July 25, 1939. J. W. HARDY 2,167,298

PHOTOGRAPH PRINTING FRAME

Filed Jan. 4, 1939 3 Sheets-Sheet 1

Fig. 1.

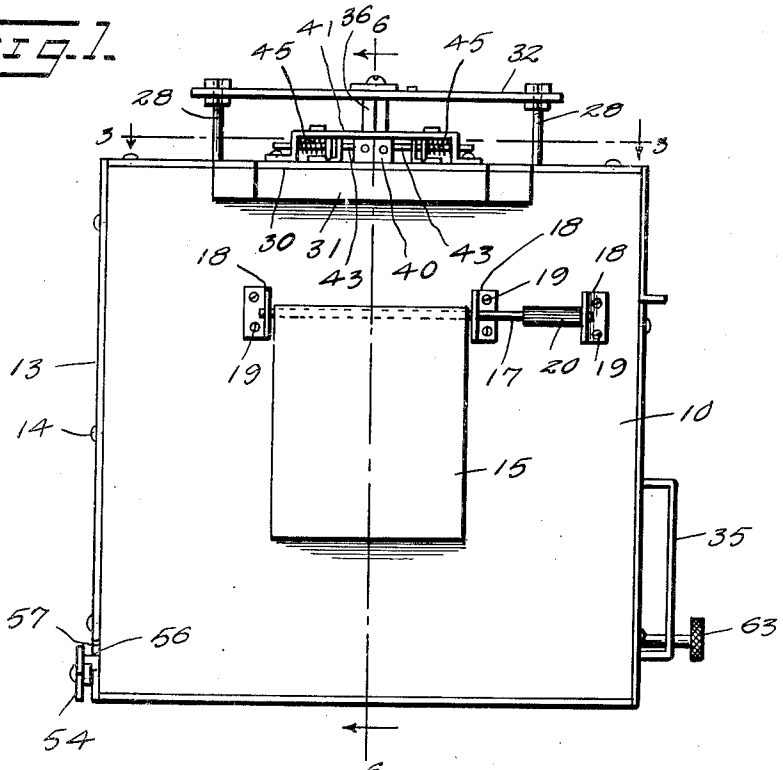


Fig. 2.

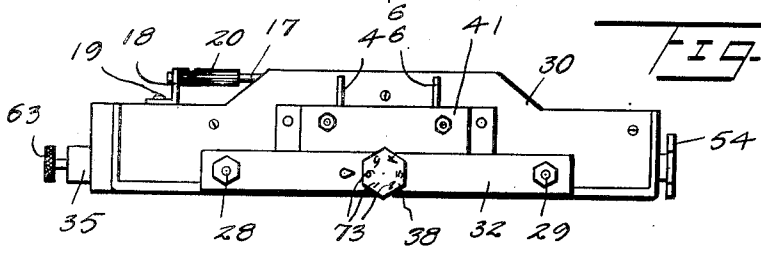
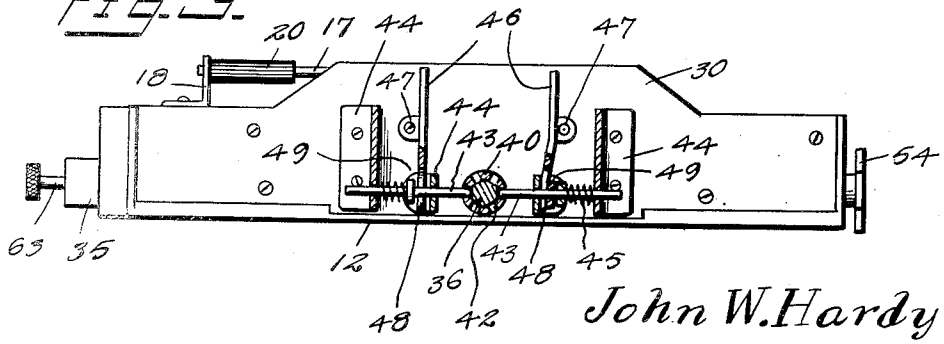


Fig. 3.



