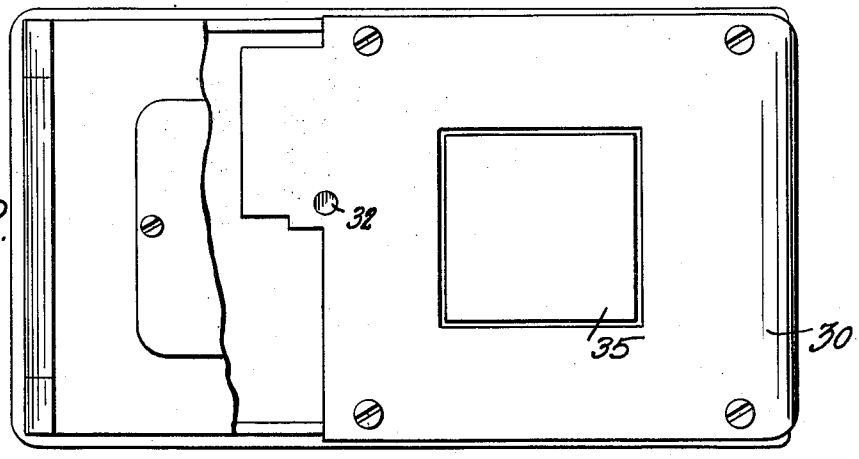
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TIME RECORDING MACHINE

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Fig. 2.



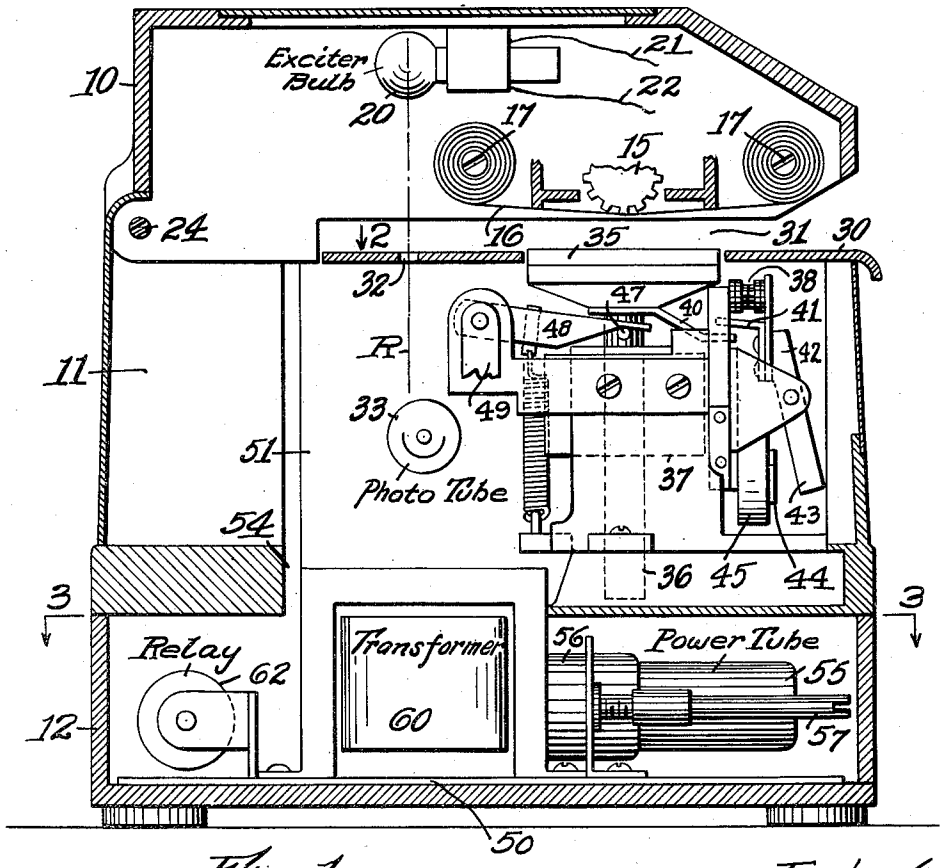


Fig. 1.

