

No. 610,028.

Patented Aug. 30, 1898.

J. A. CHEAPE.
ACTINOMETER.

(Application filed Mar. 22, 1898.)

(No Model.)

Fig. 1.

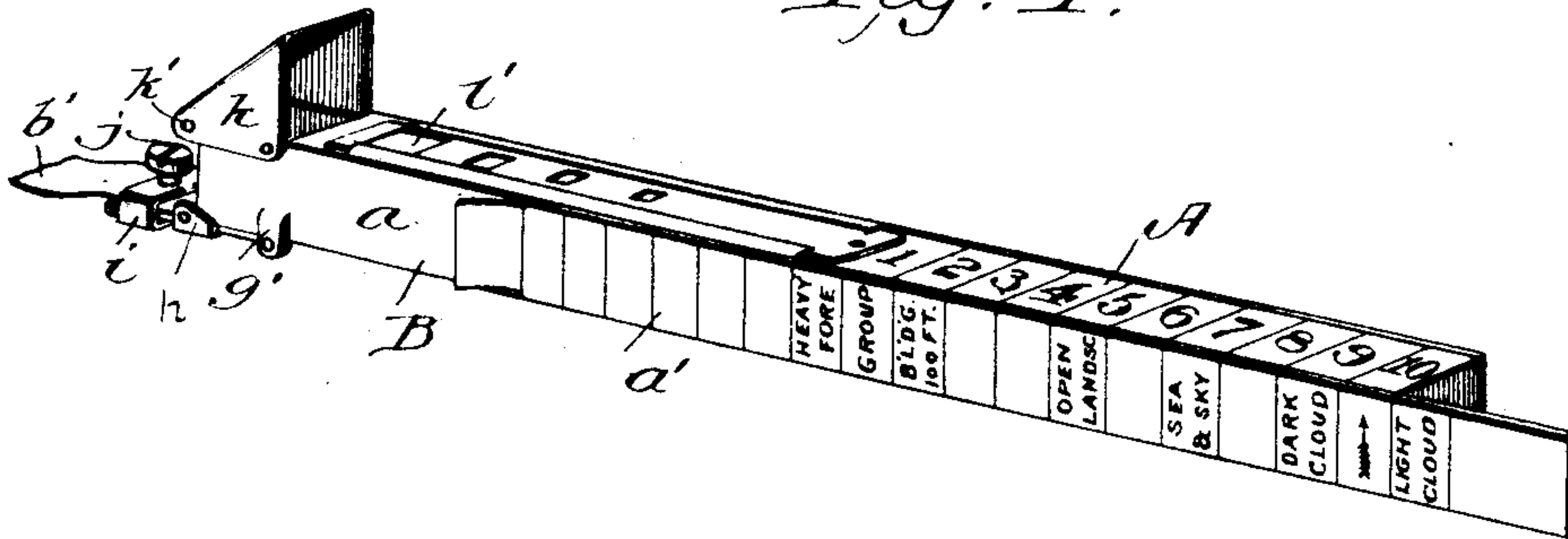


Fig. 2.

