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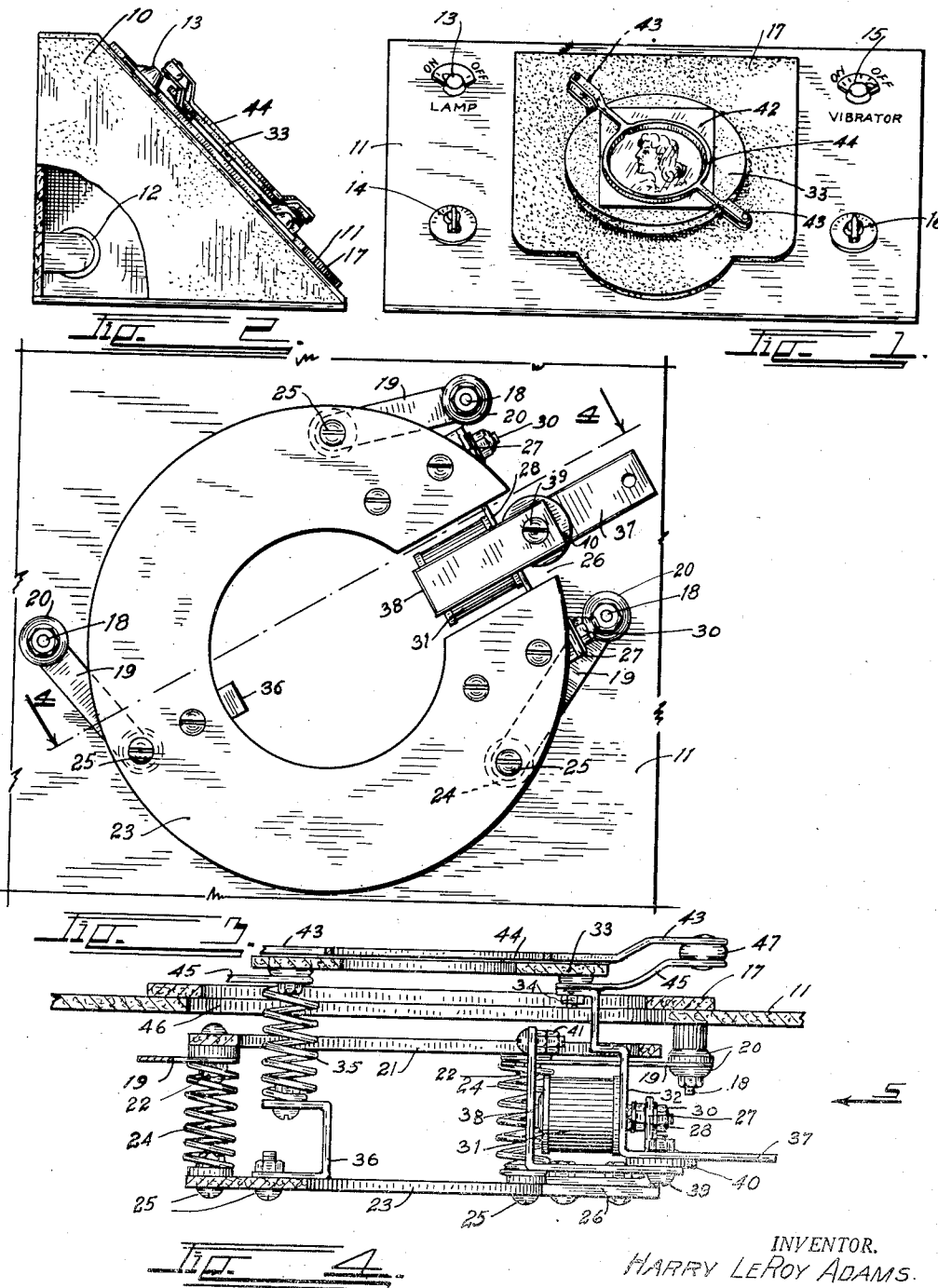
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2,422,174

