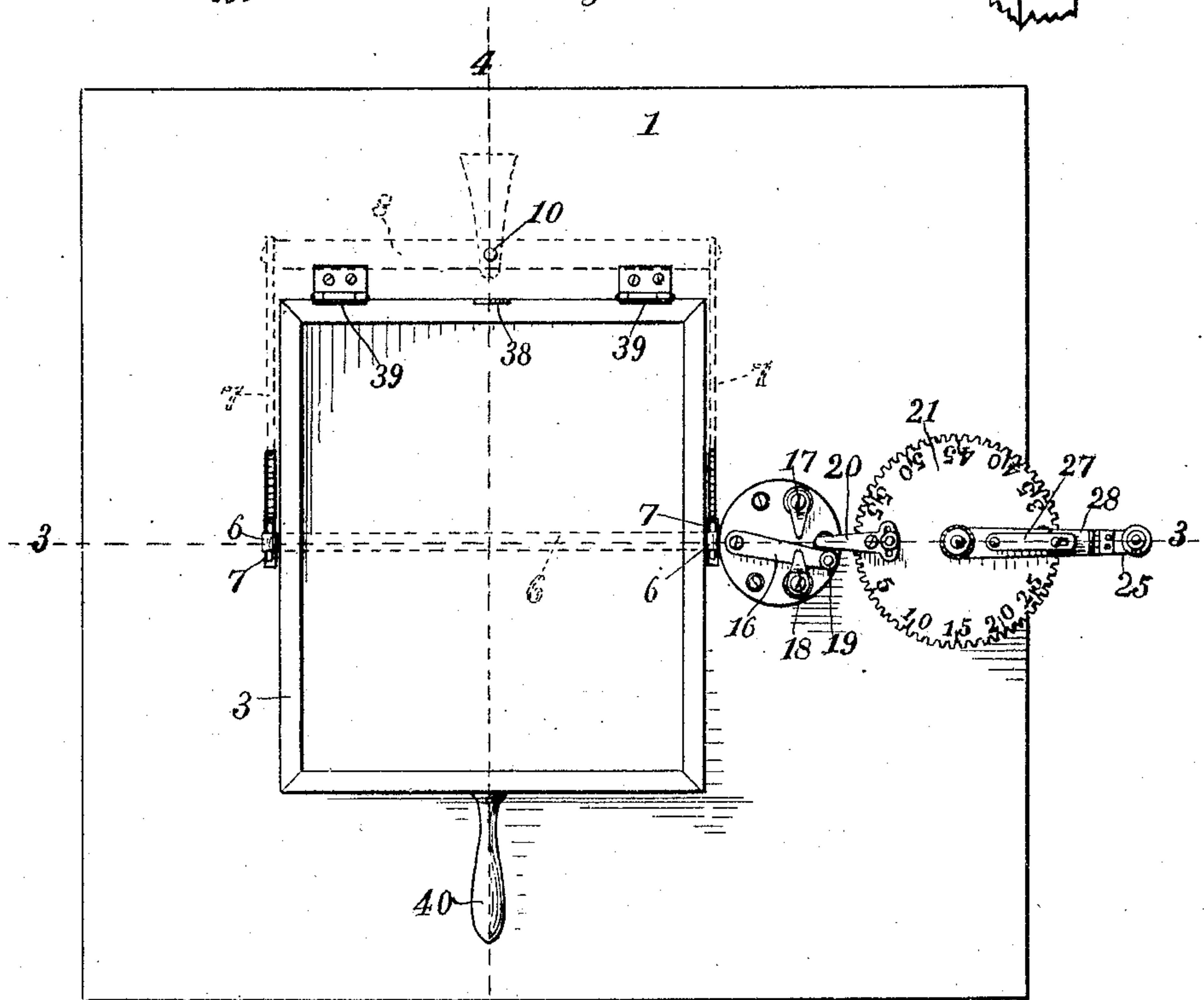
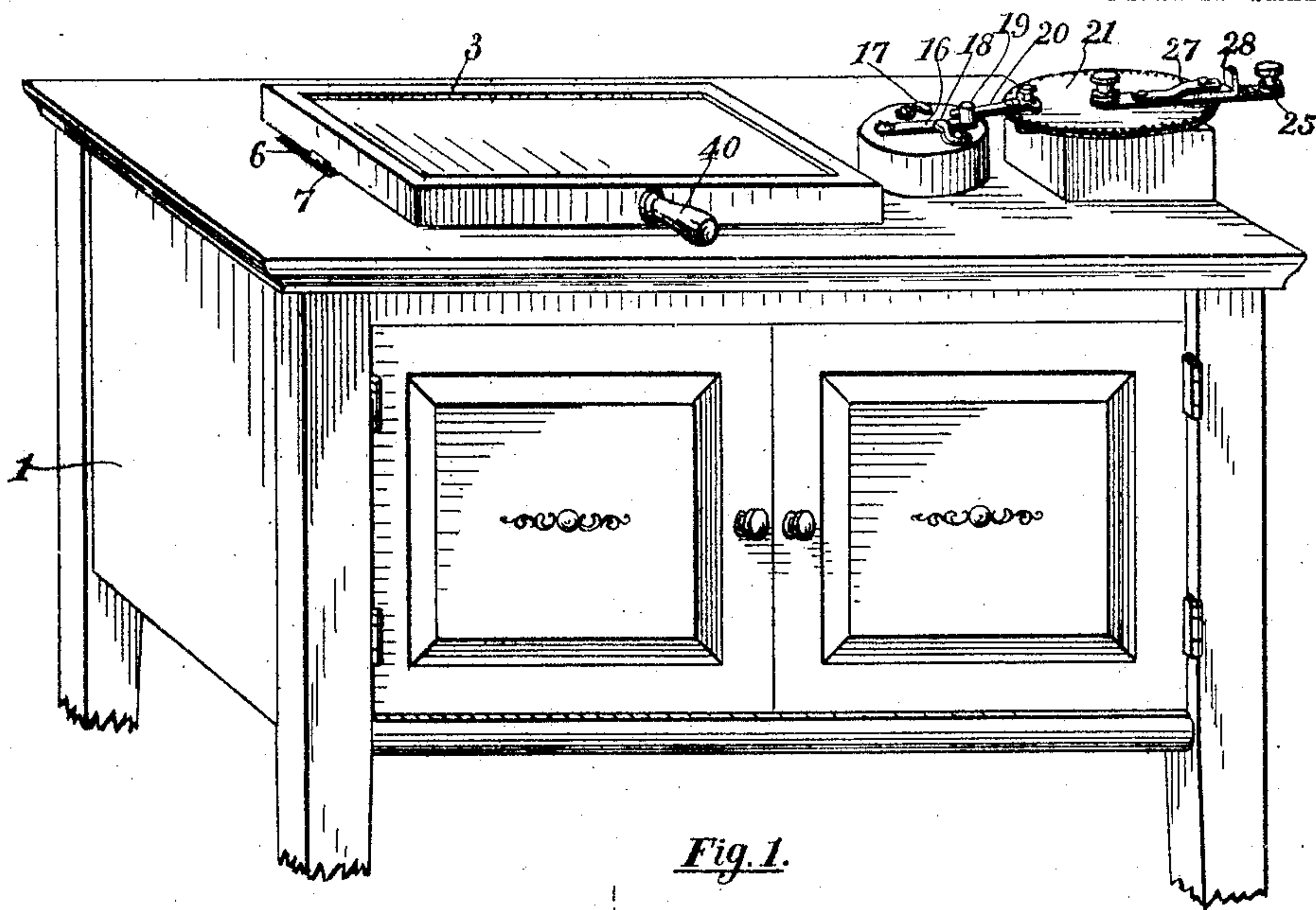