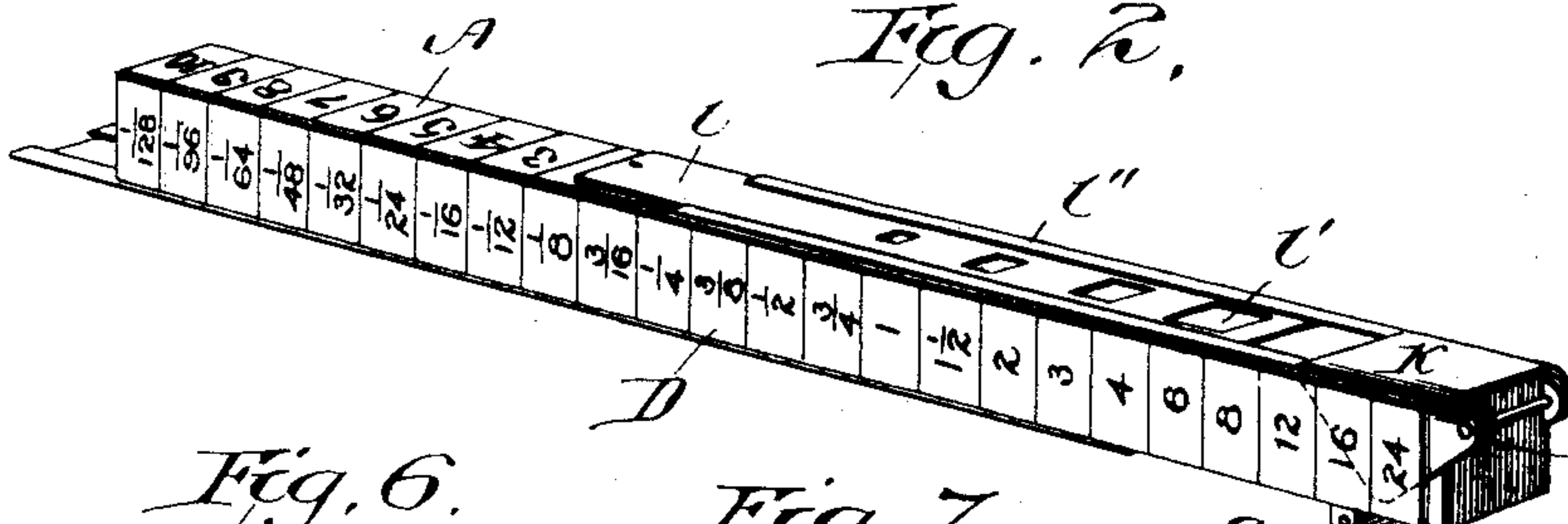


Fig. 6.

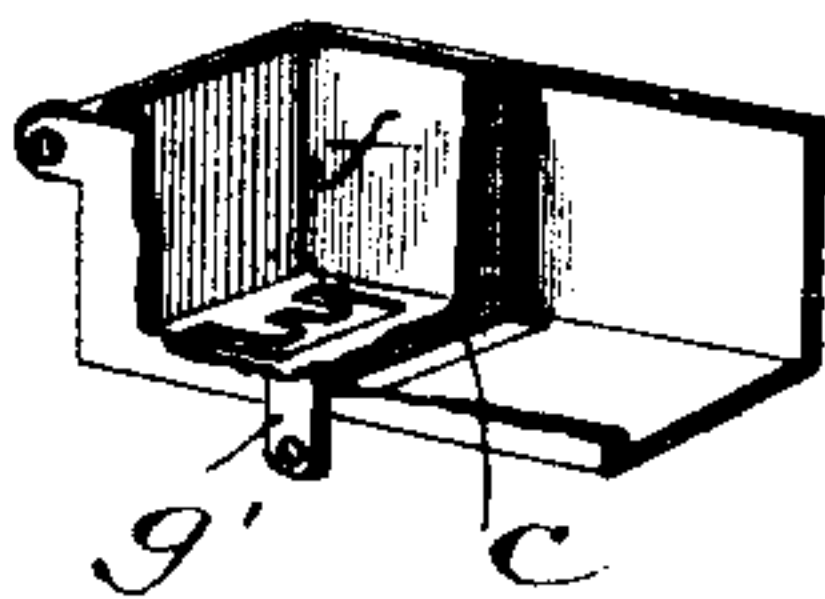


Fig. 7.