PHOTOGRAPHIC RETOUCHING DEVICE

Filed March 25, 1946

2 Sheets-Sheet 1



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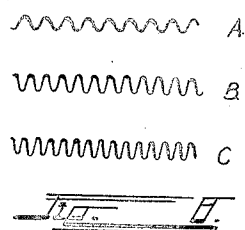
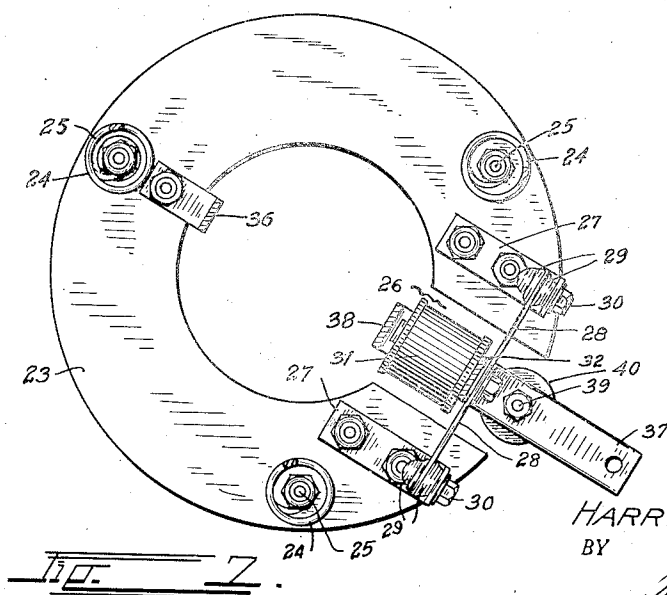
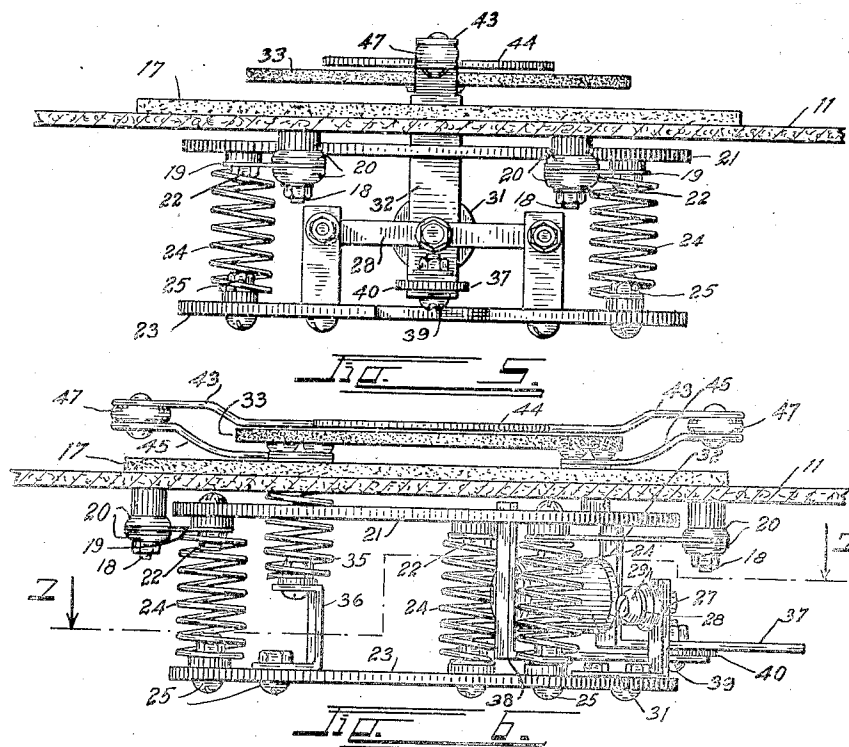
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PHOTOGRAPHIC RETOUCHING DEVICE

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8 Claims. (Cl. 95—103)

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This invention relates to a device for use in retouching photographs. Photographic retouching is done by highly skilled operators who work over the blemish spots on a negative with a retouching pencil. The work consists of a plurality of microscopic, overlapping check marks or loops which must be so small and so uniform that they will not become apparent on an enlarged print from the negative.

The principal object of this invention is to provide means for automatically forming these small, microscopic check marks so that retouching will require less skill and less time.

Another object of the invention is to provide a device of this character which will produce retouching marks much more uniformly than can possibly be produced by hand; which can be adjusted to accommodate various types of work and various densities of negative.

A still further object of the invention is to so construct the device that it will be substantially noiseless in operation.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a front view of a retouching cabinet in which the invention is embodied;

Fig. 2 is an end view thereof partially broken away;

Fig. 3 is an enlarged rear or interior view of the vibrating mechanism employed in the improved retouching device;

Fig. 4 is a cross-section therethrough, taken on the line 4—4, Fig. 3;

Fig. 5 is a side view of the vibrating mechanism, looking in the direction of the arrow "5," Fig. 4;

Fig. 6 is a similar side view, looking in the direction of the arrow "6," Fig. 5;

Fig. 7 is a cross-section, looking downwardly on the line 7—7, Fig. 6; and

Fig. 8 illustrates various markings produced by the device in a highly magnified condition.