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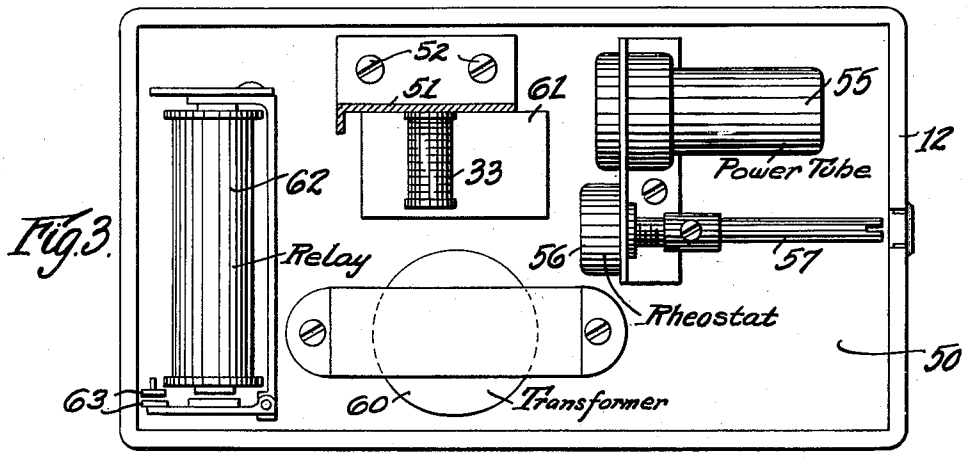


Fig. 3.

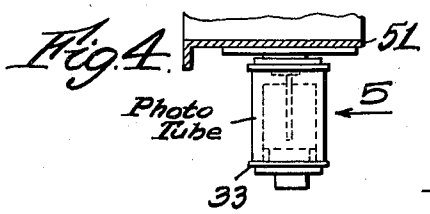


Fig. 4.

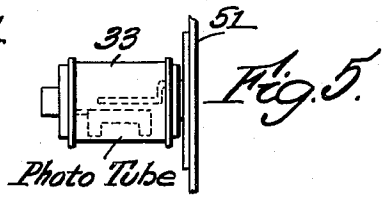


Fig. 5.

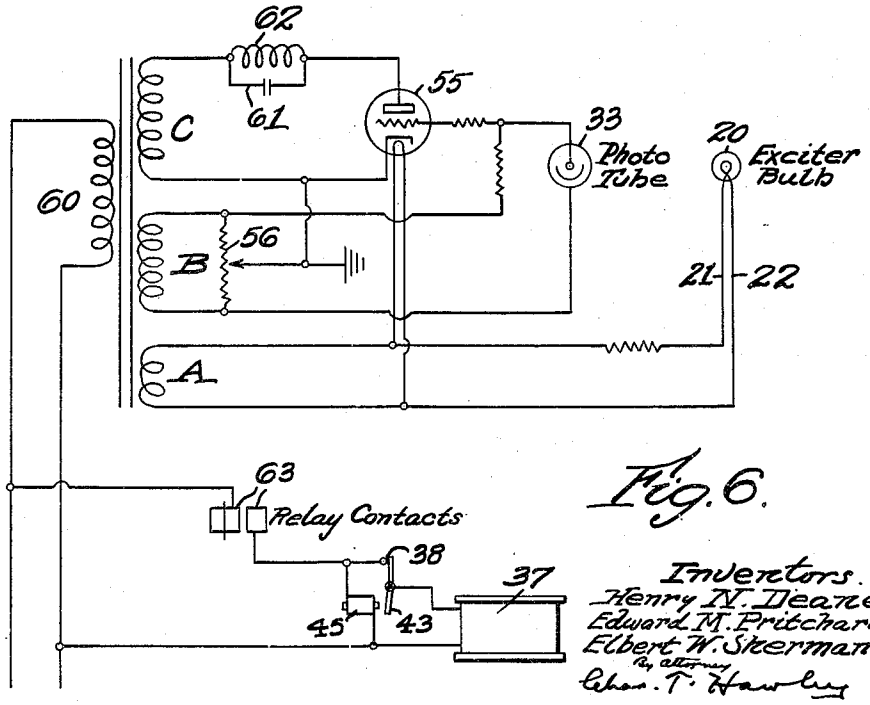


Fig. 6.