No. 854,076.

PATENTED MAY 21, 1907.

J. C. CALHOUN.  
PHOTOGRAPHIC PRINTING MACHINE.  
APPLICATION FILED MAY 17, 1906.

2 SHEETS—SHEET 1.



Witnesses

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*Fig. 4.*

A detailed cross-sectional diagram of a mechanical assembly. The drawing shows a base with vertical support structures. On the left, a component labeled 18 is mounted on a base 16. To its right, a series of rollers or guides are shown, labeled 19, 31, 32, 35, and 37. These rollers appear to guide a horizontal member or track. Other labels include 33, 34, and 36, which point to specific parts of the housing or support structure. The letter 'a' is used twice to indicate different sections or views of the assembly.

Witnesses

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Attorney



# UNITED STATES PATENT OFFICE.

JOSEPH C. CALHOUN, OF HOLLAND, MICHIGAN, ASSIGNOR OF ONE-HALF TO  
GEORGE P. HUMMER, OF GRAND RAPIDS, MICHIGAN.

## PHOTOGRAPHIC-PRINTING MACHINE.

No. 854,076.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed May 17, 1906. Serial No. 317,275.

*To all whom it may concern:*

Be it known that I, JOSEPH C. CALHOUN, a citizen of the United States, residing at Holland, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Photograph-Printing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in photograph printing machines, and its object is to provide a device operated by artificial light that is simple and convenient; and to provide the same with improved mechanism adapted to change the light and stop the printing at a predetermined time of exposure; and to provide the device with various new and useful features hereinafter more fully described and particularly pointed out in the claims.

