

(No Model.)

2 Sheets—Sheet 1.

A. T. THOMPSON.
STEREOPTICON.

No. 446,238.

Patented Feb. 10, 1891.

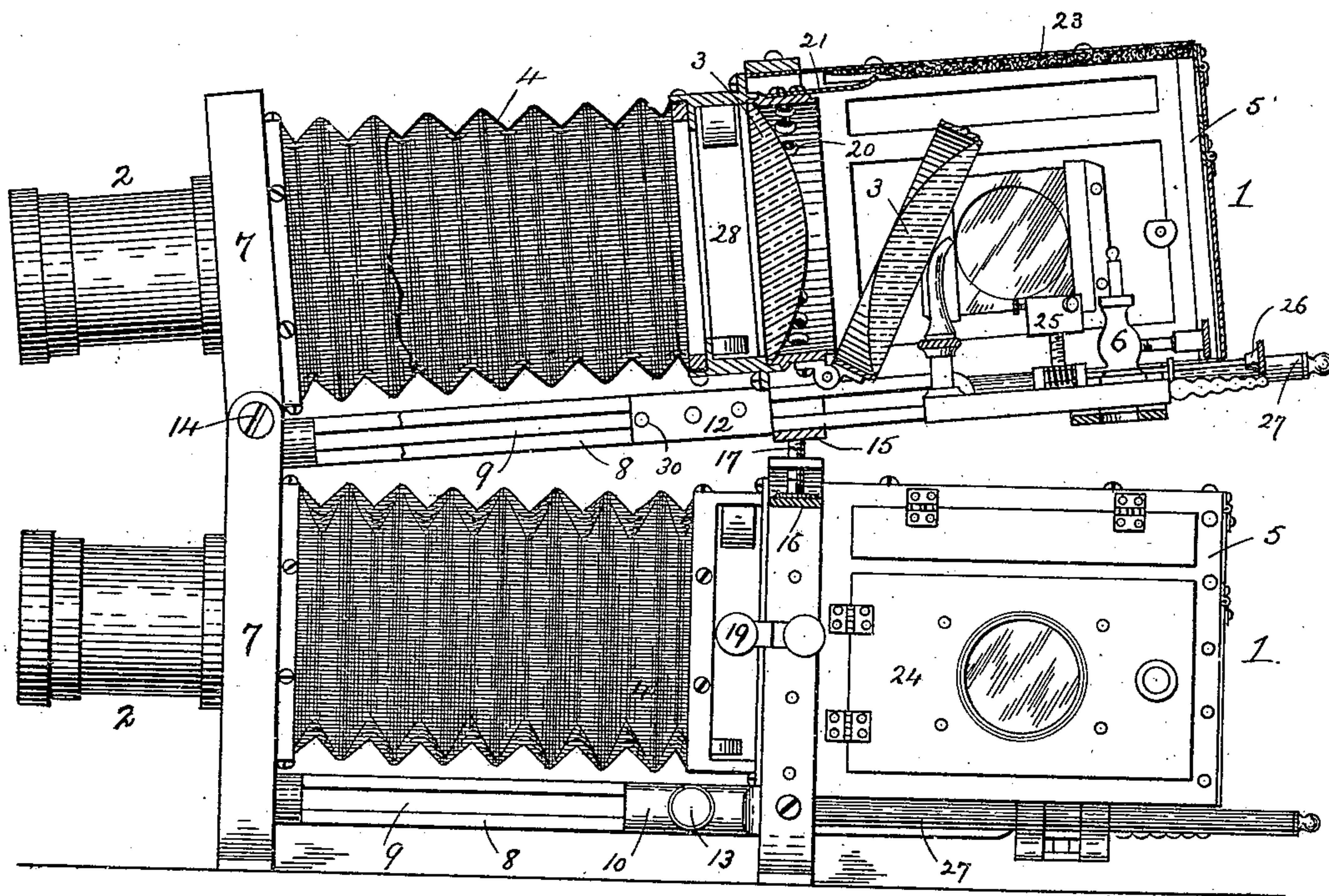


Fig. 1.

