(No Model.) 2 Sheets—Sheet 1.

H. FORD.

TIMING APPARATUS FOR PHOTOGRAPHERS.

No. 423,473. Patented Mar. 18, 1890.

Fig 2

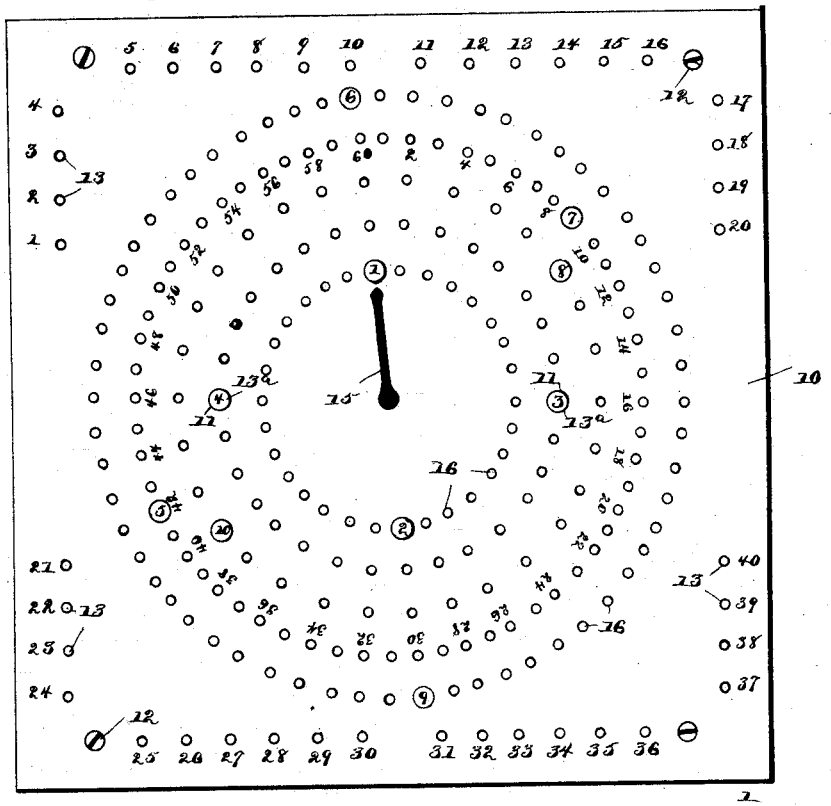
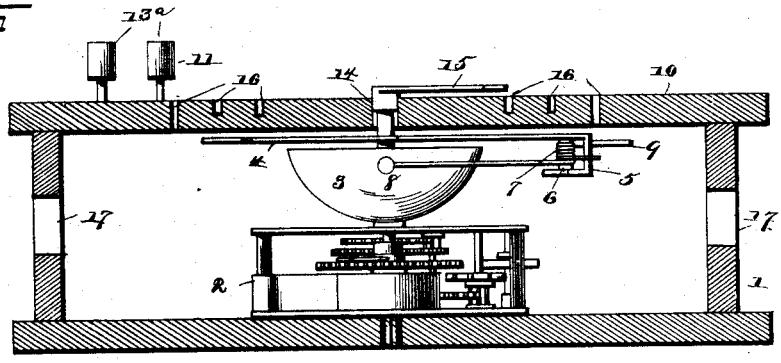


Fig 5



Witnesses:
John Imrie
W. S. Lurall

Inventor
Harry Ford.
By his Attorneys,
C. A. Snow & Co.

(No Model.) 2 Sheets—Sheet 2.

