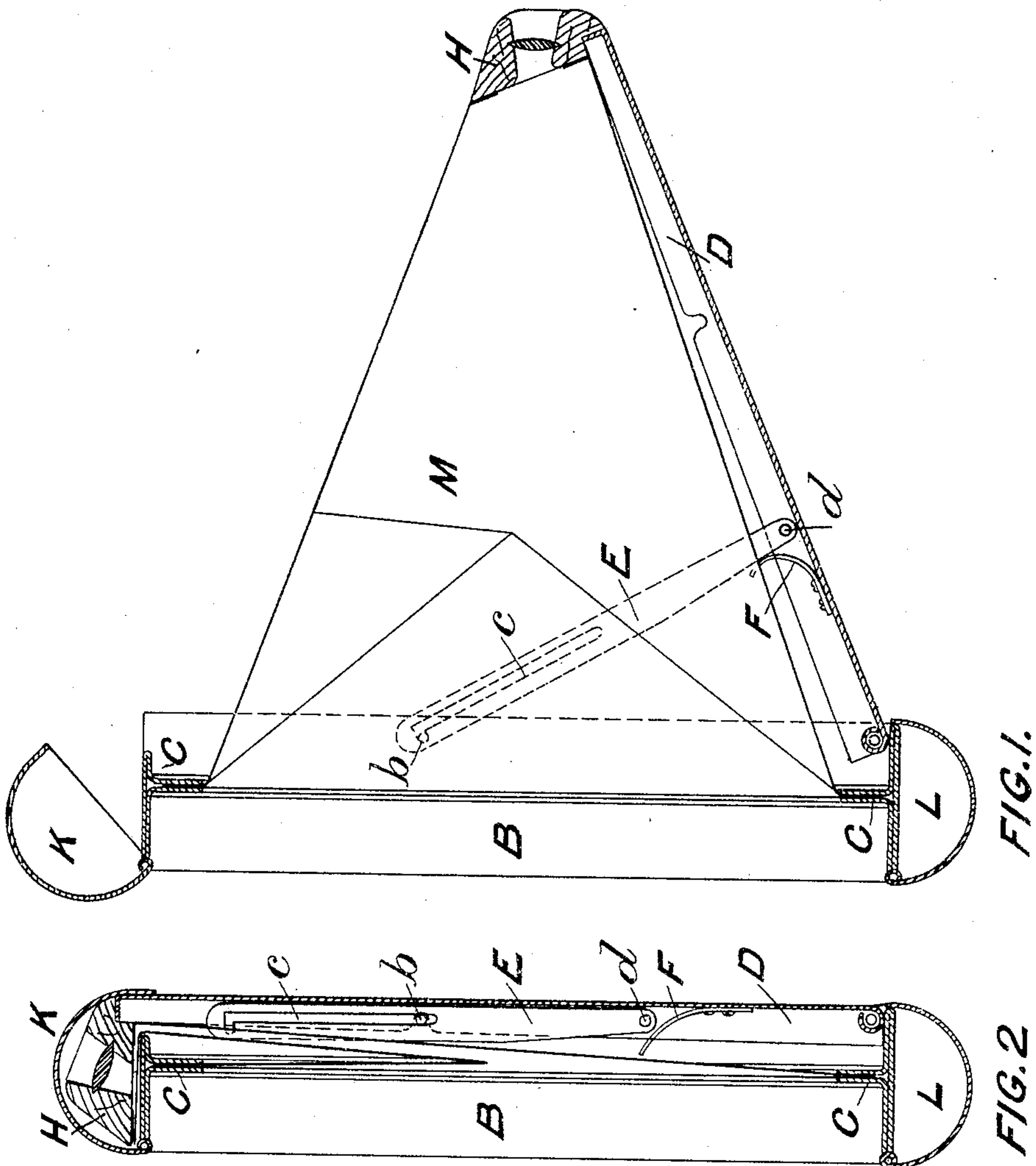


No. 785,239.

PATENTED MAR. 21, 1905.

J. E. THORNTON.
PHOTOGRAPHIC CAMERA.
APPLICATION FILED SEPT. 15, 1902.

4 SHEETS—SHEET 1.



WITNESSES.

Joseph Bates.
E. Howard.

INVENTOR.