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Fig. 4.

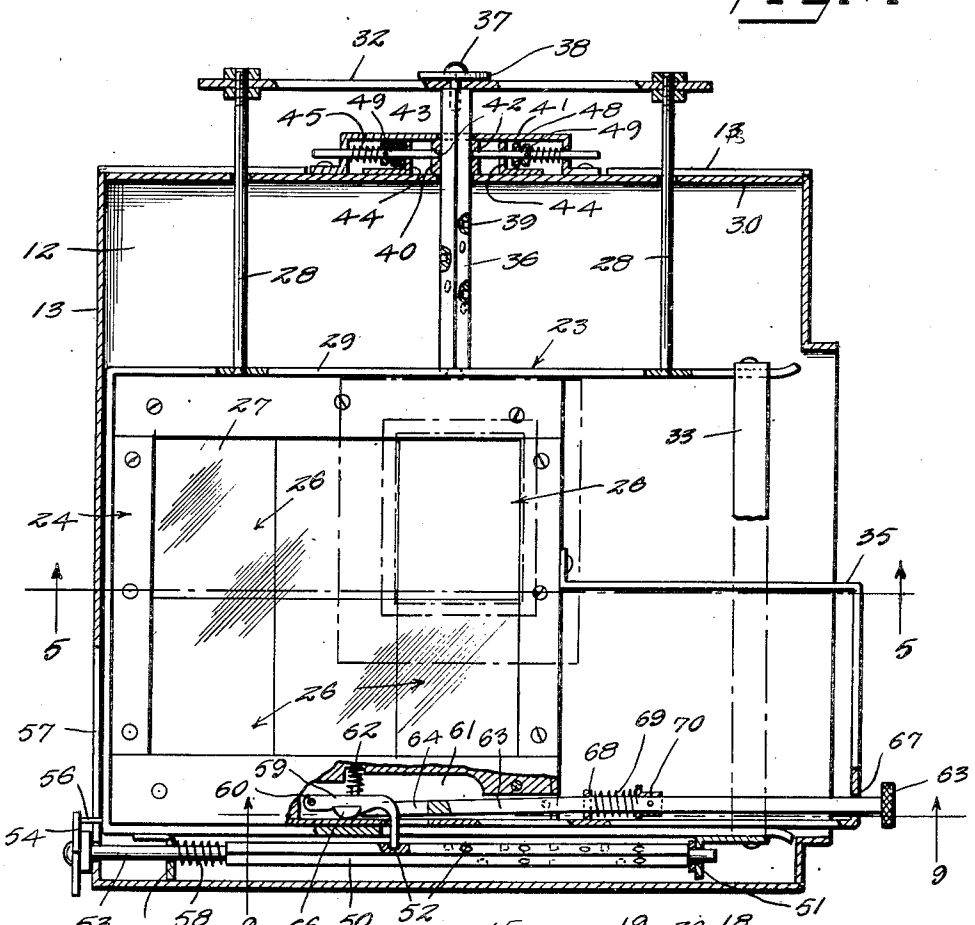


Fig. 5.

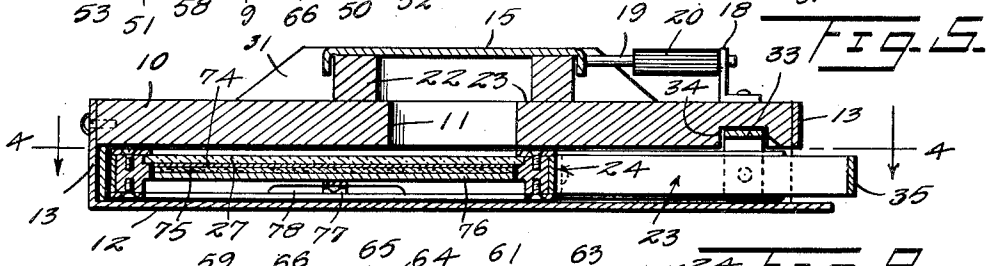


Fig. 9.

