(No Model.) 5 Sheets—Sheet 1.

A. L. JAYNES.

WORKMAN'S TIME RECORDER.

No. 483,629. Patented Oct. 4, 1892.

Fig. 1.

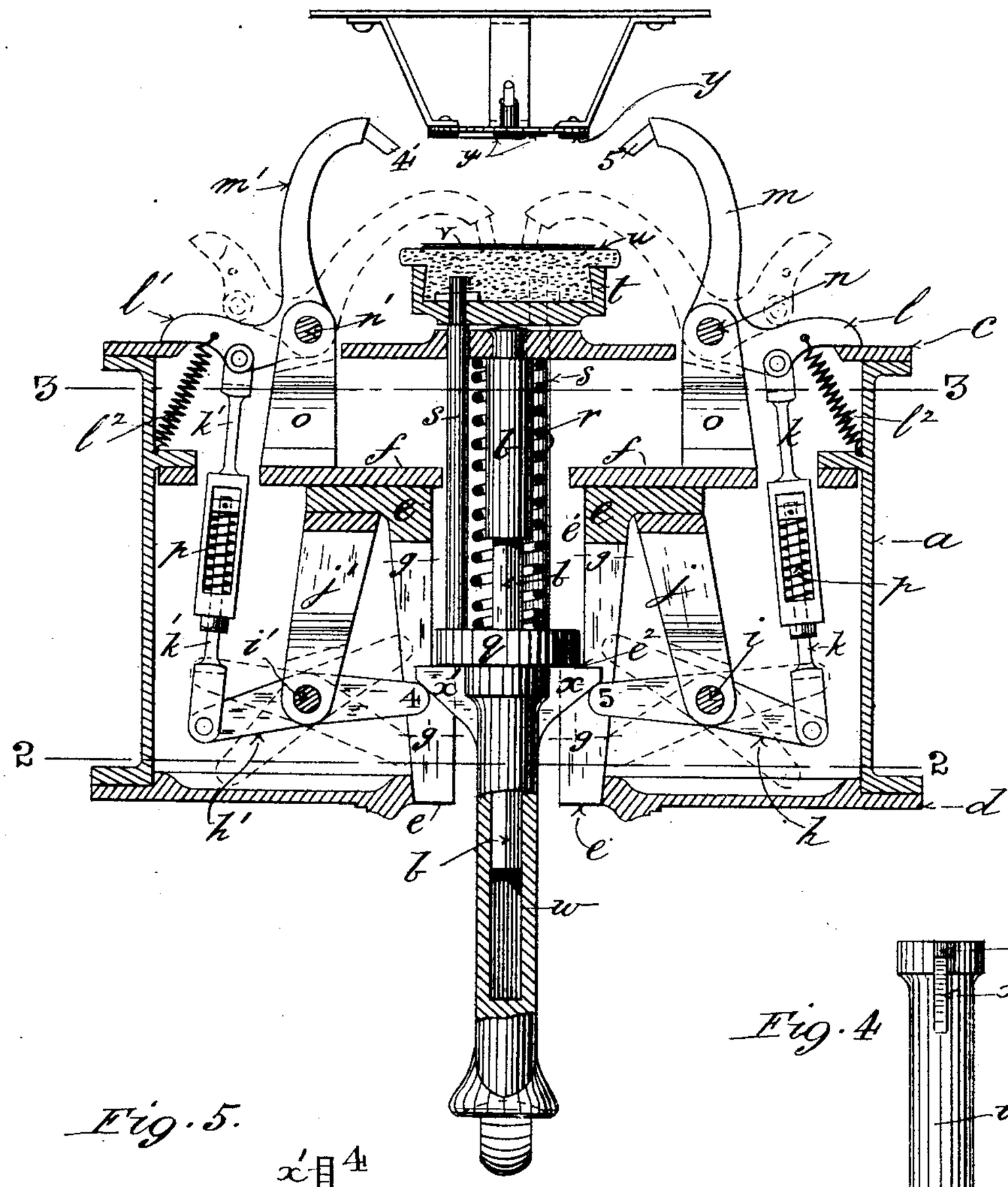


Fig. 5.

