Oct. 23, 1923. 1,471,773

H. N. BOWEN

SCREEN HOLDER

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Fig. 1

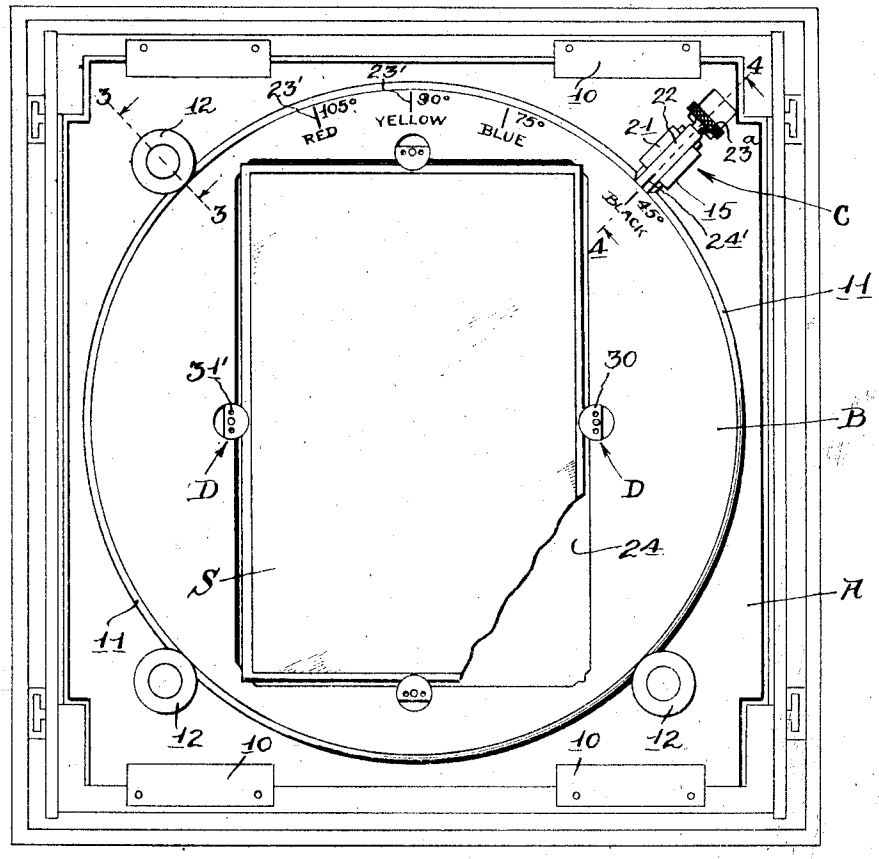

Fig. 4

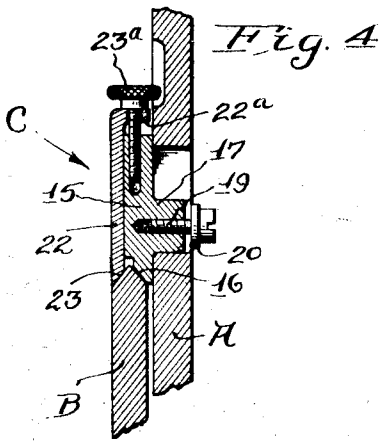

Fig. 3

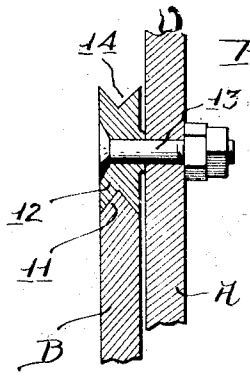

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Fig. 2

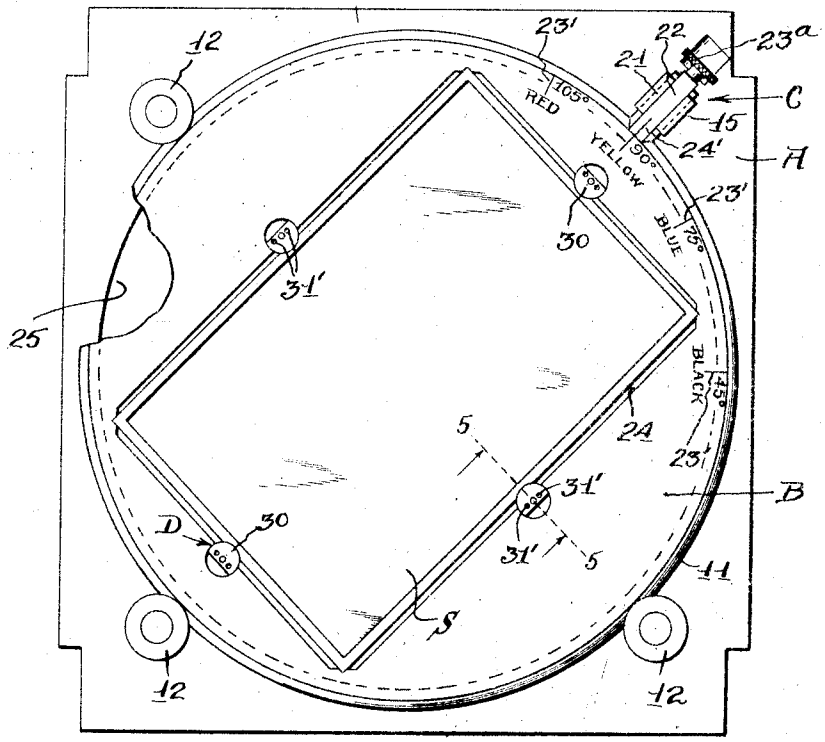


Fig. 5

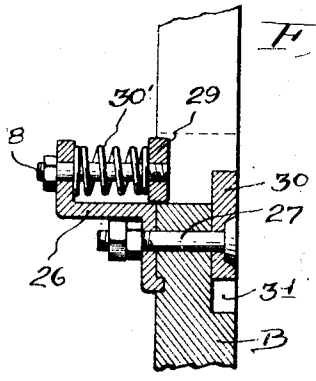
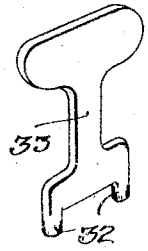


Fig. 6



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UNITED STATES PATENT OFFICE.

HERBERT NELSON BOWEN, OF LAKEVIEW, MINNESOTA.

SCREEN HOLDER.

Application filed November 14, 1921. Serial No. 514,877.

To all whom it may concern:

Be it known that I, HERBERT NELSON BOWEN, a citizen of the United States, residing at Lakeview, White Bear Lake, in the county of Washington and State of Minnesota, have invented a new and useful Screen Holder, of which the following is a specification.

My invention relates to improvements in screen holders.

In every engraving shop where photo engravings are produced, various ordinary square screens with different rulings from 59 lines to the inch to 200 lines to the inch are required. These screens are very expensive and are generally confined to use in the production of black and white engravings. In making negatives in the production of two, three and four color work, circular screens, ruled like the ordinary square screens, are ordinarily employed. These circular screens, of course, provide for the making of negatives of relative maximum dimensions at the various angles of said screens, but the primary purpose of their circular shape is to provide for supporting the same, whereby they may be readily positioned at various angles to produce the desired color process negatives. Circular screens being so much more expensive than the ordinary square screens, the acquisition thereof, even by concerns having a relatively large output, is often prohibitive, the result being that large volumes of negative work in color process procedure are necessarily delegated by many small concerns to larger institutions having the requisite equipment.

The primary object of my invention is to provide a screen holder for application to cameras, the same being adapted to removably receive the ordinary square, half tone screens of various dimensions and to locate the same in different angular relations, whereby color process negatives may be readily produced therewith.

With the foregoing and other objects in view, which will appear in the following description, the invention resides in the novel combination and arrangement of parts and in the details of construction hereinafter described and claimed.