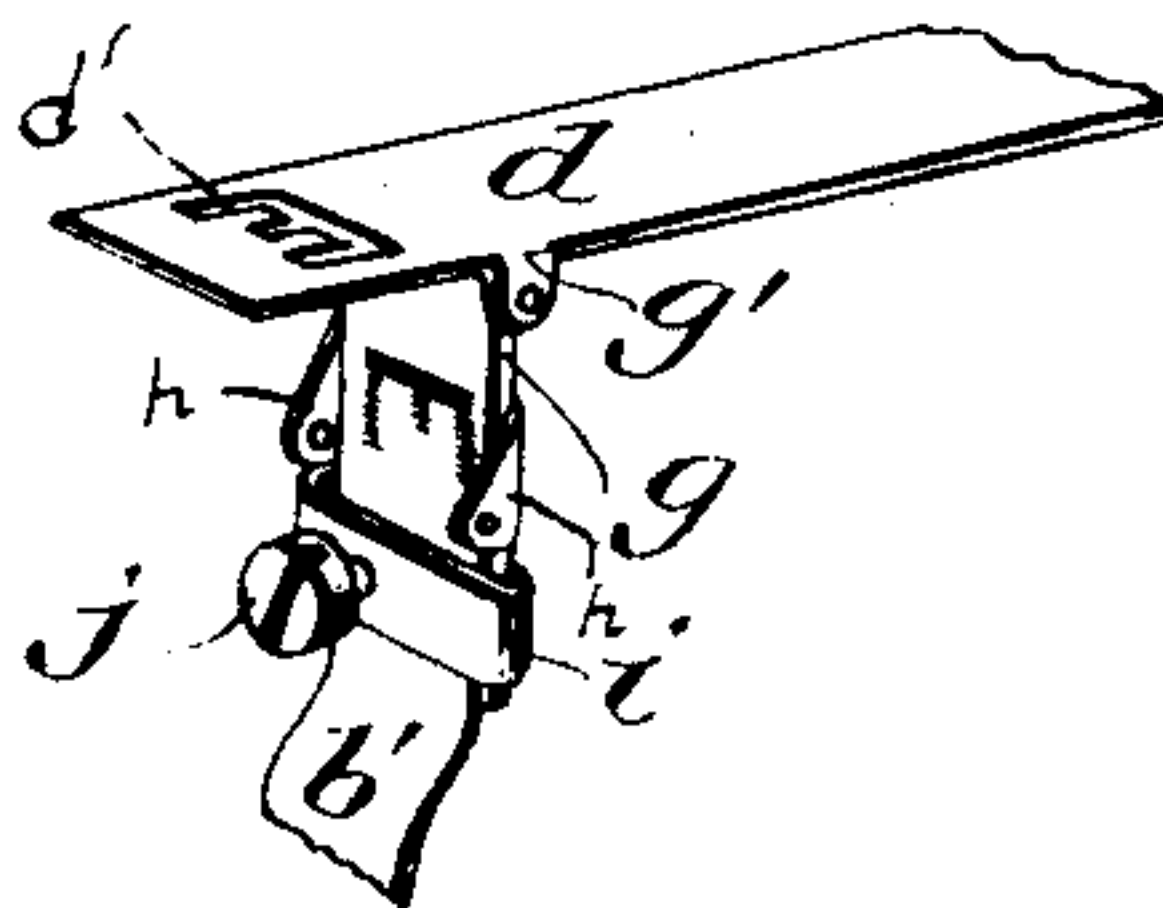


Fig. 8.

