(No Model.)

3 Sheets—Sheet 1.

J. C. HINCHMAN.

AUTOMATIC TIME PRINTER AND INDICATOR.

No. 496,310. Patented Apr. 25, 1893.

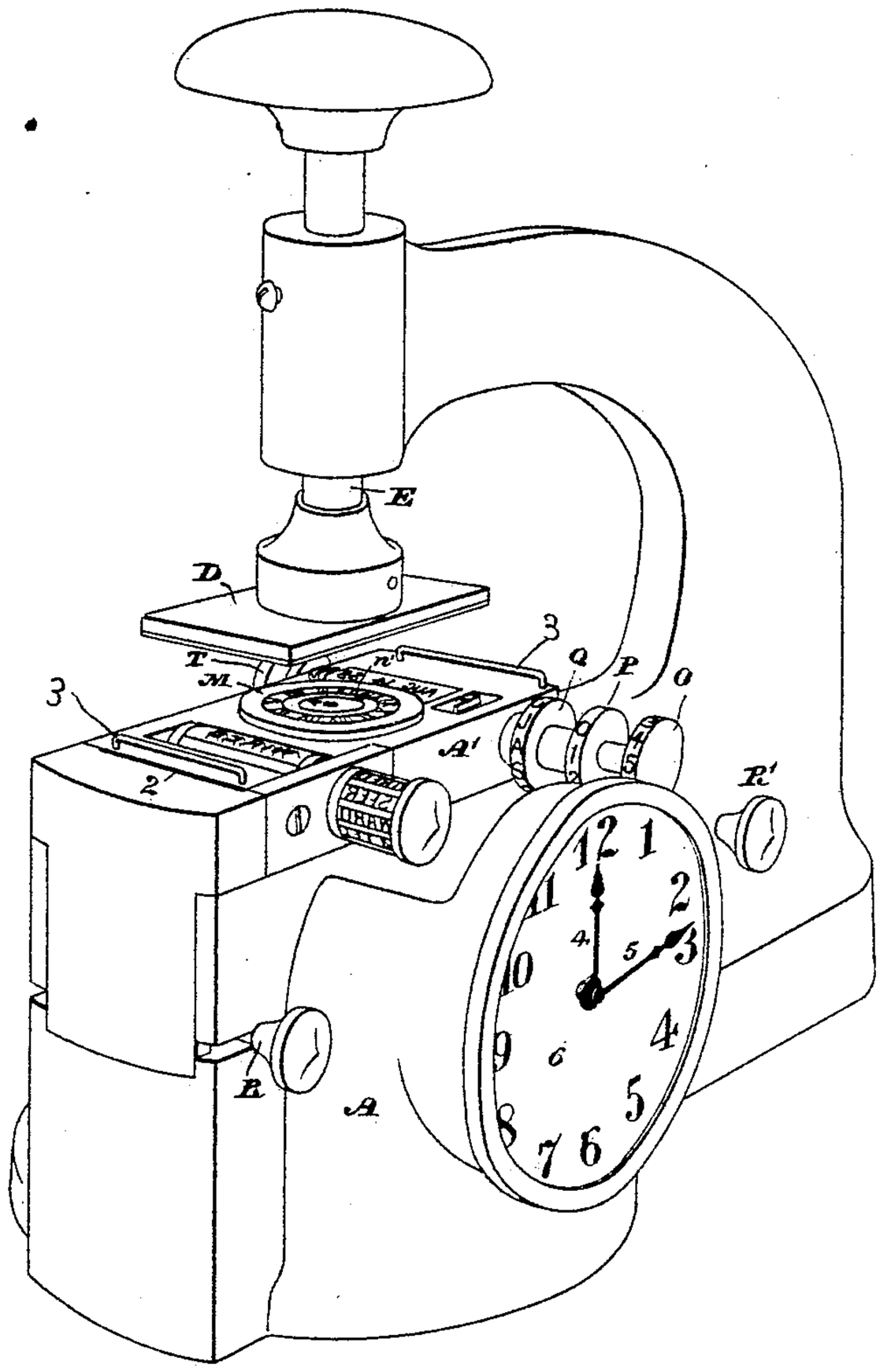
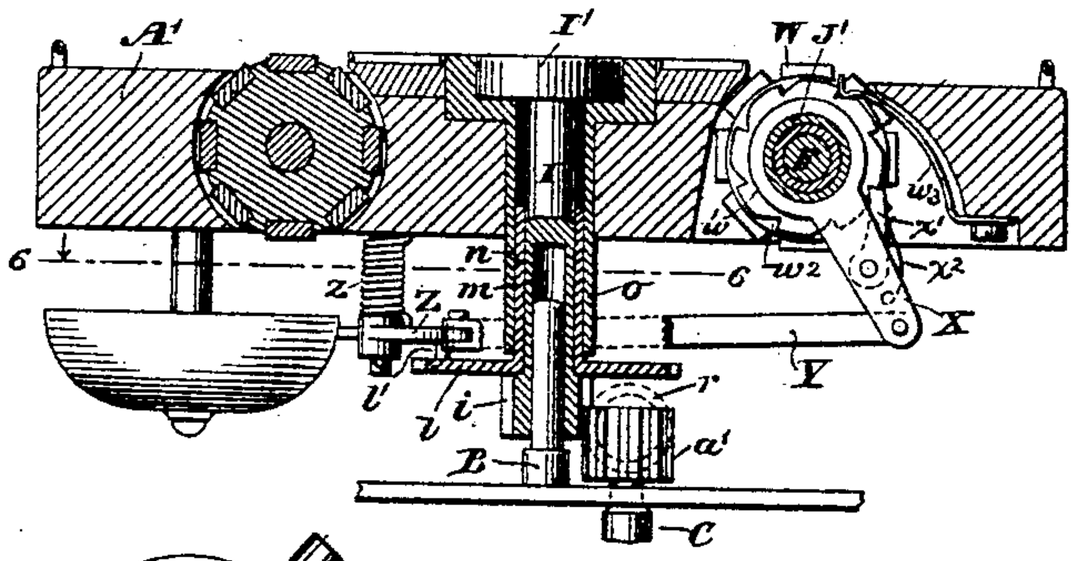