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UNITED STATES PATENT OFFICE

2,271,914

TIME RECORDING MACHINE

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Application March 5, 1940, Serial No. 322,348

2 Claims. (Cl. 101—287)

This invention relates to recording machines and is of general application, but is shown herein as embodied in a time stamp of the type commonly used for stamping a single time record on a card, paper or other record sheet.

The greater number of such time stamps, as heretofore known, have been provided with a plunger or lever for manual stamping of the record. Certain stamps have been provided with electrically actuated stamping mechanism, controlled by a hand-operated switch, and in certain other stamps the switch or some mechanical element has been moved to operative position by contact of the record sheet. These latter machines, while convenient to operate and reasonably satisfactory when used with cards or relatively stiff record sheets, have not always proved satisfactory and reliable when used with light or thin sheets of paper.

It is the general object of our invention to provide a time stamp or other time-recording machine in which the record will be automatically stamped by presentation of the sheet but without engagement with any tangible operative part.

More specifically, our invention relates to a time recording machine in which the stamping operation is controlled by photo-electric devices and is rendered operative by interruption of a ray of light normally directed toward a photo-electric cell, such interrupation being caused by the record sheet when placed in stamping position.

A further feature of our invention relates to an improved construction by which all parts of the photo-electric devices are assembled and mounted on a single supporting plate, secured within a separate compartment preferably formed in a removable sub-base of the machine.

Our invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of our invention is shown in the drawings, in which

Fig. 1 is a sectional side elevation of a time stamp embodying our improvements;

Fig. 2 is a plan view of the base of the stamp, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a plan view of the sub-base and associated parts, taken along the line 3—3 in Fig. 1;

Fig. 4 is a plan view of a photo-electric tube;

Fig. 5 is a side elevation thereof, looking in the direction of the arrow 5 in Fig. 4; and

Fig. 6 is a diagrammatic view showing certain photo-electric devices and electrical connections.

Referring to the drawings, our improved time stamp comprises an upper or cover portion 10, a middle or base portion 11 and a sub-base portion 12.

The cover portion 10 contains the type wheels 15 and actuating mechanism therefor, the type ribbon 16 wound on spools 17, and a small exciter bulb 20 having wires 21 and 22 connected into an electric circuit which will be hereinafter described. The mechanism for actuating the type wheels 15 and for feeding the type ribbon 16 may be of any usual construction and forms no part of our present invention.

The cover portion 10 is pivoted at 24 to the base portion 11 and is provided with a suitable locking device (not shown) by which it is normally maintained fixed in the position shown in Fig. 1 but from which position it may be swung upward after release of the locking device.

The base 11 supports a plate 30, spaced from the cover portion 10 by an elongated slot or opening 31 in which the card or record sheet may be inserted for stamping. The sheet is commonly inserted from the front of the machine or from the right as viewed in Fig. 1.

The plate 30 has a small round opening 32 (Fig. 2) through which light rays R (Fig. 1) may pass from the exciter bulb 20 to the photo-electric tube 33. When a record sheet is presented for stamping and is fully inserted in the slot 31, the rays R are more or less fully interrupted, depending on the opaqueness of the record sheet, but in any event the strength of the rays is reduced to such an extent that the photo-electric devices cause a record to be stamped, as will be hereinafter described.

The actual stamping is performed by a platen 35 (Fig. 1) mounted at the upper end of a plunger 36 slidable vertically in a solenoid coil 37. Current to energize the coil 37 is supplied to the coil through the normally closed contacts 38 (Fig. 1) in a control circuit to be described. As the platen rises, a projecting member 40 movable with the platen 35 engages an arm 41 mounted on a lever 42 which supports one of the contacts 38. Engagement of the arm 41 by the member 40 swings the lever 42 clockwise, breaking the circuit through the contacts 38 and causing the lower portion 43 of the lever to make contact with the armature 44 of a holding magnet 45. This magnet is energized at the same time that the solenoid 37 is rendered active but also remains energized after the solenoid circuit through the contacts 38 is broken. Consequently the contacts 38

are held apart until the magnet circuit is broken and even after the platen **35** returns to its normal lowered position. A pin **47** at the upper end of the plunger **36** operates through a lever **48** and arm **49** to feed the type ribbon **16** through connections not shown.

