No. 702,358. Patented June 10, 1902.

A. D. DAVIS.

PHOTOGRAPHIC CAMERA.

(Application filed Apr. 13, 1901.)

(No Model.)

Fig. 1.

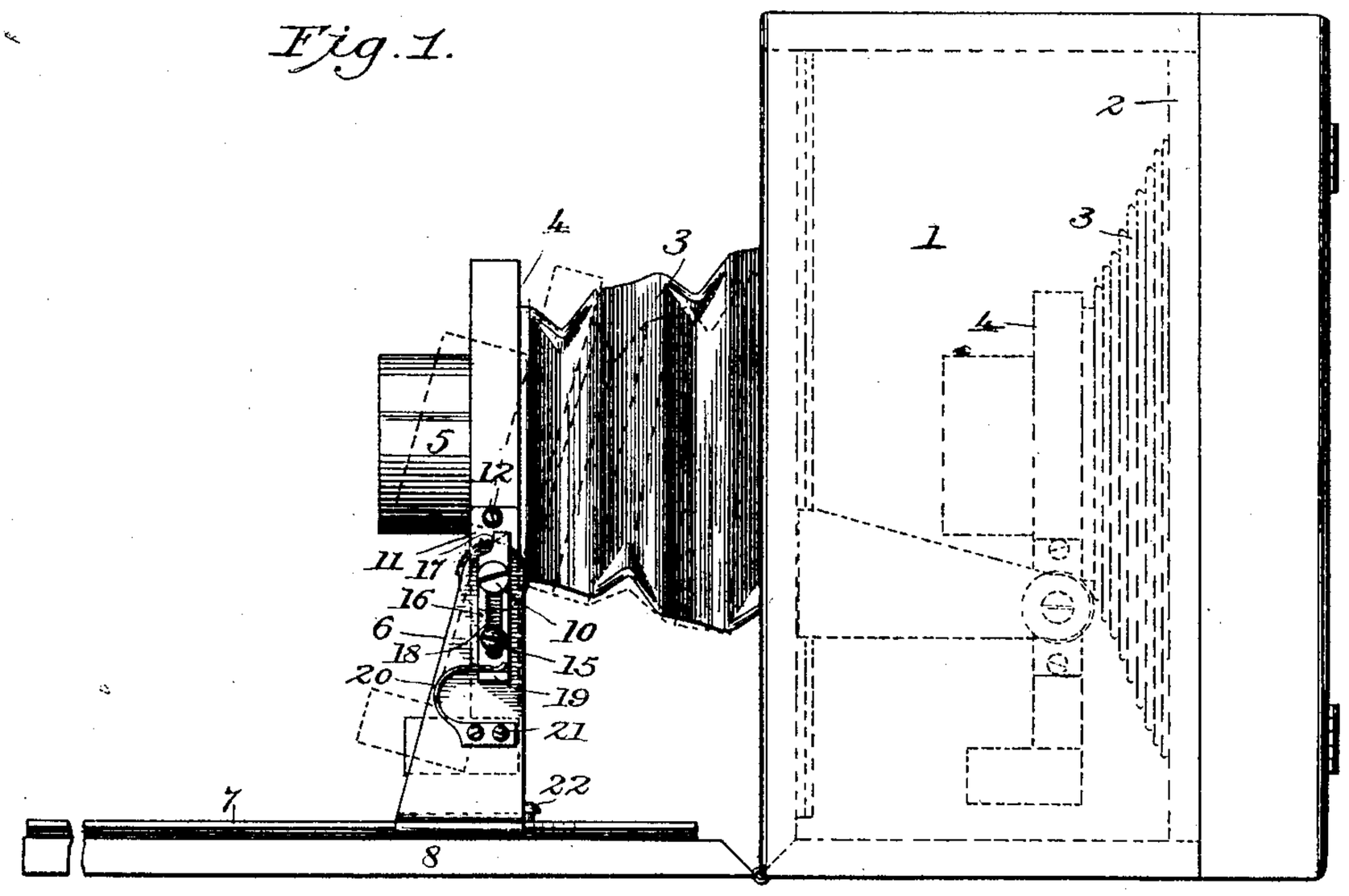


Fig. 2.

Fig. 3.