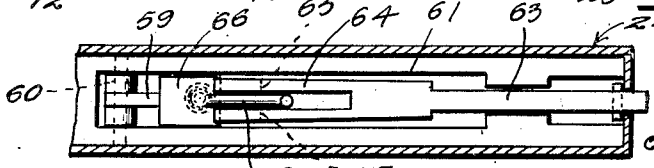
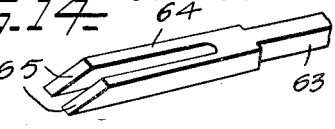


Fig. 14.



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PHOTOGRAPH PRINTING FRAME

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Fig. 6.

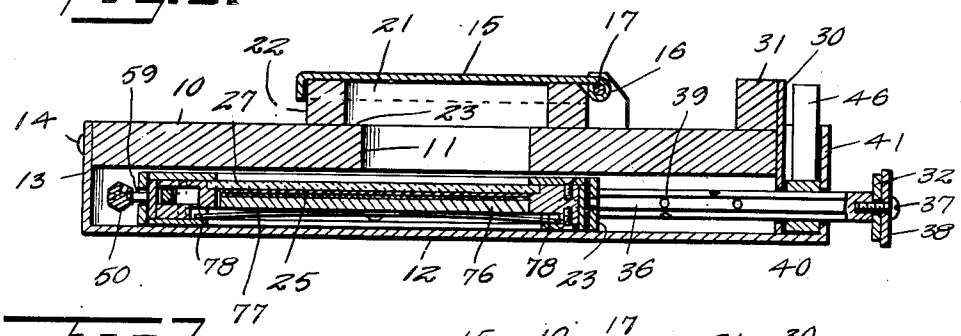


Fig. 7.

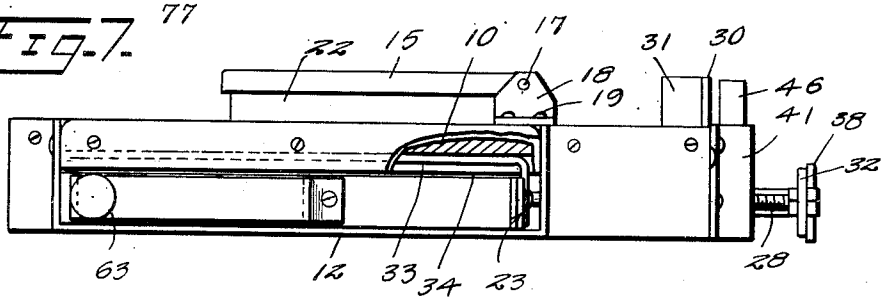


Fig. 8.

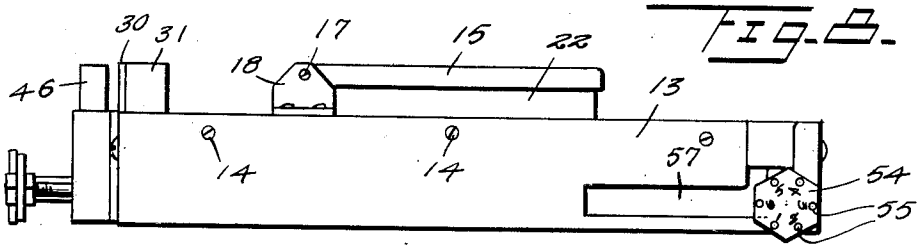


Fig. 11.

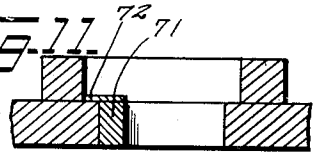


Fig. 10.

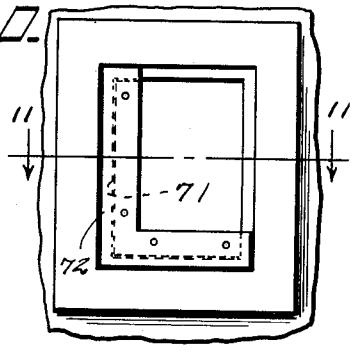
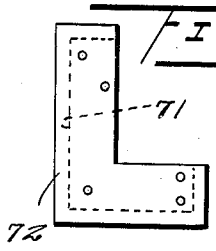


Fig. 12.