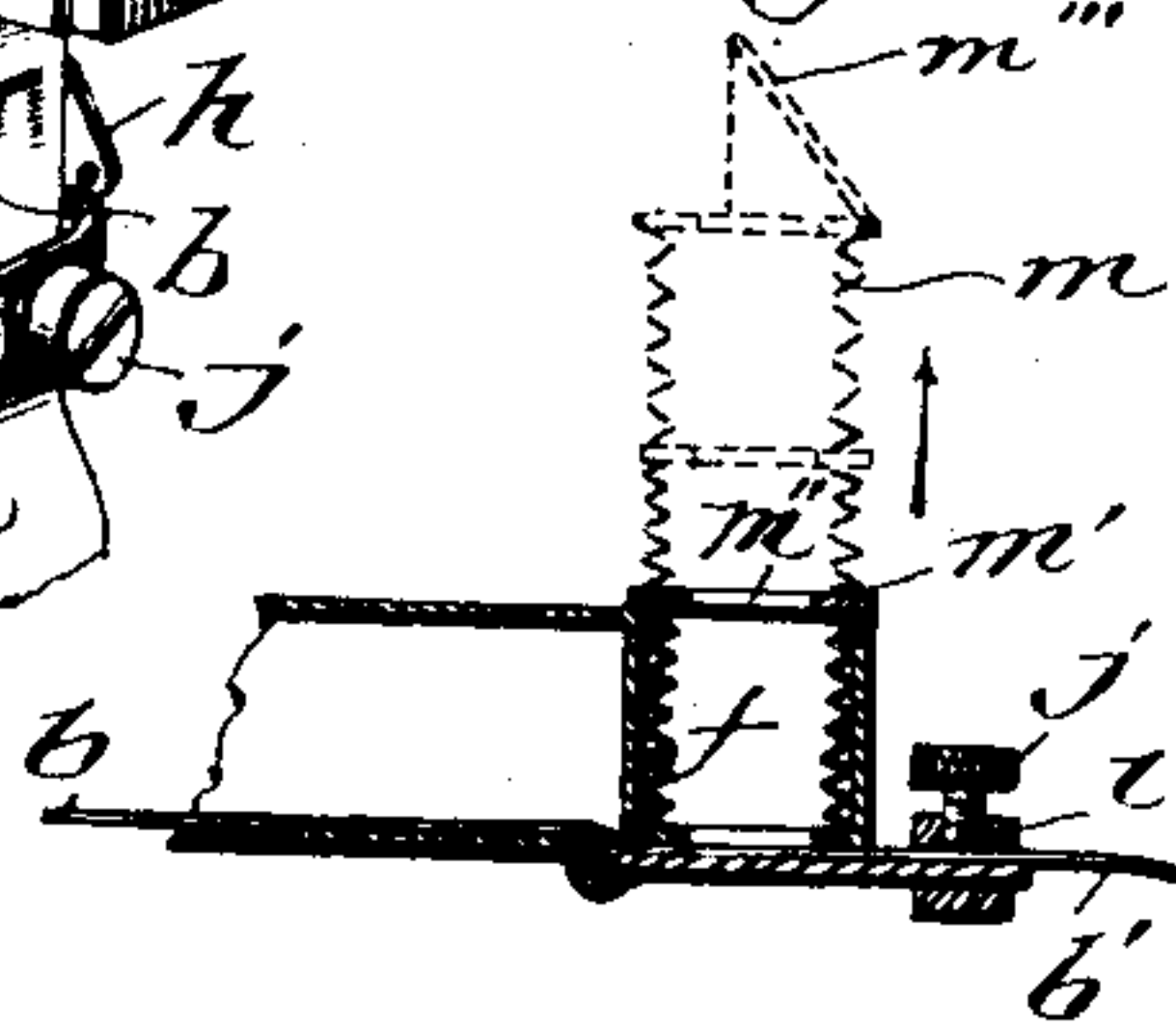


Fig. 3.

