

(No Model.)

5 Sheets—Sheet 1.

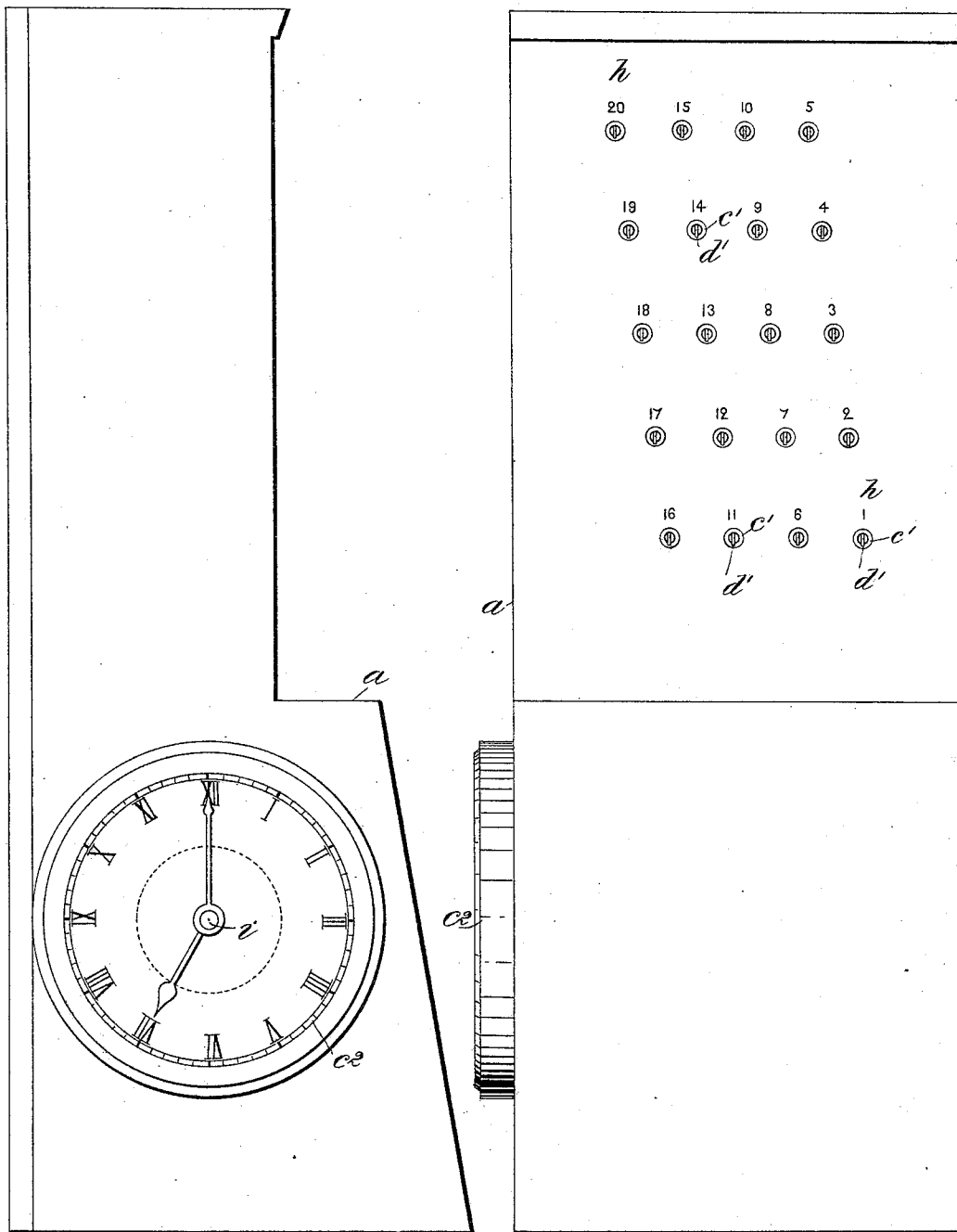
J. S. MORSE & D. R. LOVEJOY.
EMPLOYEES TIME RECORDER.

No. 527,395.

Patented Oct. 9, 1894.

FIG. 2.

FIG. 1.



Witnesses:
John Buckler,
D. J. Morgan

Inventors:
J. S. Morse
D. R. Lovejoy
By A. P. Thayer
Attorney.

(No Model.)

