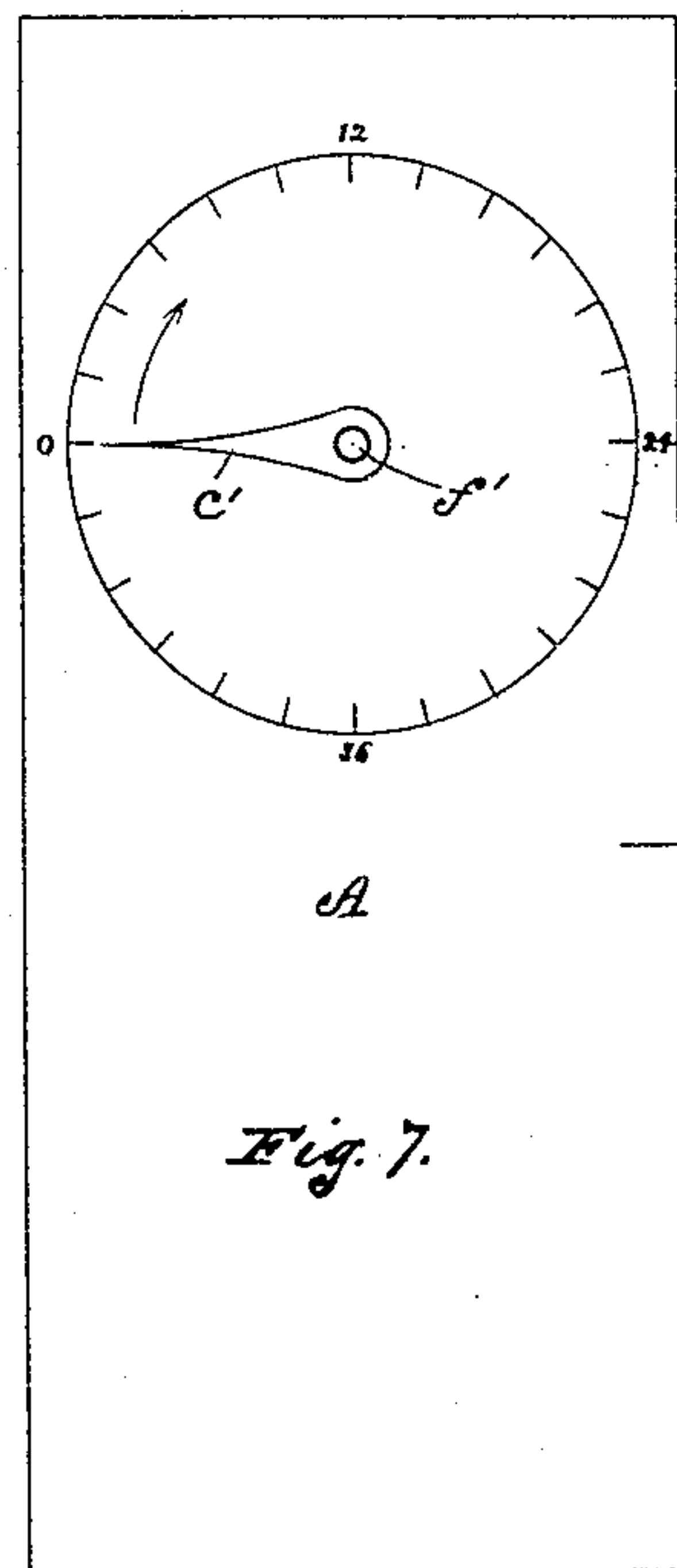
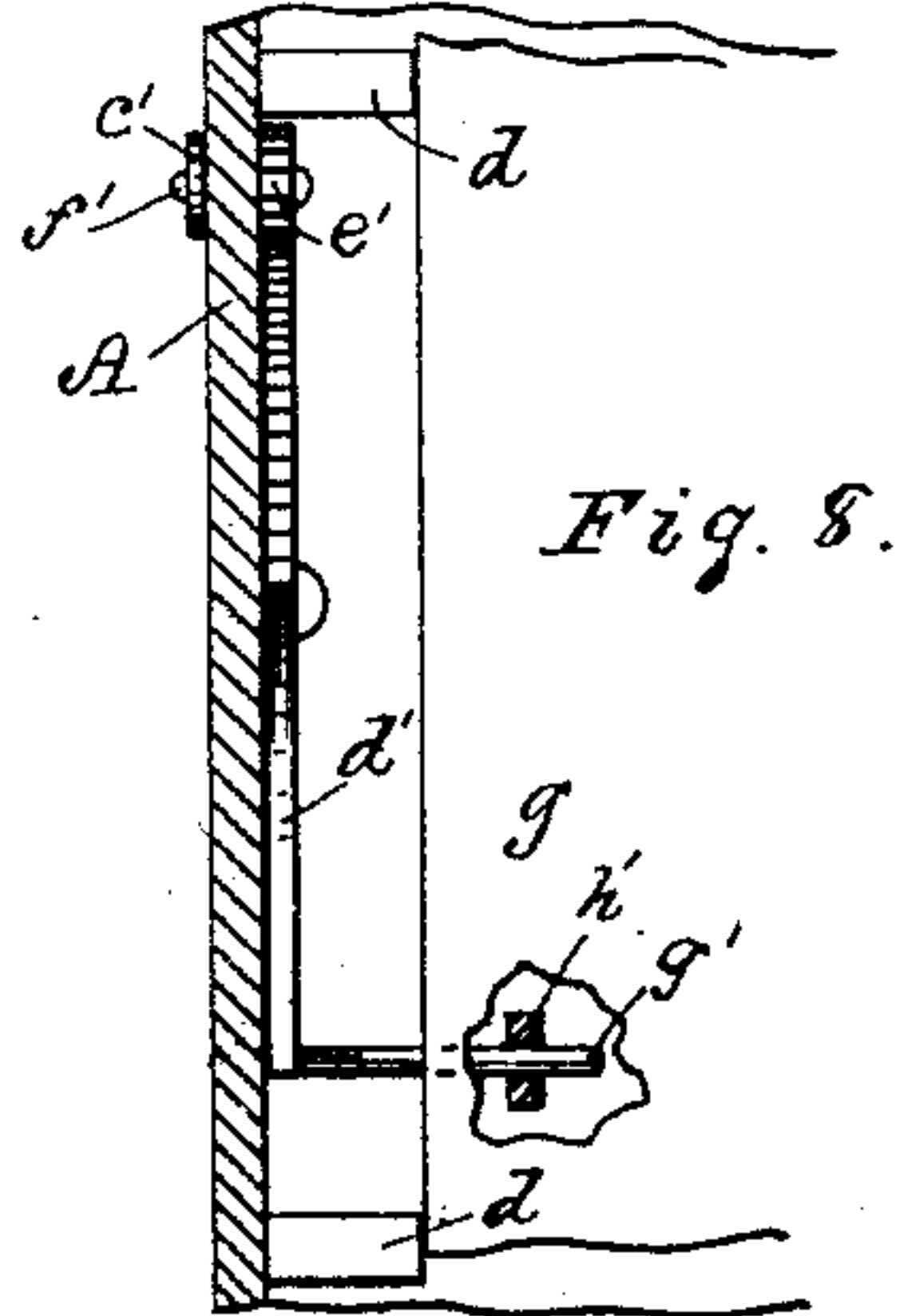
