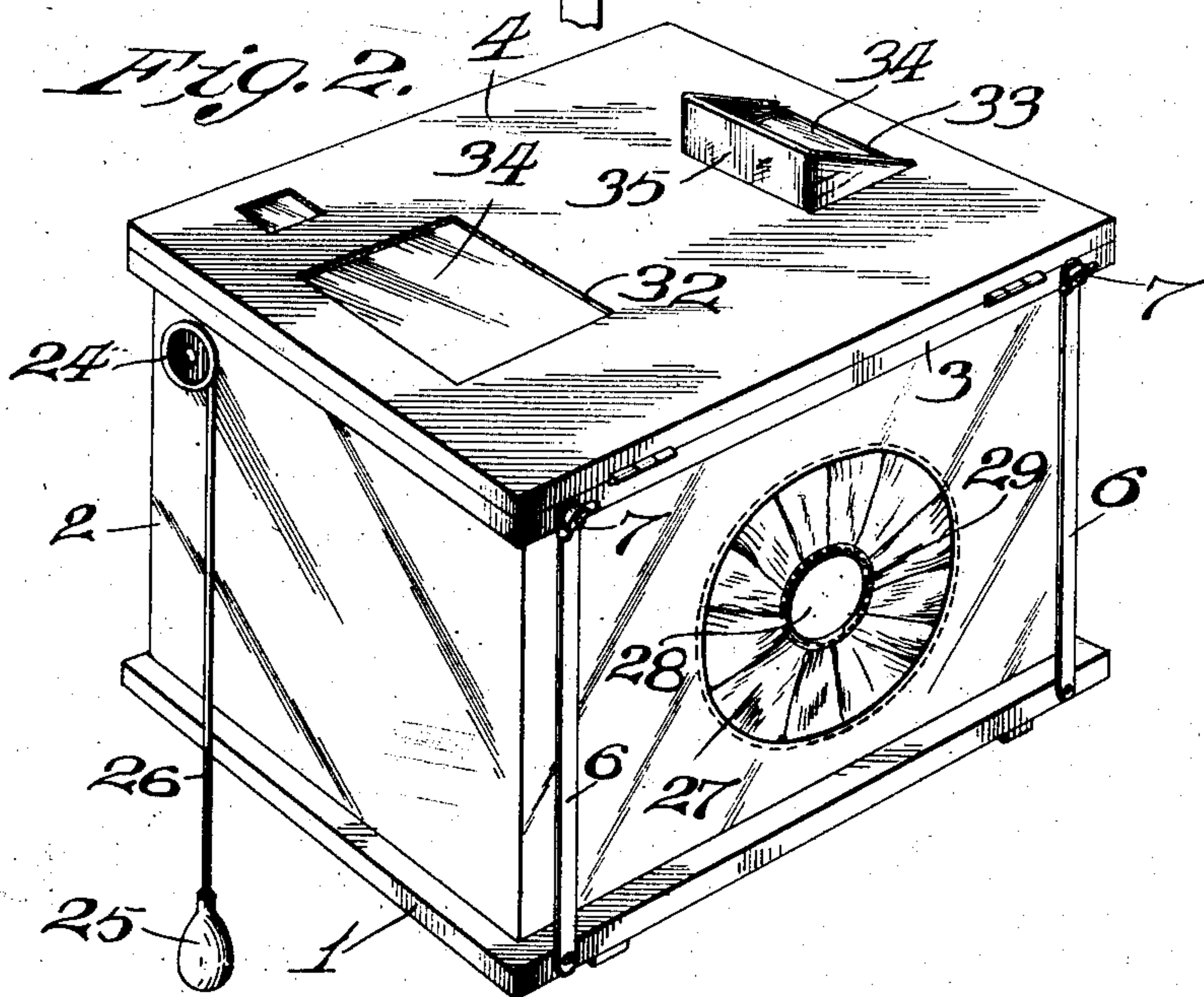