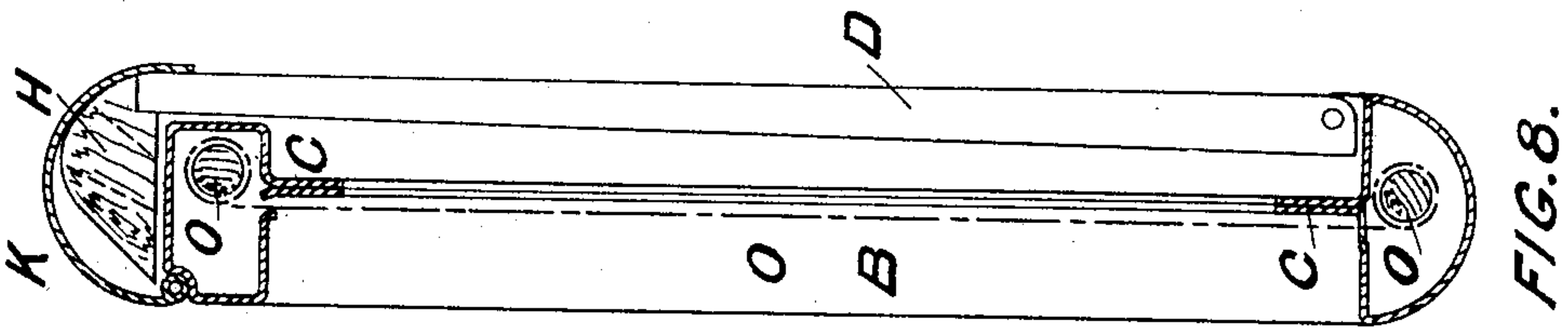
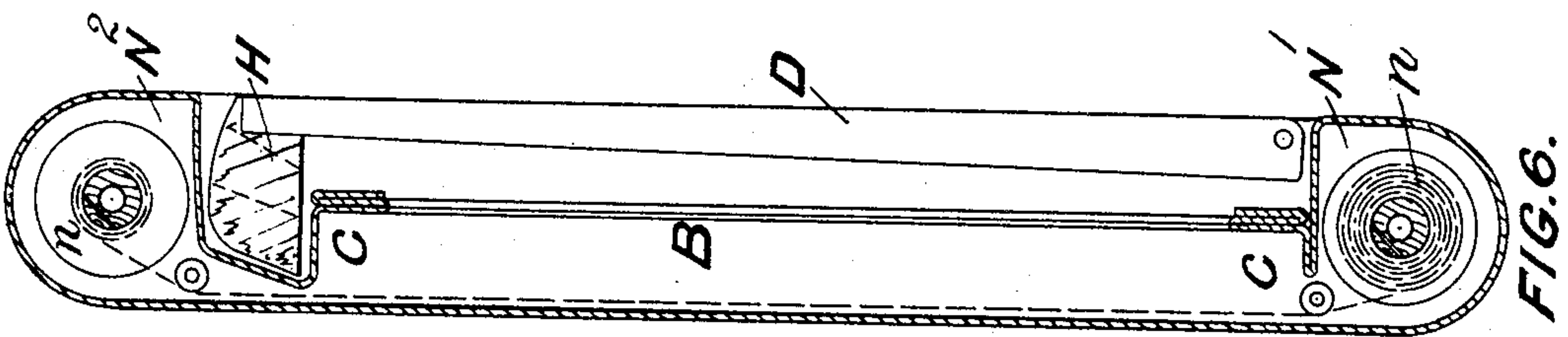
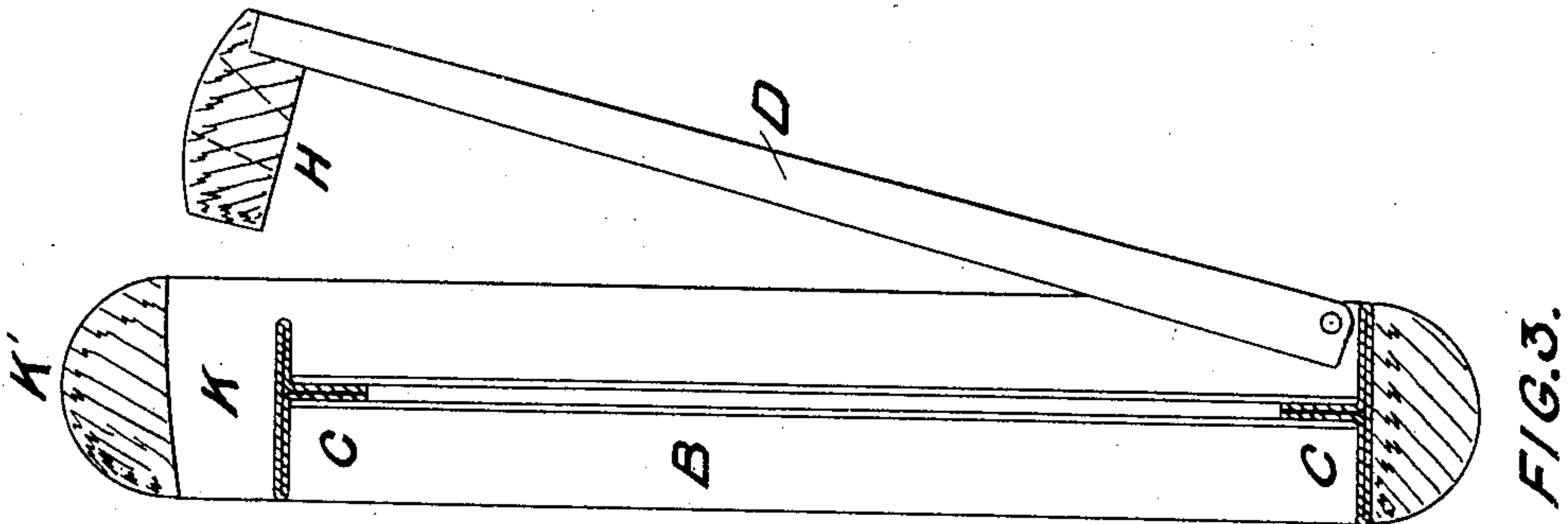