This platen-actuating mechanism forms in itself no part of our present invention but is included in the subject matter of a pending application of Alfred Ruttiman, Serial No. 275,571, filed May 24, 1939.

The various devices comprising the photo-electric control mechanism are preferably assembled on a plate **50**, detachably secured by screws to the sub-base **12**, which sub-base is in the form of a casing which is closed except at the top and which is normally covered by the base portion **11**.

The photo-electric tube **33** is of any usual construction and is mounted on a bracket **51** (Fig. 3) which may be secured by screws **52** to the supporting plate **50**. The bracket **51** extends upward through an opening **54** in the bottom of the base **11**, so that the tube **33** is supported at about the center of the base portion **11** but independently thereof.

The other parts assembled on the supporting plate **50** include an electronic or power-generating tube **55**, a rheostat **56** which may be adjusted by turning a screw **57**, a three-part transformer **60**, a condenser **61**, and a magnetic relay **62** which, when energized, closes the relay contacts **63** (Fig. 6). Three separate circuits A, B and C are taken off of the transformer **60**. The circuit A continuously energizes the exciter bulb **20**. The circuit B includes the photo-electric tube **33**, and the circuit C includes the magnetic relay **62** which closes the relay contacts **63** and thereby completes the power circuit of the stamping solenoid coil **37** previously described.

From the foregoing description, the method of operation of our improved stamping mechanism will be readily understood. So long as the rays R from the bulb **20** strike the photo-electric tube **33**, the resistance of the electronic or power-generating tube **55** will remain high and the magnetic relay **62** will be inactive. When the rays of light are interrupted, either wholly or to a substantial extent, the photo-electric tube **33** acts automatically to reduce the resistance of the electronic tube **55**, thus allowing a substantial current to flow through the coil of the magnetic relay **62**.

The relay then promptly closes the contacts **63** in the stamping solenoid circuit, and the solenoid **37** is energized to stamp the record. As the record is stamped, the contacts **38** in the solenoid circuit are separated, thus breaking the solenoid circuit. The holding magnet **45** in the shunt circuit then holds the contacts **38** open until the record sheet is removed and the relay contacts **63** open.

The entire stamping operation is thus initiated by inserting the record sheet and thereby interrupting the light rays which strike the photo-electric tube. The operation is practically instantaneous and no mechanical contact is made with the record sheet, which may be as thin or light as desired, provided it is sufficiently opaque to cut off a substantial part of the light rays.

The sensitiveness of the photo-electric control may be varied by adjusting the rheostat **56**. With very thin or translucent paper, the rheostat will be adjusted so that the photo-electric control will respond to smaller variations in the amount of light reaching the tube **33**.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what we claim is:

1. A recording apparatus comprising a cover portion, a base portion and a sub-base, said base portion being mounted on but separate and detachable from said sub-base and having an opening in the bottom thereof and said sub-base being open at the top, impression devices and an exciter bulb mounted in said cover portion, impression mechanism mounted on said base portion and adapted to cooperate with said impression devices to produce a record; a photo-electric tube and control means for said impression mechanism mounted on said sub-base, said tube being entirely supported on said sub-base but being mounted on a member projecting upward through the opening in the bottom of the base portion and being positioned within said base portion, and a sheet-supporting plate on said base portion having a hole through which a selected light beam can pass from said bulb to said tube, said control means coacting with said tube and light beam and being rendered operative to cause said impression mechanism to stamp a record when said light beam is interrupted, as by placing a record sheet on said supporting plate to cover the opening therein.

2. A recording apparatus comprising a cover portion, a base portion and a sub-base, said base portion being mounted on but separate and detachable from said sub-base, impression devices and an exciter bulb mounted in said cover portion, impression mechanism mounted in said base portion and adapted to cooperate with said impression devices to produce a record, a plate removably mounted in said sub-base, a photo-electric tube and control means for said impression mechanism mounted on said removable plate, said sub-base being open at the top but covered by said base portion, and said base portion having an opening in the bottom thereof and having a record-supporting plate mounted thereon which is provided with an opening through which a selected beam of light from said bulb is directed to said tube, and said control means coacting with said tube and light beam and being rendered operative to cause said impression mechanism to stamp a record when said light beam is interrupted, as by placing a record sheet on said supporting plate to cover the opening therein.

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