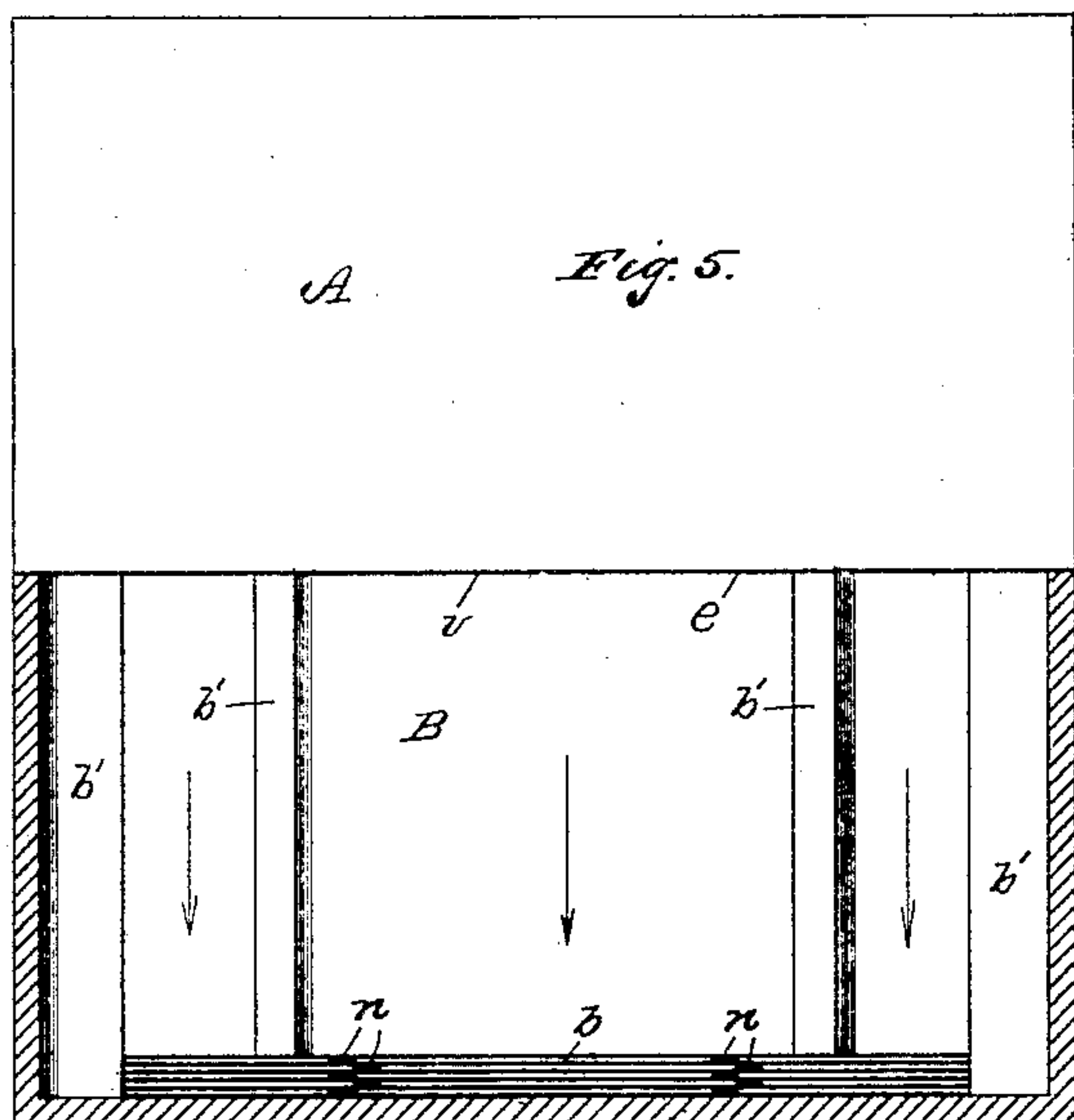
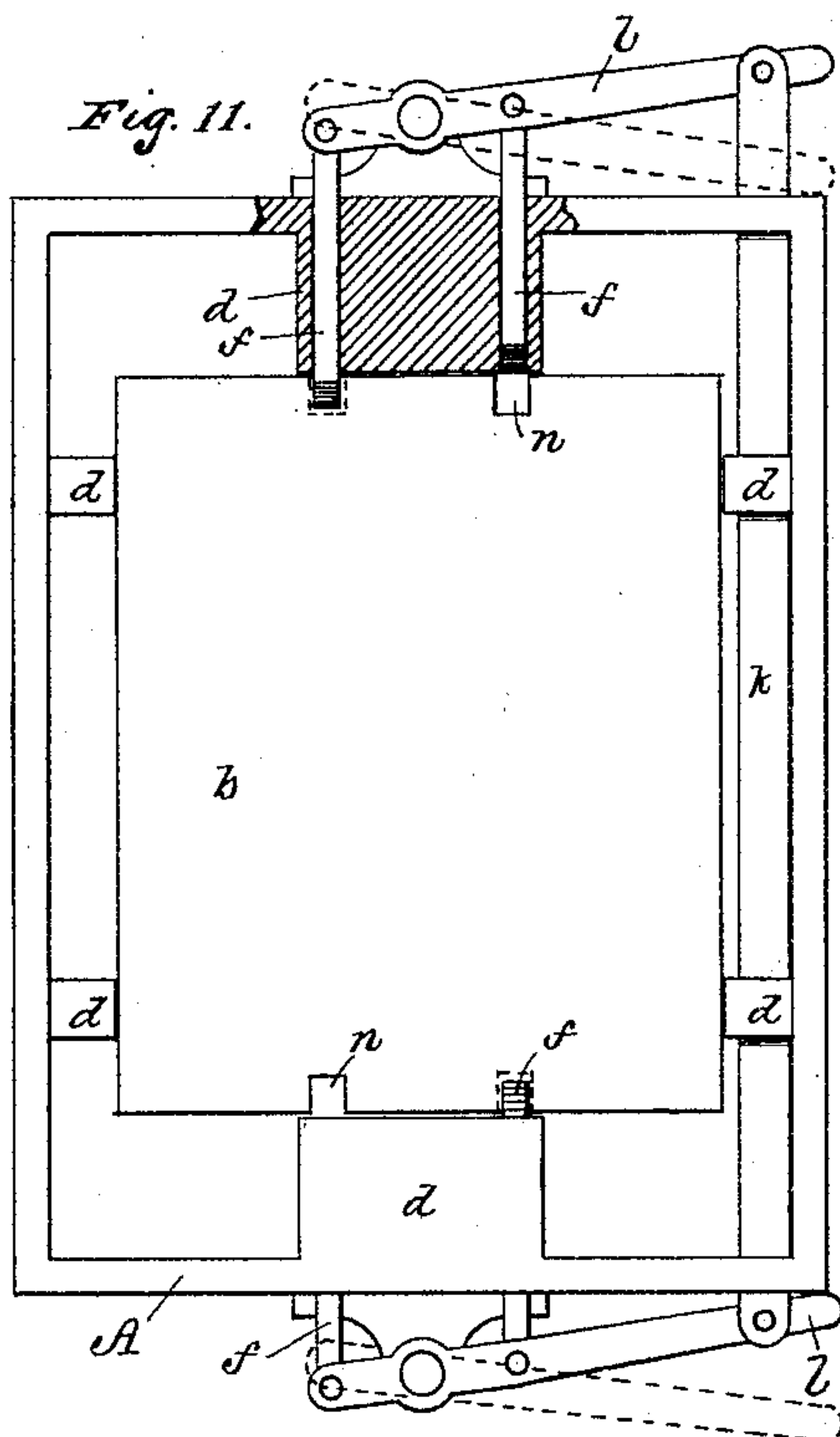
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Edgar E. Ellis.
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By E. B. Whitmore, Atty