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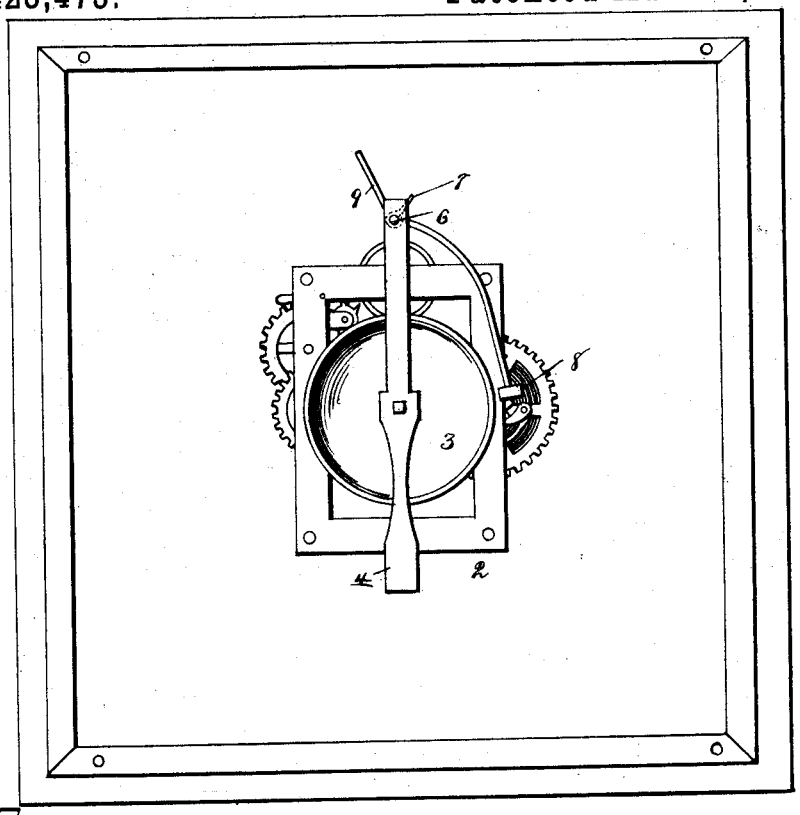


Fig 3

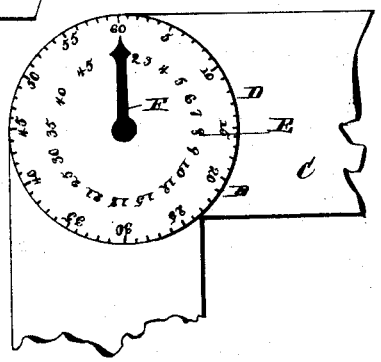
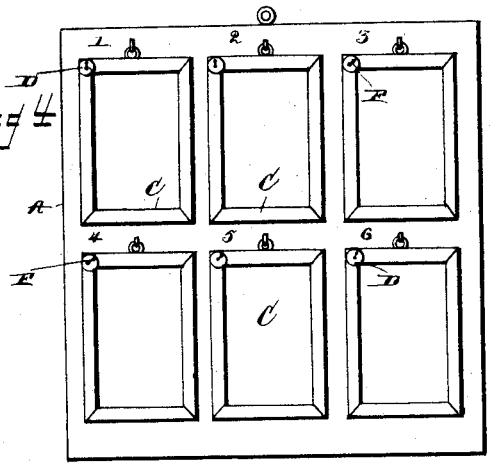


Fig 4



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UNITED STATES PATENT OFFICE.

HARRY FORD, OF LYNDON, KANSAS.

TIMING APPARATUS FOR PHOTOGRAPHERS.

SPECIFICATION forming part of Letters Patent No. 423,473, dated March 18, 1890.

Application filed May 29, 1889. Serial No. 312,526. (No model.)

To all whom it may concern:

Be it known that I, HARRY FORD, a citizen of the United States, residing at Lyndon, in the county of Osage and State of Kansas, have invented a new and useful Timing Apparatus for Photographers, of which the following is a specification.

This invention has relation to print-timing apparatuses for photographs.