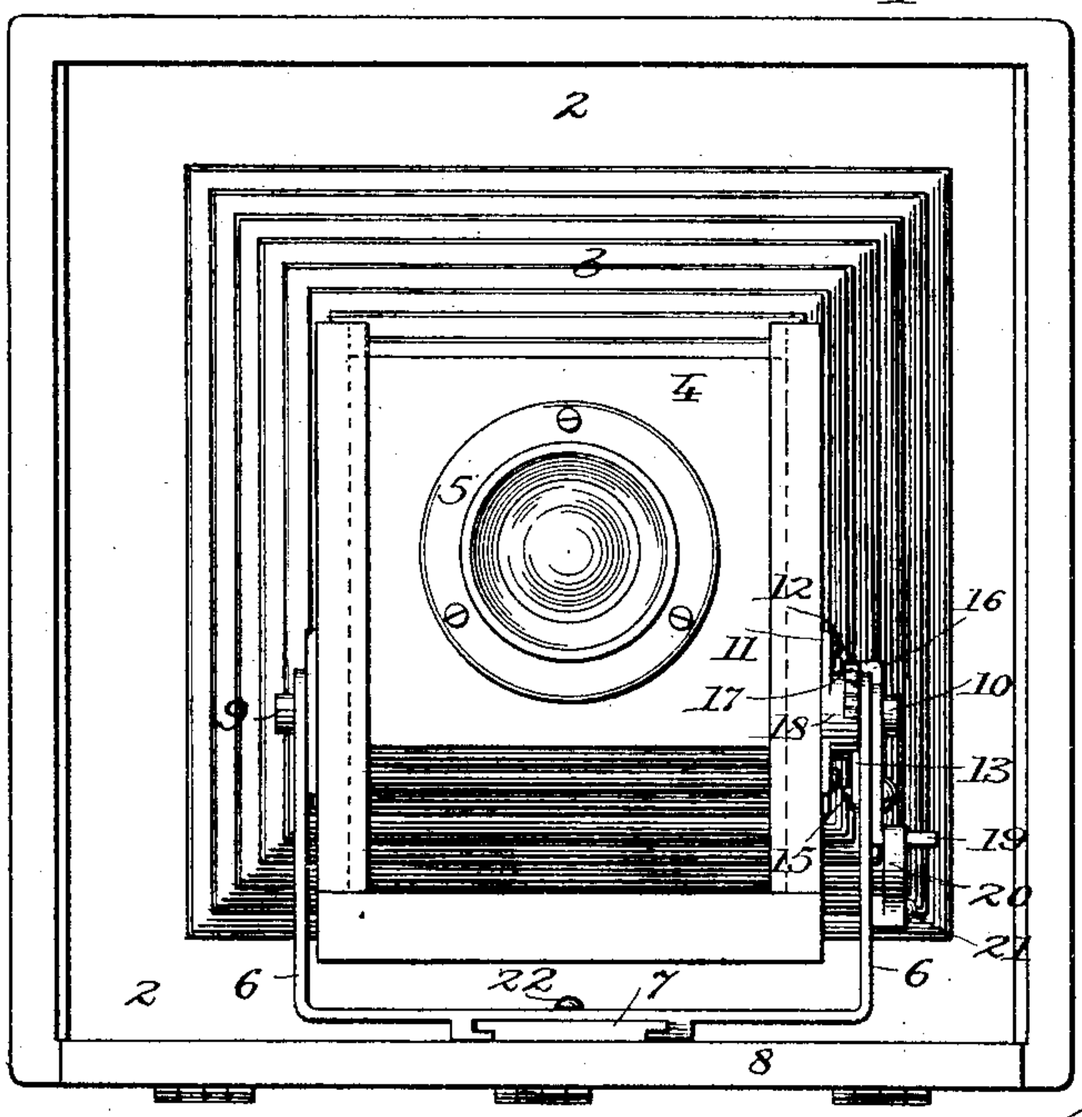
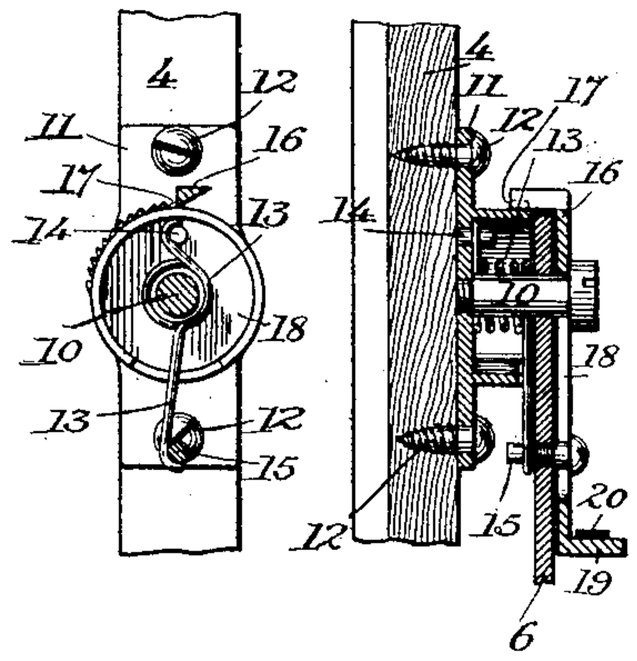


Fig. 4.