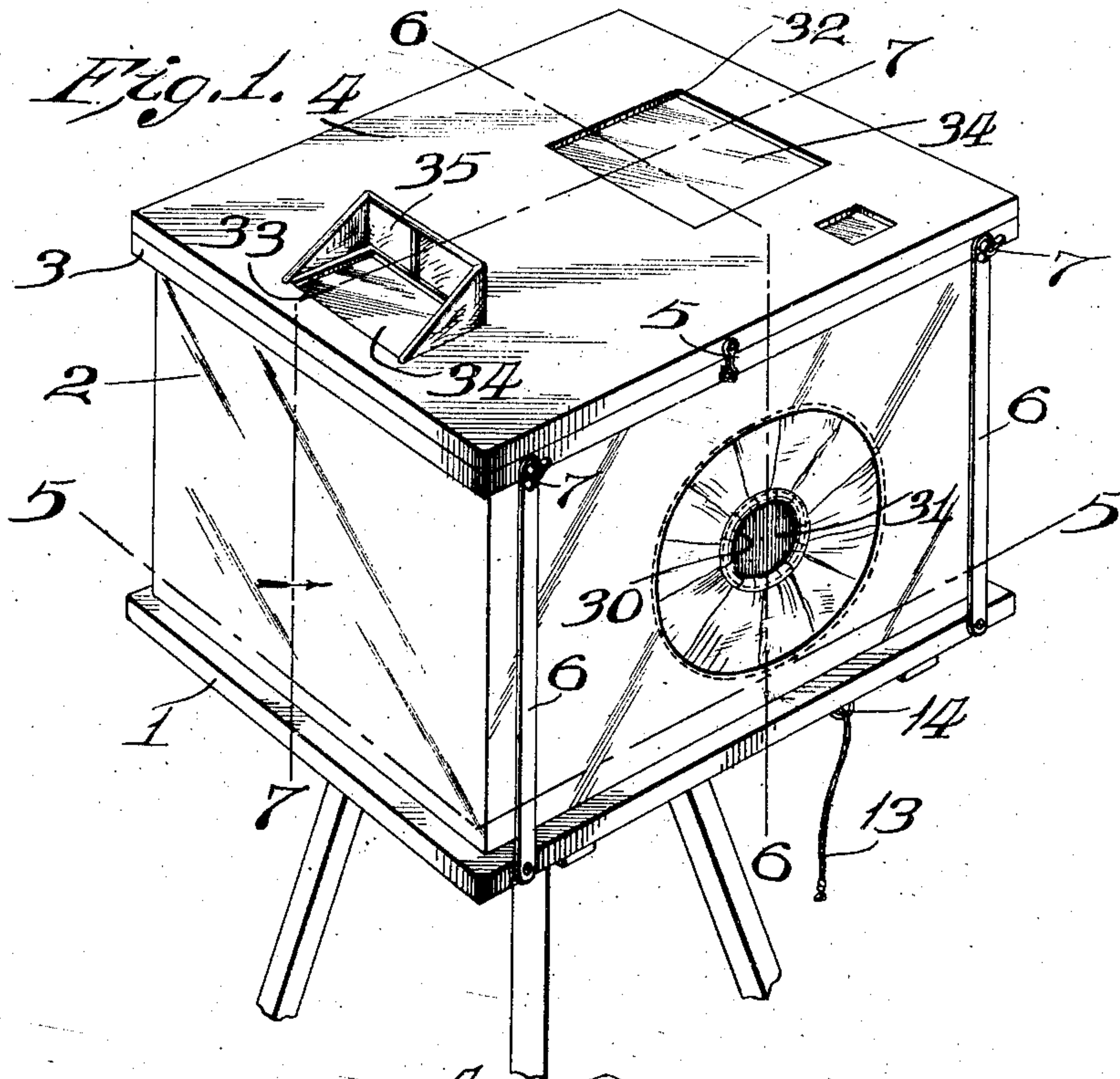