Fig. 1.

Fig. 5.



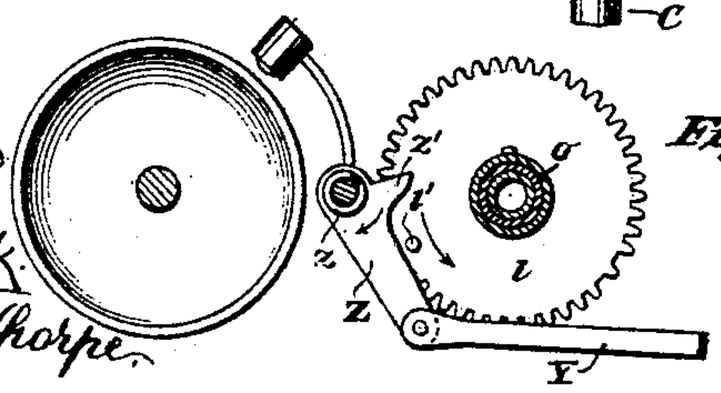


Fig. 6.

Witnesses
Geo. W. Breck.
Edward Thorpe.

Inventor
John C. Hinchman

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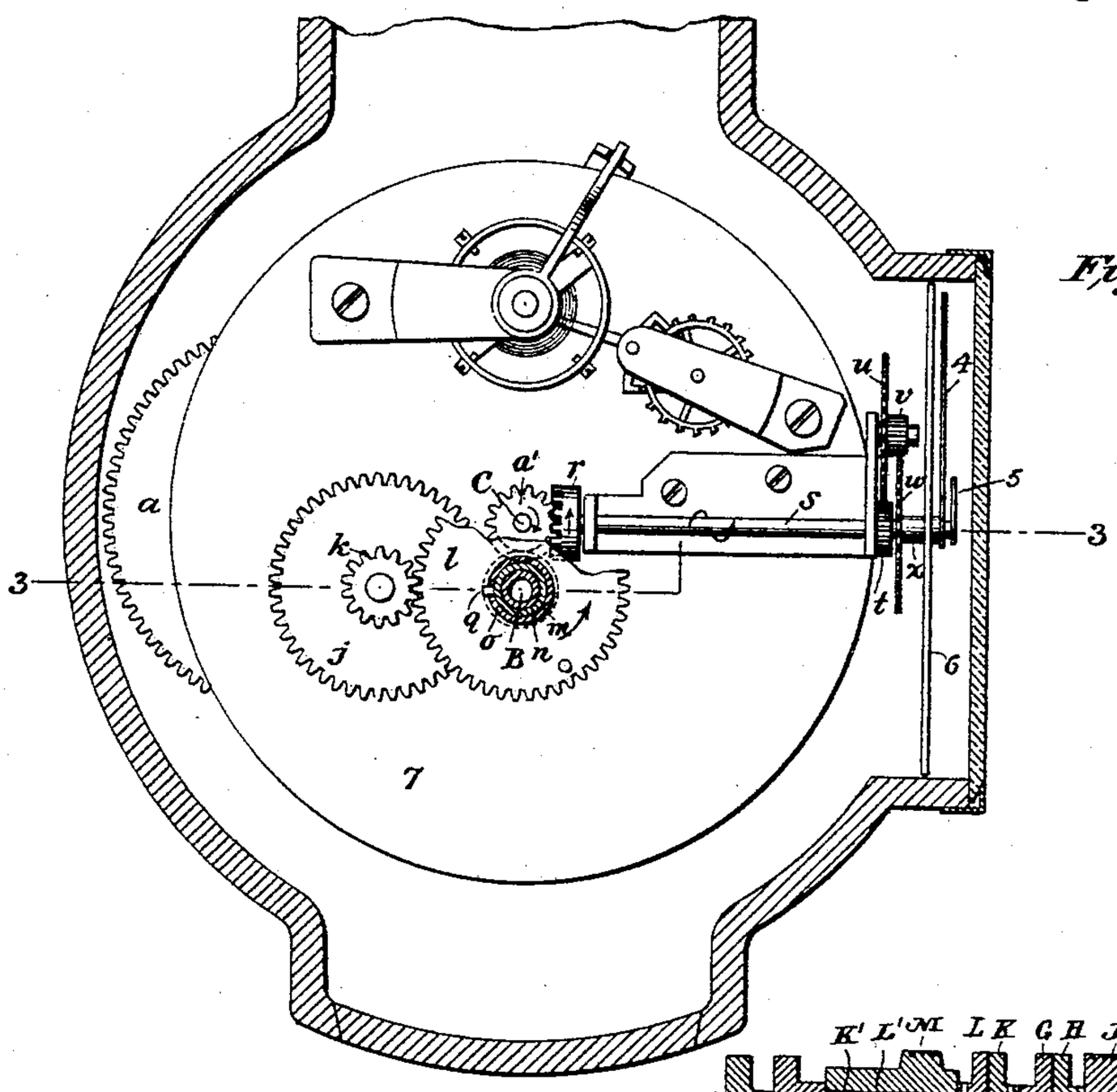

Fig. 2.

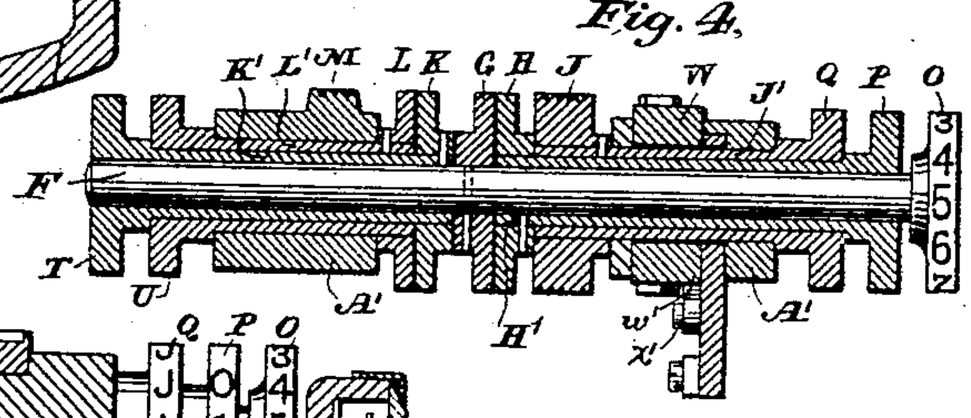

Fig. 4.