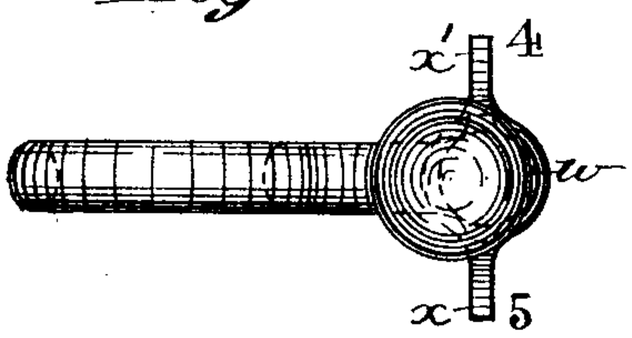
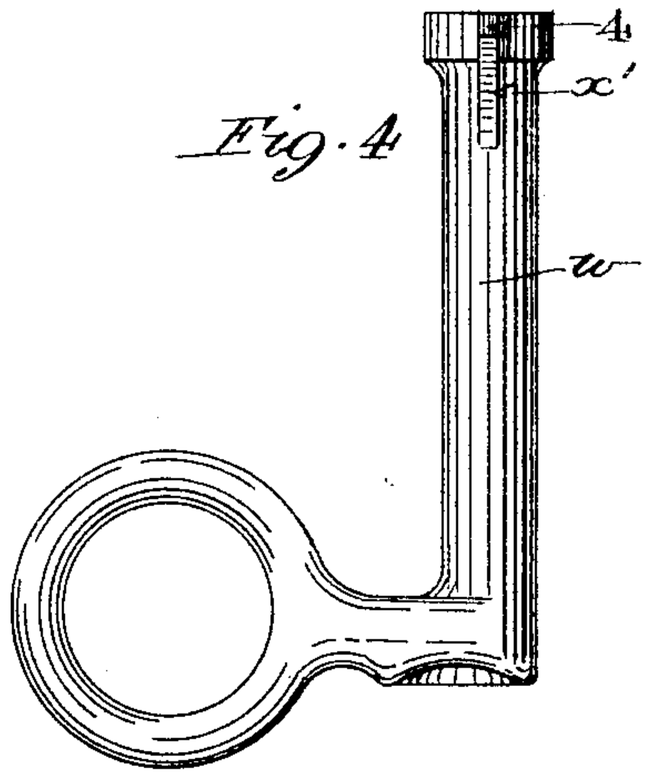


Fig. 4.



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(No Model.) 5 Sheets—Sheet 2.

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WORKMAN'S TIME RECORDER.

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Fig. 2.