J. B. WILLYERD.
 COMBINED PORTABLE PHOTOGRAPHIC APPARATUS AND DARK ROOM.
 APPLICATION FILED MAY 23, 1908.

929,807.

Patented Aug. 3, 1909.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

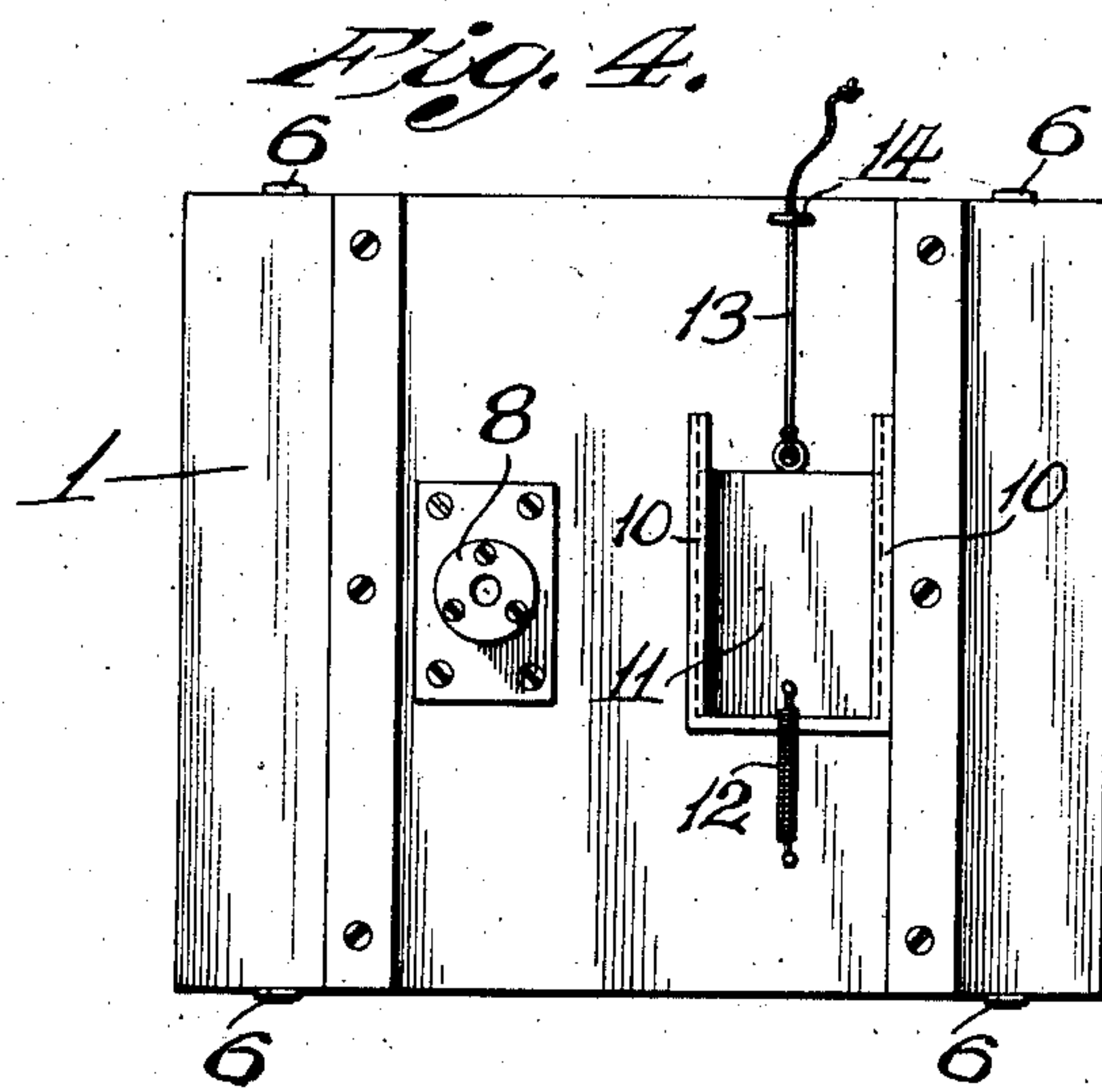
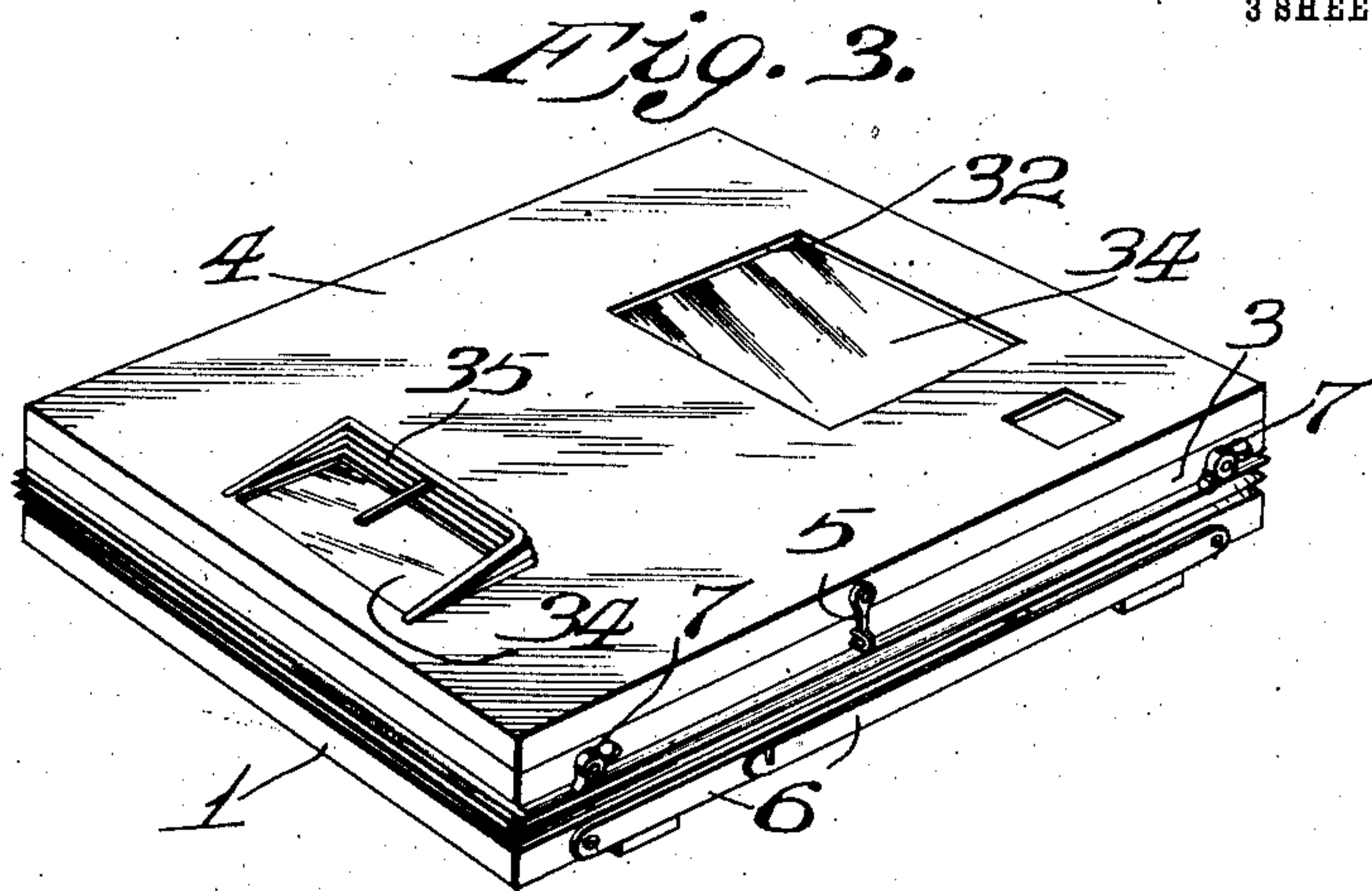
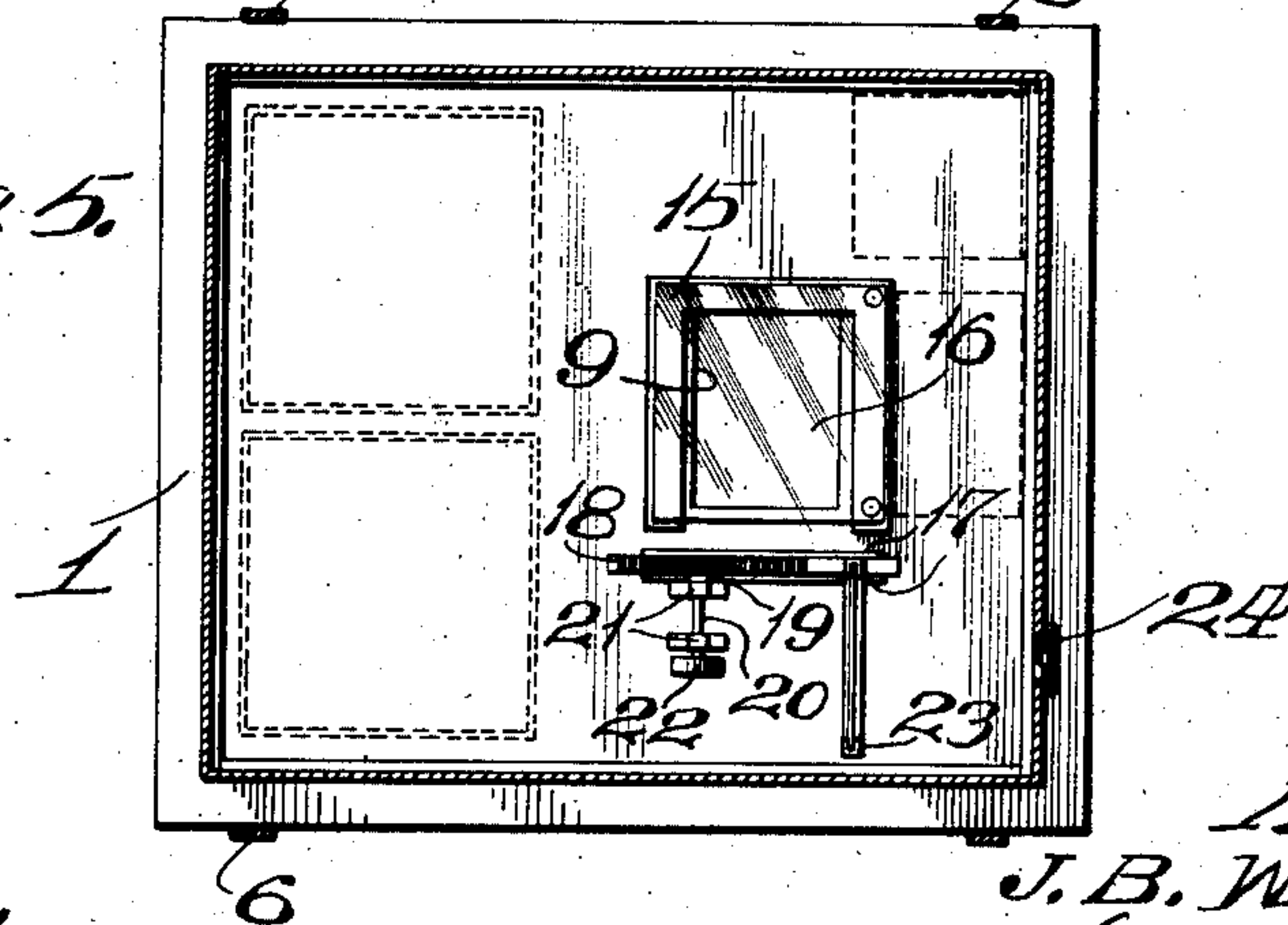