5 Sheets—Sheet 2.

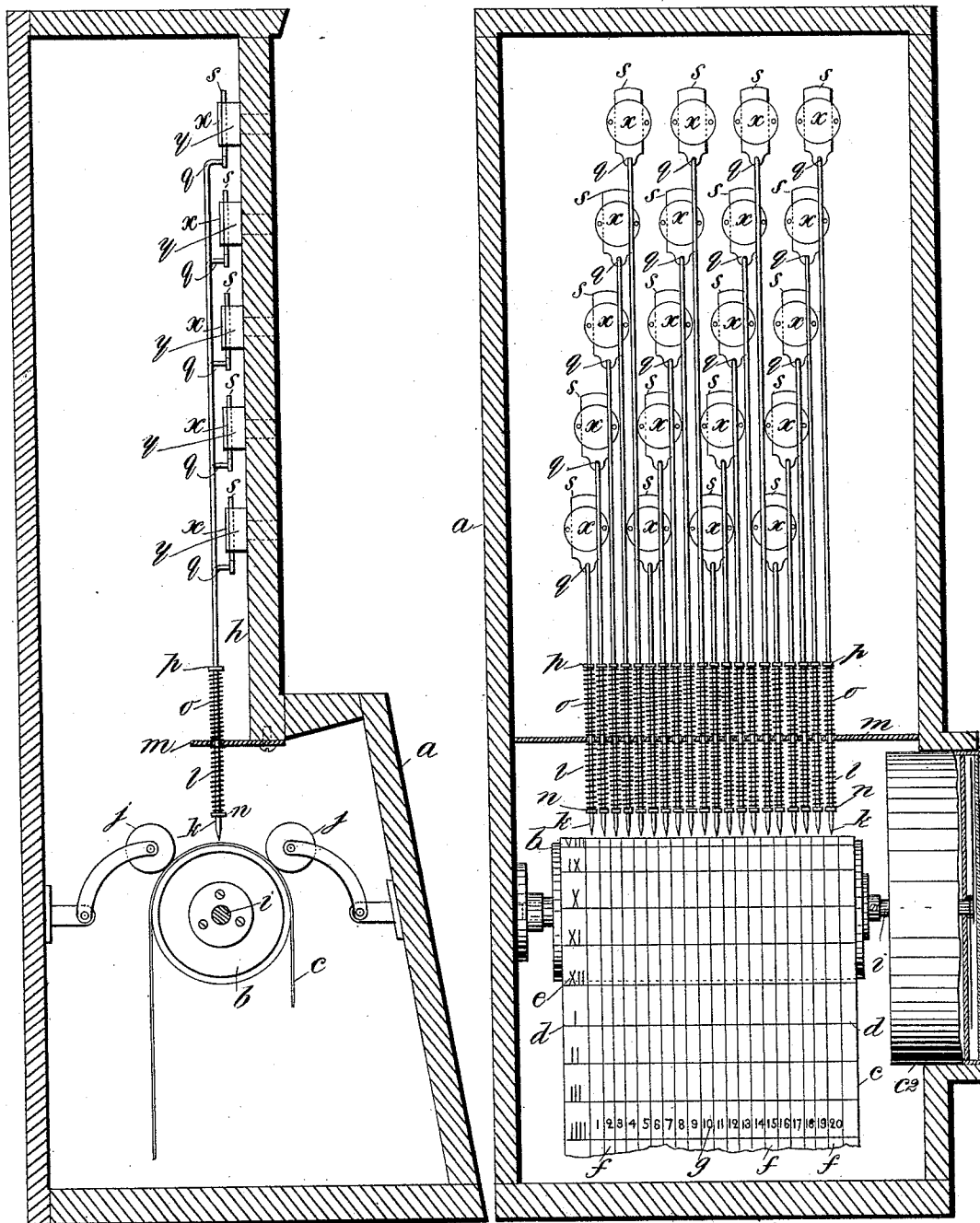
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FIG. 1.

FIG. 3.



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5 Sheets—Sheet 3.

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Fig. 5.

