

PHOTOGRAPHIC PLATE DEVELOPING, WASHING, AND FIXING APPARATUS.
APPLICATION FILED NOV. 11, 1911.

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Patented Mar. 26, 1912.

4 SHEETS—SHEET 1.

Fig. 1.

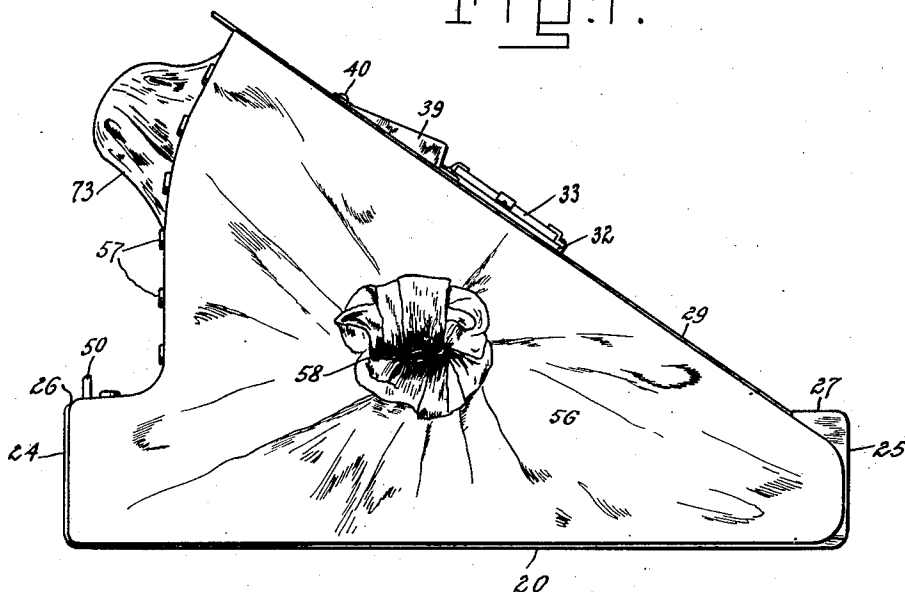
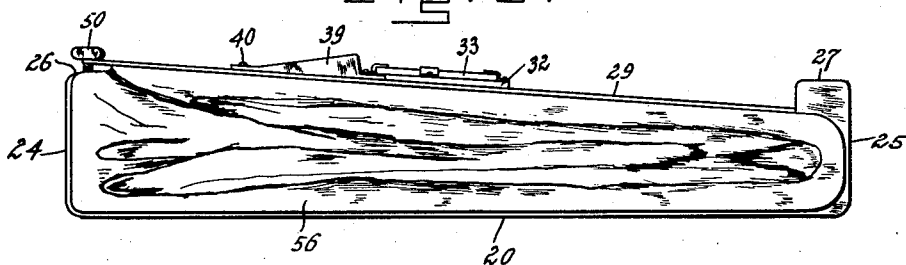


Fig. 2.



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1,021,035.

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4 SHEETS-SHEET 2.

Fig. 3.

