July 4, 1944. A. C. BURKE 2,352,601

FRAME FOR PROCESSING PHOTOGRAPHIC NEGATIVES

Filed Dec. 22, 1942

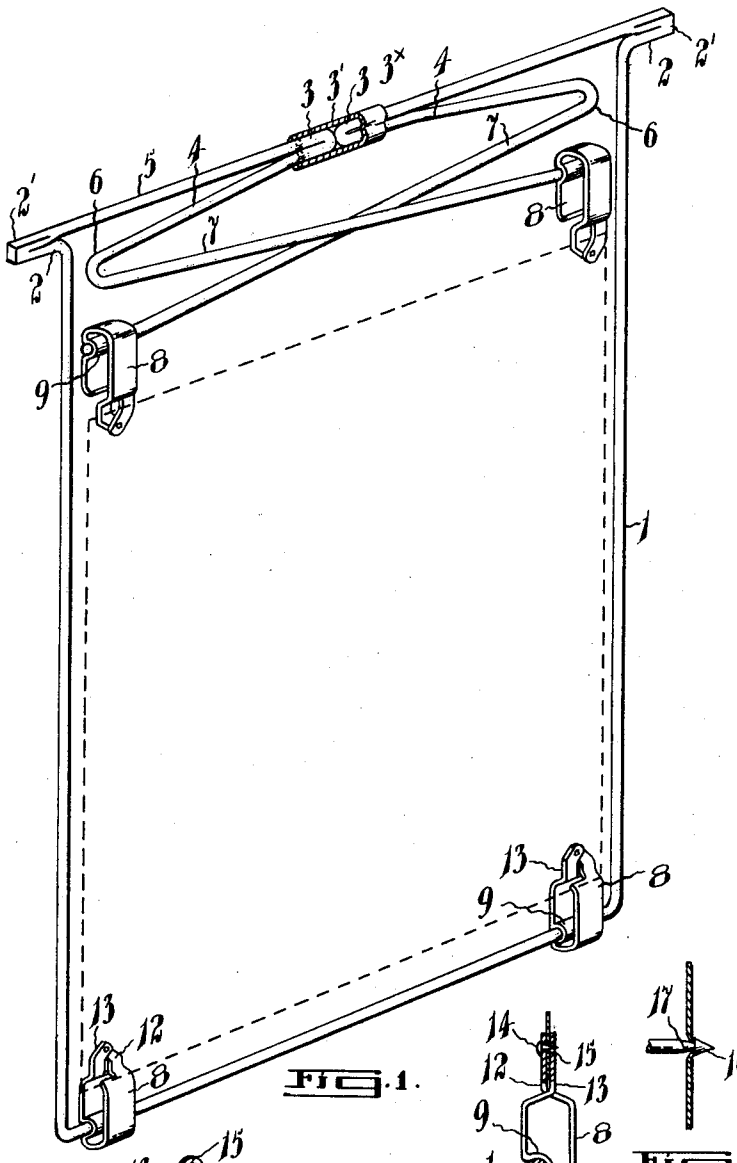


FIG. 1.

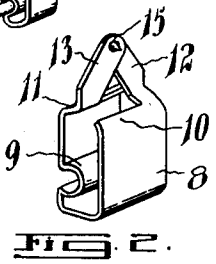


FIG. 2.

FIG. 3.

FIG. 4.

Inventor
Arnold C. Burke
By
H. J. & Dennison
ATTY.

Patented July 4, 1944 2,352,601

UNITED STATES PATENT OFFICE

2,352,601

FRAME FOR PROCESSING PHOTOGRAPHIC NEGATIVES

Arnold C. Burke, Toronto, Ontario, Canada

Application December 22, 1942, Serial No. 469,852
In Canada October 28, 1942

3 Claims. (Cl. 95—100)

This invention relates to improvements in frames for holding photographic negatives during the processing operation and the principal object of the invention is to devise a structure which will hold the negative securely under tension during the processing operation so that it will not wrinkle or warp and will therefore present a uniform flat surface over its entire area in the operation of printing therefrom and will not distort the image reproduced thereon.

A further object of the invention is to devise a structure which will be very simple to manufacture and which will remain in effective service for an extensive period of time and still further will be very easy to handle.

The principal feature of the invention consists in the novel arrangement within a strong and simple frame of a supporting member for holding the negative formed of a length of resilient material formed into a double loop with free ends to engage the negative or other sheet to be supported, suitable holding means being provided on the frame on the end opposite to the looped member to hold the opposite ends of the sheet securely.

In the accompanying drawing

Figure 1 is a perspective view of a holder construction in accordance with this invention.

Figure 2 is a perspective detail of the preferred form of clip holder for gripping the ends of the negative.

Figure 3 is a longitudinal sectional detail showing the application of the clip holder illustrated in Figure 2.

Figure 4 is an elevational detail of a modified form of holder showing a portion of a negative impaled thereon.

In the processing of photographic negatives, particularly those of larger sizes which are used in X-ray photography, it is customary to use some type of frame holder which will hold the negative sheet in a flat position so that it may be immersed in the processing fluid without touching against the walls of the bath or touching other negatives which may be in process.