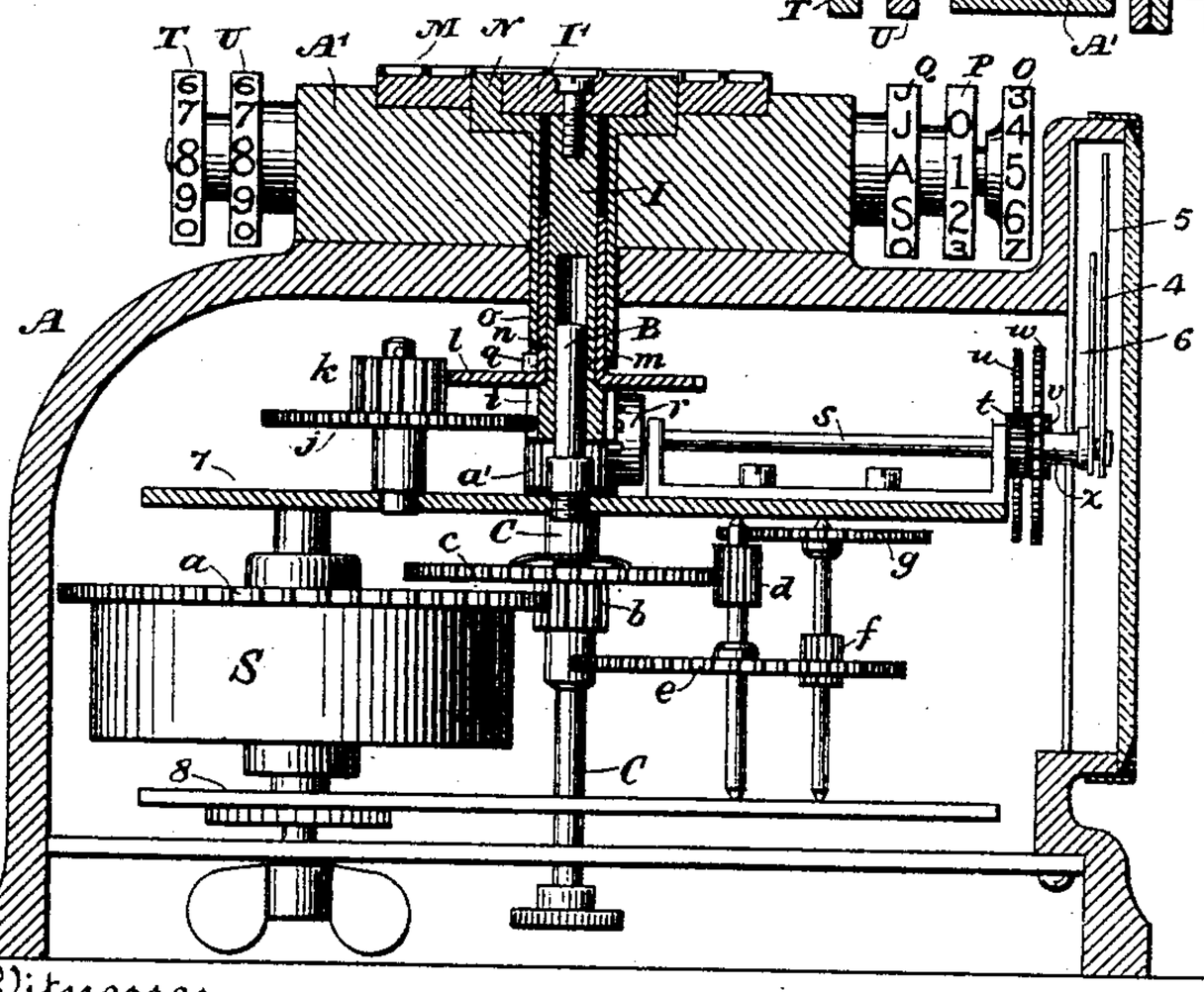

Fig. 3.

Witnesses
Geo. W. Breck.
Edward Thorpe.

Inventor
John C. Hinchman

(No Model.) 3 Sheets—Sheet 3.