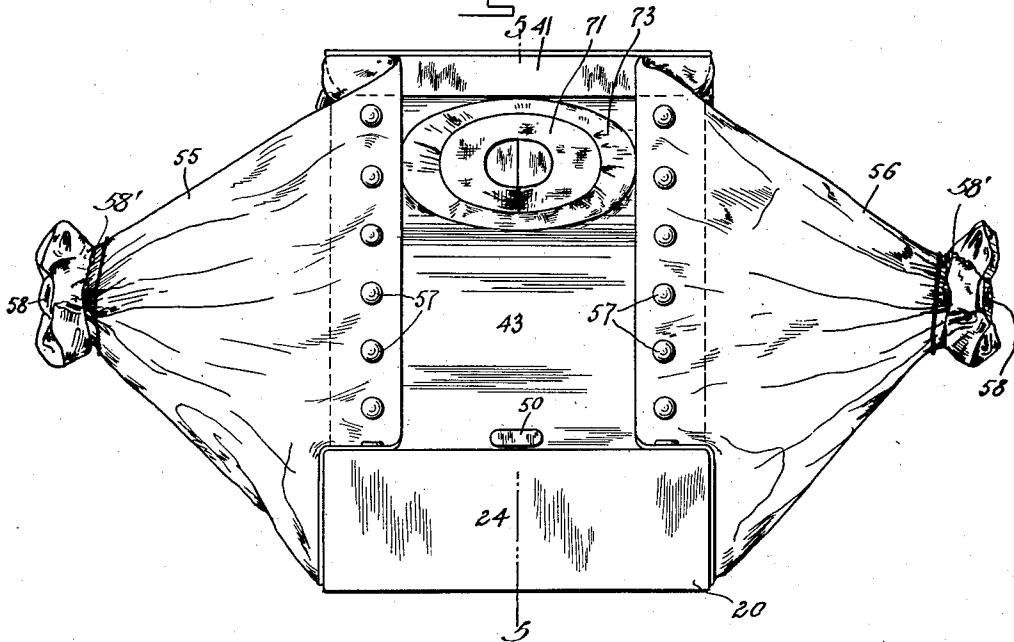
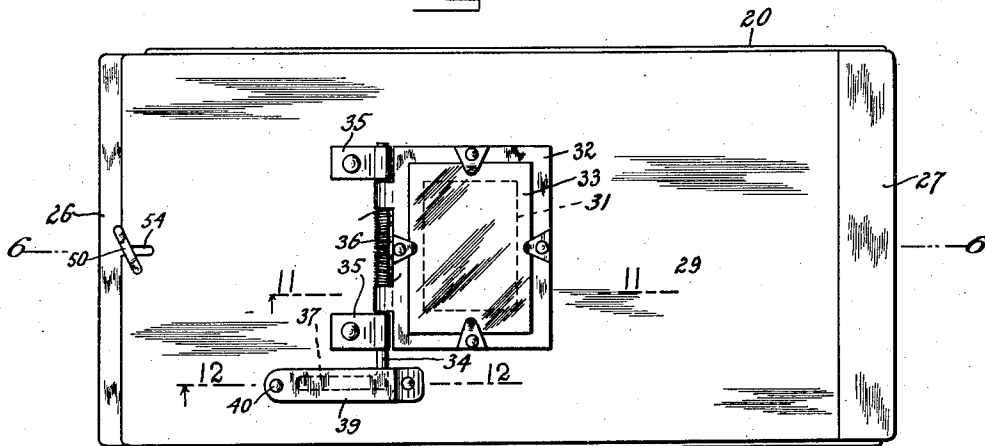


Fig. 4.



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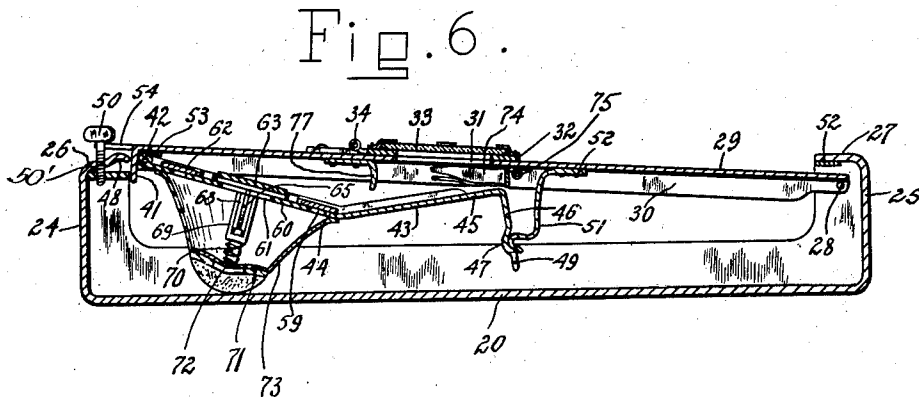
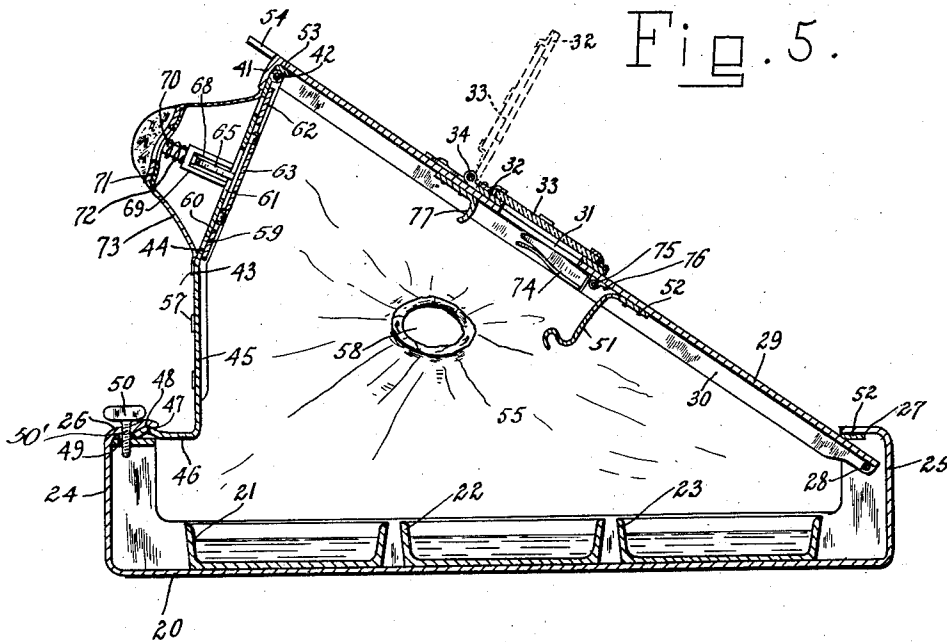
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 7.