The device consists of a vibrating mechanism for supporting a photograph negative over a light source. The mechanism may be supported in any desired manner or mounted in any suitable cabinet, table or enclosure. As illustrated in

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Figs. 1 and 2, the mechanism is mounted in a cabinet 10 having an inclined instrument panel 11. The cabinet 10 surrounds any suitable light source, such as a fluorescent lamp tube 12.

The instrument board may contain any suitable control instruments. As illustrated, it contains a lamp switch 13 for controlling the current supply to the lamp 12, and a lamp rheostat 14 for controlling the voltage of the lamp current. A vibrator switch 15, for controlling the current to a vibrating mechanism to be later described, and a vibrator rheostat 16 for controlling the voltage of the current supply to the vibrating mechanism.

As thus far described, the device may be arranged in any desired manner, since the various accoutrements form no part of the invention. The invention comprises a vibrating mechanism which, in the form shown, is mounted at the center of the instrument board 11, the latter having a circular cut-out 46 for receiving the mechanism.

The vibrating mechanism comprises a face plate 17 which is mounted on the face of the instrument panel 11. The plate 17 has a central opening corresponding with the opening 46 in the instrument board. The plate 17 may have any suitable design, and is preferably covered with felt or other protective substance, both for appearance and to prevent damage to the negative. The plate carries three rearwardly projecting equally spaced studs 18 which extend entirely through the instrument board 11 and project from the back thereof. Each of these studs 18 supports at its inner extremity a leaf spring 19 positioned between a plurality of rubber washers 20.

The leaf springs 19 extend parallel to the back of the face plate 17 and resiliently support a ring plate 21 in spaced relation to the instrument board 11. The attachment to the ring plate 21 is made at the extremity of each leaf spring by means of a spring bolt 22.

An annular back plate 23 is resiliently supported from the ring plate 21 by means of coil springs 24, there being three coil springs, each extending from one of the bolts 22 on the plate 21 to an attachment bolt 25 on the plate 23. Thus, it will be noted that the back plate 23 has a double resilient mounting; first, through the leaf springs 19; and second, through the coil springs 24.

The back plate 23 has an opening 26 at one side to allow space for the electrical vibrating mechanism. The latter is supported from angle brackets 27 secured to the plate 23 at each side of the opening 26. A spring blade 28 extends between the brackets 27 and is secured thereto,

between resilient washers 29, by means of attachment bolts 30.

The spring blade 28 supports, intermediate its extremities, an electro-magnet 31. An L-shaped magnet frame 32 is mounted between the magnet and the spring blade 28 and extends upwardly through the opening in the face plate 17 to support a circular negative plate 33, to which its extremity is attached by means of an attachment bolt 34. The opposite side of the negative plate 33 is resiliently supported by means of a fourth coil spring 35 extending from a spring bracket 36 on the back plate 23. The negative plate is supported above the face plate 17 and concentrically of the latter.

The magnet frame 32 is extended rearwardly from the magnet 31 to form a vibrating arm 37. An L-shaped armature member 38 is secured to the vibrating arm 37 by means of an attachment bolt 39, a resilient washer 40 being interposed therebetween. The armature member 38 extends alongside the magnet 31, thence turns across the pole piece thereof, terminating in a freely vibrating upper extremity. The vibrating extremity of the armature member 38 is provided with carefully selected counter-weights 41, which may be a bolt with a suitable number of nuts tightened thereon.

It will be noted that the entire mechanism is open through the center to allow light from the light source 12 to pass completely there-through and through the central opening in the negative plate 33.

A negative 42 may be clamped over the opening in the negative plate 33 by any suitable clamping means. As illustrated, the negative 42 is clamped beneath a clamping ring 44. The ring is provided with oppositely extending arms 43 which are secured to the extremities of bracket arms 45 extending outwardly from each of the bolts 34. Cushion members 47 are interposed between the arms 43 and the arms 45. The arms are resilient and act to constantly urge the negative 42 against the negative plate 33 to secure the former in place.

In use, the electro-magnet 31 is supplied with alternating current from any suitable source. This current produces an intermittent attraction for the armature member 38, causing the latter to freely vibrate. Since the electro-magnet itself is also resiliently mounted on the spring plate 28, it vibrates in synchronism with and in opposite direction to the armature 38. The vibration of the electro-magnet 31 is carried through the magnet frame 32 to the negative plate 33 to vibrate the negative 42.

By careful balancing of the vibrating arm 37, the armature 38, and the counter-weights 41, the entire mechanism will vibrate in step with the alternating current but not necessarily in phase therewith. For instance, the elements 37, 38 and 41 can be so co-ordinated as to cause the armature to vibrate at any desired multiple of 60 cycles when the electro-magnet is energized by a 60-cycle alternating current. This produces a slower vibration of greater amplitude than a simple armature vibrating at the original 60-cycle rate.