J. C. HINCHMAN.

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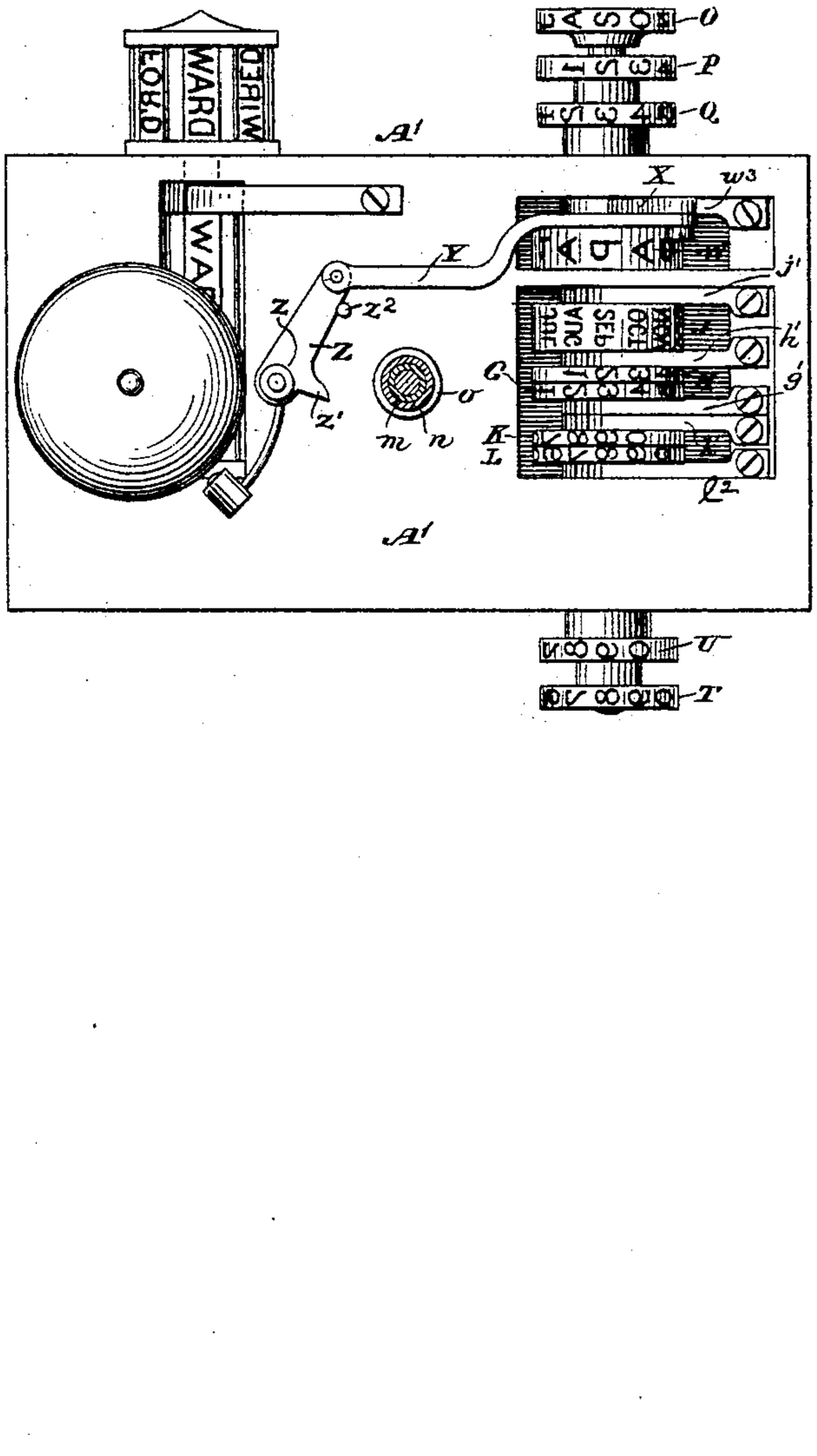
Fig. 7.



Witnesses
Geo. W. Breck.
Henry W. Bond

John C. Hinchman Inventor
By his Attorney
G. N. Stockbridge

UNITED STATES PATENT OFFICE.

JOHN C. HINCHMAN, OF SUMMIT, NEW JERSEY.

AUTOMATIC TIME PRINTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 496,310, dated April 25, 1893.