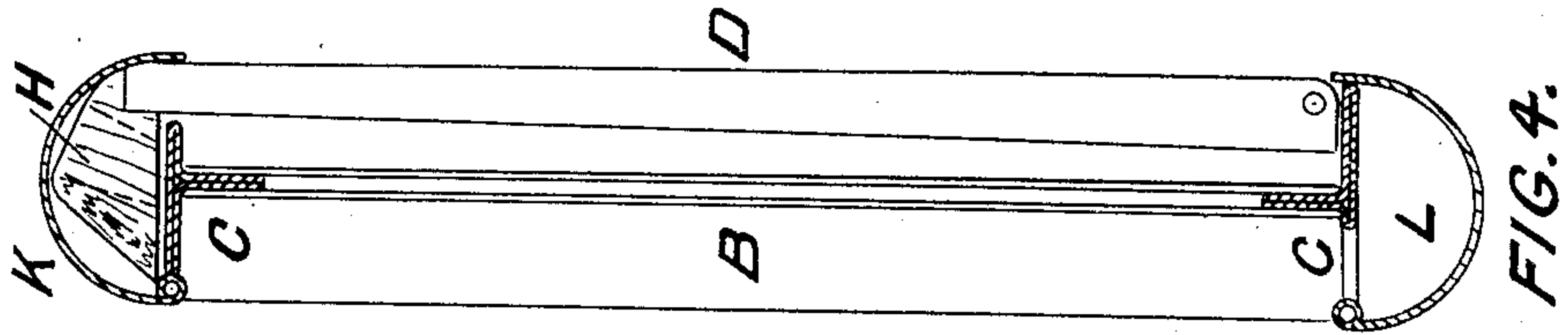
J. E. Thornton
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att'y