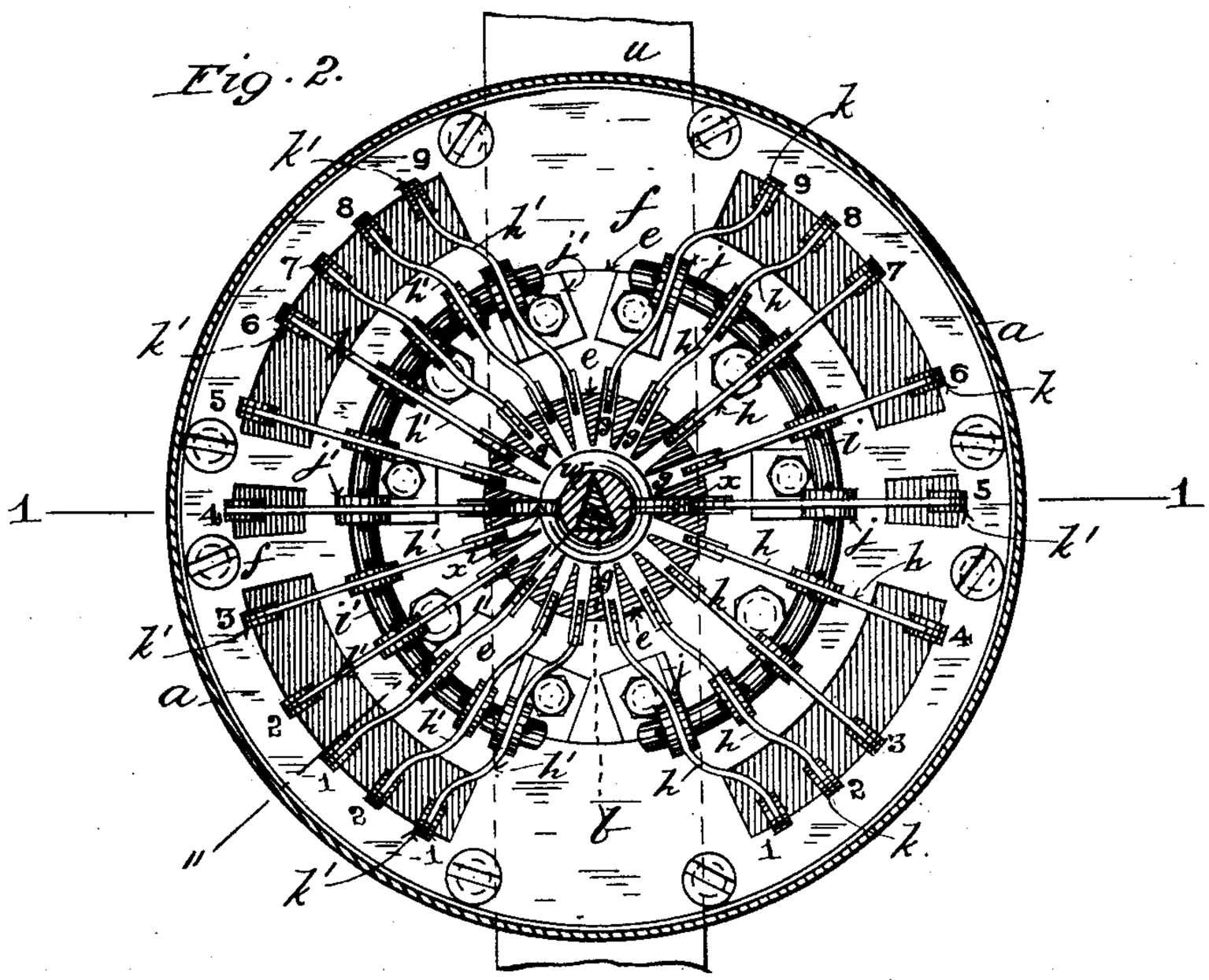
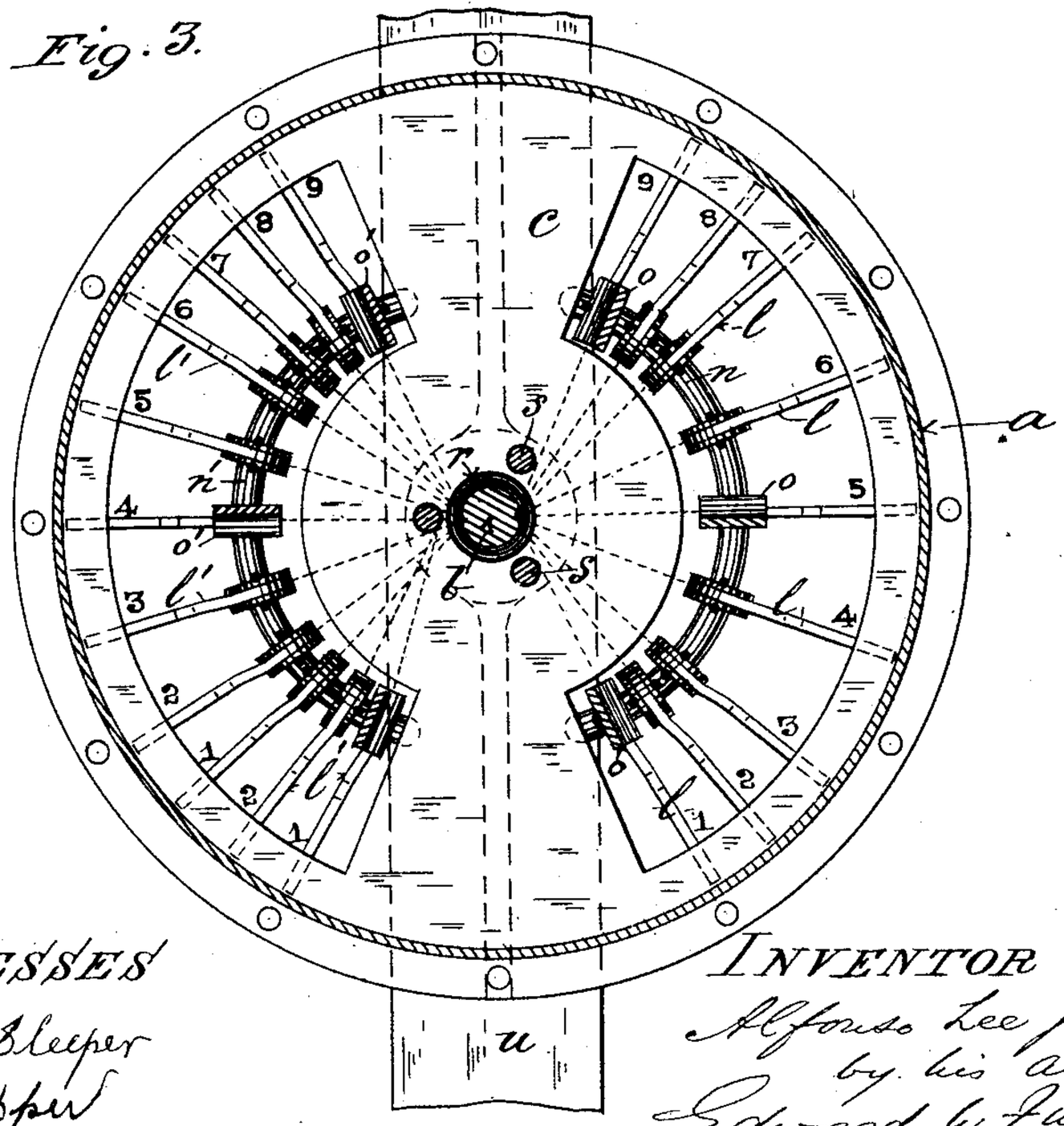