Among the objects in view are to provide an apparatus having a series of preferably five or more concentric perforations, the perforations being suitably numbered and representing one or more minutes, to provide a case with suitable clock mechanism, having an alarm and an indicator moving over the dial, and a series of pins corresponding by numbers to the spaces occupied by the printing-frames while printing, whereby said pins representing their respective spaces may be inserted in one of the perforations a suitable number of minutes in advance of the dial-indicator, and when said dial-indicator or hand reaches that point an alarm will be sounded, and thus indicate that the frame corresponding in number with that pin requires attention.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of an indicator constructed in accordance with my invention. Fig. 2 is a similar view, the dial removed, and Fig. 3 is a plan of a printing-frame provided with certain adjuncts; Fig. 4, a printing-frame holder adapted to receive a series of frames. Fig. 5 is a transverse central section.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 represents a suitable casing, in which at its center is located any ordinary clock mechanism 2, the minute-shaft of which is provided with a closely-fitting alarm-bell 3, and with an arm fixedly mounted with the shaft and designated as 4, one end of the arm being bent to form an L, as at 5, and provided with a pintle 6, around which is wound a coiled spring 7, and from one side of which projects a hammer 8, adapted to strike the bell, and from the other side an outwardly-projecting trip 9. The mechanism is wound after the manner of an ordinary clock, and by the insertion of a key through the bottom of the casing which takes over the winding-shaft.

10 represents the cover of the casing, which in this instance constitutes a dial, and the same is secured by any suitable means—in this instance by screws 12—to the walls of the casing. A series of openings or perforations 13 are arranged at right angles to each other—in this instance at the four corners of the cover—and are numbered from 1 up to any desired number, and serve to receive when not in use a number of pins 11, having heads 13^a, bearing numerals corresponding with those of the perforations 13. A central opening 14 is formed in the cover 10, and up through the same projects the minute post or shaft of the clock mechanism, and upon the same is arranged a minute hand or indicator 15, the same being almost in line with the arm 5, arranged upon the shaft below the casing. A series of—in this instance five—concentrically-arranged openings or perforations 16 are formed in the cover 10, one of said series being provided with numerals from 1 to 60, and representing minutes, or it may be two or more, as desired. The perforations, while formed upon circles, are concentric with the opening 14, and are also upon radiating lines from said opening 14, so that a given numeral will indicate a radial series of openings or perforations. In order to emit the sound from the casing, the same is preferably provided with one or more openings 17 in its side walls.

The above description applies to the indicator proper, which indicator is designed for use in connection with certain other adjuncts, which I will now proceed to describe.

Referring to Fig. 3, A represents an ordinary printing window or rack, and C represents an ordinary printing-frame, upon any suitable point of which is mounted an indicator D, divided into degrees by a numbered scale E from 1 to 10, and then 12, 15, 18, 21, &c., each degree being provided with numerals from 1 to 60, as represented, or it may be otherwise, if desired.

A hand-indicator F is provided upon the

dial B and adapted to be moved over said dial.