Fig. 5.



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Fig. 6.

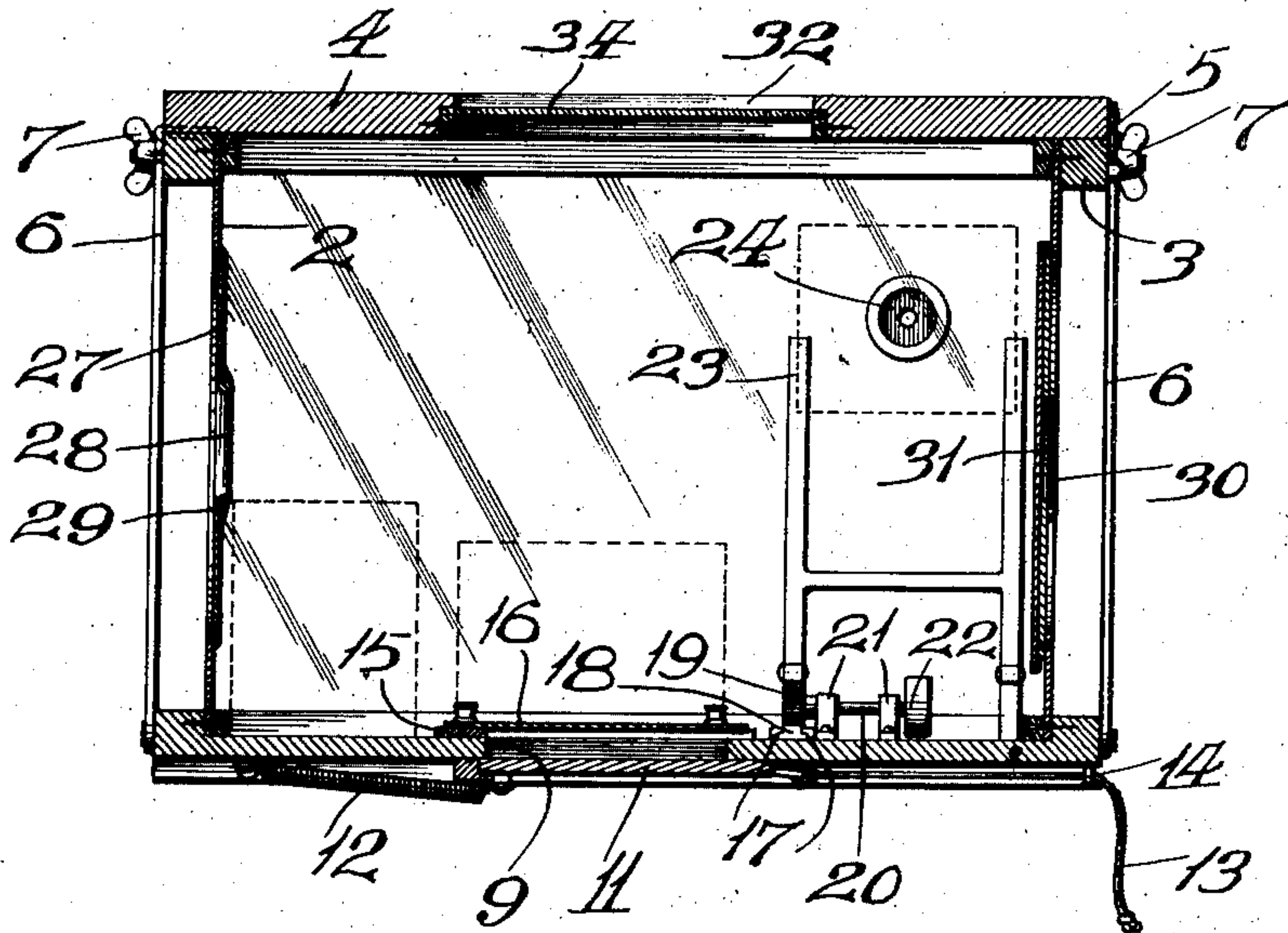
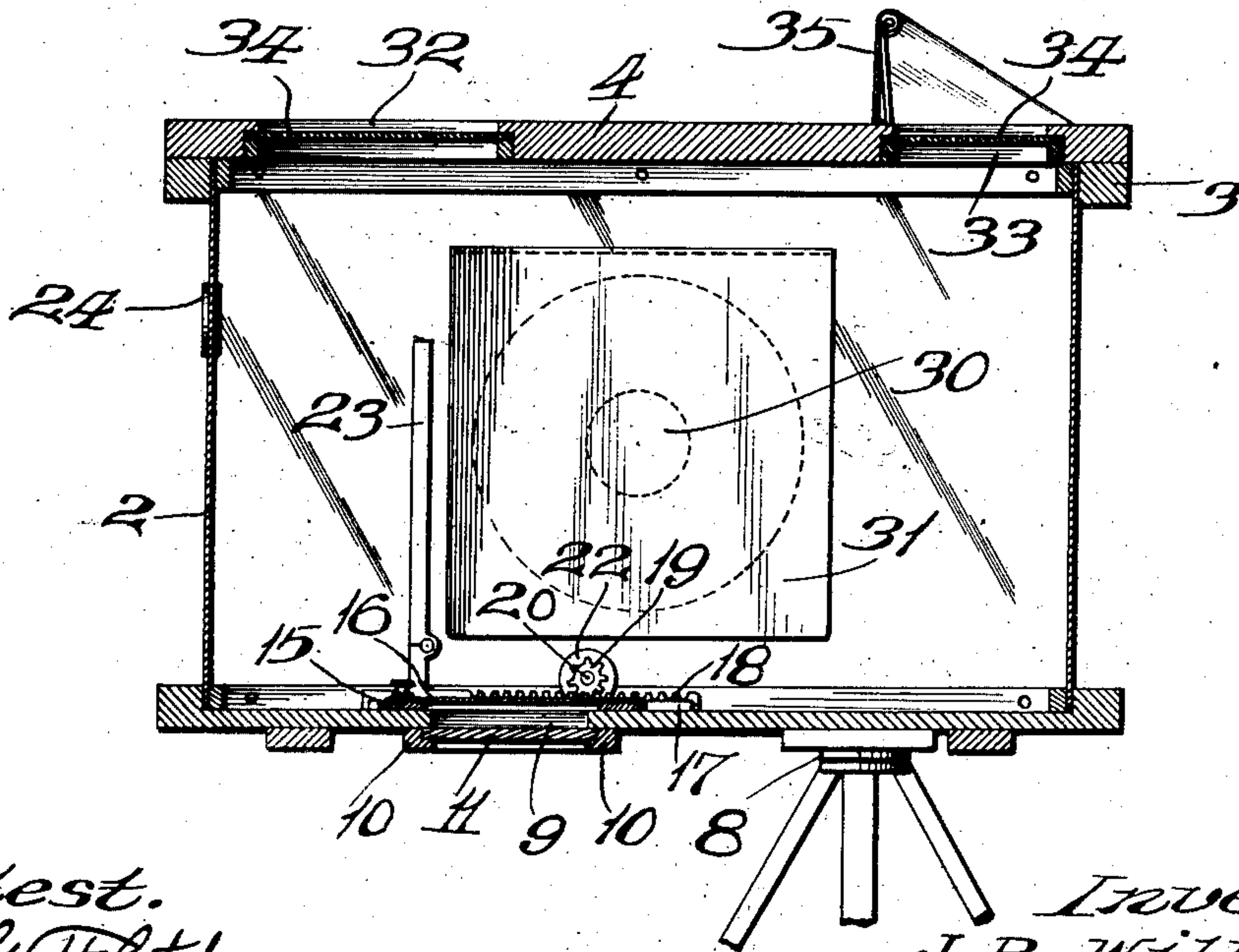


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN B. WILLYERD, OF ST. LOUIS, MISSOURI.

COMBINED PORTABLE PHOTOGRAPHIC APPARATUS AND DARK ROOM.

No. 929,807.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed May 23, 1908. Serial No. 434,562.

To all whom it may concern:

Be it known that I, JOHN B. WILLYERD, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in a Combined Portable Photographic Apparatus and Dark Room, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a portable photographic apparatus, particularly adapted for making negatives, developing and fixing the same, and then printing pictures from said negatives upon sensitized sheets or cards, which latter are subjected to the developing and fixing baths, and are then ready for delivery.