Fig. 3.



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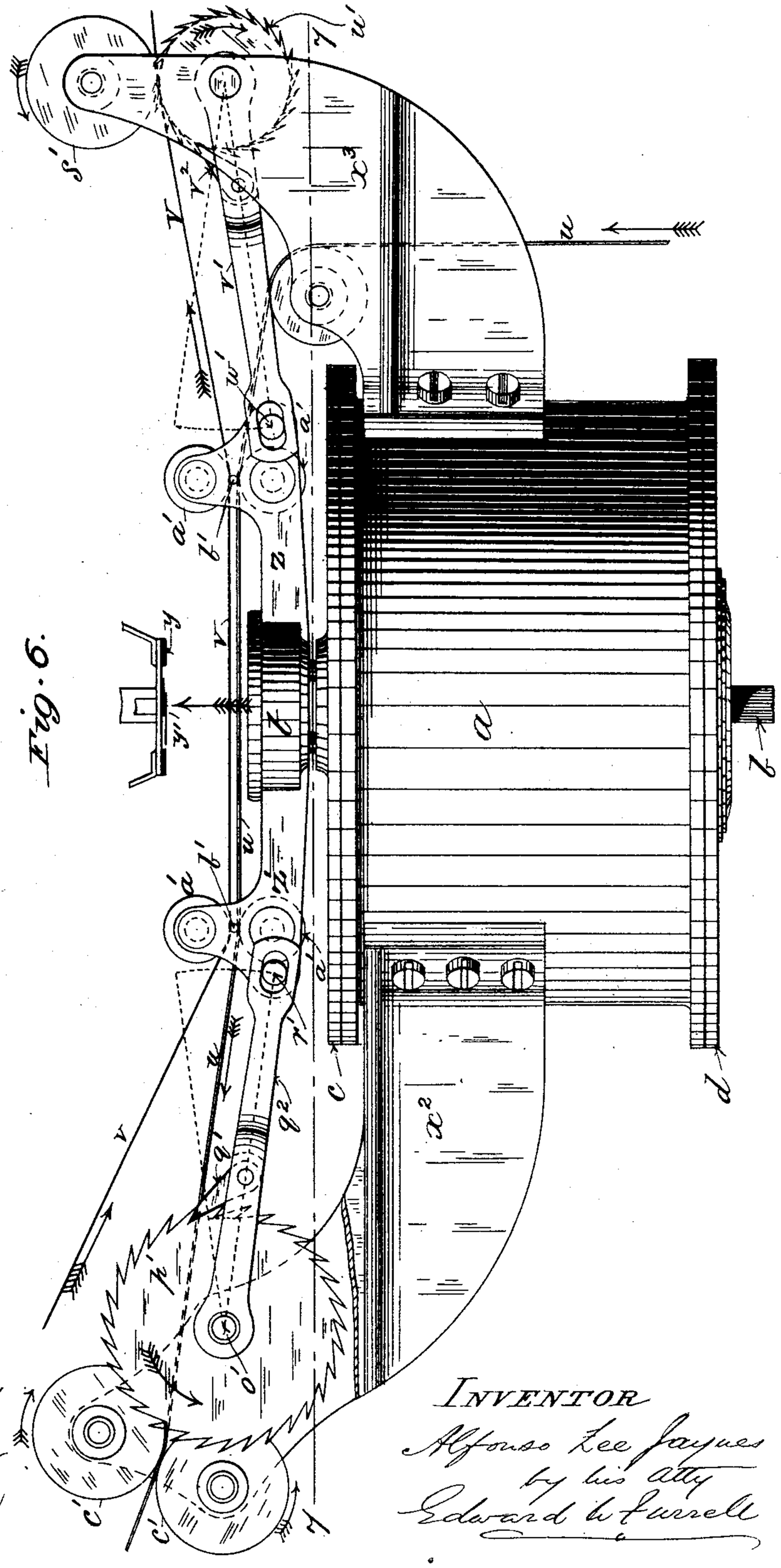