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PHOTOGRAPHIC CAMERA.
APPLICATION FILED SEPT. 15, 1902.

4 SHEETS—SHEET 2.



WITNESSES.

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No. 785,239.

PATENTED MAR. 21, 1905.

J. E. THORNTON.
PHOTOGRAPHIC CAMERA.
APPLICATION FILED SEPT. 15, 1902.

4 SHEETS—SHEET 3.

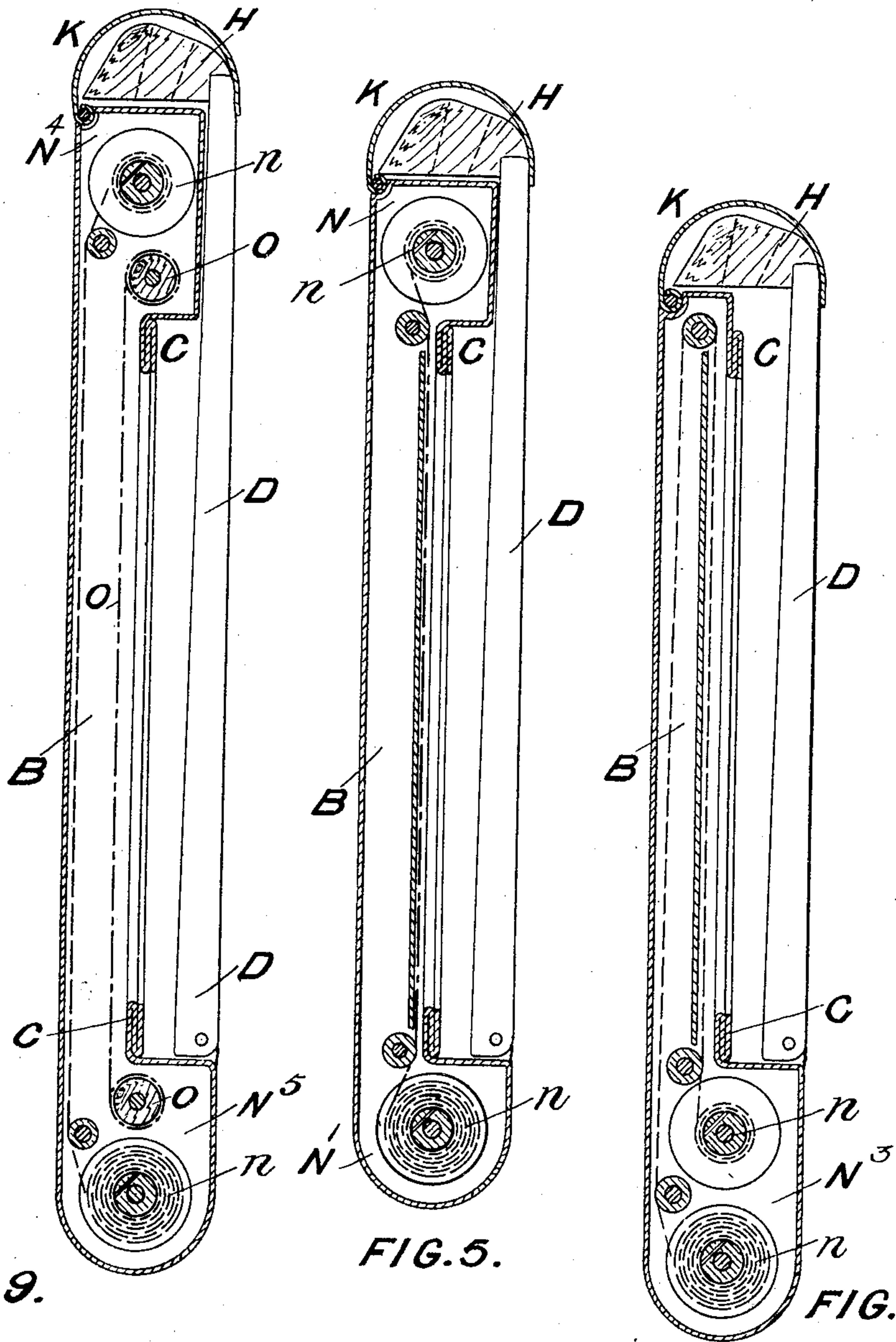


FIG. 9.

FIG. 5.

FIG. 7.

WITNESSES.

Joseph Bates.
E. Howard.

INVENTOR.