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UNITED STATES PATENT OFFICE.

EDGAR E. ELLIS AND AUGUST L. LEHNKERING, OF ROCHESTER, NEW YORK.

MEANS FOR HOLDING AND CARRYING PHOTOGRAPHIC FILMS.

SPECIFICATION forming part of Letters Patent No. 462,116, dated October 27, 1891.

Application filed January 24, 1890. Serial No. 338,023. (No model.)

To all whom it may concern:

Be it known that we, EDGAR E. ELLIS and AUGUST L. LEHNKERING, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Means for Holding and Carrying Photographic Films, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

Our invention relates to photography, and more especially to the matter of holding and carrying the plates or sensitized films used in the art and the undeveloped negatives after exposures have been made.

The object of the invention is, mainly, to provide a convenient holder for carrying a large number of plates or films, and also a receiver for the exposed plates or films, with means to safely and conveniently discharge the plates or films from the holder to the receiver after being exposed.

Referring to the drawings, Figure 1 is a front view of the plate-holder, parts being broken away and sectioned, as on the dotted line *xx* in Fig. 2; Fig. 2, a section taken on the dotted line *yy* in Fig. 1, parts being broken away; Fig. 3, a front sectional view sectioned on the dotted line *zz* in Fig. 2, parts being shown in two positions by full and dotted lines; Fig. 4, a side view of the device, seen as indicated by arrow in Fig. 3; Fig. 5, an end view of the plate-holder and plate-receiver, the latter being transversely sectioned along the plane of the inner surface of the end wall; Fig. 6, a view of the inner surface of a side wall of the holder, parts being omitted; Fig. 7, an exterior view of the side shown in Fig. 6; Fig. 8, a view of some of the parts shown in Figs. 6 and 7, seen as indicated by arrow *x'* in Fig. 6, the side being sectioned, as on the dotted line *y'* in Fig. 6; Fig. 9, drawn to a larger scale, shows the edges of portions of the back piece for the films; Fig. 10, drawn to a small scale, shows another form of the film backs, and Fig. 11 shows a modified construction of the discharger for the films.

Referring to the parts, A is the body of the plate-holder, and B the body of the receiver for the exposed plates or films, these bodies being made of any suitable material that will exclude the light, such as thin strips of wood,

compressed paper, hard rubber, &c. The plate-holder is preferably a prismatic box in which to place a large number (say forty-eight) of separate plates or sensitized mounted films for the convenience of the photographer, either for indoor or outdoor work. These plates or films, made ready for exposure, are of a uniform size and placed side by side in a compact body within the holder. In the drawings we have shown sensitized films *a*, mounted upon opaque back pieces or backs *b*, the latter being made of wood, paper, hard rubber, or other suitable material. The films are detachable, but held to place upon the backs by simple clips *c*, extending out from the back.

The interior of the holder is provided with parallel rigid guides *d*, two at each side, in which guides the mounted films are placed. These guides form bearings or rests for the edges of the film-backs and prevent them from shaking or moving laterally upon each other to the end that the films may not become worn or frayed in consequence of such motion in carrying them about. On account of these guides the mounted films can have no motion in the holder except a sidewise motion or a motion in a direction perpendicular to the planes of the films. The front side of the plate-holder is formed with a central discharge-opening *e*, sufficiently large to allow the mounted films to drop or pass out thereat sidewise—that is to say, in a direction perpendicular to the plane of the film. Movable stops *ffff* are provided, projecting inward from the sides of the holder, which prevent the mounted films from passing out of the holder until it is wished to discharge them into the receiver B. A spring-pressed follower *g* serves to continually press the films or the backs thereof gently against the stops, the latter being in a plane parallel with the front face of the holder. This follower is preferably a plate of some material about the size of one of the film-backs and connected with the back *h* of the holder by a slender spiral spring *i*. This spring acts to push the mounted films in a sidewise direction within the holder against the stops.