The operation of my invention is as follows: It is well known among photographers and others skilled in the art to which my invention relates that considerable loss of time accrues from the necessary ceaseless examining of the prints in order that they may not be over or under printed. It is also well known that different negatives require different lengths of exposure in the same sun, and that the different lights give different results to the same negative when exposed the same length of time. By my invention, however, I propose to determine the length of time a certain negative will take to print in the light to which it is to be exposed, and after ascertaining that fact the time for removal of that print will be indicated by an alarm previously set, thus avoiding any necessity for watching the time and frequent examinations of the print. I also propose to so manipulate or print a series of negatives at one and the same time. I take, for instance, the frame C and place it on the space designated as 1 in the printing window or rack B, (having judged the time it will take to print by looking at the negative and observing the strength of the printing-light at the time.) I then take the pin designated as 1, which corresponds with the said space, and insert the same a sufficient number of holes or perforations ahead of the indicating-hand 15 as will indicate the minutes supposed to be required to finish the print. In the same way do I fill all of the spaces with frames, having guessed in the same manner the length of time each negative takes in the light at hand. When the indicating-hand 15 arrives at the pin 1, the tripping-arm 5 and its trip 9 will be brought in contact with the pin 1 and the alarm sounded. The first frame is then removed and the print examined, and, if done, removed therefrom and fresh sensitized paper placed with the frame ready for another print and the pin 1 moved the same number of spaces ahead as before. If on examination the print should be found to be not sufficiently printed, the frame is again placed out and the pin 1 advanced a sufficient number of minutes to complete the print, and the indicator-hand on the dial D also advanced a like number of minutes. At each successive alarm the frame corresponding to the pin pointed to by the hand on the dial 10 is examined and treated accordingly. The dial D serves the purpose of indicating the number of minutes it has taken to sufficiently print from a negative contained within that frame, so that the operator will not become confused when printing a number of negatives, but by reference to the dial can see just how many degrees ahead of the indicating-hand 15 he must insert the corresponding pin.

I do not wish to limit myself to the precise construction of form of the parts illustrated, and I reserve the right to modify my invention within the spirit and scope of the claims.

Having described my invention, what I claim is—

1. The combination, with a casing having a dial provided with five or more concentrically and radially arranged series of perforations indicating minutes, and a series of removable pins adapted for insertion in the perforations and to depend in one of the series of perforations below the dial, of a clock mechanism mounted in the casing and provided with an alarm adapted to be operated by the pins, and with a minute-shaft passing through the dial and provided with a pointer adapted to move over said dial, substantially as specified.

2. The combination, in an indicator, of a casing provided with a cover having several series of concentric radially-arranged perforations, removable pin mounted in the perforations in one of said series and depending below the bottom surface of the cover, of clock mechanism mounted in the casing, the minute-shaft of which is provided with an alarm-bell and with a dial-hand extending over the dial on the cover, an intermediate cross-shaft or arm provided with a hammer, and a trip-arm adapted to be brought into contact with the pins, substantially as specified.

3. The combination, with a casing having a cover provided with several series of concentrically and radially arranged perforations spaced apart to indicate degrees of time, and a series of pins adapted for insertion within the perforations, of a clock mechanism mounted in the casing, the minute-post of which is provided with a bell and a horizontally-arranged alarm-sounding bar terminating in an L-shaped end having bearings, a spring-actuated hammer mounted in the bearings and having a trip, and an indicator, and mounted on the shaft and nearly in line with the bar, substantially as specified.

4. An indicator having a dial provided with perforations representing degrees of time, and pins bearing numbers adapted for insertion within the perforations and depending into the casing, a clock mechanism mounted in the casing and having an alarm-bell, a trip and hammer adapted to operate the bell mounted on the minute-post of the mechanism, said apparatus being adapted for use in connection with a printing-frame holder, having numbers agreeing with those on the pins, and printing-frames having indicators mounted thereon and divided into degrees of time, agreeing with those of the dial, substantially as specified.

5. The case 1, having the cover 10 secured thereon by the screws 12 and provided with the central perforation 14, the concentric and radially arranged series of perforations 16, representing the degrees of time, and having the outer series of perforations 13, in combination with the clock mechanism 2, mounted

in the casing having the minute-shaft 4, the bell 3, the arm 5, terminating in an L, and having the pintle 6, spring 7, hammer 8, and trip 9, adapted to be actuated by the pins, and having the pointer 15 projecting above and adapted to move over the dial-cover 10, substantially as specified.

6. The combination, with an ordinary clock-train, of an alarm-bell, a minute-hand armed with a trip-acting hammer for striking said bell, set-pins for operating said trip, and a perforated dial for placing said pins at various distances in advance of a minute-hand, for the purpose of timing photographic prints, in the manner as substantially set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HARRY FORD.

Witnesses:

L. T. WILSON,

WALTER PLEASANT.