July 8, 1958 T. COONRADT 2,842,052

SHEET CONTROLLED ELECTRICALLY OPERABLE TIME RECORDING DEVICE

Filed March 9, 1954 2 Sheets-Sheet 1

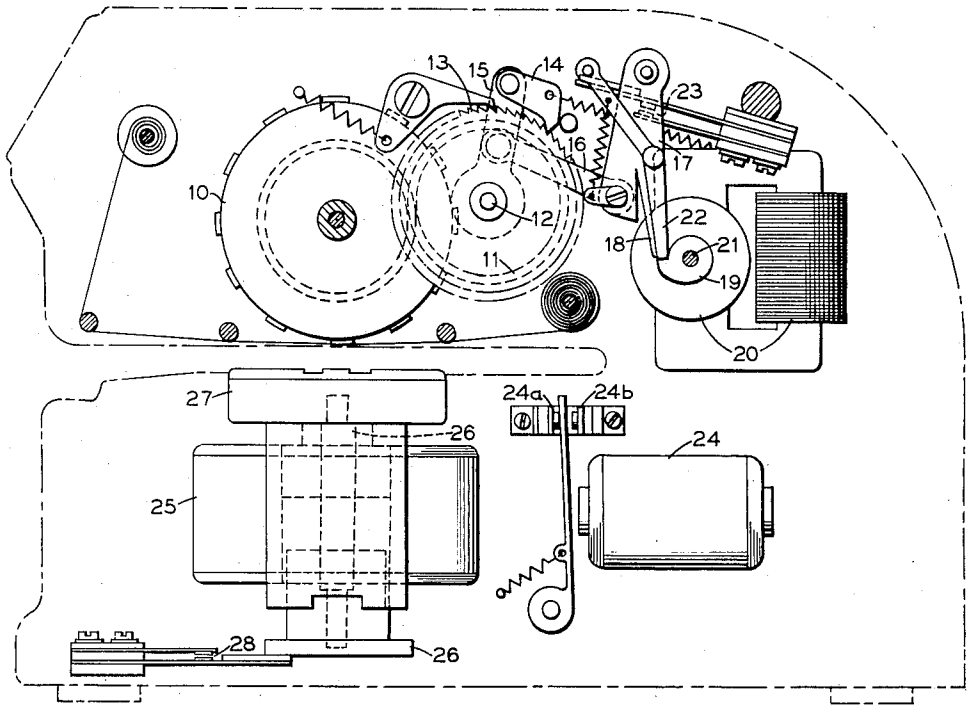


FIG. 1

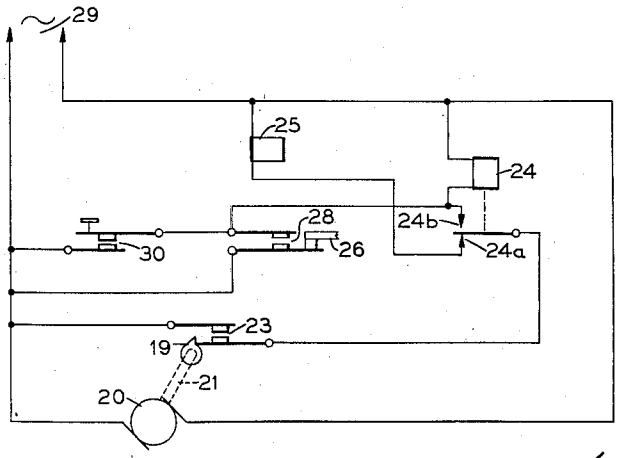


FIG. 2

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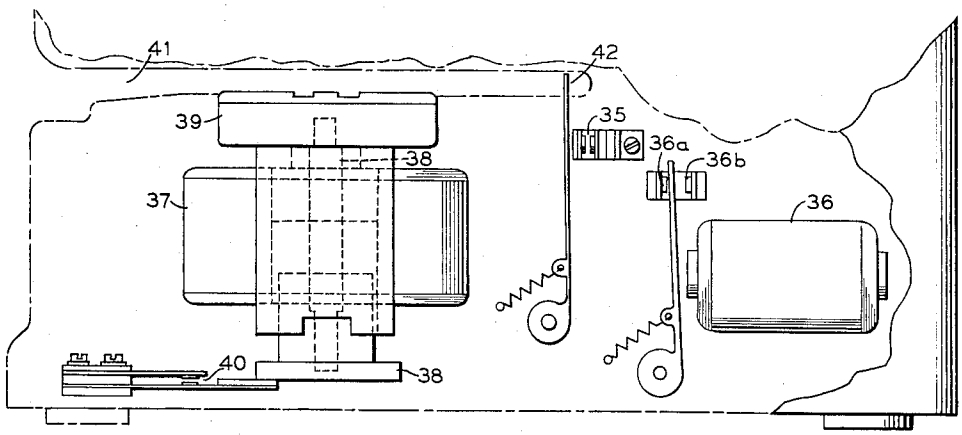


FIG. 3

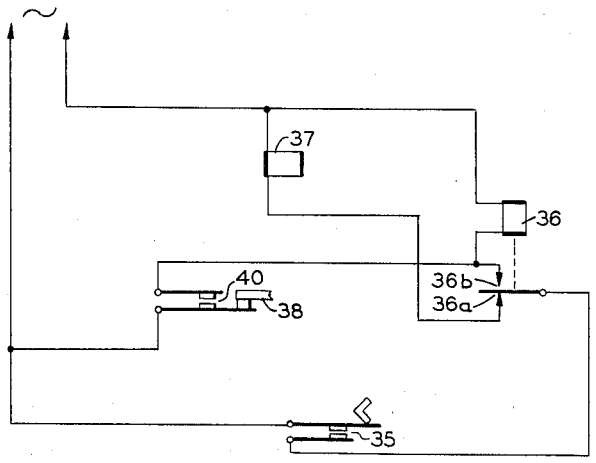


FIG. 4

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SHEET CONTROLLED ELECTRICALLY OPERABLE TIME RECORDING DEVICE

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2 Claims. (Cl. 101—287)

This invention relates to improvements in automatic time imprinting devices and, more particularly, to the controls for such imprinting devices.

Time stamps are frequently utilized as a component in signaling systems, such as printing telegraph systems of the type shown and described in Patent No. 2,237,137 issued to C. R. Doty. Printing telegraph systems of this type comprise a signaling device such as a teletypewriter and a time imprinting device. As long as the system is operative, the time imprinting device is adapted to be operated automatically to register the time at periodic intervals upon a message blank. The time imprinting device is made inoperative whenever the system is rendered inoperative.

Time stamps of this type are more commonly used as individual units for recording time impressions on a record card or sheet. Time stamps of this type frequently employ electrically controlled printing mechanisms which are rendered operative by switching means actuated by the record on which it is desired to have a printed time impression. Such stamps usually include means for preventing multiple impressions on the record for a single insertion of the record. The system of controls commonly includes mechanical linkages for actuation of the contacts preventing multiple registrations.

It is the prime object of this invention to provide an imprinting device with an improved means for automatically breaking the impression circuit after a single actuation of the printing mechanism and for thereafter holding the impression circuit open until the record initiating contacts have been opened.

Another object of the invention is to provide improved electrically controlled means for actuating the printing mechanism.

A further object of the invention is to provide improved imprinting control means adapted for automatic operation at periodic intervals.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of examples, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Fig. 1 is a side elevation view showing the main operating elements of the time imprinting unit.

Fig. 2 is a circuit diagram for a time imprinting unit adapted for use in a time and message recording system.

Fig. 3 is a side elevation view of a portion of a modified form of the time imprinting unit showing the main operating elements of a record actuated time imprinting control.