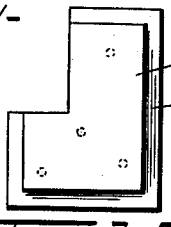


Fig. 13.

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UNITED STATES PATENT OFFICE

2,167,298

PHOTOGRAPH PRINTING FRAME

John W. Hardy, Pacific Beach, Calif.

Application January 4, 1939, Serial No. 249,305

4 Claims. (Cl. 88—24)

This invention relates to photograph printing frames and has for an object to provide a frame for projection printing adapted to hold a large sheet of sensitized paper and having novel means for intermittently adjusting the paper with respect to the negative for quickly making a number of exposures on the sheet which, after developing, may be severed to produce a plurality of prints, thus reducing time spent in a dark room.

A further object is to provide a device of this character in which various sizes of masks may be quickly applied without dismantling any part of the machine to the end that prints of various desired sizes may be made on a single large sheet of paper.

A further object is to provide a device of this character, which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of this specification,

Figure 1 is a top plan view of a multiple photograph printing frame constructed in accordance with the invention.

Figure 2 is an end elevation of the frame.

Figure 3 is a cross sectional view taken on the line 3—3 of Figure 1 and drawn to larger scale than Figure 2.

Figure 4 is a longitudinal sectional view of the frame taken on the line 4—4 of Figure 5 showing the glass pane of the paper holder in position for one of six exposures, the exposure areas being indicated by full lines on the pane by way of example.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 4.

Figure 6 is a longitudinal sectional view taken on the line 6—6 of Figure 1.

Figure 7 is a side elevation looking toward the right of Figure 1.

Figure 8 is a side elevation looking toward the left side of Figure 1.

Figure 9 is a cross sectional view taken on the line 9—9 of Figure 4, showing the dog and forked push rod for releasing the dog.

Figure 10 is a fragmentary plan view showing the exposure opening with a mask therein to reduce the size of the opening.

Figure 11 is a cross sectional view taken on the line 11—11 of Figure 10.

Figure 12 is a plan view of a mask interchangeable with the mask shown in Figure 10.

Figure 13 is a plan view of the mask also interchangeable with the mask shown in Figure 10.

Figure 14 is a detail perspective view of the forked end of the push rod showing the cam faces thereof for releasing the dog.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, the device is shown to comprise a top wall 10 formed preferably of a substantially rectangular board having a centrally located rectangular exposure opening 11, as shown in Figure 6. A bottom wall 12, preferably of sheet metal, and the same shape as the top wall, is provided with a peripheral flange 13 which is secured to the edges of the top wall through the medium of screws 14 or other connectors and coacts with the top wall in forming a casing for housing the working parts of the device.

A flanged shutter plate 15 is provided at one end with a sleeve 16 which is fixed to a hinge pintle 17 which is journaled in three angular bearing brackets 18 secured by screws 19 or other connectors to the top wall. A sleeve grip 20 is fixed to the pintle between two of the bearings as best shown in Figure 1, through the medium of which the shutter plate may be opened or closed.

The shutter plate normally seals an exposure opening 21 defined by a frame 22 which is fixed to the top wall 10 of the casing, concentric with the exposure opening 11 of the top wall. The frame 22 is of greater size than the exposure opening 11 and provides a ledge 22 upon which a masking block may be supported to reduce the size of the opening.

A U-shaped frame 23, best shown in Figure 4, preferably formed of strap metal, is mounted in the casing for movement longitudinally of the casing, and a paper holder designated in general by the numeral 24 is mounted in the frame for sliding movement transversely of the casing. This relative movement of the frame 23 and paper holder 24 with respect to the fixed exposure opening 11 permits of adjustment of the paper holder so that a plurality of exposures

may be made on the single large sheet of paper 25 as indicated by the exposure areas 26 indicated by intersecting longitudinal and transverse lines marked on the glass pane 27 of the paper holder, as best shown in Figure 4.