Application filed August 9, 1889. Serial No. 320,305. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HINCHMAN, a citizen of the United States, residing at Summit, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Automatic Time Printers and Indicators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

To insure accuracy in the operation of time stamps, it is found desirable to combine therewith a time indicator, which is operated by the same mechanism as that which controls the movements of the time printing machinery. It is true that in such a case the presence of the time indicator exercises no actual control over the time stamp apparatus, but it does serve to call attention to any variation from accuracy in the time printing machinery, and when regulated by standard time, serves as an assurance that the stamping apparatus is in proper condition. At the same time, it is preferable that the time indicator mechanism should be subordinate, and that the driving mechanism should be applied primarily to the stamp timing machinery. The time indicator will then be regulated intermediately, that is, through the controlling mechanism of the stamp. Now, in apparatus of this class, where the matter to be printed is arranged upon the peripheries of moving wheels; that is, where the movements of the driving mechanism are in the same direction as that of the hands of the timepiece, this is a thing which can be easily accomplished. But in practice, time stamping machines are now constructed according to the type in which the moving part or parts of the stamp, and some of the other significant parts are arranged concentrically. With such a construction the movements of the indicating hands are in a reverse direction to those of the moving parts of the stamp. Accordingly, it becomes a matter of more difficulty to make such connections as shall combine the whole apparatus into a unit, and at the same time give due prominence to the stamping machinery. I have accomplished this result by gearing the minute hand spindle of a time indicator to the center arbor of the stamp driving mechanism by a crown wheel and pinion connection, as will appear hereinafter. By these means I am not only enabled to secure an efficient apparatus, but I also obtain simplicity and compactness of construction to a degree otherwise not possible. Beyond this, I have introduced certain novel features in the gearing of my time stamping machinery and in the mechanical construction of the stamp, as will appear from the specification which follows.

The letters and figures constituting the significant parts of my stamping apparatus are mounted, in the present instance, in and on a removable plate which forms the top of the entire closing chamber of the apparatus, and at the same time serves as a printing bed.

In the form of apparatus illustrated and described in the present application, I arrange upon a fixed dial on the printing bed Roman numerals from I to XII to indicate the hours of the day. Within an opening in this dial is a smaller dial, which carries a pointer corresponding to the hour hand of a clock. This second dial makes a complete rotation under the influence of clock mechanism, once every twelve hours, and within it is another rotating dial having a pointer corresponding to the minute hand of a clock. The latter dial makes a complete rotation once every hour.

My meridian apparatus, that is, the devices for indicating the changes from a. m. to p. m. is mounted upon a transverse shaft, which also carries wheels with letters and numerals for indicating the months, days and years. The whole constitutes what I call my universal date apparatus. The different wheels, with one exception, are mounted directly upon sleeves which the mentioned shaft traverses. The universal date apparatus is located at one end of the top plate, while at the opposite end is a transverse shaft or roller, provided with spaces for other significant words or characters. Both devices, with the exception of the meridian apparatus, are designed to be operated by hand and are retained in place after each operation by suitable clicks. The meridian wheel is operated automatically, as will appear.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a perspective of my printing and indicating apparatus. Fig. 2 is a horizontal section taken just above the spindle of the minute hand of the timepiece. Fig. 3 is a vertical section along the line 3—3 of Fig. 2. Fig. 4 is a section of my universal date apparatus. Fig. 5 is a central cross section of the removable top plate of the stamping apparatus. Fig. 6 is a section taken on line 6—6 of Fig. 5 and, Fig. 7 is a bottom plan of the top plate.

Referring to the drawings by letters and numerals, A is the casing of my time printing and indicating apparatus, and A′ the top plate thereof. Raised slightly above the surface of the top plate are characters in type, over which an ink ribbon is adapted to be drawn. The ribbon (not shown in the drawings) is wound upon rollers, R, R′, which extend transversely through the chamber of the casing A. The rollers are provided with thumb pieces outside the casing, by means of which they may be rotated for feeding the ribbon. In passing from one roller to the other, the ribbon traverses suitable slits and guides in and on the top plate A′. One of the slits is shown at 2, and the guides are designated by the characters 3, 3. Between the guides the ribbon passes over the characters in type already mentioned. Above these is a platen or printing pad D attached to a push-rod E, which is supported on a curved extension of the casing A, as clearly shown in Fig. 1.