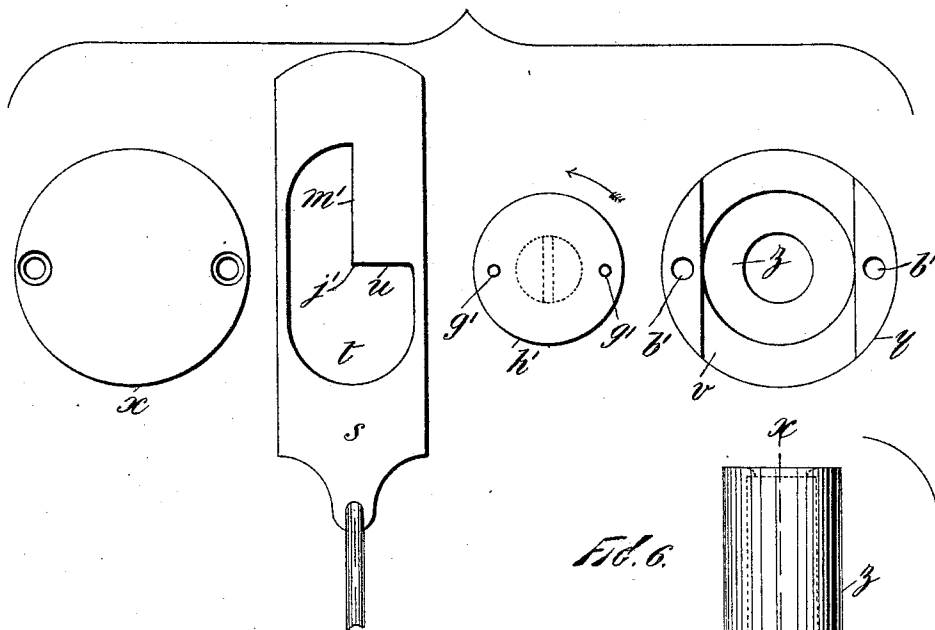


Fig. 6.

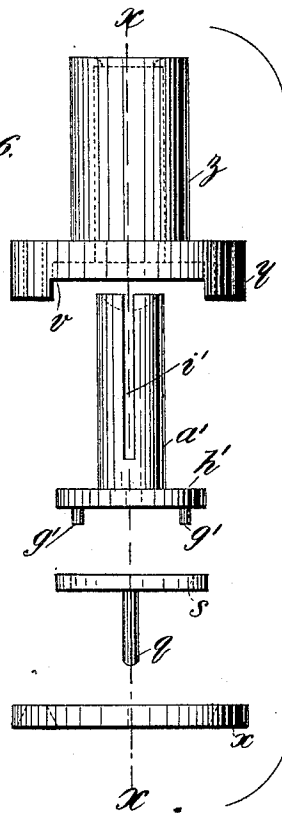


Fig. 7.

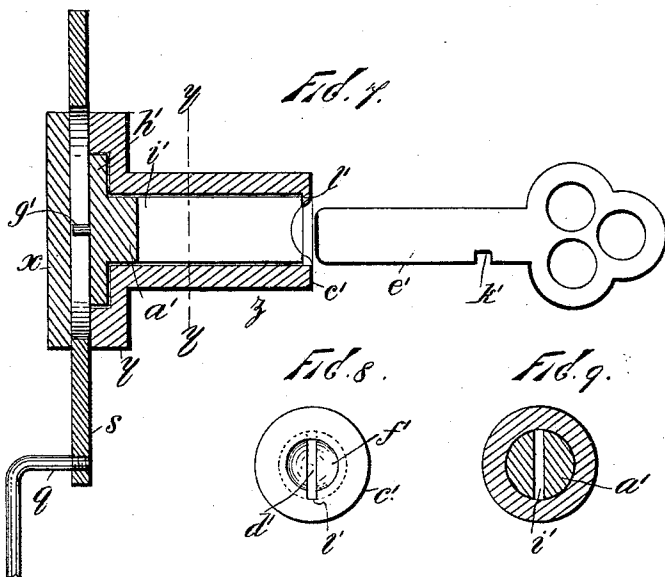
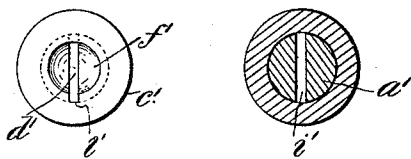


Fig. 8.

Fig. 9.



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FIG. 10.

