

July 7, 1931.

R. V. TUTTLE

1,813,780

TIMING DEVICE

Filed July 15, 1927

2 Sheets-Sheet 1

Fig. 1.

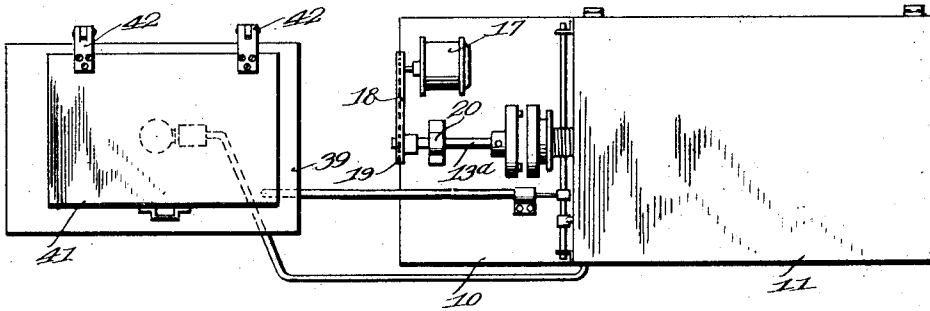


Fig. 2.

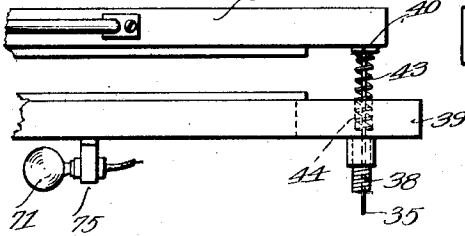


Fig. 3.

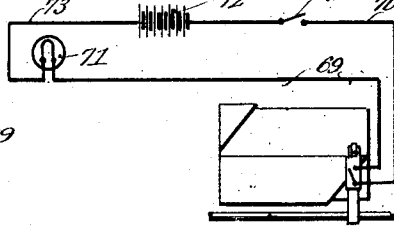
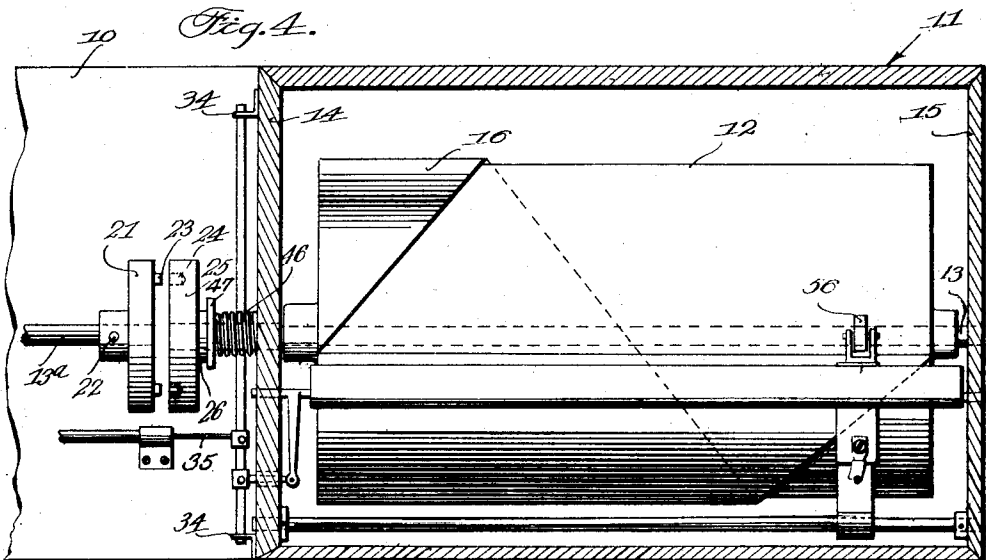


Fig. 4.