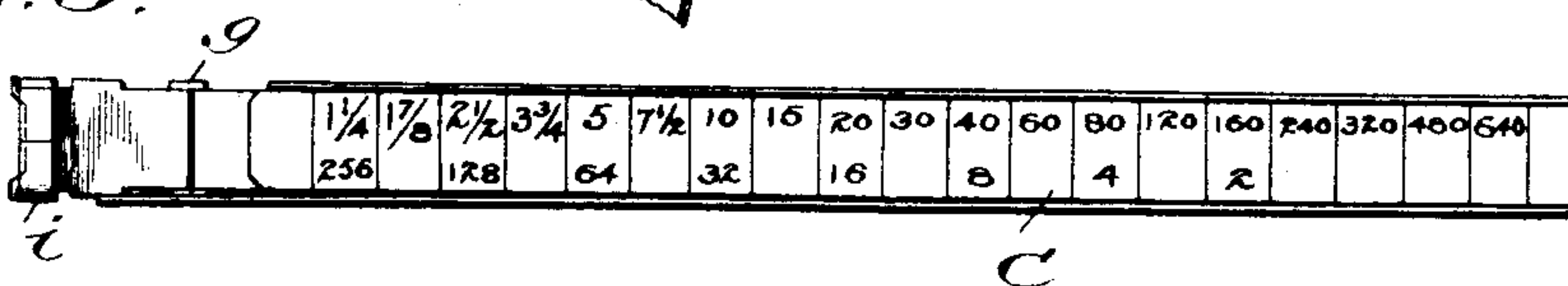
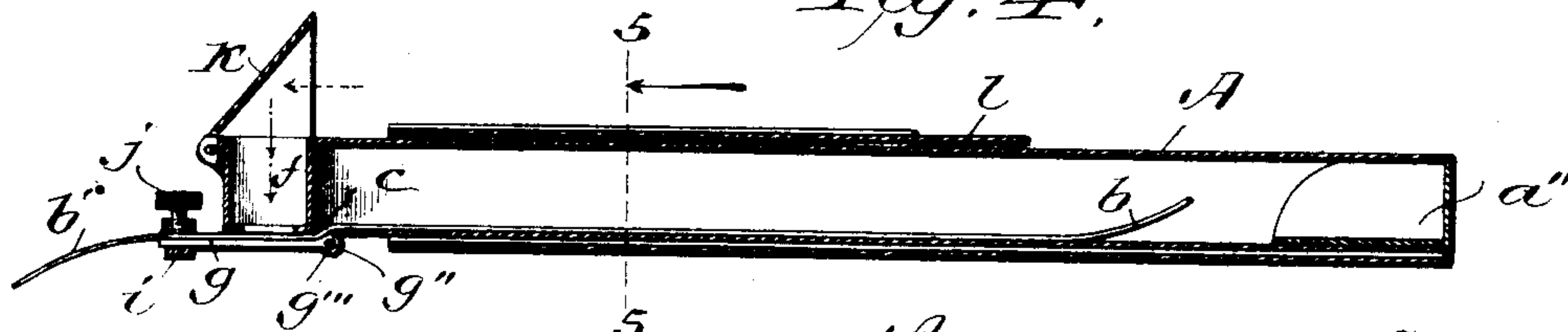


Fig. 4.

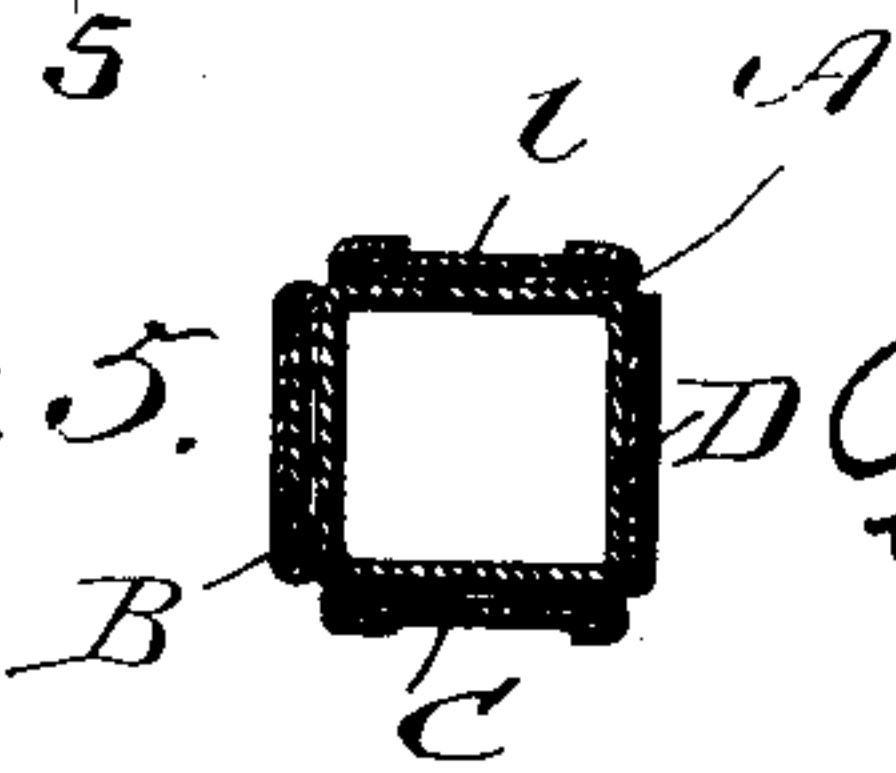


Witnesses

Wm. H. Hudson,

Ralph S. Warfield,

Fig. 5.



Inventor

John Albert Cheape
by Phesack & Co.
Attorney

UNITED STATES PATENT OFFICE.