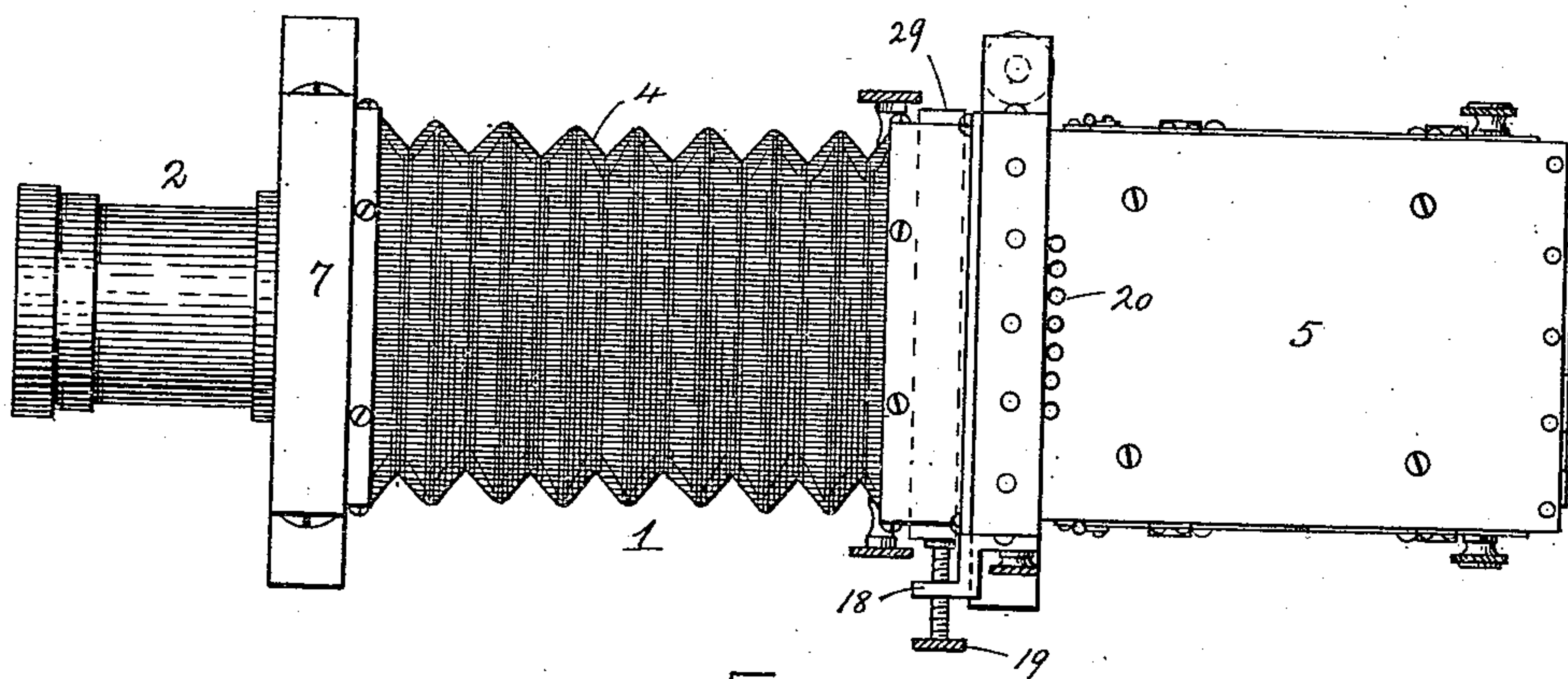


Fig. 2.

WITNESSES.

R. Henry Marsh.
Francis C. Steward

INVENTOR,

Albert T. Thompson.
by H. C. Lodge Atty.