Fig. 9.

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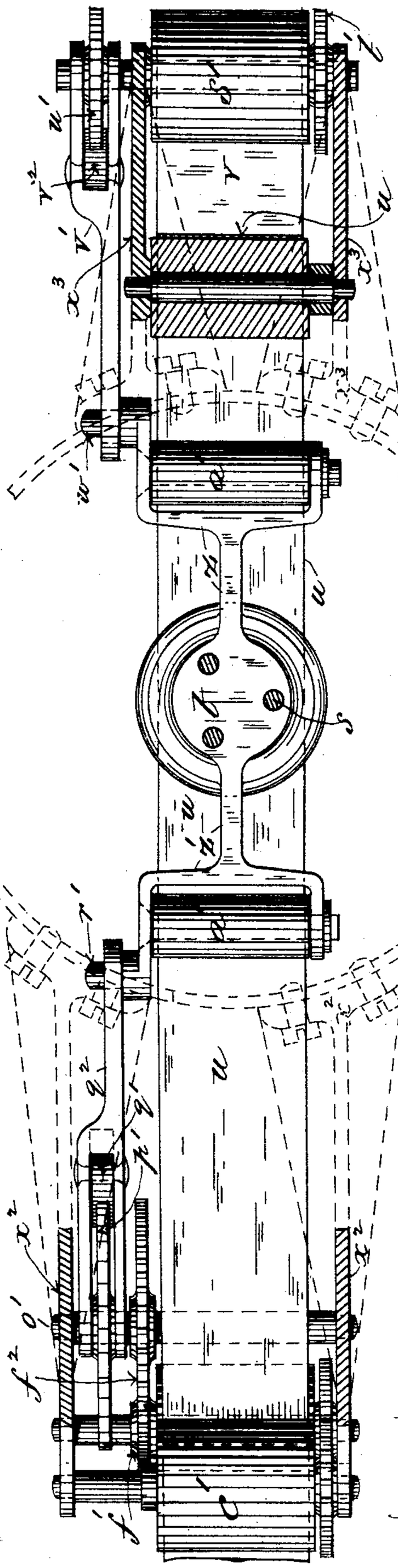

Fig. 7.