JOHN ALBERT CHEAPE, OF CHARLOTTESVILLE, VIRGINIA.

ACTINOMETER.

SPECIFICATION forming part of Letters Patent No. 610,028, dated August 30, 1898.

Application filed March 22, 1898. Serial No. 674,827. (No model.)

To all whom it may concern:

Be it known that I, JOHN ALBERT CHEAPE, a citizen of Great Britain, residing at Charlottesville, in the county of Albemarle and State of Virginia, have invented certain new and useful Improvements in Actinometers; 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 letters of reference marked thereon, which form a part of this specification.

My object is to provide an actinometer wherein one can determine by the slightest printing of the stencil the strength of the actinic light, so that any slow or fast sensitized photographic paper which prints out without development may be used, because the paper has to print so slightly that it will act as rapidly as the specially-prepared papers required in many other actinometers and which have to print long enough to conform to some dark shade.

To this end my invention consists in the peculiar features and combination of parts more fully described hereinafter and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of the exterior of my device, in which one of the slides on the body of the device is partly drawn out and adjusted. Fig. 2 is a similar view with the end turned in the opposite direction and with the exposure plate or carrier opened to show the effect of an exposure on the sensitized paper. Fig. 3 is a plan of the bottom of my device in which the top line of figures represents the number of seconds in which the paper colors and the lower line of figures represents the number of the lens-stops. Fig. 4 represents a longitudinal section of my device; Fig. 5, a transverse section through the line 5 5 of Fig. 4, and Figs. 6, 7, and 8 are detail views of parts of the exposure end of my device.

The body *a* of my device consists of an elongated four-sided tube, preferably of a size suitable to be carried in the vest-pocket of the

user. The color-paper or sensitized paper *b* is cut in long strips and stored within this tube. The end *b'* of the strip *b* extends out of the back end of the tube through a transverse slot *c*, thence under a stencil-plate *d*, having a stencil *d'* in the bottom of the exposure-box *f*. The extended end *b'* of the sensitized paper is drawn over the face of a hinged paper-carrier or plate *g*, which serves as a back for the stencil, and this plate is held in closed adjustment against the stencil-plate by means of a pair of spring-clasps *h*, projecting from the sides of the carrier or plate and embracing and engaging the opposite sides of the tube when the carrier or plate is closed, as shown in Fig. 1. The disk is hinged by means of a pair of ears *g'*, struck up out of the stencil, and a pintle *g''*, passing through an eye *g³* on the end of the plate *g*. This stencil-plate *d* forms the bottom side of the tube. The free end of the hinged plate or paper-carrier *g* is provided with a paper-clasp for holding the extended end *b'* of the sensitized paper down tightly against the upper face of the plate *g*. This clasp consists of a band *i*, which surrounds the free end of the plate *g*. A clamping-screw *j*, passing through the top of the band *i*, clamps the paper tightly in place. In the present instance the letter *E* forms the stencil in the bottom of the exposure-box *f*. This exposure-box is of equal dimensions on all sides and is therefore a perfect cube.

As a convenient means in order to reduce and regulate the power of the light which enters the exposure-box *f*, a reflector *k* is attached, and consists of a triangular-shaped member hinged at *k'*, so as to be thrown open to receive the light, as shown in Figs. 1 and 4, and to be closed to cut off light from the exposure-box, as in Fig. 2. In Fig. 4 the arrows indicate the direction of the entering light as it passes into the exposure-box *f*. This reflector *k* can be swung back on the hinge *k'* far enough to have no effect whatever on the light which enters the exposure-box *f*, or it can be adjusted to stand at intermediate points within the arc of a circle in order to regulate the entrance of the light to the finest possible point.

In connection with the exposure-box I provide two other instrumentalities for still further regulating the light, and they consist of an adjustable slide l , Fig. 2, and a bellows m , Fig. 8. The slide l is provided with a longitudinal series of rectangular openings l' , technically called "stops." This slide is adapted to be slid longitudinally between the guides l'' and can be moved backward to bring any one of the openings l' over the top of the exposure-box f to reduce the size of the space through which the light enters. For instance, if the first stop be moved over the top of the exposure-box the force of the light will be reduced one-half and the stencil will require double the time. The second stop will require four times the amount of exposure and time to print, and so on.