The U-shaped frame 23 is provided with a handle comprising a pair of rods 28 which are fixed to one leg 29 of the frame and slidably project through openings in a plate 30 which is fixed in any preferred manner to a transversely disposed bar 31 projecting from the top wall, as best shown in Figure 6. The rods 28 are connected together at their outer ends through the medium of a cross bar 32 which forms a grip to slide the U-shaped frame longitudinally in the casing. Sliding movement of the frame is directed through the medium of a guide bar 33, best shown in Figures 4, 5 and 7, which is connected at the ends to the ends of the legs of the U-shaped frame, and which is slidably received in a guide groove 34 formed in the bottom face of the top wall 10.

The paper holder 24 is provided with a U-shaped handle 35 formed of strap metal, fixed to two of the edges of the paper holder and adapted to project beyond the flange of the bottom wall 12 of the casing. The paper holder may be slid transversely of the casing through the medium of this handle.

The longitudinal adjustment of the U-shaped frame 23 in the casing is controlled through the medium of a rod 36, of polygonal cross section which is secured to the leg of the frame 23 to which the rods 28 are secured, and which projects through an opening in the flange 13 of the bottom wall, as best shown in Figure 4. The outer end of the rod is secured to the cross bar 32 of the handle through the medium of a screw 37 and washer 38. The rod is provided with openings 39 in the faces. A collar 40 is loosely mounted on the rod between the flange 13 and a strap bracket 41 which is fixed to the flange. The collar is provided with openings 42 to receive latch pins 43 which are slidably mounted in the strap bracket and in angular brackets 44 carried by the flange 13. Helical springs 45 are sleeved on the pins and tend constantly to hold the pins projecting through the openings in the collar and into the openings 39 of the rod, into which latter they are interchangeably received for a purpose later described. A pair of levers 46, best shown in Figure 3, are pivotally mounted intermediate their ends on pivot pins 47 carried by the plate 30 and having forked ends 48 engaging respective pins 43 between the brackets 44 and nuts 49 on the pins to withdraw the pins from the openings in the collar and in the rod 36.

When the levers 46 are manually forced toward each other at the outer ends the inner ends of the levers will force back the pins 43 against the tension of their controlling springs and permit the U-shaped frame to be moved longitudinally of the casing by moving the cross bar 32 of the handle outwardly or inwardly relatively to the casing.

The transverse adjustment of the paper holder 24 in the U-shaped frame 23 is controlled through the medium of a rod 50, also of polygonal cross section and rotatably secured at the ends in bearing brackets 51 carried by the other leg of the U-shaped frame 23, as best shown in Figure 4. This rod is also provided in its sides with a plurality of openings 52. The rod is provided with a cylindrical extension 53 which is slidably fitted in one of the brackets 51 and in the flange 13 of the bottom plate. The extension is terminally equipped with a disc head 54 of polygonal shape provided with the same number of openings 55 as there are sides to the rod 50, these openings selectively receiving a stop pin 56 which projects from the cross member of the U-shaped frame through a slot 57 in the flange 13 of the bottom plate as best shown in Figures 1 and 4.

A helical spring 58 is sleeved on the cylindrical portion of the rod between the polygonal shaped portion and the adjacent bearing bracket 51 to normally hold the rod with a predetermined face presented toward the adjacent edge of the paper holder 24.

As best shown in Figure 1, an angular dog 59 is pivoted at one end as shown at 60 in a recess 61 formed in the edge of the paper holder and is held through the medium of a helical spring 62, to be interchangeably received in the openings 52 formed in the rod 50. A push rod 63 is provided with a forked end 64, the branches of the fork having cam faces 65 which engage underneath a lug 66 connected to the dog 59 and lift the dog out of engagement with the rod 50 when the push rod is moved manually inwardly.

The push rod is slidably mounted in an opening 67 formed in the handle 35 of the paper holder as best shown in Figure 4 and is slidably received in a bearing bracket 68 carried by one leg of the U-shaped frame 23, as best shown in Figure 4.