The stops project from the edges of parallel side bars *k k*, Fig. 3, at the sides of the holder, these bars being joined at their ends

by movable joints to pivotal bars ll at the ends of the holder. On account of being thus mounted the side bars may be moved in end-wise directions, their motions in any given case being in opposite directions, as indicated. Motion may be given these side bars by various means—as, for instance, by a pinion o , Fig. 2, engaging teeth p on one of the bars, the shaft r of the pinion extending through to the exterior of the holder and being provided with a handle s to move it. (See Figs. 3 and 4.) t is a plate secured to the exterior of the holder, provided with stops uu for the handle. By moving the handle to one stop u the side bars, with the stops f , will be thrown to one position—as, for instance, the position shown in full lines in Figs. 1 and 3—and by moving the handle to the opposite stop u the side bars and stops f will be thrown to another position, indicated by dotted lines in Fig. 3. Now the edges of the film-backs b are not even or regular, but are formed with notches or indentures n , two at each side, in position to register with the four stops f ; or, to more fully explain, the backs of half the number of films are notched in a manner to register with the stops f when in one position, and the backs of the other half of the films are notched to register with those stops when in the other position. The backs of one form or pattern—that is to say, notched in one manner—are, for convenience, all marked “1,” and those of the other form or pattern are marked “2;” or they may be marked consecutively from 1 to 48, the odd numbers being given to the backs of one form and the even numbers given to the backs of the other form. When the holder is “loaded” or filled with the mounted films, the sensitized surfaces are all turned in one direction toward the exposure-opening e in the holder and the differently notched or formed backs are alternated. For instance, if a back marked with an odd number is put next to the stops f a back marked with an even number next follows, followed in turn by another odd-numbered back, and so on; or the mounted films may be all laid together in this order in a prismatic body, as shown in Fig. 9, and thus placed within the holder against the stops. The back h of the holder is detachable, so that it with the follower may be removed for the purpose of inserting the mounted films, and it may be secured to the body of the holder by simple hooks or other usual means. When the mounted films are placed in the holder caution is taken to set the stops f at a position in which they shall not register with the notches of the first or contiguous back, so that said back with its film shall not pass out of the holder through the opening e . This relative position of the stops and the first back is clearly shown in Fig. 1, in which the stops respectively press against the back at the sides of the respective notches. Now when the first film is to be discharged from the holder through the opening e the stops are

shifted by means of the handle s to the other position. (Shown in dotted lines in Fig. 3.) This brings them opposite the respective notches and the back is in consequence released and allowed to pass out. The stops are now in position to catch and hold the next back, as that is differently notched. An opposite shift of the discharging mechanism or discharger will allow that back to pass out, but at the same time catch the next one. Thus only one film can pass out of the holder at once, and the discharger has to be shifted for each film.

The receiver B for the exposed films or undeveloped negatives is constructed similar to the holder A for the films and about the same size, it having an opening v in its side similar to the opening e in the holder A . The exposed films are discharged one by one, as above stated, from the holder into the receiver, said holder and receiver being placed together side by side, as shown in Figs. 2 and 5, in such a manner that the openings e v shall be opposite to each other. To shut out the light from the holder and receiver when joined for the purpose of discharging an exposed film, the face of the holder may be provided with a groove w , Figs. 1 and 2, around the opening e and the receiver with a corresponding tongue a' around the opening v to enter the groove. The receiver is provided with internal guides b' , similar to the guides d in the holder and for the same purpose.

To enable the operator to know certainly that the first film has passed from the holder into the receiver in any given case, a simple indicator is provided for the holder to move when the film passes out. The indicator shown is a simple pointer c' , Fig. 7, arranged to turn upon a dial upon the outside of the holder. This pointer may be operated by means of a toothed lever d' , Fig. 6, and pinion e' within the holder, the pinion being secured to the stem f' of the pointer. The lever moves with the follower g , and at each time the latter advances a step, on account of a film being discharged from the holder, the pointer is turned to a new mark or space on the dial. The lever is formed with a tang g' , extending out to meet the follower, and it may be attached to the follower to move forward and backward with it by means of a simple strap h' , Fig. 8, secured to the follower, or the tang may be independent of the follower and held thereagainst by means of a slender spring i' , Fig. 6. When the holder is filled with mounted films—say forty-eight in number—the follower is thereby pressed back against the action of the spring i to the back h of the holder. When in this position, the pointer points to “0” on the dial. As the follower advances toward the front of the holder from the successive discharging of the films singly, the pointer turns upon the dial, indicating the exact number of films discharged.