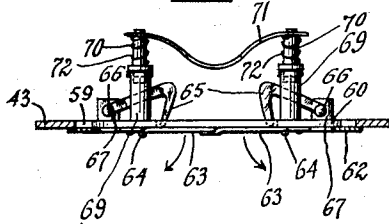


Fig. 8.

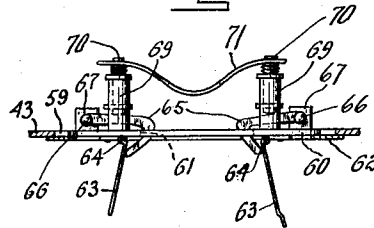


Fig. 10.

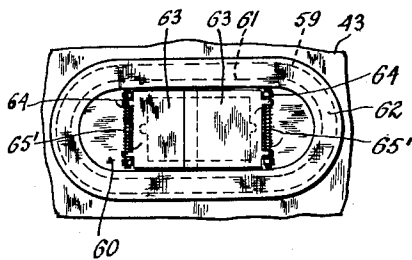


Fig. 9.

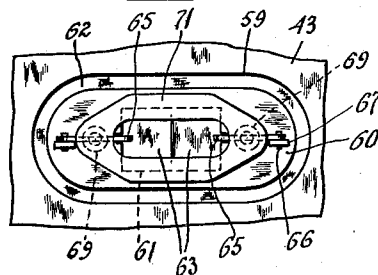


Fig. 11.

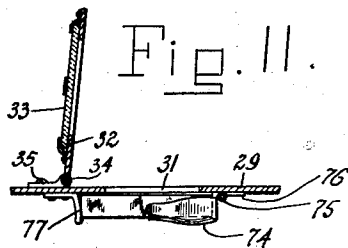


Fig. 12.

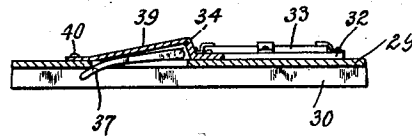


Fig. 14.

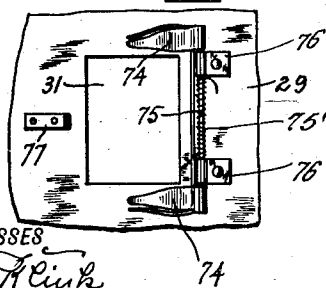
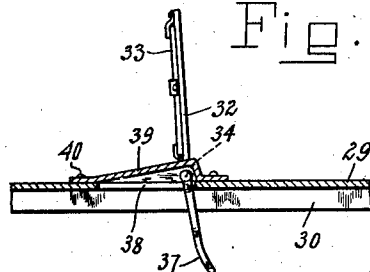


Fig. 13.



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UNITED STATES PATENT OFFICE.

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PHOTOGRAPHIC-PLATE DEVELOPING, WASHING, AND FIXING APPARATUS.

1,021,035.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed November 11, 1911. Serial No. 659,852.

To all whom it may concern:

Be it known that I, ANDREW BENKÓ, a subject of the King of Hungary, and resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Photographic-Plate Developing, Washing, and Fixing Apparatus, of which the following is a specification.