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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 702,358, dated June 10, 1902.

Application filed April 13, 1901. Serial No. 55,710. (No model.)

To all whom it may concern:

Be it known that I, ALBERT D. DAVIS, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Photographic Cameras; and I do 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 the figures of reference marked thereon, which form a part of this specification.

My invention relates to cameras, and is an improvement upon the camera for which United States Letters Patent No. 640,677, of January 2, 1900, were granted to F. W. Livermore as inventor and to myself as the assignee of an undivided one-half interest. In said patented invention the lid constitutes a lever for throwing forward the lens into position, and a stop and a brace are employed for maintaining the lens-frame in an upright position when the lens is thrown forward. Under my present invention I make use of a stop and a spring for maintaining the lens-frame in an upright position, whether vertical or inclined, in the forward position of the lens; and the invention consists, primarily, in a stop and a spring for said purpose.

It further consists in the construction and in the arrangement of parts to the accomplishment of the foregoing and such other objects as may hereinafter appear.

In the drawings, Figure 1 is a side elevation showing in full lines the lens-frame in its forward position with the lid lowered and in dotted lines the same parts in their closed position. Fig. 2 is a front view of Fig. 1. Fig. 3 is a detached view of the spring device used in connection with the lens-frame, and Fig. 4 is a vertical section through the same parts and one arm of the slide-bracket.

In the drawings the numeral 1 designates the box of the camera, which may be of any approved pattern, and within the box is placed the frame 2, to which is attached one end of the bellows 3, the other end thereof being attached to the lens-frame 4 and the lens-holder 5, all of which parts may be of any approved pattern, as may also the slide-bracket 6 and the guide-plate 7, said guide-plate being attached to the lid 8, hinged to the box of the camera, as shown. The lens-frame is connected with the upright members of the slide-bracket by means of pintles 9 and 10, so as to have a swinging movement thereon, said pintles projecting from the plates 11, attached by screws 12 or otherwise to the sides of the lens-frame.

As before mentioned, in the patent heretofore referred to a brace is employed for coöperating with a stop for holding the lens-frame steady when the lid is opened and the lens advanced to the point desired. In the present invention I omit the brace referred to and use in place thereof a spring suitably applied which will serve practically the same purpose as the brace and possess additional advantages and functions. The preferred construction and application of this spring are illustrated in the accompanying drawings, and, as illustrated, consists, preferably, of a coil-spring 13, which encircles the pintle 10, the pintle for that purpose being extended a sufficient distance from the side of the lens-frame. One end of this spring bears against a pin 14, which projects from the side of the lens-frame or the plate 11, the other end of the spring bearing against a pin 15, which preferably is threaded so as to pass through one arm of the slide-bracket, as illustrated clearly in Fig. 4, the tension of said spring being such that when the lens-frame is in an upright position the spring will tend to hold it in that position and when moved therefrom to restore it to such position. This spring also permits the lens-frame to assume the different angles which it takes in moving the frame into the camera-box, and when said frame is moved outward said spring will move the frame into its upright position. While this spring is adapted to be used in connection with a stop such as is illustrated in the Livermore patent hereinbefore referred to, yet I prefer to use a stop such as I shall now describe. The stop which I prefer to use in connection with the spring in the form illustrated in the drawings consists of a pawl 16, adapted to engage with a tooth 17, which is formed on the periphery of the shell 18, which encircles

the pintle 10 and incloses the coil-spring 13. The spring exerting its pressure upon the lens-frame in one direction and the stop affording a resistance to the spring in the opposite direction, the spring and stop coöperate to sustain the lens-frame in an upright position. This upright position may be either vertical or at an inclination to a vertical, as desired, it being desirable under some circumstances to have the lens-frame stand at an inclination to a vertical, so as to take in a different field and to have it firmly held in that position. I provide for this by having a series of these stops 17, which may be formed upon the periphery of the shell 14, as shown in the drawings, so as to graduate the inclination to that desired, and in order to have the pawl engage the stop desired the pawl is adapted to be moved out of range of one stop and be brought into the range of another. The preferred construction for this purpose is to form a slot 18 in the shank or arm of the pawl, through which slot the pintle 10 will pass and which slot will permit the pawl to be raised so as to disengage one stop and then lowered to engage another stop, the series of stops thus constituting a ratchet adapted to coöperate with the pawl for the purposes mentioned. For the purpose of holding the pawl in engagement with the stop I cause a spring to bear against a part of the pawl—for instance, against a lip or shoulder 19, formed, say, at the lower end of the shank of the pawl—which spring may be of any desired form, a suitable form for the purpose being illustrated in the drawings and consisting of the loop-spring 20, the free end of which bears down against the top of the lip or shoulder 19, so as to draw the pawl downward by a yielding motion, said spring being held by screws 21 or otherwise preferably to one arm of the slide-bracket 6, as illustrated.