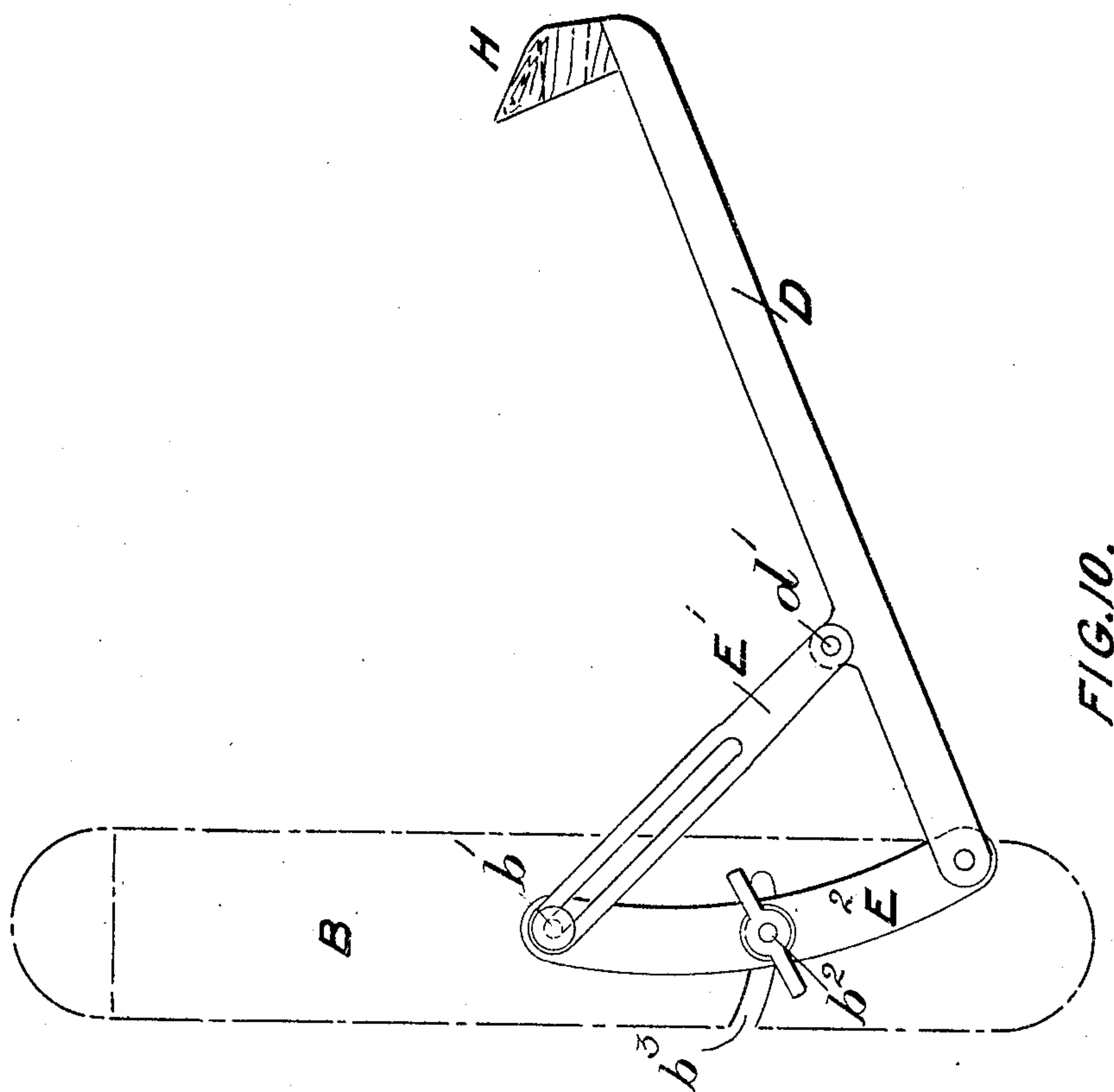
J. E. Thornton
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No. 785,239.

PATENTED MAR. 21, 1905.

J. E. THORNTON.
PHOTOGRAPHIC CAMERA.
APPLICATION FILED SEPT. 16, 1902.

4 SHEETS—SHEET 4.



WITNESSES.

Joseph Bates.
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INVENTOR.

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att'y.

UNITED STATES PATENT OFFICE.

JOHN E. THORNTON, OF ALTRINCHAM, ENGLAND, ASSIGNOR TO JOHN
OWDEN O'BRIEN, OF MANCHESTER, ENGLAND.

PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 785,239, dated March 21, 1905.

Application filed September 15, 1902. Serial No. 123,529.