The principal object of my invention is to provide a simple, inexpensive apparatus, which is collapsible in order that it may be folded into a comparatively small area while being transported, or stored, and by means of which apparatus finished pictures can be rapidly and cheaply produced.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view of my improved apparatus, showing the rear and right hand sides thereof; Fig. 2 is a perspective view of the apparatus, showing the left and front sides thereof; Fig. 3 is a perspective view of the apparatus, as it appears when collapsed and folded for transportation or storage; Fig. 4 is a view looking at the under side of the apparatus; Fig. 5 is a horizontal section taken on the line 5—5 of Fig. 1; Fig. 6 is a vertical section taken on the line 6—6 of Fig. 1; Fig. 7 is a vertical section taken on the line 7—7 of Fig. 1.

Referring by numerals to the accompanying drawings:—1 designates the bottom board or table of the apparatus, to which is fixed in any suitable manner the lower edge of a vertically disposed rectangular wall 2, of closely woven fabric, or rubber, or analogous flexible material, which is impervious to light; and the upper edge of this wall is fixed to a rectangular frame 3, to one of the side rails of which is hinged a top board, or cover,

4, the free edge of which is held to the frame 3 by a hook 5.

Pivotally connected to the corners of the bottom board 1 are rods 6, the upper ends of which are engaged by screws 7, carried by the frame 3, thus providing means for holding the apparatus in an unfolded, or open, condition while in use; and, when the apparatus is folded for storage or transportation, these rods 6 swing downward and lie against one another along the side edges of the bottom board 1, as shown in Fig. 3.

Fixed to the under side of the bottom board 1 is a socket 8, which provides means whereby the apparatus may be mounted on a tripod, or like support; and formed in said bottom board, in front of this socket 8, is a rectangular opening 9, at the sides of which, on the under side of said board 1, are arranged cleats 10, between which is adapted to slide a rectangular plate 11, which normally closes the opening 9; and secured to the forward end of this plate 11 is one end of a retractile coil spring 12, the opposite end of which is secured to the board 1, in front of the opening 9. A cord 13 is secured to the rear end of the plate 11, and passes through a screw eye 14 fixed in the board 1 adjacent the right hand edge thereof.

Fixed on top of the bottom board 1 and inclosing the opening 9 is a rectangular frame 15, to one side of which is fixed in any suitable manner the edge of a rectangular sheet 16, of celluloid, or analogous transparent, flexible material.

Located on the board 1, immediately to the right of the opening 9, is a pair of guides 17, and arranged to slide between said guides is a rack bar 18, with which meshes a pinion 19 mounted on the end of a shaft 20 rotating in bearings 21; and fixed on the end of said shaft 20, opposite the pinion 19, is a disk 22, which is adapted to be manually engaged when it is desired to rotate the pinion 19 and shift the rack bar 18.

Hinged to the forward end of the rack bar 18 is a U-shaped frame 23, the upright members of which are grooved on their inner edges so as to receive and hold a photographic plate.

Arranged in any suitable manner in the flexible wall 2, and at such a point as to be directly in front of the plate positioned in the frame 23, is a combined photographic lens

and shutter 24, which shutter is operated in any suitable manner, preferably by means of a bulb 25 arranged on the end of a flexible tube 26 leading to the end of the shutter operating mechanism.

Arranged in the left hand portion of the wall 2 is a circular section 27, of flexible, elastic material, which is gathered, or arranged in folds; and formed in the center of this section is an opening 28, around the edge of which is arranged an elastic binding 29, which is adapted to fit snugly around the wrist of the operator of the apparatus while said apparatus is in use, and which binding normally draws the inner edge of the material 27 together so as to exclude light from the interior of the apparatus. A corresponding opening 30 is formed in the right hand portion of the wall 2, and secured to the inside of this right hand portion of the wall is the upper edge of a rectangular flap 31, which normally closes said opening 30; and which flap will readily move to one side when the hand of the operator is inserted through the opening 30.

Openings 32 and 33 are formed in the top 4, and in these openings are arranged sections 34, of red glass; and located immediately in front of the opening 33 is a hood, or shield 35, which is arranged to fold downward onto the top of the cover 4, as shown in Fig. 3, when the apparatus is folded and not in use. These openings, provided with the sections of red glass, permit the operator to readily observe the developing and printing operations, which take place on the interior of the apparatus.

An apparatus of my improved construction is prepared for use by arranging the body in an open position, as seen in Figs. 1 and 2, and by arranging a supply of sensitized plates and sensitized sheets or cards within the apparatus; and providing a pair of trays, which are located on the rear portion of the bottom board, or table 1; and one of which trays contains a photographic developer, and the other tray a fixing solution.

In the use of the apparatus, the operator passes the right hand through the opening 30, forces the flap 31 to one side, and places one of the sensitized plates in the U-shaped holder 23. The disk 22 is now manipulated to move the rack 18 backward or forward to obtain the proper focus, and the shutter of the combined lens and shutter is now opened to make the exposure. After this action has been accomplished, the exposed plate is removed from the frame 23 and placed in the tray containing the liquid developer; and when said plate has been properly developed, it is placed in the tray containing the fixing solution.