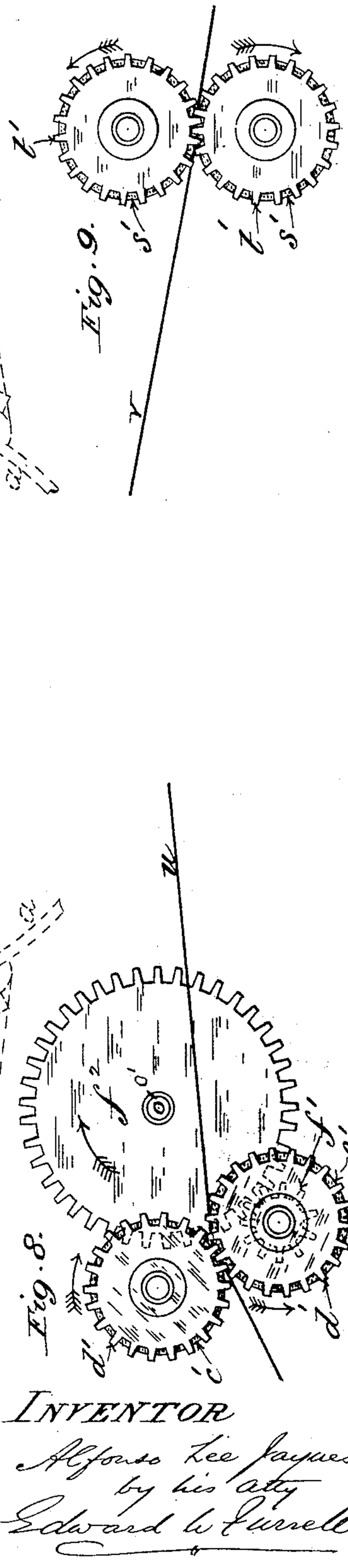

Fig. 9.

Fig. 8.

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WORKMAN'S TIME RECORDER.

No. 483,629. Patented Oct. 4, 1892.