The resulting vibration, combined with the multiple resilient mounting, results in swinging the negative plate in a slightly circular path with a slight simultaneous vertical vibration thereof. If a retouching pencil be drawn rapidly across the vibrating negative, a result as shown at "A" in Fig. 8 will be produced. It will be noted that the vertical vibration slightly accentuates one half of

each since curve. A slower movement of the pencil will produce a result such as shown at "B," and still slower movement, a result such as shown at "C."

It will be noted that the width or magnitude of the vibration is the same in each case. The number of vibrations per inch, however, is increased by a slower movement of the pencil. Thus, a retoucher can obtain any desired "screen" in his retouching to match the particular negative being worked upon. The intensity or magnitude of the vibration can be controlled by means of the vibrator rheostat 16.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A photographic negative retouching device comprising: a face plate; an annular plate resiliently supported from the rear of said face plate; a back plate resiliently supported from the rear of said annular plate; a negative plate resiliently supported from said back plate and positioned forwardly of said face plate; and electro-magnetic means for vibrating said negative plate.

2. A photographic negative retouching device comprising: a face plate; an annular plate resiliently supported from the rear of said face plate; a back plate resiliently supported from the rear of said annular plate; a negative plate resiliently supported from said back plate and positioned forwardly of said face plate; bracket members extending forwardly from said back plate in spaced-apart relation; a leaf spring extending between said bracket members; an electro-magnetic vibrating means mounted on said spring; a magnet frame secured to said vibrating means; and means for securing said magnet frame to said negative plate.

3. A photographic negative retouching device comprising: a face plate; an annular plate resiliently supported from the rear of said face plate; a back plate resiliently supported from the rear of said annular plate; a negative plate resiliently supported from said back plate and positioned forwardly of said face plate; bracket members extending forwardly from said back plate in spaced-apart relation; a leaf spring extending between said bracket members; a resilient arm extending from said negative plate and being secured to said leaf spring and terminating in a freely vibrating extremity; an electro-magnet secured to said arm and to said spring; and a resilient armature member secured to said arm and extending across said magnet in freely vibrating relation thereto.

4. A photographic negative retouching device comprising: a supporting panel; a face plate secured on the front of said supporting panel; spring supporting studs extending rearwardly from said panel; leaf springs extending from said studs; a negative plate resiliently supported from said springs forwardly of said face plate; and an electromagnetic means for vibrating said negative plate.

5. A photographic negative retouching device comprising: a supporting panel; a face plate secured on the front of said supporting panel; spring supporting studs extending rearwardly from said panel; leaf springs extending from said studs; a ring plate supported from said leaf springs rearwardly of said panel; a negative

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plate positioned forward of said panel and resiliently supported from said ring plate; and an electro-magnetic means for vibrating said negative plate.

6. A photographic negative retouching device comprising: a supporting panel; a face plate secured on the front of said supporting panel; spring supporting studs extending rearwardly from said panel; leaf springs extending from said studs; a ring plate supported from said leaf springs rearwardly of said panel; an annular back plate; coiled springs supporting said back plate rearwardly of said ring plate; a negative plate positioned forwardly of said panel; means for supporting said negative plate from said back plate; and an electro-magnetic means for vibrating said negative plate.

7. A photographic negative retouching device comprising: a supporting panel; a face plate secured on the front of said supporting panel; spring supporting studs extending rearwardly from said panel; leaf springs extending from said studs; a ring plate supported from said leaf springs rearwardly of said panel; an annular back plate; coiled springs supporting said back plate rearwardly of said ring plate; a second set of coiled springs extending from said back plate forwardly through said ring plate and through said face plate to a position in front thereof; a negative plate supported from said latter springs forwardly of said face plate; and electro-magnetic means for vibrating said negative plate.

8. A photographic negative retouching device

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comprising: a supporting panel; a face plate secured on the front of said supporting panel; spring supporting studs extending rearwardly from said panel; leaf springs extending from said studs; a ring plate supported from said leaf springs rearwardly of said panel; an annular back plate; coiled springs supporting said back plate rearwardly of said ring plate; a second set of coiled springs extending from said back plate forwardly through said ring plate and through said face plate to a position in front thereof; a negative plate supported from said latter springs forwardly of said face plate; a magnet supporting arm extending rearwardly from said negative plate; means resiliently mounting said arm on said back plate; an electro-magnet mounted on said arm; and a resilient armature member mounted on said arm in freely vibrating relation with said magnet.

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