The characters in type which project slightly above the surface of the top plate, constitute the significant parts of my time printing apparatus, and they are operated, some of them by hand, and some of them by automatic mechanism. They are arranged as shown, in a horizontal position, and the process of printing is accomplished by placing the paper on which a record is to be made between the printing pad and the ink ribbon, and then pressing the pad down by means of the push-rod. The automatic mechanism which operates the moving parts of the time printing apparatus, serve also to actuate the hands 4 and 5 of the time indicator, the dial 6 of which is located in a vertical position within an opening in one side of the casing A. Thus the printing devices and the time indicating apparatus are both arranged in the most convenient position, the one for taking an impression of the time and the other for easy inspection.

I will first describe the automatic apparatus and afterward that which is operated by hand. The clock mechanism is located within the casing A, and is in this instance applied directly to the moving parts of the time stamp, and indirectly to the time indicating apparatus. It is supported between top and bottom plates 7 and 8 respectively, and is driven by a suitable spring S. Through a cog wheel *a* and a pinion *b*, movement is communicated to the center arbor C, on which the mentioned pinion is mounted. The center arbor is connected with suitable escapement devices, through the train of wheels and pinions *c*, *d*, *e*, *f*, *g*. A pinion *a′* secured to the center arbor above the plate 7, engages with a pinion *i*, which is secured to the lower end of a hollow post I. The said post is slipped over an independent standard B, and has its bearing thereon. Outside the post I is a sleeve *n* on which is a cog wheel *l*. Motion is communicated to this wheel and sleeve through the gear wheel *j* and elongated pinion *k*. Near the hub of the wheel *l* is a pin *q*. This is adapted to engage with a notch in the bottom of a sleeve *o*, which surrounds the sleeve *n* and carries at its upper end a dial N having a pointer *n′*. The relations of the parts are such that the dial I′ will be caused to rotate once every hour, while the dial N will make a complete revolution once in twelve hours. The two dials are concentric, and are surrounded by a dial M, fixed to the top plate A′, and provided with Roman numerals from I to XII, for indicating the hours of the day. The dials M, N, and I′ correspond respectively to an ordinary clock dial, an hour hand, and a minute hand; or, more strictly, the last two devices are represented by the pointers on the dials N and I′. The pinions *i* and *k* are elongated in order to insure their engagement with the co-operating gear wheels, in spite of any inequalities in the bearing surfaces on which the dials N and I′ rest.

The movements for my time indicating apparatus are taken off the pinion *a′* through the medium of a crown wheel *r* on the spindle *s* of the minute hand 5. Motion is communicated to the hour hand 4 on the sleeve *x* through the gearing *t*, *u*, *v*, *w*.

By the means of the construction described, I am able to make a time indicating and printing apparatus which shall be very compact. The clock mechanism, for the most part, occupies the space under the top of printing plate, while, for the time indicating apparatus, I need only employ such space as is necessary for a dial and indicating hand and a glass protecting case. Most of the other significant parts of my time stamping apparatus, are operated by hand, and their construction will now be described.

Near one end of the top plate A′ is an opening through which project wheels or dials, carrying characters in type for indicating the months, days and years. The type characters project far enough to be in a suitable position for printing, and are, in fact, on the same level with the characters on the dial M and the pointers on the dials N and I′. The wheels referred to are mounted on a transverse shaft F, which has its bearings in the top plate. The same shaft carries a meridian wheel for indicating the transition from a. m. to p. m. I prefer to arrange the character M in a fixed position on the top plate and to provide what I have called my meridian wheel, with the characters A and P alternately, and I have illustrated this construction in the drawings.

The details of the apparatus just referred to are shown in Fig. 4. While I have said that all the wheels are mounted on the shaft F, this is strictly true only of the wheel G which bears figures representing the units of the numbers which indicate the days of the month. The other wheels are mounted on sleeves, surrounding the shaft F. For example, the wheel H, or tens wheel, of the numbers which indicate the days of the month, is secured to a sleeve H′, next to the shaft. The wheel J, which carries letters for indicating the months, is secured to a sleeve J′ outside the sleeve H′. The latter sleeve covers only about one-half the length of the shaft F, the other half being covered by a sleeve K′, to which is secured a wheel K, for indicating the tens of the numbers which represent the years. Outside the sleeve K′ is another sleeve L′ to which is attached a wheel L, carrying figures for indicating the units of the said numbers. Now, all the above mentioned wheels are located in such a position that their rims or peripheries are under the printing ribbon. This being the case, it is necessary to provide some means for operating them from the outside, and for holding them in place when they have been brought to the right position. At the outer right hand of the shaft F is secured a disk or wheel O having on its periphery numbers corresponding precisely in order and position with any chosen numeral in position for printing. Similarly, and for the same purpose, wheels P, Q, T, and U are secured to the outer ends of the sleeves H′, J′, K′ and L′ respectively. These wheels are all located outside the top plate, in positions where they can be easily reached by the hand, and they are all supplied with letters or numerals corresponding to those on the inner wheels, as will be readily understood. The hubs of the various wheels are supplied with notches corresponding in number and position to the characters on their peripheries and a series of spring clicks g', h', j', k', j^2 and w^3 co-operating with the notched hubs, hold the wheels in position, so that an impression can be taken from them without danger of their being disturbed. The notches and springs are so arranged that the characters on the wheels are held in proper position for printing.