The operations incident to the developing and fixing of the plate can readily be observed by the operator through the openings

32 and 33, provided with the section 34 of red glass; and after the plate has been removed from the fixing bath and is dry, said plate is positioned immediately over the opening 9 inside the frame 15. The celluloid sheet 16 is now folded down onto the negative, and the sensitized card or sheet of paper is now placed directly on top of said celluloid sheet; and with the left hand pressing firmly on the sensitized sheet or card, the cord 13 is pulled outward with the right hand to move the plate 11 laterally beneath the bottom 1, thus permitting light to pass through the opening 9, thus making a positive print upon the sensitized sheet or card. After this operation is completed, the sheet or card is first subjected to the developing bath, then the fixing bath, after which said sheet or card is dried and the same is ready for delivery.

An apparatus of my improved construction is simple, inexpensive, can be readily folded for transportation or storage, is easily and quickly set up for use, and by its use photographic prints are easily, quickly, and cheaply produced.

I claim:—

1. In an apparatus of the class described, a solid bottom board, a solid cover, a collapsible wall connected to the bottom board and to the cover, there being normally closed apertures formed in the sides of the flexible wall, there being an opening formed in the bottom board, a section of transparent material located on top of the bottom board over said opening; and a sliding plate normally closing said opening, which sliding plate controls the admission of the rays of light through the opening in the bottom board and is utilized in printing pictures from a negative located over the opening.

2. In an apparatus of the class described, a bottom board, a solid cover, a collapsible wall connecting the bottom board and the cover, there being normally closed apertures formed in the sides of the flexible wall, a combined photographic lens and shutter arranged in the front side of the flexible wall, an adjustable plate holder arranged on the bottom board opposite the combined lens and shutter, and means arranged on the bottom board whereby a sensitized card and negative are exposed to the light in order to reproduce the picture on the negative.

3. In an apparatus of the class described, a bottom board, a solid cover, a collapsible wall connecting the bottom board and the cover, there being normally closed apertures formed in the sides of the flexible wall, a combined photographic lens and shutter arranged in the front side of the flexible wall, an adjustable plate holder arranged on the bottom board opposite the combined lens and shutter, there being an opening formed in the bottom board, a section of transparent

material located on top of the bottom board over said opening; and a sliding plate normally closing said opening, which sliding plate controls the admission of the rays of light through the opening in the bottom board and is utilized in printing pictures from a negative located over the opening.

4. In an apparatus of the class described, a bottom board, a rectangular frame, a collapsible wall connecting the bottom board and frame, a cover hinged to one side of the frame, there being normally closed apertures formed in the sides of the flexible wall, and means arranged on the bottom board and in the front portion of the flexible wall whereby a sensitized photographic plate may be exposed.

5. In an apparatus of the class described, a bottom board, a rectangular frame, a collapsible wall connecting the bottom board and frame, a cover hinged to one side of the frame, there being normally closed apertures formed in the sides of the flexible wall, means arranged on the bottom board and in the front portion of the flexible wall whereby a sensitized photographic plate may be exposed, there being an opening formed in the bottom board, and a sliding plate normally closing said opening.

6. In an apparatus of the class described, a bottom board, a cover, a collapsible wall connecting the bottom board and the cover, there being normally closed apertures formed in the sides of the flexible wall, and means arranged on the bottom board and in the front portion of the flexible wall whereby a sensitized photographic plate may be exposed.

7. In an apparatus of the class described, a bottom board, a cover, a collapsible wall connecting the bottom board and the cover,

there being normally closed apertures formed in the sides of the flexible wall, means arranged on the bottom board and in the front portion of the flexible wall whereby a sensitized photographic plate may be exposed, there being openings formed in the cover, and sections of transparent material arranged in said openings.

8. In an apparatus of the class described, a bottom board, a cover, a collapsible wall connecting the bottom board and the cover, there being normally closed apertures formed in the sides of the flexible wall, means arranged on the bottom board and in the front portion of the flexible wall whereby a sensitized photographic plate may be exposed, there being openings formed in the cover, sections of transparent material arranged in said openings, there being an opening formed in the bottom board, and a sliding plate normally closing said opening.

9. In an apparatus of the class described, a bottom board, a cover, a collapsible wall connecting the bottom board and the cover, there being an opening formed in the bottom board, a section of transparent material located on top of the bottom board over said opening, and a sliding plate normally closing said opening, which sliding plate controls the admission of the rays of light through the opening in the bottom board and is utilized in printing pictures from a negative located over the opening.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

JOHN B. WILLYERD.

Witnesses:

M. P. SMITH,
E. L. WALLACE.