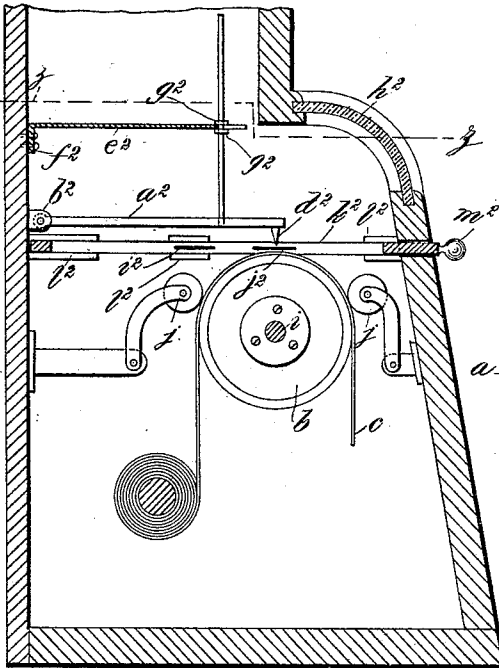
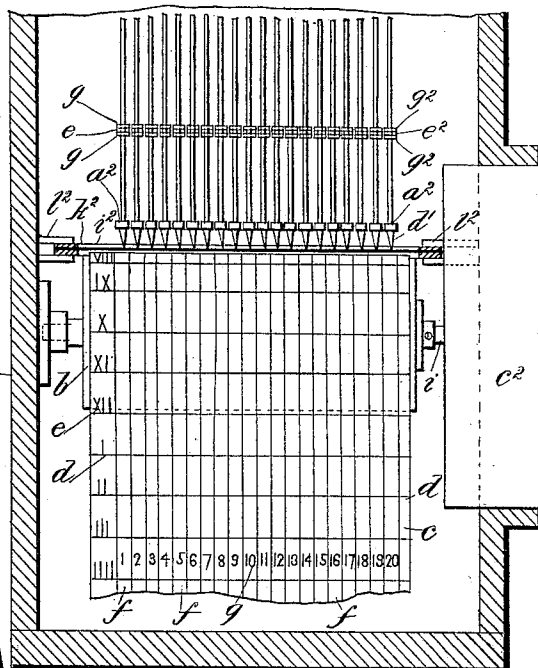


FIG. 11.



a. FIG. 12.

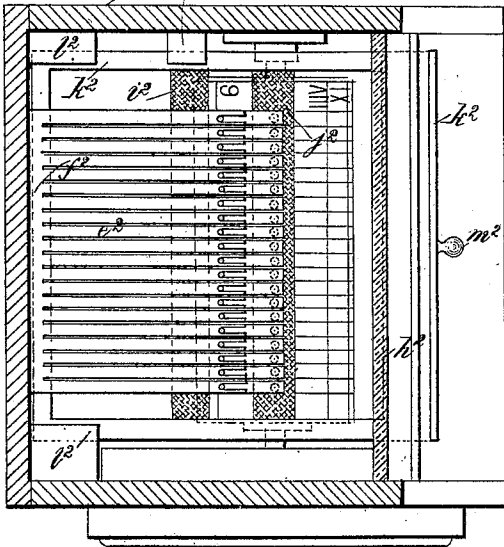
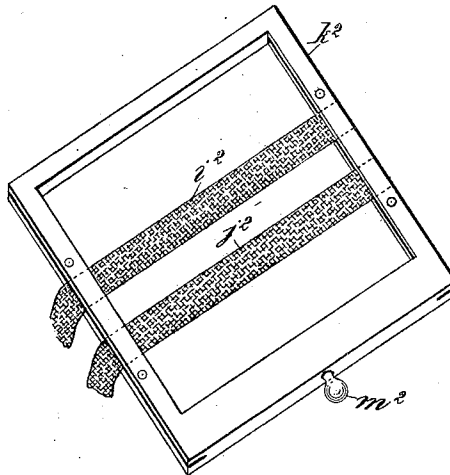


FIG. 13.



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(No Model.)

5 Sheets—Sheet 5.

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EMPLOYEES TIME RECORDER.

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FIG. 14.