To all whom it may concern:

Be it known that I, JOHN EDWARD THORNTON, a British subject, and a resident of Altrincham, in the county of Chester, England, have invented certain new and useful Improvements in Photographic Cameras, of which the following is a specification.

This invention relates to that form or type of folding pocket-camera in which the bellows is constructed with a single central fold and the optical system when the camera is folded lies outside the top edge of the body. Several cameras of this type have recently been invented; but they one and all have the disadvantage that they do not look so neat as cameras of other folding types, owing to their square corners, position of the optical system when folded, the fact that it is then outside and unprotected, and, finally, because of the design and construction of the folding connections, owing to which the stretchers that are used to distend the bellows and retain the optical system in position when in use are necessarily rigidly attached to the front or optical chamber and are slotted at their back end, the said slot moving (in the act of folding) over a pin fixed to the outside of the body, and are therefore of necessity placed outside the camera in a position that gives it a very clumsy and unfinished appearance. My improvements are designed to overcome these objections, and in carrying them out I dispense entirely with the details of the folding parts hitherto used and adopt a special design and construction.

The invention will be fully described with reference to the accompanying drawings.

Figure 1 is a longitudinal sectional elevation of the camera with parts extended; Fig. 2, a similar section with the parts folded; Fig. 3, a section showing a modified arrangement for protecting the optical system when folded; Fig. 4, a section showing modified construction to permit of withdrawal at the bottom of the tabs of a film-pack or the slide of a plate-holder; Fig. 5, a section showing a modified construction providing for a film-roll and chambers, top and bottom, to contain the

film-spools; Fig. 6, a section showing a modified construction similar to Fig. 3 for a film-roll, with two chambers to contain the film-spools; Fig. 7, a section showing a modified construction for a film-roll, with a chamber at one end for both film-spools; Fig. 8, a section showing a modified construction adapted to contain a blind-shutter; Fig. 9, a section showing a modified construction for a film-roll and blind-shutter; Fig. 10, a section showing a modified construction with swing-back.

The body B of the camera may be made of cardboard or sheet metal stamped or bent to the desired shape, or it may be made of wood or other material or partly of one and partly of another material. I at present prefer, however, to form the body B from sheet metal stamped from a single blank, with the bellows M clamped between internal flanges C.

The base-board D is hinged to the body B and is held in its extended position by one or more slotted stretchers E one at either side. The slotted stretcher E is at its lower end pivoted to the base-board D at *a*, and the slot *e* runs on a pin *b*, attached to the inside of the body-frame. The stretcher may be straight or curved and is held in position when the camera is extended by the spring F.

The length of the stretcher E is such that the base-board is retained at an angle of about sixty degrees instead of dropping down to an angle of ninety degrees, as in other cameras. In this position the stretchers E automatically lock and retain the base-board for use. A hinged strut may be attached to the base-board or to the camera-front to support the camera when resting upon a table or other horizontal surface.

The optical system of the camera (comprising the lens, shutter, diaphragms, focusing mechanism, and finders or such of these as are employed) is carried by a long box, tube, plate, or block H, affixed to the outer end of the base-board D. The optical carrier H is preferably rigidly attached, though it may be cradled in bearings, so that it may describe a rotary motion when opening or closing the camera or to serve the same purpose as a swing-

front. When desired to have adjustable focus, a focusing-lens is fixed in the optical tube.

The top and bottom ends of the camera-body are caused to have a rounded or semicircular appearance when the camera is closed, which is a convenience when carrying in the pocket and gives the camera a more elegant outward appearance than the square ends hitherto used. This rounding may be carried out in several ways, according to the particular style or pattern of camera required. The optical carrier H is also rounded.

The ends of the camera-body B are rounded by attaching thereto a semicylindrical tube, block of wood, or other material. I prefer to form the ends of metal pivoted to the body to form a cap K at one end to cover the optical carrier H when closed and a cap L at the other end to cover any apertures formed for the removal of the tabs of films or the slides of plate-holders. The caps K and L are hinged in any convenient way upon their hinges to render the opening and closing of the camera easy, or they may be swiveled automatically to allow the camera to be opened or closed.