WITNESSES

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2 Sheets-Sheet 2

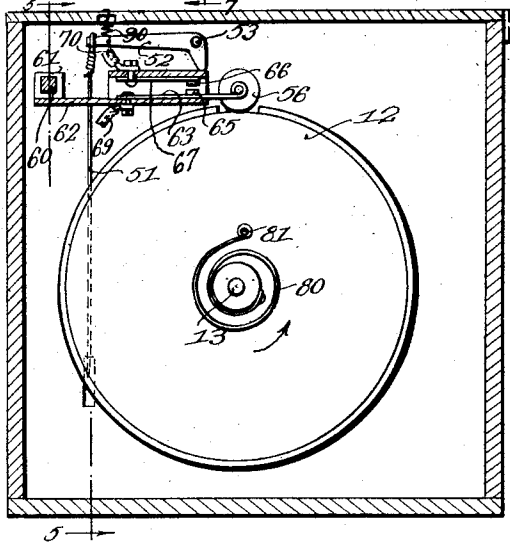
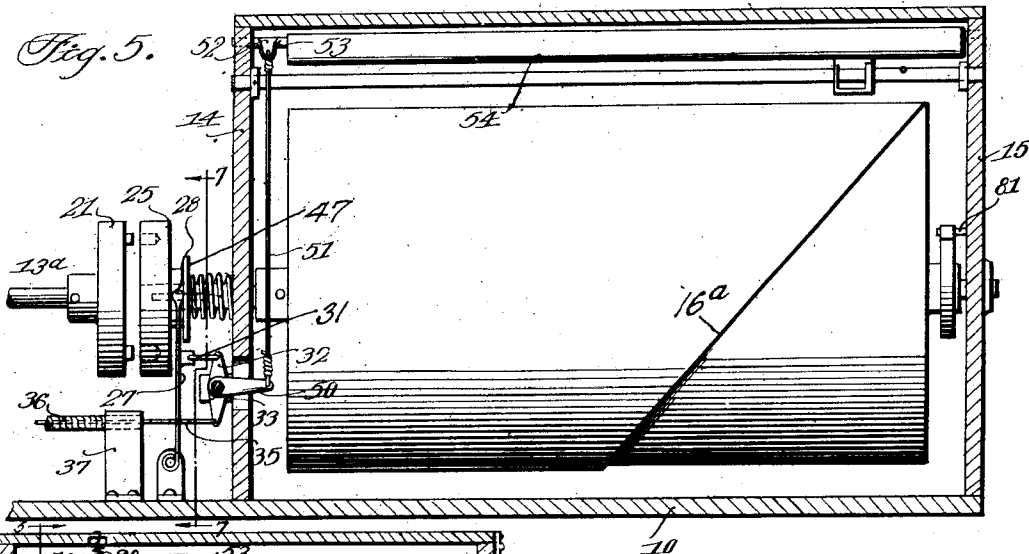
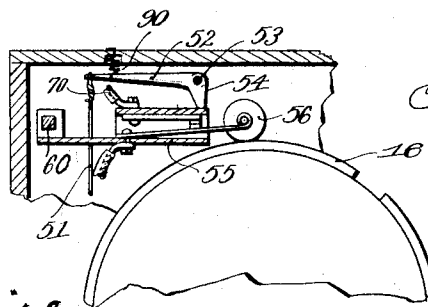
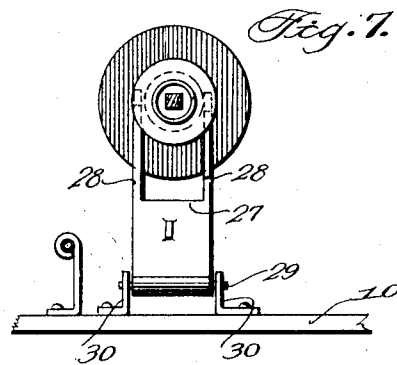


Fig. 6.



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UNITED STATES PATENT OFFICE

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TIMING DEVICE

Application filed July 15, 1927. Serial No. 206,013.

This invention relates to a timing device for printing photographs.

An object of the invention is the provision of a device which is adapted to be automatically operated by the usual platen and printing frame bringing an electric lamp into play and for timing the period for the exposure of the photographs to the rays of the lamp.