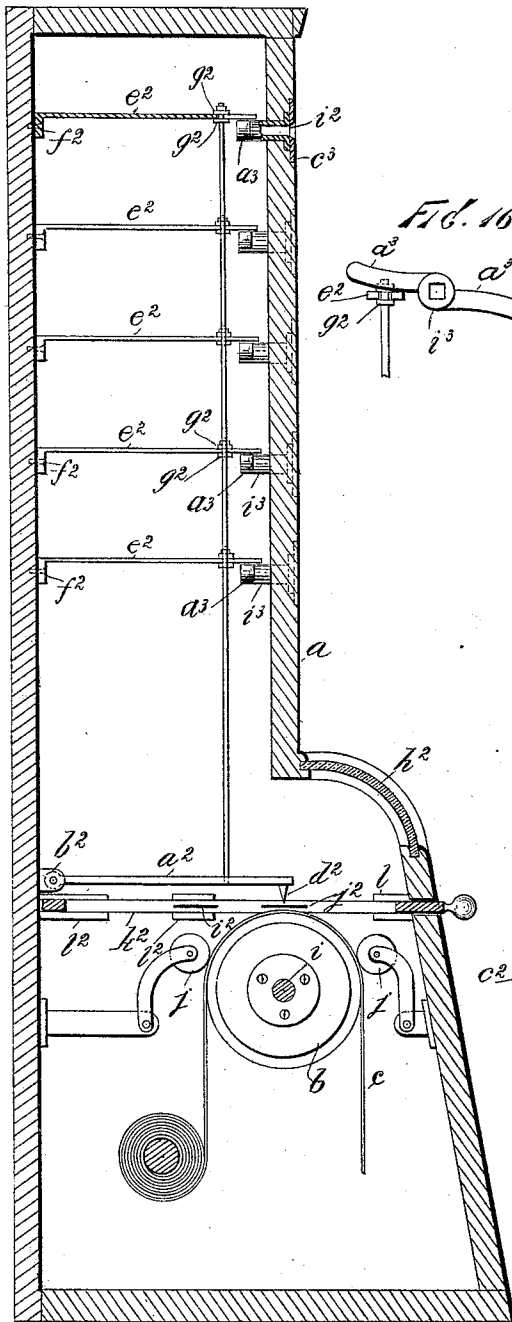


FIG. 16.

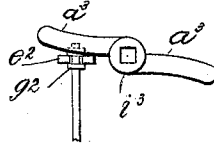
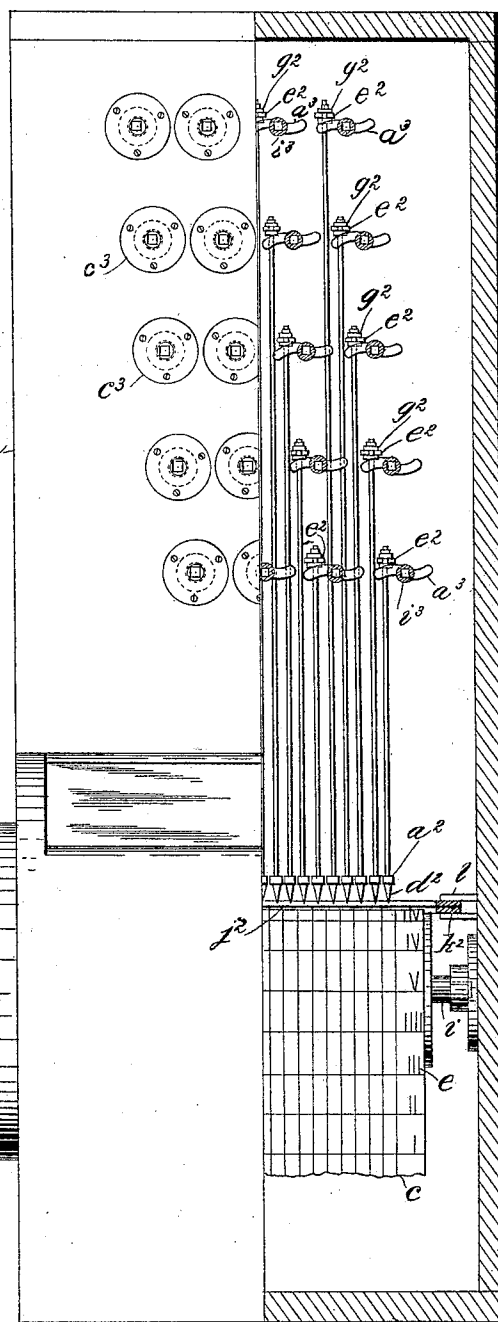


FIG. 15.



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UNITED STATES PATENT OFFICE.