A helical spring 69 is sleeved upon the push rod between the bracket and a collar 70 on the push rod and normally holds the push rod outwardly to dispose the cam faces 65 thereof out of engagement with the lug 66 on the dog.

When the push rod is pushed inwardly to dislodge the dog from the rod 50 the paper holder 24 may be moved in the U-shaped frame 23 transversely of the casing to expose a fresh section of the sensitized paper through the exposure opening 11 in the top wall after each exposure is made.

A plurality of different sizes of right angular shaped masks, shown at 71 in Figures 10 to 13, inclusive, are provided with respective flanges 72 adapted to seat on the ledge 23 of the exposure opening, as best shown in Figure 11, and vary the size of the exposure opening to the desired size of print to be made.

The openings 55 of the head 54 correspond with a respective face of the rod 50 and with a respective mask 71. When a selected mask is in use the respective opening 55 is engaged with the pin 56 to regulate the transverse distance the paper holder can be moved before it encounters the dog 59 so that successive prints in a transverse direction, of a predetermined size, may be made. The washer 38 of the rod 36 is provided with numerals as shown at 73 in Figure 2, each numeral corresponding with a respective face of the rod 36, and with a respective mask. When a selected mask is in use the washer is turned to present a respective numeral at a mark on the handle to regulate the longitudinal distance the paper holder may be moved before the openings 39 in the respective face of the rod 36 encounter the pins 43, so that prints in a longitudinal direction, of a predetermined size, may be made.

As best shown in Figure 5, the sensitized paper 74 is confined between the pane 27 and a blotter paper backing 75 on the conventional wood back 76 of the paper holder, this back being removable and secured in place in the usual manner by a

centrally pivoted spring clamp 77 which engages in a groove 78 in the frame of the paper holder.

Since the operation of the parts has been described as the description of the parts progressed it is thought that the invention will be fully understood without further explanation.

What is claimed is:

1. A photograph printing frame comprising a casing having an exposure opening, a frame in the casing, a paper holder in the frame, a rod adjustably mounting the paper holder in the frame with relation to the exposure opening, said rod being of polygonal formation in cross section and being provided with a plurality of openings in its side faces, a spring pressed pivoted dog carried by the paper holder and selectively engageable in the openings in the rod, a spring controlled push rod slidably mounted on the frame and having a cam face engageable with the dog to disengage the dog from said openings, and means on the paper holder for manipulating the paper holder.

2. A photograph printing frame comprising a casing having an exposure opening, a frame in the casing, a paper holder in the frame, a rod adjustably mounting the frame with relation to the exposure opening, said rod being secured to the frame and projecting from the casing, said rod being of polygonal cross section and having openings in its side faces, a collar having an inner wall of polygonal cross section slidably receiving the rod, a bracket secured to the casing and confining the collar on the rod, there being a plurality of radially disposed openings in the collar, and a spring pressed latch mounted on the casing and selectively engageable through the openings of the collar and openings in the rod to limit movement of the rod.

3. A photograph printing frame comprising a casing having an exposure opening, a frame in the casing, a paper holder in the frame, a rod adjustably mounting the paper holder in the frame with relation to the exposure opening, said rod being of polygonal formation in cross section and being provided with a plurality of openings in its side faces, a spring pressed pivoted dog carried by the paper holder and selectively engageable in the openings in the rod, a spring controlled push rod slidably mounted on the frame and having a cam face engageable with the dog from said openings, means on the paper holder for manipulating the paper holder, and means connected to the rod for indicating which face of the rod is coacting with the dog.

4. A photograph printing frame comprising a casing having an exposure opening, a frame in the casing, a paper holder in the frame, a rod adjustably mounting the frame with relation to the exposure opening, said rod being secured to the frame and projecting from the casing, said rod being of polygonal cross section and having openings in its side faces, a collar having an inner wall of polygonal cross section slidably receiving the rod, a bracket secured to the casing and confining the collar on the rod, there being a plurality of radially disposed openings in the collar, a spring pressed latch mounted on the casing and selectively engageable through the openings of the collar and openings in the rod to limit movement of the rod, and means connected to the rod for indicating which face of the rod is coacting with the latch.

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