Various types of spring-tension devices have been proposed for gripping and holding the sheet within a frame and this invention has been devised to overcome the difficulties met with in the use of such devices. It consists of a rectangular frame 1 preferably formed of a single length of wire which, at the top corners of the rectangle, is formed with outwardly extending return bends 2 which are preferably formed with rectangular extremities 2' thus providing projecting lugs by means of which the frame may be suspended in a bath by resting upon the edges of the bath or upon rods mounted therein and the squared ends are shaped to fit into holders with squared orifices.

The wire is also formed with return bends 3 which abut intermediate of the width of the frame and they are preferably enclosed within a tubular sleeve 3' which is shaped in elliptical form in cross section and is crimped at the ends 3x to snugly embrace the looped ends 3 to form a strong rigid frame.

The extensions 4 of the looped ends 3 of the wire frame extend laterally and project inwardly at a slight angle from the top cross member 5 of the frame 1 and they are preferably bent to form return loops 6 which extend adjacent to the side members of the frame. The ends 7 of the loops 6 preferably cross each other and the terminal ends extend close to the side members of the frame.

Attached to each of the free terminal ends of the members 7 and to the bottom cross bar of the frame are fastening clips 8 for gripping the negative to be processed, which is indicated by dotted lines.

The clips 8 are preferably formed of thin sheet spring metal bent double and having on one side a loop 9 which extends transversely of the clip presents an open groove to receive the wire frame which is pressed thereinto and is engaged and held under spring tension as particularly illustrated in Figures 1 and 2.

The end edges 10 and 11 of the clips 8 are bent slightly inward and from the opposite ends of each of the inturned edges extends the angularly arranged spring fingers 12 and 13 respectively. The free ends of the fingers 12 and 13 overlap and the finger 12 is provided with a sharp pin 14 which projects into a registering hole 15 in the finger 13.

It will be readily understood that by gripping the clips 8 between the thumb and finger a slight pressure will spring the sides of the clip inwardly thereby separating the overlapping ends of the engaging fingers, whereupon the edge of the negative to be processed is inserted between the fingers and on the release of pressure the pin 14 will perforate the negative and the fingers will grip it securely.

In use of this device a sheet to be processed is positioned within the frame 1 with the bottom edge securely gripped in the clamp members 8 as described. The double looped spring members 7 are then sprung downwardly to meet the

length of the sheet and the clips mounted thereon are manipulated to grip the upper edge. The spring tension of the long loops of the members 4 exert a longitudinal pull close to the edges of the sheet in longitudinal alignment with the bottom gripping members, thereby stretching the sheet taut and holding it securely.

Further, these looped members at the top have a slightly outward as well as longitudinal pull and they apply a slight tension transversely of the top end of the sheet as well as applying a longitudinal tension.

Owing to the extreme flexibility of this upper looped holding member any stresses in a sheet held thereby will be overcome and the sheet will be held taut and prevented from wrinkling or warping, either when immersed in the bath or when the frame is suspended clear of the processing fluid for drying.

It will be readily appreciated that a device such as described is very simple and rugged and will withstand considerable abuse. It occupies the minimum of space both in the processing bath and in a drying rack and there are no joints to become loose or disrupted.

The wire or rod from which the device is made may be a wire of metal or a rod of any suitable resilient material which will be sufficiently rigid to perform the service required and of such resiliency as to apply sufficient tension to the negative being held thereby and will withstand the rigours of any service to which it is put and will also be free from detrimental action through chemicals with which it may come in contact.

The preferred form of the tension-applying means at the top of the frame has been shown as a double looped extension of the frame but it will be understood that a serviceable device may be made without the loops 6 and extensions 7, the clips 8 being fastened directly to the free ends of the members 4.

A modified form of means for gripping or securing the negative is illustrated in Figure 4 as a sharpened point 16 formed on the rod ends 7 and turned laterally, the point having a shoulder 17 to engage and hold the sheet impaled thereon. Such points may if desired be attached to the lower bar of the frame.

What I claim as my invention is:

1. A processing holder for photographic negatives, comprising a frame formed of a single length of spring material bent into substantially rectangular form, both ends of the wire being shaped to form return bends which meet centrally of the top end of the rectangle the free ends extending laterally toward the side members of the frame and in angular relation to the top end, means rigidly securing the meeting portions of the return bends of the frame top, means arranged at the extremities of said spring arms for engaging and holding one end of the negative and applying longitudinal tension thereto, and means mounted on the bottom end of said frame for holding the opposite end of said negative.

2. A processing holder for photographic negatives, comprising a substantially rectangular frame formed of a single length of spring material bent adjacent to each end with return bends abutting midway of one end of the frame and extending angularly inward of the frame and toward the side members to form spring arms, a sleeve embracing and rigidly securing together the abutting ends of said return bends, and means mounted on the ends of said spring arms and the opposite end of the frame for gripping and holding the negative.

3. A processing holder for photographic negatives, comprising a length of spring rod bent into rectangular shape having a return bend adjacent to each end, said return bends abutting midway of the length of one end of the frame, the portions of said spring rod extending from said return bends extending angularly into the space enclosed by the frame and toward the side members thereof and having return bends formed intermediate of their length, the extremities extending from the latter bends being crossed intermediate of the width of the frame and forming spring arms, means mounted on the end of the spring arms and on the frame for gripping a negative, and means securing the abutting return bends at the end of frame rigidly together.

ARNOLD C. BURKE.