The opening e in the holder, through which

exposures are made, is closed by a rolling slide or shutter k' , Figs. 1 and 2. This rolling shutter is an opaque flexible sheet of some strong substance, as cloth, wound upon a roller l' at one end of and within the holder. Straps or bands $n' n'$ lead from the shutter on either side of the opening e to a winding roller o' at the opposite end of the holder. The shutter and the bands pass over carrying-rollers p' and r' , which hold the shutter near the front of the plate-holder and in position to effectually close the opening e and exclude the light from the sensitized films within. The roller l' is provided with a coiled spring v' to turn it in such a manner as to wind the flexible shutter upon it. To draw the shutter over the opening e against the action of the spring v' , we preferably employ a gear w' , Figs. 2 and 3, close to the side wall of the holder, engaging the teeth of a pinion b^2 on the roller o' . The shaft a^2 of the gear passes through to the outside of the holder, where it is provided with a crank or handle s' , Figs. 3 and 4. A circular plate t' is preferably employed on the outside of the holder for the handle s' , and stops $u' u'$ for the handle are provided. By turning the handle in the direction of the associated arrow from its position shown in full lines to that shown in dotted lines—that is to say, from one stop u' to the other—the rolling shutter will be brought to fully cover the opening e . Turning the handle back to its first position, the opening will be uncovered, the spring-actuated roller l' automatically drawing the shutter away from said opening. The stops $u' u'$, like the stops $u u$, for the handle s of the discharger, consist, in part, of depressions or holes, as shown, into which a projecting portion of the handle enters. Both handles are thus held by positive means in either one of their assumed positions. Instead of the long roller r' for the bands, two short rollers of the width of the band may be used, one for each band.

The opening v of the receiver B may be closed with an ordinary slide d^2 , Fig. 2, or by a rolling shutter, as shown for the holder A, as may be desired.

The backs b for the films are preferably formed with a thumb-notch c^2 , Fig. 3, so that the film may be more easily caught by the thumb and finger to draw it out from under the clips c .

The lens is focused upon the film next the stops f in the holder, and as soon as one film is exposed and discharged into the receiver another film is pushed forward in the focus by the spring-pressed follower g .

Fig. 11 shows a modification in the form and manner of operating the stops f and the discharging mechanism. In this construction the pivot-bars l are without the holders and connected by a single side bar k . The stops are joined to the pivot-bars and move endwise in the act of holding or discharging a film. In this form the notches n in the film-backs are differently arranged, as shown, to

be adapted to this construction of stops, but two of the latter acting at the same time to hold the back.

Fig. 10 shows a form of back in which, instead of notches n , corresponding projections d^2 are provided at the edges of the back to be engaged by the stops f . Practically these operate the same as the notches, for the same motions of the stops cause them to be presented to portions of the back (to the projections d^2) when in one position and when shifted to spaces at the edges of the backs. In either case the stops when shifted move from positions in front of parts of the back to positions in which they do not oppose any part of the back.

It will be understood that the guides d , instead of being secured within the holder, as shown, may be secured in corresponding positions to the back piece h , and the pile of mounted films placed within them previous to being inserted in the body of the holder.

We are aware that a "series of photographic plate-holders provided with notches, in combination with a locking and releasing device adapted to co-operate with said notches," is not broadly new with us.

I claim—

1. In combination with a holder adapted to receive a number of plates on edge, guides or bearings d , adapted to support the plates on all their edges, whereby the plates are prevented from moving upon one another.

2. In combination with a holder adapted to hold a number of plates, guides or bearings d , supporting the plates by their edges, and a receiver B, provided with guides b' , adapted to support the exposed plates by their edges.