JAMIN S. MORSE AND DIMMITT R. LOVEJOY, OF NEW YORK, N. Y.; SAID LOVEJOY ASSIGNOR TO SAID MORSE.

EMPLOYÉ'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 527,395, dated October 9, 1894.

Application filed September 16, 1893. Serial No. 435,731. (No model.)

To all whom it may concern:

Be it known that we, JAMIN S. MORSE and DIMMITT R. LOVEJOY, citizens of the United States, and residents of New York city, in the county and State of New York, have invented certain new and useful Improvements in Employés' Time-Recorders, of which the following is a specification.

Our invention consists of apparatus whereby a large number of employés may rapidly record their time of entering and leaving the premises, on a record sheet automatically moved along the marking devices by a clock or in unison with the movements of a time measuring instrument, one of the essential advantages of our improved recorder being that a number of persons may readily and without interference with one another make their records simultaneously to expedite the record making when many are passing together, particularly as when leaving the works in a body, all as hereinafter fully described reference being made to the accompanying drawings, in which—

Figure 1, is a front elevation of our improved time recorder. Fig. 2, is a side elevation. Fig. 3, is a sectional elevation of the case and part of the clock and a rear elevation of the recording apparatus. Fig. 4, is also a sectional elevation of the case, the section being taken at right angles to that of Fig. 3, and transversely of the axis of the roll which carries the record sheet, showing a side elevation of the recording apparatus. Fig. 5, represents detail views of several essential parts of the recording stamp operating devices separately, in side elevation and on an enlarged scale. Fig. 6, represents plan views of the parts shown in side elevation in Fig. 5. Fig. 7 is a vertical section of the assembled parts of Figs. 5 and 6, and a side view of a key such as is used by the employés for making the record. The section is taken on the line $x x$, Fig. 6. Fig. 8, is a front elevation of a key hole plate. Fig. 9, is a cross section of an impression stamp lifter and its case taken on line $y y$, Fig. 7. Fig. 10, is a sectional elevation of the apparatus in part, transversely of the axis of the roll that carries the record sheet, showing a modification of the impression devices and

the application of interchangeable inking tapes to enable the different impressions for entering and leaving to be printed in different colors. Fig. 11, is a sectional elevation at right angles to that of Fig. 10. Fig. 12, is a horizontal section on line $z z$, of Fig. 10. Fig. 13, is a plan view of the inking tape device removed from the case. Fig. 14, is a sectional elevation transversely to the shaft, showing a modified arrangement of apparatus for lifting the impression stamp by means of a rotary key. Fig. 15, is partly a front elevation and partly a sectional elevation of the apparatus as in Fig. 14, parallel with the shaft, and Fig. 16, is a detail showing the impression to be made by direct action of the key through pressing the stamps downward instead of lifting them, as they may be if preferred, with equal facility.

In any suitable case as a , we arrange a roll as b , to carry a record sheet as c , said roll being actuated by any approved motor so as to move the record sheet synchronously with a clock as c^2 , or other time measuring instrument, said sheet being lined transversely as d , and figured on one margin with a time scale as e , and being lined in longitudinal divisions as f , one for each individual whose time is to be recorded; these divisions being numbered on the sheets preferably at the top but elsewhere if desired as at g , correspondingly with the numbers h , on the front of the case. In this example the roll is represented as on a rear extension of the hour hand shaft i , of the clock but it may be otherwise geared, and gravitating guide rolls j , are suitably arranged with it for controlling the record sheet.

With each division of the record sheet is an impression stamp k , arranged to take effect on the record sheet radially to the roll and preferably consisting of a reciprocating rod and also preferably arranged vertically and above the roll, the impression die or point being preferably integral with the rod but it may be arranged as a type lever and it may have various means of actuating it for making the impression which may be by puncture, indentation or otherwise.

In Figs. 10, 11, 12, 14 and 15, we represent the rods connected to levers a^2 , pivoted at

b^2 , and causing impression points d^2 , to take effect on the record sheet.