In the drawings, Fig. 1 is a view in elevation illustrating a device embodying my invention and applied to a camera; Fig. 2 is a similar view, the screen holder member being shown in an angular position differing from that shown in Fig. 1; Figs. 3 and 4 are enlarged sectional views, in detail, taken respectively on the lines 3—3 and 4—4 of Fig. 1; Fig. 5 is a similar view taken on the line 5—5 of Fig. 2 and Fig. 6 is a perspective view of a spanner key employed in operating the screen fastening devices on the holder member.

Referring to the drawings, I have used the reference letter A to indicate the frame or support of my improved device and the letter B to designate the screen holder associated therewith. The frame A comprises a plate adapted to be applied to a camera as shown in Fig. 1, the margins of the plate, in working position, being embraced by the ordinary frame holding fingers 10 of the camera. The screen holder B comprises a circular plate having a double beveled edge 11 (Figs. 3 and 4). Rollers 12 journaled closely adjacent to the face of the frame A, on bearings 13 in said frame, are grooved as at 14, Fig. 3, to receive the beveled edge 11 of the holder B. Two of these rollers, near the lower edge of the plate A, support the holder B in working position. A third roller 12, near the upper edge of the frame A, serves primarily as a guide roller, the same being supplemented by means of a clamping guide C opposite said upper roller 12. This clamping guide includes a base 15 slidably adjustable on the frame A in a direction radially of the holder B. Said base has a jaw member 16 beveled to correspond with the inner beveled edge portion of the holder B and is formed with an angular lug 17 fitting closely in a slot 18 in the frame A. A set screw 19 threaded in said lug, and having a shoulder 20 over-reaching the slot 18 at the rear of the frame A, provides for clamping the base 15 in normal position (Fig. 4) and permits of freeing said base so that the same may be withdrawn from the edge of the holder B, preparatory to its removal from the rollers 12. Said base 15 includes a dove-tail guide 21 in which a clamping slide 22 is mounted. Said slide 22 is beveled to form a jaw member 23 for the outer beveled edge portion of the holder B (Fig. 4). A binding screw 23^a threaded in the base A and bearing against the rearwardly turned shoulder 22^a on the slide 22 serves to clamp said slide against the holder B, causing said holder to be gripped between

the two jaw members 16 and 23 of the guide C and thereby secured against accidental angular movement on the frame A. Releasing the binding screw 23ª results in freeing the slide 22, so that the holder can be turned, as desired. A line 24′ on the outer face slide 22 supplies a mark of reference employed in adjusting the holder B. On the margin of the holder B are similar lines 23′, the use of which will soon appear.