Fig. 4 is a circuit diagram for a record actuated time imprinting unit.

Time imprinting unit

The time registration mechanism, Fig. 1, is shown to comprise type wheels and type wheel transfer mechanism

of a well-known type. This mechanism is similar to the mechanism included in the time stamp fully disclosed and described in the United States Patent No. 1,798,583 issued March 31, 1931. Therefore, it is believed that the following brief description of the time registration mechanism will suffice.

The time stamp generally is shown to comprise the usual type elements **10** of which any number may be provided to register the hours, minutes and seconds, if so desired, and which are adapted to be positioned by the driving gear **11** which is secured to the shaft **12**. The type wheels are provided with the usual transfer mechanism and thus are adapted to indicate any of the desired increments of time. Secured to the shaft **12** is a ratchet wheel **13** which is adapted to be positioned periodically by the pawl **14** pivotally supported by the lever **15** which is rotatably mounted on shaft **12**. Attached to the lever **15** is an arm **16** which has connection with a part of the bell crank member **17** pivotally supported by the unit which also has an extension arm **18** adapted to be positioned by the cam **19**. It should be mentioned here that the cam **19** is not provided in the Patent 1,798,583. In this patent an impulse magnet is provided to actuate the pawl mechanism, whereas in the present time stamp mechanism a synchronous motor generally indicated at **20** is provided ot rotate the shaft **21** upon which the cam **19** is secured. The synchronous motor **20** is adapted to rotate the shaft **21** one complete revolution each minute. Of course, it is obvious that the mechanism can be arranged for any desired interval of time. The cam **19** is not only adapted to position the bell crank lever **17** every minute so as to actuate the ratchet **13** and shaft **12**, thus positioning the type wheels accordingly, but is also adapted to position the lever **22** pivotally secured to the lever **17** to actuate the contacts **23** every minute or periodically in accordance with the chosen time interval. The purpose of contacts **23** will be understood as the description progresses.

In the preferred embodiment of this invention, the time stamp is provided with a relay **24** for controlling transfer contacts **24*a*** and **24*b***, a print solenoid **25** having an armature **26** movable within solenoid **25**, a print platen **27** rigidly attached to the armature **26**, and a set of contacts **28** controlled by armature **26**. The purpose and operation of the contacts and elements will now be explained in connection with the description of the circuit diagram.

Time imprinting operation

Referring now to Fig. 2, which is a circuit diagram for a time imprinting unit adapted for use in a time and message recording system, it may be assumed that the time and message recording system is operative. Under this condition, it is desired that a time registration be made at periodic intervals, as for example at one minute intervals. The synchronous motor **20** is connected with a constant source of A. C. power as indicated at **29**. Synchronous motor **20** drives shaft **21** and cam **19** at a rate of one revolution per minute. Cam **19**, in addition to actuating the type wheel advancing mechanism, closes the contacts **23** once each minute completing a circuit to energize the print solenoid **25** through the normally closed contact points **24*a*** of relay **24**. Referring to Fig. 1, energization of print solenoid **25** actuates the armature **26** causing print platen **27** to be forcibly driven into engagement with the type wheels **10** thereby effecting a time registration on a message tape. The initial movement of armature **26** permits contacts **28** to close. Referring to Fig. 2, the closing of contacts **28** completes a circuit energizing relay **24**. The energization of relay **24** causes contact points **24*a*** to open and contact points **24*b*** to close. The opening of

contacts 24*a* interrupts the circuit for the print solenoid 25 and permits armature 26 to return to its normal position thereby opening contacts 28. Relay 24 remains energized through a hold circuit which is completed through contacts 24*b* and 23 until the hold circuit for relay 24 is broken by the opening of the cam controlled contacts 23. When relay 24 is de-energized, contacts 24*a* will close and thereby condition the circuit to the print solenoid 25 for the next time registration. The above-described operations permit only a single time registration for each closure of the cam controlled contacts 23. The above-described automatic time registration operation continues at one minute intervals for the duration of time that the time and message system is operative.