In Figs. 3 and 4 a compressed coil spring l , is applied to the rod of the impression stamp between a fixed bar m , through which the rod works and a collar n , secured to the rod for imparting the thrust to make the impression, and a like compressed spring o , is applied to the rod on the other side of said bar, and between it and a collar p , secured to the rod to effect recoil of the impression stamp for clearing the record sheet immediately after making the impression, so that the sheet which moves continuously will not be mutilated by the stamp. When the rod is raised compression of spring l , is increased, and compression of spring o is diminished so that on release of the rod for making the impression, spring l will thrust the stamp sufficiently beyond the normal position to make the impression, slightly increasing the compression of spring o , and decreasing its own, whereby spring o , on recovery will retract the stamp clear of the record sheet, and leave it free to continue its movement without mutilation of the sheet.

In Figs. 10, 11, 13, 14 and 15, we represent flat springs e^2 , attached at one end to the inside of the case at f^2 , and at the free ends carrying the rods which pass through them with collars g^2 , or other suitable means to complete the proper connection. These springs are set so as to hold the impression points slightly above the record sheet normally, and they act similarly to the others in effecting the impression and retracting the stamps, when the impression stamps are lifted by the keys.

For raising the impression stamp, the elbow q , of the upper end of the rod is connected into the side of the plate s , near its lower end, which plate having the slot t , and the shoulder u , is fitted in the slide-way v , attached to the inside surface of the front plate of the case and secured by the disk cover x , so that it can slide up and down freely. The slide-way is formed in the face of the head y , of the case z , in which the rotating impression stamp lifter a' is fitted. Said head is secured to the front plate by screws inserted through the holes b' which screws also secure the cover plate x . The case z , is a tubular extension of head y , inserted in a bored hole of the case front with the end flush with or slightly projecting from the outside surface of the front plate and forming the key hole plate c' having the slot d' for the key e' , and the cavity f' surrounding the key hole to facilitate the entry of the key so that operators passing in a hurry may not be delayed.

The stamp lifter is a rotating device fitted in the bored case z , so as to turn freely and having two studs g' fitted in its head h' to engage shoulder u , of the sliding plate s , when turned by the key in the direction indicated by the arrow in Fig. 5, and lift the

impression stamp, said lifter having the slot i' to receive the key for turning it. When a stud g' escapes from the extremity j' of the shoulder u , the impression stamp is instantly thrust down by its spring l to make the impression. Two studs are used in order that two operations of the impression stamp may be made by one revolution of the key, and the key e' has a notch k' in one edge, which when the key is entered and turned engages the inner edge l' of the key hole plate and secures the key so that after having made one record, as when entering the factory in the morning, the key may be left in the key hole ready for making the record of leaving time, when, by turning the key far enough for making another record, it may be pulled out and kept by the user till entering again, which expedites the work. The keys thus serve to indicate who are in and who are not in.

The shoulder m' of the slot t in the sliding plate s , prevents the key from being turned backward after making a record and compels the forward turning and consequently the second record before the release of the key.

We consider the rotating key an especially desirable means of operating the stamps, because of the facility it affords of guarding against tampering with the apparatus by unauthorized persons, and also against interference with the records of one another by the employes, which can be effectually prevented by specially adapting each key for its particular stamp lifter by differential wards as common in locks, and it has this special advantage over all other forms of keys, viz: It locks against backward movement after having caused one operation of the impression stamp, and compels the marking of another record before it can be withdrawn.

In this example we have represented a small machine adapted for only twenty persons, each being identified on the record slip by the number of the longitudinal recording space corresponding with the number of the recording stamp figured on the front of the case which he works, but in practice the machines will be made larger according to the number of hands employed up to several hundred recording stamps. It will be seen that for such large numbers it is important to arrange the impression stamps as close together side by side as possible to avoid too great breadth. The rods of the impression stamps are therefore made with the elbows q connecting in the sides of the sliding plates, and the lifting devices are arranged in groups of five one above another in the diagonal lines represented in Figs. 1 and 3, so that the rods of the lifting devices may occupy a plane back of the plane of said lifting devices which are too wide for being in the same plane of the lifting devices of stamps thus placed close together.

The record strips may be of length suitable for one day to be applied daily, with corresponding morning and evening time scales e ,

or they may be more lengthy for weekly or monthly application, in which cases the daily time scales e , will be placed at intervals apart corresponding to the run of the roll during the hours when business is suspended, or such long strips may have the scales following in close proximity, and be readjusted every morning before the hour for resuming business arrives.

For readily distinguishing the records of entry and exit one from the other, we propose to employ two differently colored tapes i^2, j^2 adapted to be readily introduced between the stamps and roll, and provided with any suitable means therefor as the sliding frame k^2 , fitted in suitable slide ways i^3 and having a handle m^2 , projecting through the front of the case whereby it may be readily shifted to set the different tapes as required.