The meridian wheel W is mounted loosely on the sleeve J′ and is capable of independent rotation thereon. This wheel has on its periphery the letters A. and P. arranged alternately. On the wheel W is a hub w', provided with suitable notches w^2. Loosely mounted on the sleeve J′ is an arm X which extends past the hub w' and carries a dog x', which is pressed into one or another of the notches w^2 by a spring x^2. The arm X is connected at its outer extremity by a link Y to the end of a centrally pivoted arm Z, which is mounted on a post secured to the bottom of the top plate A′. A spring z is attached to the top plate and to the arm Z in such a manner as to press the latter in the direction indicated by the arrow in Fig. 6. As a result, the arm X is pressed normally into the position shown in Fig. 5 against a stop z^2. To operate the meridian wheel one step, it is necessary to move the arm X forward against the force of the spring z until the dog x' catches in the notch next succeeding the one in which it may be resting, when, if the arm be released, the meridian wheel will be carried forward one space, and a change will be made in the reading at the top. This action is accomplished every twelve hours through the medium of the following devices:

A projection z' on the arm Z is arranged in the path of movement of a pin l', on the cog wheel l. It is so arranged as to be pressed upon the said pin in its rotation, and to be urged against the power of the spring z until finally it is tripped as the pin passes by. The movement caused by the pin is sufficient to move the arm X far enough to cause the dog to enter the next notch before the tripping takes place. When that happens, the meridian wheel is carried forward, as above detailed.

The arm Z is extended beyond its pivot in the form of a hammer, which is adapted to strike a suitable alarm device y on the return of the arm after being tripped.

I provide an alarm apparatus, as indicated, in order that attention may be called to the change from a. m. to p. m. by an audible signal. This change is, of course, an important one, and if attention be called to it by an alarm, the person in charge of the apparatus will be at once notified and can take steps to correct any deviation from actual time, which may have been developed in the apparatus during the preceding twelve hours. To the same end it serves also the time indicating apparatus, which can be referred to at any hour of the day, and which will also call attention to errors in the clock mechanism.

Having now described my invention, what I claim is—

1. The combination with type-dials forming part of a time printing apparatus, and a suitable motor therefor, and intermediate gearing the shafts of which are parallel with each other and with the motor shaft, of a visual dial and pointers traversing the same, the axes of the pointers being at right angles or substantially so to the shafts before mentioned, whereby the time indicating apparatus is subordinated to the automatic time stamping apparatus, substantially as set forth.

2. In a time printing apparatus, a meridian wheel mounted on a suitable shaft, a printing ribbon passing over the said wheel, and a stamp, as described, in combination with an alarm, and with clock mechanism for moving the meridian wheel step by step, the hammer of the alarm being operatively connected with the step by step mechanism, whereby attention will be called every time the meridian wheel is operated.

3. In a universal date apparatus, the combination of a top plate, a series of horizontally rotating type-wheels countersunk within said plate for indicating the smaller divisions of time, as hours and minutes, a horizontal aperture formed within said plate, a shaft centrally arranged within said aperture, a type-wheel placed near the middle of said shaft, a series of unit wheels and sleeves mounted upon said shaft and arranged upon either side of said central wheel for indicating the days of the month, the year or other divisions of time, and a slot in the upper surface of said top plate communicating with said horizontal aperture through which the peripheries of said type-wheels arranged upon said horizontal shaft project, as and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN C. HINCHMAN.

Witnesses:
G. H. STOCKBRIDGE,
H. W. HELFER.