The holder B is formed with a central screen receiving openings 24, rectangular in shape, to receive a rectangular screen as at S. The frame A is also formed with a central opening 25, registering with the opening 24 in the holder B, said opening 25 being of such dimensions as to avoid obstructing the opening 24 in said holder. Screen frame and adapter holding devices D are supplied at each margin of the screen opening 24. Each device includes a clip 26 attached to the holder B by means of a bolt 27 as shown in Fig. 5. A stem 28 slides in the clip 26 and is fitted with an abutment 29. A spring 30′ encircling the stem 28 and interposed between the clip 26 and abutment 29 yieldingly urges the latter forward. A mutilated disc-like head 30, seated in a depression 31 in the holder B and revolubly held in such position by the bolt 27, overlaps the edge of the screen opening 24 in all of its angular positions excepting one position, wherein said head is entirely withdrawn from said opening. Diametrically opposed recesses 31′ in the heads 30 receive the lugs 32 of a spanner key 33 employed in turning the same. With the heads 30 turned to avoid obstructing the screen opening 24, a screen frame may be placed against the yielding abutments 29 and pressed rearwardly a sufficient distance to allow the heads 30 to be turned into overlapping locking positions (Figs. 1 and 2).

It will be noted that the outer faces of the rollers 12, frame securing heads D and clamping guide C lie flush with the face of the holder B. This provision permits a close arrangement of camera plates with respect to screens carried in the holder B.

The marks 23′ on the holder are made with respect to the rectangular screen opening 24. An ordinary rectangular screen, in place within the holder B, is held in position wherein the diagonal lines thereof rest at 45°, when the 45° line 23′ on the holder B coincides with the reference line 24′ on the slide 22 (Fig. 1). This position of a screen is required to produce a "black" negative for color process work. Shifting the holder B to move the 75°, 90° and 105° lines 23′ into registration with the reference line 24′ respectively locates the holder B in proper positions for the production of "blue", "yellow" and "red" negatives for color process work.

My improvement is advantageous, among other things, for the following reasons: It enables a producer, equipped only with the ordinary square, half tone screens, to increase his capacity, at little expense, by adding an output otherwise necessitating great expense. It minimizes the cost of color work to the consumer by saving in the cost of production. The improvement is conveniently applied to a camera. It readily accommodates the various ordinary square, half tone screens and provides for quickly and accurately adjusting the same to the various angular positions required to produce the various color process negatives.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a device of the class described, an angularly adjustable circular holder formed with a screen receiving opening therein, a mounting for said holder applicable to a camera and arranged to avoid obstructing the opening in said holder, said mounting including a plurality of combination supporting and retaining rollers engaging the margin of said holder and means for locking the holder in various angular positions, said rollers and holder locking means being confined within limits at the rear of a plane closely paralleling the face of said holder.

2. A supporting plate designed to co-act with screen securing devices within a camera and formed with an opening therethrough, a second plate parallel with the first and comprising a screen holding member, the same being formed with a screen receiving opening therein registering with the opening in said supporting plate, means on the supporting plate supplying a revoluble mounting for the screen holding member, means for locking said member in various angular relations with respect to the supporting plate and yielding means on the holding member for securing a screen in position within the opening therein, said means including spring pressed abutments and locking heads opposed thereto, said parts being adapted to grip opposite sides of a screen frame, the abutments being yieldable to accommodate screen frames of various thicknesses and the locking heads being arranged to locate the faces of the various screens in a plane in approximate coincidence with the face of the holding member.

3. In a device of the class described, a frame removably applicable to a camera housing, a circular holder member having a rectangular opening therein unobstruct-

ed by said frame, means on the frame for revolubly supporting the holder in parallelism with and in close proximity to the frame, means on the holder to secure screens in position registering with the opening therein and means on the frame to secure the holder against rotation with respect thereto, said holder supports, screen securing and holder locking means being confined within limits at the rear of a plane flush with the face of said holder.

4. In a device of the class described, a frame removably applicable to a camera housing, a holder member having an opening therein unobstructed by said frame, means on the frame for revolubly supporting the holder in parallelism with and in close proximity to the frame, means on the holder to secure screens within the opening therein and means to secure the holder against rotation with respect to the frame, said holder supports, screen securing and holder locking means being confined within limits at the rear of a plane closely paralleling the face of said holder, whereby said face of said holder may be brought into the immediate proximity of a plate used in connection therewith.

In testimony whereof, I have signed my name to this specification.

HERBERT NELSON BOWEN.