3. In combination with a holder having an exposure-opening, a flexible shutter moving across the opening, and a spring-actuated roller, to which the shutter is secured, arranged, substantially as shown, to hold the curtain normally away from the opening.

4. In combination with a holder having an exposure-opening, a flexible shutter, a spring-actuated roller to which the shutter is secured, roller o' , bands n' , connected to the roller and shutter, a shaft a^2 , geared to the roller o' , an arm s' , secured to the shaft a^2 , and stops $u' u'$ to hold the shutter against movement.

5. In combination with the holder A, having a discharge-opening e , a receiver B, provided with a corresponding opening v , a series of plates mounted loosely in the holder A face to face, means for urging the plates forward through the openings $e v$, and a stop mechanism, substantially such as shown and described, to release the plates one by one and to permit them to pass from the holder into the receiver without moving their surfaces over one another.

6. In combination with the holder A, having a discharge-opening e , guides d , arranged on a level with the opening, a series of plates resting upon the guides, a stop mechanism adapted to hold the plates and to release them

one at a time, and means for forcing the released plate out through the opening *e* without raising the plate, all substantially as shown.

5 7. In combination with a holder A, two reciprocating bars, a series of plates or films adapted to be engaged on opposite edges by the bars, substantially in the manner described, and means for imparting motion in
10 opposite direction to the bars.

8. In combination with a holder A, two reciprocating bars *k k*, provided with tongues *f f*, a series of plates having notches *n n* in the edges adjacent to the bars, and means for
15 reciprocating the bars.

9. In combination with a holder, a series of plates or films notched or provided with tongues, the notches or tongues of alternate plates corresponding in position, and a stop
20 mechanism constructed and arranged substantially as shown and described, whereby the release of one plate places the stop mechanism in position to hold the next.

10. In combination with a holder A, the
25 bars *k k*, provided with tongues *f f*, plates *a a*, alternately provided with notches in alignment with the tongues, levers *l l*, connecting the bars *k k*, a handle or arm *s* for actuating the bars, and stops *u u* for locking the bars
30 against movement.

11. In combination with a holder adapted to receive a number of plates, means for releasing the plates one by one, and an indicator arranged to be automatically operated
35 by the discharge of each of the plates, all substantially as shown and described.

12. In combination with a holder adapted to receive a number of plates, means for releasing the plates one at a time, a follower,
40 and an indicator graduated to correspond with the number of plates and actuated by the follower, all substantially as shown and described.

13. In combination with a holder A, pro-

vided with a series of plates, and means for releasing them one at a time, the indicator-shaft *f'*, provided with a pointer *c'* to work over a scale and provided also with a pinion *e'*, the pivoted rack-bar *d'*, and a follower
50 serving to actuate the rack-bar.

14. A series of photograph plates or films placed side by side within an inclosing holder, the latter having an open side for the plates or films to pass out thereat, and movable stops to hold said plates or films within the
55 holder, in combination with an automatic indicator to record the discharging of plates or films from the holder.

15. A series of mounted photographic films placed side by side in an inclosing holder, the
60 backs of the films being made after two different forms, the films having the differently-formed backs being alternated within said holder, for the purpose set forth.

16. A series of independent sensitized photographic films mounted upon opaque backs and placed within an inclosing holder, the
65 backs having the edges made irregular or uneven after two different patterns, the differently-formed backs with their mounted films
70 being placed alternately within the said inclosing holder, substantially as described.

17. A series of photographic films mounted independently upon separate backs within
75 an inclosing holder, the backs having their edges formed after two different patterns and arranged alternately within said holder, in combination with shiftable stops formed to correspond with the two different forms of
80 backs.

In witness whereof we have hereunto set our hands, this 4th day of January, 1890, in the presence of two subscribing witnesses.

EDGAR E. ELLIS.

AUGUST L. LEHNKERING.

Witnesses:

E. B. WHITMORE,

M. L. McDERMOTT.