When the time and message system is rendered inoperative, the time registration unit is likewise rendered inoperative by the closure of switch 30. The closure of switch 30 completes a circuit causing relay 24 to be energized. The energization of relay 24 opens the contacts 24*a* and renders the circuit to print solenoid 25 inoperative. The synchronous motor 20 continues to operate in order to advance the type wheels 10 and thereby maintain the type wheels in true time.

While the fundamental novel features of the invention as applied to a time and message system has been described above, it should be understood that the time stamp is equally adaptable for use as a record actuated unit with means for prevention of multiple registrations upon a single insertion of the record. The embodiment of a time stamp for this purpose will now be described.

Record actuated time stamp

Referring now to Fig. 3, this is a side elevation view of a portion of the time imprinting unit showing the main operating elements of a record actuated time imprinting control. This time imprinting unit is similar in construction to the one described above except for the addition of the record actuated contacts 35. The time stamp is provided with a relay 36 for controlling transfer contacts 36*a* and 36*b*, a print solenoid 37 having an armature 38 movable within solenoid 37, a print platen 39 rigidly attached to the armature 38, and a set of contacts 40 controlled by armature 38. The purpose and operation of the contacts and elements will now be explained in connection with the description of the circuit diagram of Fig. 4.

When it is desired to make a time registration on a record, the record is inserted into the throat 41 of the time stamp so as to engage lever 42 and thereby close the contacts 35. The closure of contacts 35 completes a circuit to the print solenoid 37 through the closed contact points 36*a*. The energization of print solenoid 37 actuates the armature 38 causing the print platen 39 to effect a time registration upon the record. The initial movement of armature 38 permits contacts 40 to close. The closure of contacts 40 completes a circuit energizing relay 36. The energization of relay 36 causes contact points 36*a* to open and contact points 36*b* to close. The opening of contact points 36*a* interrupts the circuit for the print solenoid 37 and permits armature 38 to return to its normal position thereby opening contact points 40. Relay 36 remains energized through a hold circuit which is completed through contacts 36*b* and the record actuated contacts 35 until the circuit is broken by the removal of the record from lever 42 so as to permit contacts 35 to open. When relay 36 is de-energized contacts 36*a* will return to their normally closed position and thereby condition the circuit for the print solenoid 37. The above-described sequence of operation permits only a single time registration for each closure of the record actuated contacts 35.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention. It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In an automatic time printing system, the combination of printing means, an electromagnetic device having a set of transfer contacts, cyclically operated contacts, a control circuit for said printing means including the normally closed contact points of said electromagnetic device and established by the closure of said cyclically operated contacts to effect printing operations at periodic intervals, an energizing circuit for said electromagnetic device including means controlled by said printing means whereby said energizing circuit is established when said printing means is actuated, said electromagnetic device being operative to interrupt said control circuit for the printing means, a holding circuit for said electromagnetic device established through transferred contacts of said electromagnetic device and said cyclically operated switch, said holding circuit being maintained in an energized state until interrupted by the release of said cyclically operated contacts.

2. In a printing device, the combination of printing means, an electromagnetic device, a first set of normally closed contacts and a second set of normally open contacts both controlled by said electromagnetic device, a switch operable by a record to be recorded upon, a control circuit for said printing means including said first set of contacts and completed by the closure of said record operated switch to effect a printing operation, an energizing circuit for said electromagnetic device including a third set of contacts operable by the actuation of said printing means, said electromagnetic device being operative to transfer the condition of said first and second sets of contacts, said first set of contacts, in transferred condition, serving to open said control circuit for the printing means, a holding circuit for said electromagnetic device established through said second set of contacts in transferred condition and said record operated switch, said holding circuit being maintained in an energized state until interrupted by the release of said record operated switch.

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