The present invention relates to a photographic plate developing, washing and fixing apparatus, and has for one of its objects to provide a device so constructed that the photographic plates can be developed therein without recourse to a dark room.

Another object of the invention is to permit the observation of the plates while developing without exposing the same to actinic rays, and to enable the convenient transfer of the plates from the developing bath to the fixing bath without removing the plates from the apparatus.

A further object of the invention is to provide an apparatus of this type which can be easily folded to form a small package which can be conveniently carried along in a satchel or suit case.

A still further object of the invention is to provide an apparatus of the character described which can be used as a copying or printing means also.

With these and other objects in view which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of an apparatus constructed in accordance with the present invention in its extended position; Fig. 2 is a similar elevation showing the device in its folded state; Fig. 3 is a front elevation of the apparatus in its extended position; Fig. 4 is a plan view of the same in its folded state; Fig. 5 is a section taken on line 5—5 of Fig. 3; Fig. 6 is a section taken

on line 6—6 of Fig. 4; Fig. 7 is a sectional view of the sight opening closure and its operating means, the opening being closed; Fig. 8 is a similar view of the device shown in Fig. 7, the parts being in other positions; Fig. 9 is a front elevation of the device shown in Fig. 7; Fig. 10 is a rear elevation thereof; Fig. 11 is a section taken on line 11—11 of Fig. 4; Fig. 12 is a section taken on line 12—12 of Fig. 4; Fig. 13 is a section taken on the same line with the frame in its open position; and Fig. 14 is a plan bottom view of the device shown in Fig. 11.

In the drawings, the numeral 20 indicates a trough shaped casing, preferably oblong in form, the width of which exceeds the length of the standard plate which it is designed to develop, and the length of which exceeds more than three times the width of the plate, and accommodates three trays 21, 22 and 23, one containing the developing bath, another clear water, and the third the fixing bath. The front portion 24 and the rear portion 25 of the trough-shaped casing are somewhat elevated, and provided with inwardly bent flange portions 26 and 27, respectively. To the rear portion 25 of the trough-shaped casing and below the flange portion 27 is pivoted at 28 a top plate 29, having downwardly bent portions 30 extending along its longitudinal edges, and being provided with an oblong opening 31, the size of which corresponds substantially to the size of the photographic plate which it is designed to develop. This opening is normally closed by a frame 32, covered with a ruby colored glass plate 33. The frame is fixedly attached to a spindle 34, rotatably mounted in keepers 35, 35 which are secured to the outer side of the plate 29. A spring 36, bearing against the top plate 29 and against the frame 32, tends to hold the said frame against the plate 29, and thereby the opening 31 covered. To the spindle 34 is fastened an arm 37, extending through a slot 38 in the plate 29 into the apparatus, said slot being covered by a recessed body 39, secured by means of rivets 40, 40 or otherwise to the plate 29. When the frame 32 covers the opening 31 in the top plate, the arm 37 is arranged within the recess of the body 39, as clearly shown in Fig. 12 of the drawings. The front end of the plate 29 is bent downward, as shown at 41, and in rear of this downwardly bent portion is pivoted at 42 to the plate 29 a front 43, the upper portion 44

of which is arranged at an acute angle to the vertical body portion 45 thereof. The lower end of the front 43 is bent at right angles to the body portion thereof, as shown at 46, and provided with an elevation 47, adapted to be seated in a recess 48 of the somewhat resilient flange portion 26 of the casing. It is furthermore provided with a slot 49, engaging a thumb screw 50, the threads of which mesh with the interior threads of a hole 50' in the flange portion 26, whereby, when said thumb screw is screwed up, the front 43 will be held in its operative position together with the plate 29, as clearly shown in Fig. 5 of the drawings. The elevation 47 is adapted to be engaged by a leaf spring 51, fastened at 52 to the plate 29, to hold the front 43 in proper position when the apparatus is folded. To properly shut out the actinic rays of light, strips of fabric 52 and 53 are attached to the flange portion 27 and to the front end of the cover plate 29, respectively. A slot 54 is made in the front portion of the plate 29, said slot being adapted to accommodate the thumb screw 50 when the parts are in their folded positions, shown in Fig. 6 of the drawings.