A further object of the invention is the provision of a device for causing illumination of a lamp and for predetermining the period of time for the illumination and for the consequent exposure of photographic papers to the light, the timing device being set in motion automatically by the usual operation of the platen of a printing device when said platen is moved to an operative position, the period of illumination being determined in advance of the actuation of the platen.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claim.

In the drawings:—

Figure 1 is a plan view shown more or less diagrammatically, of the timing device for exposing photographs to the rays of an electric lamp,

Figure 2 is a fragmentary section showing the tripping means adapted to be actuated by the movable platen of the printing machine,

Figure 3 shows diagrammatically the electric circuit associated with the device,

Figure 4 is a plan view partly in section of the timer,

Figure 5 is a longitudinal side view partly in section of the timer,

Figure 6 is an end view with the casing partly broken away,

Figure 7 is a transverse vertical section taken along the line 7—7 of Fig. 5, and

Figure 8 is a fragmentary enlarged end view showing the sketch operating mechanism in closed position.

Referring more particularly to the drawings 10 designates the base member on which is mounted a housing 11 which is adapted to house a rotary timing cylinder 12. The cylinder 12 is rigid with a shaft 13 mounted in bearings in the end walls 14 and 15 of the housing. The cylinder has secured to its outer surface, a copper strip 16 which is of irregular form and which will be presently described in connection with the switch mechanism.

The shaft 13 is driven from a motor 17 by means of a chain 18 and a sprocket 19 and shaft 13^a and a pair of clutch members. The outer free end of the shaft which projects beyond the wall 14 is supported in a bearing 20 carried by the base member 10.

One element 21 of the clutch member is pinned at 22 to the shaft 13^a and is in the shape of a disk. The inner face has prongs or lugs 23 projecting laterally therefrom and adapted to be received within pockets 24 of a similarly constructed disk 25 which is slidably mounted on the shaft 13 but is adapted to drive the shaft when said disk is rotated. The disk or clutch element 25 has an annular groove 26 which receives the arms of a yoke 27 so that when the arms 28 of said yoke are moved towards the disk 21 the lugs 23 will be received within the pockets 24 and the disk 25 will be in contact with the disk 21 whereby disk 21 will cause rotation of disk 25 and rotation of the shaft 13 and cylinder 12. The yoke 27 is pivoted at 29 in spaced brackets 30 secured to the base member 10. A ring 31 connects the yoke 27 with the upper end of a lever 32 pivoted on a shaft 33 which is mounted in bearings 34 carried by an end wall 14. The other end of the lever is connected to a Bowden wire 35 the sheath 36 which houses the wire is secured at one end to a bracket 37 mounted on the base member 10. The other end of the sheath, as shown at 38 (Fig. 2), is secured to a table 39 and the wire 35 passes through the table and is pro-

vided with a head 40 adapted to be engaged by a movable platen 41 hinged at 42 to the table 39. A spring 43 has one end in engagement with the head 40 and the other end in
 5 engagement with the bottom of a pocket 44 formed in the table 39 so that when the platen 41 is depressed the head will be forced downwardly against the tension of the spring 43, the spring being adapted to force the head
 10 back to its normal inoperative position as will be presently explained. A coil spring 46 embraces the shaft 13 and has one end in engagement with the wall 14, while the other end is in contact with a flange 47 of the clutch
 15 element 25, whereby said spring will tend to force the clutch element 25 into engagement with the clutch element 21.

A lever 50 is rigid with the shaft 33 and is connected by means of a cable or wire 51 with
 20 a lever 52 rigid with a shaft 53. The shaft 53 is mounted in bearings in the end walls 14 and 15 and adjacent the top of the casing 11. The shaft 53 carries rigidly secured thereto a cam 54 which extends approximately the entire
 25 length thereof so that it will be in position to act upon a switch box 55 for depressing the same and forcing the roller 56 into engagement with the cylinder 12. A square
 30 shaft 60 is adapted to be received by a square opening in a plate or block 61 secured to one end of the base member 62 of the switch casing 55. A flexible arm 63 is rigidly secured
 35 to the base member 62 of the casing 55 and has a contact member 65 adapted to engage a contact 66 carried by a flexible arm 67 to the
 40 top of the switch casing so that when the switch box is moved downwardly for causing the roller 56 to move into contact with the raised strip 16, the flexible switch contact arm 63 is moved upwardly causing the
 45 contacts 65 and 66 to close the circuit connected therewith which is indicated by the wires 69 and 70.