It may sometimes be found preferable to employ a bellows m . This bellows folds down into the exposure-box f , as seen in Fig. 8, and can be pulled out, as shown in dotted lines. The top m' of the bellows is provided with a central opening m'' and a reflector m^3 . By the use of these regulating devices the exact amount of exposure required can readily be ascertained.

The four flat sides A, B, C, and D are provided with registering indicia, whereby the amount of exposure necessary for the plate is determined. The side A bears a line of numbers from one to ten, inclusive, denoting the rapidity of the plate. The side B is provided with a slide a' , containing subject-matter indicia, such as a "Heavy foreground," a "Group," a "Building 100 ft.," &c. The side C (shown better in Fig. 3) is provided with a slide bearing two parallel lines of figures. The upper line, commencing at the rear end of the tube, denotes the number of seconds, from one and one-fourth to sixty-four in which the paper colors, and the lower line, commencing at the forward end of the tube, gives the number of lens-stops from two to two hundred and fifty-six. The side D bears a line of numbers from the fraction one one-hundred-and-twenty-sixth at the front end to twenty-four at the rear, representing the right length of time to expose the plate.

a' represents a stopper which fits within the front end of the tube and closes it.

The preferred construction of my device having been set forth, I will now briefly describe its operation.

Assuming that the rapidity of the plate is ten, the slide a' on side B should be pushed to bring the arrow thereon opposite number "10" on side A, as seen in Fig. 1. Now if it has taken sixty seconds to color the paper under the stencil E, the operator should push the sliding scale on the side C until the numeral "60" comes opposite the description of the kind of picture he desires to take. Upon turning the tube over to the succeeding side D the scale thereon will indicate the right ex-

posure to give the plate opposite any stop which he may be using.

When the reflector k is thrown all the way back, as represented in dotted lines in Fig. 4, more light will be admitted and the stencil will print much more quickly than when the reflector k is swung over the exposure-box, as shown in Figs. 1 and 4.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An actinometer consisting of an exposure-box, fixed scales indicating the speed of plate or film and the time of the film or plate exposure, and slides having denoted on one the light value, and lens-stops and on the other, the different subjects to be photographed.

2. An actinometer consisting of an exposure-box, means for regulating the amount of light to be admitted thereto and a movable reflector.

3. In an actinometer, an exposure-box provided with means for regulating the quantity of light admitted thereto, in combination with a stencil, and a paper-holder movable toward and away from the stencil, substantially as described.

4. In an actinometer, an exposure-box provided with a reflector, in combination with a stencil, and a paper-holder movable toward and away from the stencil, substantially as described.

5. In an actinometer, an elongated body portion having an exposure-box at one end, a stencil device, and a slide on the body portion provided with graduated stops arranged to be passed over the open end of the box to graduate the light, substantially as described.

6. In an actinometer, a tubular body portion provided with slides bearing registering indicia, in combination with an exposure-box, a stencil and a hinged paper-holder arranged to open and close, substantially as described.

7. In an actinometer, an elongated tubular body portion provided with longitudinally-movable slides bearing registering indicia, in combination with an exposure-box and a stencil device, substantially as described.

8. In an actinometer, the combination with a rectangular tube arranged and adapted to contain strips of sensitized paper, of a stencil-plate at one end of the tube, said tube being provided with an opening through which the paper is extended to a point beneath the stencil and a holder on which said extended end is held to the action of the stencil, and means for claspings the paper on the holder, substantially as described.

9. In an actinometer, a cubic exposure-box provided with a stencil, in combination with a paper-holder, one being adapted to open away from the other, substantially as described.

10. An actinometer, consisting of an expo-

sure-box, a plate having different-sized holes therein adapted to be moved over the box for regulating the amount of light thereto, and a reflector cooperating with the exposure-box.

- 5 11. An actinometer comprising a tubular body having a stencil, a cubical exposure-box, and a paper-holder located at one end.

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

JOHN ALBERT CHEAPE.

Witnesses:

GEO. E. WALKER,
JOHN B. MOON.