The lifting devices which we have represented are such as we prefer for simplicity, but it is obvious that we may employ various different forms of apparatus for this purpose, and we do not limit ourselves to the devices so far described. For example, the lifter i^3 , may be made with cams or arms a^3 , Figs. 14, 15 and 16, and adapted to act against the projecting ends of springs e^2 , to lift them as in Figs. 14 and 15, or to press them down and make the impressions by direct action of the key, as in Fig. 16, in which case the springs will yield to the action of the keys in making the impressions and the recoil will raise the stamps above the paper. In this case the lifter i^3 is modified a little in form, and it has a square socket to receive a square end of the key, but these are immaterial changes. It will be seen that the arms a^3 will be stopped against the edges of the springs against being turned backward same as the studs g' are stopped against like motion by shoulder m' ; and it is obvious that instead of the arrangement of the impression stamps to act against the timed roll for making the impressions, the roll may be made to draw the paper over a fixed pad against which the stamps may be made to act. The roll or pad will have a suitable yielding felt or other surface best adapted for protection of the record sheet under the action of the stamps.

The front plate of the case may be glazed as at h^2 , or as otherwise preferred, so that the record sheet may be visible at will.

We claim—

1. The combination in a stationary time recorder, of the timed record sheet carrying roll, the record sheet carried thereon and having the record scale graduated to the timed roll, a series of impression stamps adapted to act on the record sheet, a series of rotating keys each adapted for actuating an impression stamp individually and means to prevent reverse action of the keys, substantially as described.

2. The combination in a stationary time recorder, of the timed record sheet carrying

roll, the record sheet carried thereon and having the record scale graduated to the timed roll, the sheet guiding and controlling rolls, a series of impression stamps adapted to act on the record sheet, a series of rotating keys each adapted for actuating an impression stamp individually and means to prevent reverse action of the keys, substantially as described.

3. The combination in a stationary time recorder, of the timed record sheet carrying roll, the record sheet carried thereon, a series of impression stamps adapted to act on the record sheet, a series of rotating keys adapted for raising a stamp individually means to prevent reverse action of the keys, stamp thrusting and stamp recoiling springs substantially as described.

4. The combination in a stationary time recorder, of the timed record sheet carrying roll, the record sheet carried thereon, a series of impression stamps adapted to act on the record sheet means for raising the stamps individually, and stamp thrusting and recoiling springs, said springs consisting of the plates attached at one end to the case, and carrying the stamps at the free ends substantially as described.

5. The combination in a stationary time recorder, of a series of impression stamps each provided with a stamp raising slide having the slot and the shoulder for the studs of the stamp raiser, a rotating stamp raiser a key to actuate said stamp raiser and a spring to actuate the stamp both for making the impression and withdrawing the stamp from the paper substantially as described.

6. The combination in a time recorder, of a series of impression stamps each provided with a stamp raising slide having the slot and the shoulder for the studs of the stamp raiser, a rotating stamp raiser having two studs to raise the stamp twice in a revolution, and a key to actuate said stamp raiser substantially as described.

7. The combination in a time recorder, of a series of impression stamps, each provided with a stamp raising slide having the slot and the shoulder for the studs of the stamp raiser, a rotating stamp raiser having two studs to raise the stamp twice in a revolution, a key to actuate the stamp raiser having a retaining notch in one edge, and the retaining flange of the key hole plate to retain the key for the second action substantially as described.

8. The combination with the stamp raising slide, of the rotating stamp raiser case having the head provided with the guide way for the slide, the cover for said guide way, said rotating stamp raiser having the studs for raising the slide and the slot for the key, and said key substantially as described.

9. The combination in a time recorder, of the timed record sheet carrying roll, the record sheet carried thereon, and having the

record scale graduated to the timed roll, a series of impression stamps adapted to act on the record sheet, rotating keys for actuating the impression stamps individually, 5 means to prevent reverse action of the keys, and means for recoil of the stamps clear of the record sheet substantially as described.
Signed at New York city, in the county and

State of New York, this 17th day of August, A. D. 1893.

JAMIN S. MORSE.
DIMMITT R. LOVEJOY.

Witnesses:

W. J. MORGAN,
C. E. WHITNEY.