My device consists essentially of a case in which a light is placed, means for holding the paper in contact with the negative, a switch for shifting the current and changing the light and clock mechanism adapted to shift the switch, and adjustable for time, whereby the light is changed after a predetermined time of exposure, as will more fully appear by reference to the accompanying drawings, in which:

Figure 1. is a perspective view of the device embodying my invention; Fig. 2. a plan view of the same; Fig. 3. a vertical section of the same on the line 3—3 of Fig. 4.; Fig. 4. the same on the line 4—4 of Fig. 2. Fig. 5. a detail in plan view of a modified switch; and Fig. 6. the same in side elevation.

Like numbers refer to like parts in all of the figures.

1 represents a case of any convenient dimensions provided with a transparent panel 2 preferably of plate glass closing an opening in the top of the case.

3 is a frame to carry the platen, hinged at one side as at 39 and provided with a handle 40. This frame when in operative position is above the glass 2, and when opened up to release the print engages a vertically movable pin 10 and releases the paper from the negative as hereafter described. In this frame is a tray 5 in which is supported an elastic platen or pad 4 to engage the print

and press the same in contact with the negative placed upon the glass 2. To hold the print in place while closing the platen down upon the same, I provide a tape 6 extending across between the platen and the glass and preferably made elastic, but the tape may be made inelastic, if preferred, if the levers 7 are used. This tape at its respective ends extends outside the glass and platen and is attached to pivoted levers 7 extending through openings in the top of the case and connected by a cross-bar 8 engaged by a spring 9, which spring raises the bar and depresses the forward ends of the levers to bring the tape 2 down upon the back of the print. The pin 10 is vertically movable in the top of the case and engages the bar 8 to depress the same when engaged by a plate 38 on the frame 3 as the frame is opened up.

11 represents a group or cluster of electric lights in the same circuit. 12 is a red light in a separate circuit. 13 represents the circuit connecting these lights with any source of an electric current.

14 is a wire connecting the switch with the lights 11, and 15 another wire connecting the switch with the light 12 to separately operate the same. The switch is provided with a lever 16 connected to the operating circuit 13 and alternately engaging the contacts 17 and 18. The contact 17 is in circuit with the white lights 11 and the contact 18 is in circuit with the red light 12. An upwardly projecting handle 19 serves to shift the switch lever 16 as the handle is alternately engaged by the arm 20 and the lever 25 mounted on a disk 21, which disk is rotated by a spring 22 connected to the same by a train of gearing 23 and arranged to rotate the disk in a given time (preferably in one minute) by means of an escapement 24.

The lever 25 is adjustable about the axis of the disk at intervals (preferably 60) whereby the number of seconds of exposure is determined by adjustment of said lever. To adjustably hold the lever 25 in place on the disk, a latch 28 engages recesses in the edge of the disk, preferably numbered to indicate the seconds of exposure, said latch being detachably held in place by a spring 27.

The device is shown in position for thirty seconds exposure, with the red light turned on, in which position when the platen is opened, the levers 7 will be depressed at the



rear and raise the tape clear of the glass 2  
beneath which tape is placed the negative  
and the paper to be exposed. When the  
platen is closed, the first part of its move-  
5 ment will permit the tape to descend and  
grip the paper, thus holding the same until  
the platen is in place upon the paper. The  
elastic material will press the paper closely  
in contact with the negative by virtue of the  
10 weight of the frame and contents. By  
turning the arm 25 around in contact with  
the projection 19, the switch lever 16 is  
shifted to engage the contact 17 and thus  
close the circuit of the white light. The  
15 clock work will now rotate the disk 21 and in  
the pre-determined time bring the arm 20 in  
contact with the handle 19 and shift the  
switch lever 16 from the contact 17 to the  
contact 18 and thus cut out the white light  
20 and turn on the red light and stop the expo-  
sure at the pre-determined time. To pre-  
vent arcing of the switch, I prefer to use the  
modification shown in Figs. 5 and 6, in  
which the contacts 17<sup>a</sup> and 18<sup>a</sup> correspond  
25 in function and arrangement to the contacts  
17 and 18, but are upwardly turned at their  
adjacent ends instead of horizontal.

On the lever 16 I provide spring electrodes  
or contacts 32 and 33 to respectively engage  
30 the same. To normally shift this lever to  
close the red light circuit, I provide a spring  
31; and to hold the lever in contact with the  
contact 17<sup>a</sup> and close the white light circuit,  
I provide a latch 34 held in engagement with  
35 the lever 16 by a weight 37 and released by  
an upwardly projecting member 35 engaged  
by the arm 20. A stop 36 holds this latch in  
proper position when disengaged from the  
lever 16. This switch is set to close the  
40 white light circuit by contact of the arm 25  
with the handle 19, as in the other form of  
switch.