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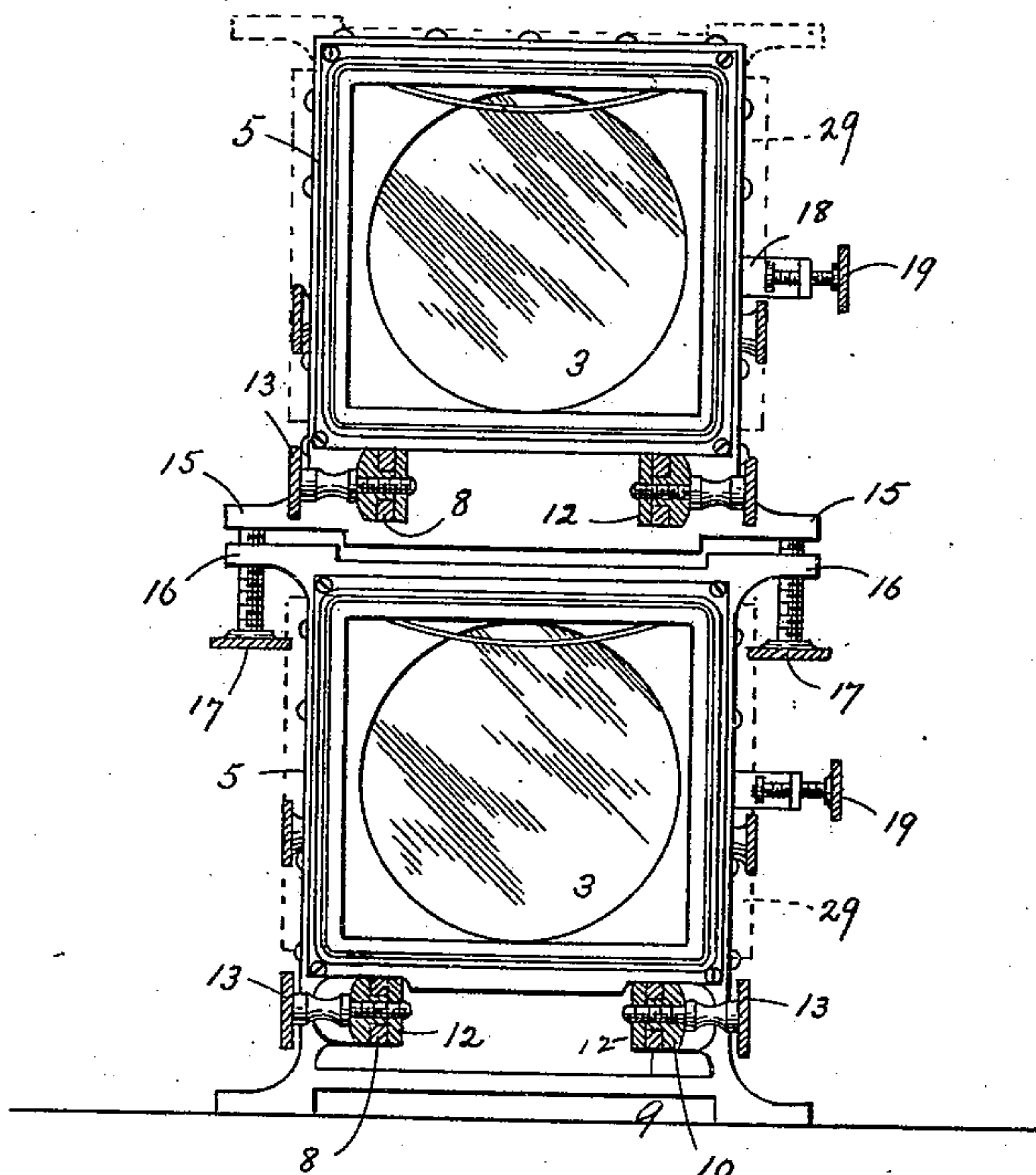


Fig. 3.