As shown more clearly in Fig. 3, the wire
 45 69 is connected with the lamp 71, while the wire 70 is connected with a source of current 72 and the wire 73 connects the other terminal of the lamp with the remaining terminal of the source of current 72. A manually operated
 50 switch 74 must be closed before the automatic device is brought into action for closing the circuit to the lamp 71. The lamp 71 is carried by a bracket 75 and is normally positioned so that it will properly illuminate
 55 a negative when the platen 41 is actuated.

A spring 80 has one end secured at 81 to the end wall 15 of the cylinder. The other end of the spring is secured to a shaft 13
 60 so that when the cylinder is revolved in one direction, as indicated by the arrow, the spring will be placed under tension so that when the cylinder is released the said spring will revolve the cylinder in the opposite
 65 direction and return it to its normal inoperative position.

The strip of material 16 is cut off along one edge, as shown at 16^a and at an acute angle to one edge, so that a portion only of the cylinder 12 will be covered, while the
 70 remaining portion will be exposed to provide a depressed portion, on which the roller 56 is adapted to be moved for opening the contacts 65 and 66. When the roller is moving over the strip 16, the contacts are closed. The inclination of the edge 16^a provides for
 75 varying lengths of travel of the roller 56 on the strip 16, which provides for a variation in the closing of the circuit. Therefore, the time of the closing of the circuit will depend upon the width of the strip at the point
 80 over which the roller travels and the speed of the drum.

The spring 80 which has one end connected to the drum 12 and the other end fixed to the casing 15, will rotate the drum 12 in
 85 an opposite direction after the drum has been revolved for increasing the tension on said spring by the motor 17. Therefore, the spring will return the drum to its normal position whereby it will be in position for
 90 again timing the printing of the photograph.

The spring 43 when compressed, will be under sufficient tension to raise the platen 41 and operate the lever 32 to move the
 95 clutch member 25 out of engagement with the member 21, and against the tension of the spring 46.

The operation of my device is as follows:

A sheet of sensitized paper is placed over the negative in the usual manner on the table
 100 39 and the platen is moved downwardly onto the negative. As the platen engages the head 40 said head is forced downwardly actuating the Bowden wire thereby rocking the lever 32 and causing the clutch member
 105 25 to be moved into engagement with the clutch member 21 whereby the pairs of lugs 23 will be received within a pocket 24 locking the clutch elements together. Since the shaft 13^a is being rotated by the motor
 110 17, the shaft 13 will likewise be revolved causing rotation of the cylinder 12. As the lever 32 is rocked, the shaft 33 is likewise rocked whereby the cable is released so that the spring 90 will raise the free end of lever
 115 52 and rock the shaft 43 so that the member 54 moved downwardly forcing the switch box 55 downwardly until the roller 56 engages the cylinder 12. Since this cylinder is revolved the roller will ride over the raised
 120 strip 16 forcing the flexible arm 63 upwardly whereby the circuit is closed through the contacts 65 and 66. At this time the lamp 71 is illuminated and will remain illuminated as long as the roller is riding over
 125 a portion of the raised strip 16. Before the platen is operated, however, the switch box is moved along the shaft 60 until it is properly positioned for timing the lighting of the lamp. It will be noted that the strip
 130

16 is so placed on the cylinder 12 that any timing may be had for closing the circuit.

I claim:—

5 In a timing device for printing photographs, a cylinder, means for rotating the cylinder, a contact strip of progressively increasing width on the cylinder, a shaft rockably mounted adjacent the cylinder, a lever
10 slidably mounted on the shaft but rockable with the shaft, a resilient arm secured to the lever and having a contact member at the free end adapted to engage the contact strip and the cylinder, a switch element on the lever, a second switch element on the
15 resilient arm adapted to be moved into engagement with the switch element on the lever when the contact member is in engagement with the contact strip, the second switch element being out of engagement with the
20 first element when the contact member is in operative relation with the cylinder.

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