In the construction shown in Figs. 1, 2, 3, and 4 the back of the camera-body B is arranged to take a film-pack of flat films or a plate-holder. In the construction shown in Fig. 3 instead of a cap K a block K' is fitted at the end of the camera with a recess k to receive and protect the optical carrier H when folded. In the construction shown in Fig. 5 the camera-body B is arranged with chambers N N', one at either end to carry film-rolls n , the film passing across from one roll to the other. In the construction shown in Fig. 6 the camera is also arranged with two chambers N² N', one at either end for the film-rolls, the top chamber N² being placed outside the optical carrier H when in the folded position. In the construction shown in Fig. 7 the camera is constructed with a single chamber N³ to hold the two film spools or rolls, the film passing over a roller at the opposite end and back again in front of the lens. In the construction shown in Fig. 8 the camera is constructed with a roller blind-shutter O and is arranged to take a flat film-pack or plate holder. In the construction shown in Fig. 9 the camera is constructed with a roller blind-shutter O and two chambers N⁴ N⁵ to carry the rolls of a roll-film. It is to be understood that either of the other constructions of camera illustrated may be arranged to also carry a roller blind-shutter, or the rolls and the optical carrier may all be placed at one end. By adopting one or other of these arrangements of the several parts it is possible to obtain base-boards of varying lengths, according to the particular focus of lens required for any particular size or style of camera. This is an important constructional feature which is not provided in any cameras of this type hitherto invented. Consequently the makers of such

cameras are limited in their choice of lenses by the size of the camera-body.

In the construction shown in Fig. 10 a swing-back can be obtained by cradling the body B relatively to the base-board D. The slotted stretcher E' is pivoted to the base-board at d' , and the body B is pivoted to the fork E² on the pin b' . The camera-body swings on the pivot b' and is clamped by a screw b^2 to the fork E², passing through a slot b^3 in the body.

What I claim as my invention, and desire to protect by Letters Patent, is—

1. A camera constructed with a body, a base-board pivoted thereto, an optical carrier attached to the base-board, a slotted stretcher pivoted to the base-board and by a pin to the body, folding inside the body, and a single-fold bellows attached to the optical carrier and to the body, substantially as described.

2. The combination with a camera-body and a single-fold bellows of a base-board pivoted to the body, and a slotted stretcher pivoted to the base-board, and to the body to fold inside the body, and of such a length to prevent the base-board being extended to an angle of ninety degrees, and allow it to be extended to an angle of sixty degrees relative to the body and be locked in that position, substantially as described.

3. The combination with a camera-body, a single-fold bellows and base-board hinged thereto, of an optical carrier attached to the extreme end of the base-board to fold outside the body, a slotted stretcher pivoted to the base-board and the body, a rounded end to one end of camera and a rounded cap at the other end to inclose and protect the optical carrier when in a closed position, substantially as described.

4. The combination with a camera-body, single-fold bellows and base-board hinged thereto, of an optical carrier attached to the extreme end of the base-board to fold outside the body, a slotted stretcher pivoted to the base-board and the body to fold inside, a cap to cover one end of the camera, a cap to cover the optical carrier, and chambers to contain the rolls of a roll-film, substantially as described.

5. The combination with a camera-body, single-fold bellows and base-board hinged thereto, of an optical carrier attached to the extreme end of the base-board to fold outside the body, a slotted stretcher pivoted to the base-board and the body to fold inside, a cap to cover one end of the camera, a cap to cover the optical carrier, and a blind-shutter, substantially as described.

6. The combination with a camera-body, single-fold bellows, and base-board hinged thereto, of an optical carrier attached to the extreme end of the base-board to fold outside the body, a slotted stretcher pivoted to the base-board and the body to fold inside, a cap to cover one end of the camera, a cap to cover

the optical carrier, and a blind-shutter and chambers for rollers of film-holders, substantially as described.

7. The combination with a camera-body,
5 single-fold bellows and base-board hinged thereto, of an optical carrier attached to the extreme end of the base-board to fold outside the body, a slotted stretcher pivoted to the base-board and the body to fold inside, a cap
10 to cover one end of the camera, a cap to cover

the optical carrier, and a pivoted fork pivoted to the body and to the base-board, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing 15 witnesses.

J. E. THORNTON.

Witnesses:

J. OWDEN O'BRIEN,

B. TATHAM WOODHEAD.