What I claim is:

1. In a photograph printing machine,  
45 the combination of means for holding sensi-  
tized paper in contact with a negative, an  
electric light, a switch to open and close the  
circuit of the light, a clock adapted to open  
the switch, and means for adjusting the  
50 clock to open the switch at a pre-determined  
time.

2. In a photograph printing machine, the  
combination of means for holding sensi-  
tized paper in contact with a negative, an  
55 electric light of actinic color, an electric  
light of non-actinic color, a separate circuit  
for each light, a switch adapted to shift the  
circuits, a clock mechanism to shift the  
switch at a predetermined time, and means  
60 for adjusting the clock mechanism to deter-  
mine said time.

3. In a photograph printing machine, a  
case having a transparent panel, a movable  
platen opposite the panel, an electric light in  
65 said case, a switch to close and break the cir-

cuit of the light, clock mechanism adapted to  
shift the switch, and means for adjusting  
said mechanism to determine the time of ex-  
posure.

4. In a photograph printing machine, 70  
means for holding sensitized paper in con-  
tact with a negative, an actinic electric light  
and a non-actinic electric light, separate cir-  
cuits for said lights, a movable lever to shift  
said circuits, a disk, an arm attached to said 75  
disk and engaging said lever to move the  
same and shift the circuits, a lever adjust-  
able on said disk and also adapted to engage  
said lever, and means for rotating the disk at  
a predetermined rate of speed. 80

5. In a photograph printing machine,  
means for holding sensitized paper in con-  
tact with a negative, an electric light, a  
switch to close and open the circuit of the  
light, two relatively adjustable members to 85  
respectively close and open the switch, and  
clock mechanism to move said members at a  
predetermined rate of speed.

6. In a photograph printing machine, a  
case, a transparent panel in the case, an elas- 90  
tic tape extending across the panel, a mov-  
able and elastic platen above the panel, an  
actinic light in the case, and means for ex-  
tinguishing the light after a predetermined  
time of exposure. 95

7. In a photograph printing machine, a  
case, a transparent panel in the case, pivoted  
arms at the respective sides of the panel, a  
tape attached to said arms and extending  
across the panel, a spring to move the arms 100  
in one direction, means for moving the arms  
in the opposite direction, an elastic and mov-  
able platen above the panel, an actinic light  
in the case, and means for automatically  
extinguishing the light at a predetermined 105  
time.

8. In a photograph printing machine, a  
case, a transparent panel, in the case, pivoted  
levers at the respective sides of the panel, a  
tape attached to the levers and extending 110  
across the panel, a spring to move the levers  
in one direction, a pin to move the levers in  
the opposite direction, and a platen hinged  
to the case and adapted to rest upon the  
panel when closed and to engage and move 115  
the pin when opened.

9. In a photograph printing machine, a  
case, a transparent panel in the case, a mov-  
able tape extending across the panel, a mov-  
able and elastic platen above the panel, a 120  
white electric light and a red electric light in  
the case, separate circuits for the respective  
lights; a contact in each circuit, a movable  
lever to alternately engage the contacts and  
shift the circuits, a rotative disk provided 125  
with recesses, clock mechanism to rotate the  
disk, an arm attached to the disk and adapt-  
ed to engage and move the switch lever in  
one direction, a lever rotative about the axis  
of the disk and also adapted to engage the 130

switch lever and oppositely move the same, and a latch on the last named lever to engage the recesses in the disk.

10. In a photograph printing machine, a case, a transparent panel in the case, levers at the respective sides of the panel, a tape attached to one end of each of said levers, and extending across the panel, a bar connecting the other ends of said levers, a spring and a pin oppositely engaging said bar, a frame hinged to the case and engaging said pin when opened, an elastic pad in the frame, an actinic light in said case, and means for extinguishing said light after a predetermined time of exposure.

11. In a photograph printing machine, a case, a transparent panel in the case, an elastic tape extending across the panel, pivoted levers to which the tape is attached, a

spring to move the levers in one direction, a pin to move the levers in the other direction, a frame hinged to the case said frame resting upon the panel when closed and engaging the pin when open, two differently colored electric lights in said case, two separate circuits for said lights, a switch to shift said circuits, a disk, clock mechanism for rotating the disk, an arm and a lever on said disk and adapted to oppositely move the switch, and means for relatively adjusting the arm and lever on the disk.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH C. CALHOUN.

Witnesses:

ELLA BALGOOYER,  
M. J. SCHOON.