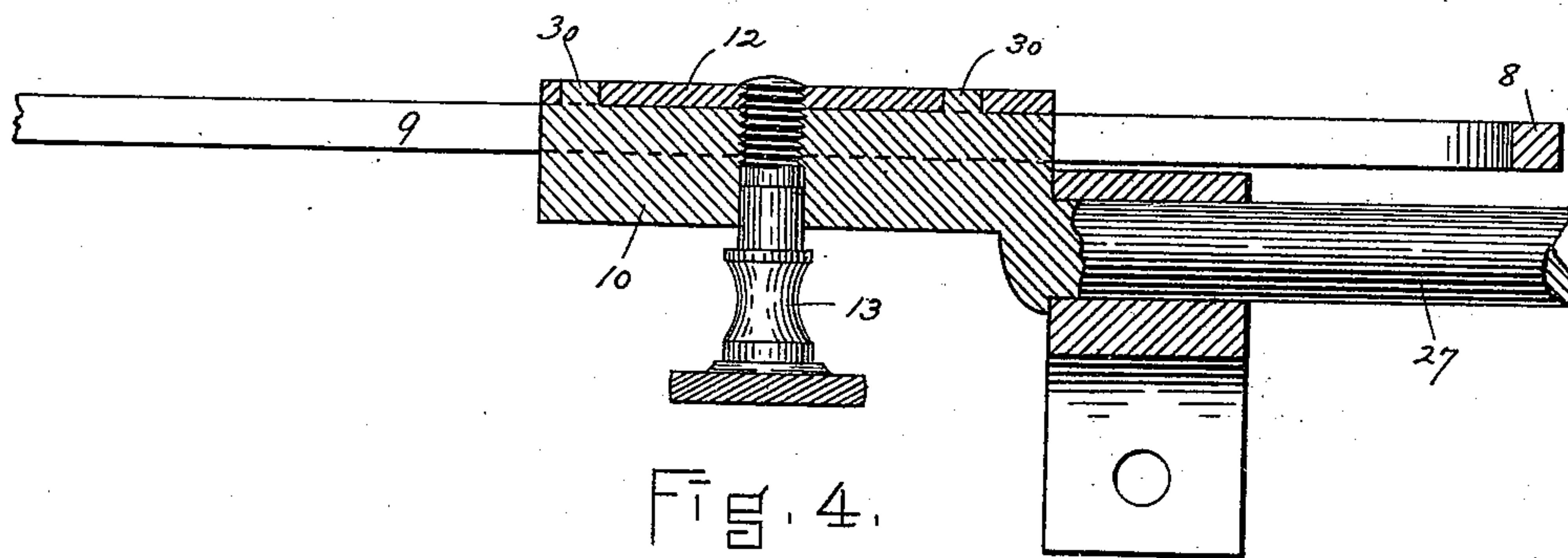


Fig. 4.

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UNITED STATES PATENT OFFICE.

ALBERT T. THOMPSON, OF BOSTON, MASSACHUSETTS.

STEREOPTICON.

SPECIFICATION forming part of Letters Patent No. 446,238, dated February 10, 1891.

Application filed September 20, 1889. Serial No. 324,499. (No model.)

To all whom it may concern:

Be it known that I, ALBERT T. THOMPSON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Stereopticons; 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to stereopticons; and its object is to improve the construction of this class of apparatus, by which it can be handled more easily and be more accurately adjusted, and thus facilitate the operator in the management and control of the several component parts.

My invention embodies several features: primarily, the positive screw adjustment, by which the lanterns, when more than one is employed, may be tilted in a vertical plane to cause the images to register or coincide upon the screen, as also the adjustment by which the slide-carriers can be operated accurately and to a nicety; further, the manner of mounting the condensing-lens, by which the rear half, pivotally hung, can be swung down in order to warm both lenses prior to use, and thereby prevent the gathering of moisture upon them, as likewise the arrangement by which the primary parts of the apparatus, each with a lens, can be operated to properly focus the stereopticon. Other peculiarities of construction will hereinafter be fully described.

The drawings herewith annexed represent, in Figure 1, a stereopticon composed of a pair of lanterns, the upper one in longitudinal sectional elevation, the lower one in side elevation. Fig. 2 is a plan of a stereopticon embodying my invention. Fig. 3 is a vertical cross-section showing the lantern and slide-carrier-adjusting mechanism. Fig. 4 is an enlarged section horizontally through the guide-block and clamping-plate which clasp the extension-bars.

My invention relates to stereopticons, one of which in the accompanying drawings I have

shown as composed of two lanterns 1 1, hence styled a "double" stereopticon. These lanterns are duplicates, and therefore I shall simply mention the principal parts which go to form each as an entirety. These parts are the objective 2, the condensing-lens 3, a movable frame to which is fastened one end of a collapsible bellows 4, and a gas-chamber 5 upon a stationary frame to which the other end of the bellows is secured, together with a burner 6 within the gas-chamber, in the present instance for oxyhydrogen gases.

More fully described, it will be seen that each objective is mounted in a rectangular frame 7, to which are fastened in the lower part and at right angles thereto two extension-bars 8 8, formed with longitudinal slots 9 9. The latter receive guide-blocks 10 10, which are firmly attached to the front of the gas-chamber 5, and in connection with a plate 12, clasp said extension-arms. As shown in Fig. 3, said blocks are T-shaped in cross-section, the head bearing against one side of the bars, while the body engages within the slot. The plate 12, which bears upon the opposite side of said bars, is flat, vertically disposed, and is recessed or bored to receive two short studs 30 30, cast upon the body of the block. (See Fig. 4.) Further, a screw-clamping bolt 13 serves to draw said block and plate together to prevent movement of the objective frame when so desired, such travel being required to properly focus the apparatus, since the objective has sliding movement, while the gas-chamber, which contains the condensing-lens, is to be stationary or fixed, and is connected with the frame 7 by the bellows 4, the latter serving to confine the light while permitting of a change in focus.