The sides of the apparatus are made of a suitable light proof fabric, denoted by the numerals 55 and 56, respectively. This fabric is attached to the casing 20, to the downwardly bent portions 30 of the plate 29 in any suitable manner, and to the front 43 by means of head and socket fastenings 57, 57 or by other separable fastening means. The fabric is made in the form of funnels, provided with openings 58, 58, through which the operator's hands may be inserted into the apparatus, and around which openings are attached to the fabric rubber bands 58', which press closely to the arms of the operator so that light cannot enter the apparatus.

For the purpose of viewing the plate in the developing and fixing bath, the front 43 is provided with an opening 59, into which is inserted a, preferably, metallic plate 60, having an aperture 61. The dimensions of the metallic plate 60 are smaller than those of the opening 59, and said metallic plate is held upon the front by means of a flexible connection, such as a leather strip 62, which is attached to the front 43 and to the plate 60 in any suitable manner. The aperture 61 is normally covered by two shutters 63, 63, which are hinged at 64, 64 to the plate 60, and normally held in their closed positions by means of springs 65', 65'. Against the shutters 64, 64 bear arms 65, 65, which are pivoted at 66, 66 to lugs 67, 67, the latter being attached to the plate 60. The arms 65 are arranged in slots 68 of standards 69, carried by the plate 60, and in these standards are shiftably arranged pins 70, adapted to bear against the arms 65. The pins are

connected by an apertured bridge 71, held together with the pins in their outermost positions by means of coil springs 72, 72, which bear against the bridge and the standards 69. The bridge 71 is formed in such a manner that it will closely fit the portion of the face of the operator around the eyes, in other words, when the face is pressed against the bridge, light will be shut out from the casing even when the shutters 63, 63 uncover the aperture 61 in the plate 60. The mechanism for opening the shutters 63, 63 is covered by a suitable light proof fabric 73, which is fastened to the bridge and to the front 43.

To the inner side of the plate 29, around the opening 31 thereof, is attached a suitable printing frame holding mechanism. This mechanism comprises spring keepers 74, 74, which are attached to a spindle 75, rotatably mounted in bearings 76, 76, fastened to the plate 29. Opposite to these spring keepers is attached to the inner side of the plate 29 a lug 77. In order to insert the printing frame into this mechanism, the spindle 75 with the spring keepers 74, 74 is swung around against the action of a spring 75', coiled around said spindle, the frame is then inserted into the spring keepers so that its opposite end will abut against the lug 77, and be held thereby in proper position, as clearly shown in Fig. 11 of the drawings. After the printing frame with the negative plate and paper are inserted, the arm 37 is depressed, bringing thereby the frame 32 into the positions shown in Figs. 11 and 13 of the drawings, admitting thereby actinic light to the printing frame in the usual manner for the well known purpose.

The operation of this device is as follows: Let us suppose that the parts are in the positions shown in Fig. 5 of the drawings. In order to charge the trays 21, 22 and 23 with the developing and fixing solutions and water, respectively, first the separable fastenings 57, 57 are opened and the thumb screw 50 loosened, whereby the elevation 47 of the front 43 can be easily engaged with the spring 51, and held against the plate 29. The plate holder is then introduced into the apparatus, after which the parts are brought back into their positions, shown in Fig. 5 of the drawings. Inserting the hands through the openings 58 into the apparatus, the rubber bands around said openings will firmly press the fabric against the arms so that no light can penetrate into the apparatus. The developing operation within the apparatus proceeds then in the usual manner, both hands of the operator being used to handle the plate. The operator presses his face against the bridge 71, whereby the pins 70 will act against the arms 65, depress the same and open thereby the shutters 63, 63, as clearly shown in Fig. 8 of the drawings.

The ruby colored glass plate 33 excludes actinic rays of light, but permits the plate being viewed through the aperture 61 in the plate 60, and thus to watch the process of developing the plate. As soon as the operator withdraws his face from the bridge 71, the springs 65', 65' will close the shutters 63, 63.

The upper portion 44 of the front 43 is inclined toward the horizontal plane to allow the operator to view the three trays in the apparatus. To have a better view of the process in the trays, and particularly in tray 21, the plate 60 is attached by means of a flexible strip 62 to the front 43, allowing thereby the plate 60 to be shifted to a certain degree, whereby a closer observation of the trays in the apparatus can be obtained.

After use, the apparatus can be folded, its parts being then arranged in the positions shown in Figs. 2 and 6 of the drawings, the fabric 55 and 56 being then inserted into the apparatus, providing thereby a portable small package which can be carried along by the operator.