In Fig. 1 of the drawings I have illustrated by full lines the lens-frame as supported in a vertical position and by dotted lines in a position at an angle or incline to a vertical, the degree of inclination being controlled by the pawl engaging one or another of the stops or teeth of the ratchet, as is obvious. This is an advantage which will be appreciated by those skilled in the art. From the construction described it will be seen that I am enabled to maintain the lens-frame in an upright position, whether it be a vertical or an inclination to a vertical, by means of a spring and a stop, and I thus produce a camera having all the advantages of the construction of camera disclosed in the Livermore patent mentioned and possessing additional advantages. It will also be observed that the construction described affords an adjustable stop for securing the lens-frame at various adjustments from a vertical to an inclination to the vertical and that the spring as the means for coöperating with the stop to hold the lens-frame in its various adjustments coöperates with the stop in the several adjustments of the lens-frame. I have illustrated and described with particularity the preferred details of construction and arrangement of the several parts; but it is obvious from the description given that while I prefer such details and intend to cover the same, yet the invention is not limited in its scope to such details, as changes can be made therein and essential features of the invention still be employed. I have also illustrated a screw 22, which can be secured at various points along the guide-plate 7, so as to limit the movement of the slide-bracket 6 in one direction, the point at which the screw is secured being that of the focus of the particular lens in use, and when a lens of a different focus is employed the set-screw is adjusted for the focus of the substituted lens, said screw thus serving as an adjustable stop for the varying focuses of different lenses.

It is common in some constructions of cameras to adjust the plate-holding frame in obtaining the focus instead of throwing the lens-frame forward for the purpose, and therefore while I have illustrated my invention as applied to the lens-frame, yet it is to be understood that my invention comprises the novel features specified in whatever connection or relation of the focusing parts of the camera they may be employed.

Having described my invention and set forth its merits, what I claim is—

1. In a camera, a frame carrying the focusing member of the camera, and a stop and spring coöperating together to maintain the focusing-member-carrying frame in an upright position, said spring exerting a pressure in one direction on said frame and the stop acting in opposition thereto, and said frame adapted to move away from the stop when the tension of the spring is overcome in the operation of closing the camera, substantially as described.

2. In a camera, a frame carrying the focusing member of the camera, an adjustable stop and means coöperating therewith to maintain the focusing-member-carrying frame, in an upright position at various adjustments, substantially as described.

3. In a camera, a frame carrying the focusing member of the camera, a support with which said frame has a swinging connection, a spring connected with a part of said frame and with a member against which it bears, and a stop coöperating with said spring to maintain said frame in an upright position, said spring exerting a pressure in one direction on said frame and the stop acting in opposition thereto, and said frame adapted to move away from the stop when the tension of the spring is overcome in the operation of closing the camera, substantially as described.

4. In a camera, a frame carrying the focusing member of the camera, a support with which said frame has a swinging connection, means for limiting the movement of said frame in one direction consisting of a stop

and a pawl, and a spring coöperating with said means for maintaining said frame in an upright position, substantially as described.

5. In a camera, a frame carrying the focusing member of the camera, a support with which said frame has a swinging connection, means for limiting the movement of said frame in one direction consisting of a pawl and a series of stops for stopping the movement at various adjustments, and a spring coöperating with said means for maintaining said frame in an upright position, substantially as described.

6. In a camera, a frame carrying the focusing member of the camera, a support with which said frame has a swinging connection, means for limiting the movement of said frame in one direction consisting of a stop and a spring-influenced pawl, and a spring coöperating with said means for maintaining said frame in an upright position, substantially as described.

7. In a camera, a frame carrying the focusing member of the camera, a support with which said frame has a swinging connection, means for limiting the movement of said frame in one direction consisting of a spring-influenced pawl and a stop, and means coöperating with said means for maintaining said frame in an upright position, substantially as described.

8. In a camera, a frame carrying the focusing member of the camera, a support for said frame, a pintle effecting a swinging connection of said frame with said support, a spring connected at one point with said support and at another point with a part of said frame, a shell formed with a ratchet and connected to said frame, a pawl to engage said ratchet and having a slotted shank, through which a guiding pin or pintle passes, and a spring acting on said pawl, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT D. DAVIS.

Witnesses:
WM. G. HENDERSON,
GEO. W. REA.