An important essential in this apparatus is to provide for accurate and speedy adjustment of the several lanterns, provided two or more are used, to cause the two images to register upon the screen. One essential is that the adjusting mechanism should be positive and more or less rapid to produce the change as quickly as possible. To this end I have pivoted the upper lantern at 14 to the objective frame 7 of the lower lantern. Moreover, I have cast or formed corresponding lateral ears or lugs 15 16, respectively, upon the upper and lower gas-chambers. The lugs 16 are

bored and tapped to receive adjusting-screws 17, vertically positioned, upon which the lugs 15 rest. By such an arrangement—pivoting the lantern at the extreme front and placing the adjusting mechanism some distance therefrom—a rapid, positive, and accurate change in the position of the upper lantern or lanterns is produced by a comparatively small movement of the screws 17. The same positive adjustment is required as regards the slides; hence I have disposed upon brackets 18 screws 19. The latter are in alignment with the aperture 28 to receive the slide-carrier 29. Thus the carrier can be placed accurately in any desired position at once.

One serious and frequent difficulty met with in the operation of stereopticons is the gathering of moisture between the lenses composing the condensing-lens when the two are mounted in a single "metallic cell," so termed. My device is to prevent this deposit of moisture, and therefore I have not only ventilated the cells at 20, but have pivotally hung the cell which holds the rear lens. Thus the rear half can be let down within the gas-chamber. Both lenses can consequently be thoroughly heated before using, and a deposit of moisture is absolutely prevented. After the act of warming is completed the rear cell and lens is swung back into position and held there by means of a spring 21. Each gas-chamber 5 is thoroughly ventilated, and is lined with asbestos or analogous packing 23 at the top. Swinging doors 24 are also furnished on either side, while peep-holes with colored glass are disposed within the latter. The lime-holder at 25 is controlled by the screw 26, and can be raised or lowered exteriorly from the rear of the lantern.

By reference to Fig. 1 it will be seen that the gas-chambers are mounted upon parallel rods 27, the forward ends of which are united with the guide-blocks 10, the latter engaging in the extension-bars. Thus a rigid support is afforded to the objectives when the apparatus is fully extended. On the other hand, by reference to Fig. 3, the manner in which the guide-blocks and plates are located upon said extension-arms is clearly shown, and a firm locking device is obtained, since the blocks have a long bearing upon the arms. The stereopticon is thus capable of being closed or extended to suit the focus desired. Since the gas-chamber is a fixture and secured to a table or other support, in order to

focus the apparatus the clamp-screws 13 are loosened, when the objective and frame 7, with the extension-bars, are free to be operated to obtain the proper focus, the slots 9 permitting movement of the arms, since the body of the T-blocks is free to move therein as endwise travel of the bars occurs.

What I desire to claim is—

1. The combination, with a movable frame and the objective-lens, a stationary gas-chamber containing the condensing-lens, and the bellows which interconnect the frame and chamber, of a slide-aperture transversely of the lantern, and the adjusting-screw in alignment with said aperture to actuate the slide-carrier, substantially as described.

2. In combination with the gas-chamber of a stereopticon, a condensing-lens composed of two parts, one secured in its cell, which is stationary within the said chamber, the other and rear part mounted in a separate cell, hinged and adapted to swing away from the stationary half of the condenser, substantially as herein stated.

3. In a stereopticon, two or more lanterns arranged in vertical series and hinged together at their front ends, as at 14, each lantern being provided with a bellows, lenses, and a gas-chamber, in combination with a series of adjusting-screws 17, arranged between their front ends and the rear ends of said lanterns, each screw 17 bearing against a lug 16 on the lantern below it and engaging with a lug 15 of the lantern immediately above it to lift or lower the rear part of the latter, substantially as set forth.

4. In a stereopticon, the sliding frame 7 with the objective-lens, the fixed gas-chamber 5 with the condensing-lens, and the interconnecting bellows 4, combined with the parallel extension-arms 8, slotted at 9 and secured to said frame, and the mechanism for controlling endwise movement of the objective-frame, consisting of the T-shaped block 10 with lateral studs 30, the flat plate 12 to receive said studs, and the transverse clamping-screw 13, substantially as set forth and described.

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

ALBERT T. THOMPSON.

Witnesses:

FRED. S. HARRINGTON,
H. E. LODGE.