What I claim is:—

1. In a device of the kind described, the combination with a casing consisting of a trough-shaped base, a cover pivoted thereto, a front hinged to the front end of said cover, and two sides made of flexible light proof fabric having holes for the insertion of the hands of the operator, said front being provided with an opening, an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the aperture therein, and a mechanism for operating said shutters, substantially as and for the purpose specified.

2. In a device of the kind described, the combination with a casing consisting of a trough-shaped base, a cover pivoted thereto, a front hinged to the front end of said cover, and two sides made of flexible light proof fabric having holes for the insertion of the hands of the operator, said front being provided with an opening, an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the aperture therein, arms fulcrumed to said plate bearing against said shutters, spring pressed pins slidably arranged upon said plate adapted to bear against said arms, an apertured bridge connecting said pins, and a flexible light proof fabric attached to said bridge and said front, substantially as and for the purpose specified.

3. In a device of the kind described, the combination with a closed casing having an opening in one of its walls, of an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening,

shutters hinged to said plate for closing the aperture therein, and a mechanism for operating said shutters, substantially as and for the purpose specified.

4. In a device of the kind described, the combination with a closed casing having an opening in one of its walls, of an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the aperture therein, arms fulcrumed to said plate bearing against said shutters, spring pressed pins slidably arranged upon said plate adapted to bear against said arms, an apertured bridge connecting said pins, and a flexible light proof fabric attached to said bridge and said front, substantially as and for the purpose specified.

5. In a device of the kind described, the combination with a casing consisting of a trough-shaped base, a cover pivoted thereto, a front hinged to the front end of said cover, and two sides made of flexible light proof fabric having holes for the insertion of the hands of the operator, said front being provided with an opening, an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the aperture therein, a mechanism for operating said shutters, said cover being provided with an opening, and a frame resting upon said cover and holding a colored glass plate to exclude the actinic rays of light from the opening in said cover, substantially as and for the purpose specified.

6. In a device of the kind described, the combination with a casing consisting of a trough-shaped base, a cover pivoted thereto, a front hinged to the front end of said cover, and two sides made of flexible light proof fabric having holes for the insertion of the hands of the operator, said front being provided with an opening, an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the aperture therein, a mechanism for operating said shutters, said cover being provided with an opening, and a frame hinged to said cover holding a colored glass plate to exclude actinic rays of light from the opening in said cover, substantially as and for the purpose specified.

7. In a device of the kind described, the combination with a casing consisting of a trough-shaped base, a cover pivoted thereto, a front hinged to the front end of said cover, and two sides made of flexible light proof fabric having holes for the insertion of the hands of the operator, said front being provided with an opening, an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the

aperture therein, arms fulcrumed to said plate bearing against said shutters, spring pressed pins slidably arranged upon said plate adapted to bear against said arms, 5 an apertured bridge connecting said pins, a flexible light proof fabric attached to said bridge and said front, said cover being provided with an opening, and a frame resting upon said cover and holding a colored glass 10 plate to exclude the actinic rays of light from the opening in said cover, substantially as and for the purpose specified.

8. In a device of the kind described, the combination with a casing consisting of a 15 trough-shaped base, a cover pivoted thereto, a front hinged to the front end of said cover, and two sides made of flexible light proof fabric having holes for the insertion of the hands of the operator, said front being 20 provided with an opening, an apertured plate within said opening, a flexible fabric holding said plate shiftably in said opening, shutters hinged to said plate for closing the aperture therein, arms fulcrumed to said plate bearing against said 25 shutters, spring pressed pins slidably arranged upon said plate adapted to bear against said arms, an apertured bridge con-

necting said pins, a flexible light proof fabric attached to said bridge and said front, 30 said cover being provided with an opening, and a frame hinged to said cover and holding a colored glass plate to exclude actinic rays of light from the opening in said cover, substantially as and for the purpose specified. 35

9. In a device of the kind described, the combination with a closed casing having an opening in one of its walls, shutters hinged to said casing for closing said opening, arms 40 fulcrumed to said casing bearing against said shutters, spring pressed pins slidably arranged upon said casing adapted to bear against said arms, an apertured bridge connecting said pins, and a flexible light proof 45 fabric attached to said bridge and said casing, substantially as and for the purpose specified.

Signed at New York, in the county of New York and State of New York, this 9th 50 day of November, A. D. 1911.

ANDREW BENKÓ.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."