Fig. 11

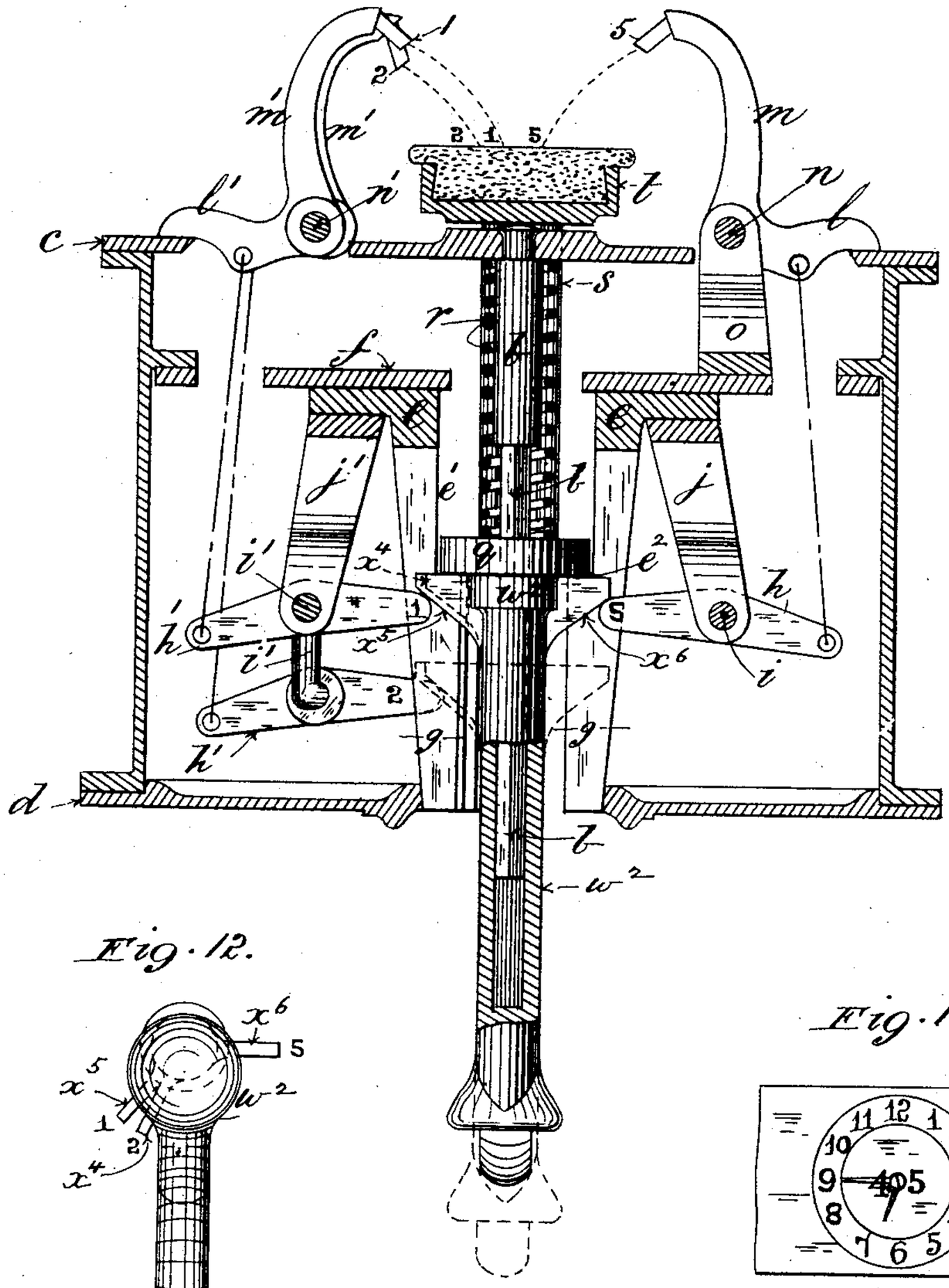

Fig. 12.

Fig. 10.

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UNITED STATES PATENT OFFICE.

ALFONSO LEE JAYNES, OF ST. LOUIS, MISSOURI.

WORKMAN'S TIME-RECORDER.

SPECIFICATION forming part of Letters Patent No. 483,629, dated October 4, 1892.

Application filed May 6, 1892. Serial No. 432,070. (No model.)

To all whom it may concern:

Be it known that I, ALFONSO LEE JAYNES, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Recording Apparatus, of which the following is a specification.

This invention, which may be used for various purposes, and particularly as a workman's time-recorder, relates to mechanism by which on the reciprocating movement of one or more of its parts the time at which such movement occurs and the number or other designating-mark assigned to the said part or parts are recorded.

In the accompanying drawings, Figure 1 represents a longitudinal section taken on line 1 1 in Fig. 2 of my improved recording apparatus arranged for use as a workman's time-recorder; Figs. 2 and 3, transverse sections thereof on lines 2 2 and 3 3, respectively, in Fig. 1; Figs. 4 and 5, side and end views, respectively, of the key shown in Fig. 1; Fig. 6, a side elevation of the apparatus at right angles to Fig. 1, showing the tape and ribbon mechanisms; Fig. 7, a transverse sectional view thereof on line 7 7 in Fig. 6; Figs. 8 and 9, side views of the gearing actuating the tape and ribbon rollers, respectively, as seen to the left and right of Fig. 7; Fig. 10, a view of the tape after receiving an impression to be recorded; Fig. 11, a similar view to Fig. 1, showing a modified arrangement of some of the parts seen on line 11 11 in Fig. 2; and Fig. 12, an end view of the key seen in Fig. 11.

Like letters and numerals of reference denote like parts in all the figures.

a represents a box or casing containing a central stem or other guide *b*, which is fixed at its rear end to the rear cover *c* of the casing *a*. The stem *b* may be circular for a suitable distance from its fixed end, and thence forward or outward of an isosceles triangular or other special shape to its free end, which projects somewhat beyond the front cover *d* of the casing *a*.

Around and concentric with the stem *b*, at a suitable distance therefrom, is preferably placed a tube or sleeve *e*, which is secured to a plate *f*, extending across and fixed to the casing *a*, intermediate to the front and rear covers *d c*. The central tubular space of the sleeve *e* around the stem *b* has an enlarged rear portion *e'*, so as to form a shoulder e^2 at the front portion of the said space.

Through the wall of the sleeve *e* are slots *g*, which are radial to the stem *b* and extend longitudinally along the sleeve *e* to a suitable distance from its front or free end. These slots *g* correspond in number to a series of levers *h h'* of the first order, the levers *h*, which are used for recording the single numbers "1" to "9," (or other desired marks,) being arranged to the right and the levers *h'* bearing the numbers "1," "2," and "1" to "9" (indicating, respectively, hundreds and tens) to the left of the stem *b*. The right-hand levers *h* are fulcrumed loosely on a spindle *i*, which is preferably radial to the stem *b* in a plane at right angles thereto and is supported by brackets *j*, projecting from the base of the sleeve *e* or plate *f*, as desired, and the left-hand levers *h'* to a similar fulcrum *i'*, carried by brackets *j'*. The free ends of the levers *h h'* enter, respectively, corresponding slots *g* of the sleeve *e* and may be vibrated freely along the said slots. The other ends of the levers *h h'* are connected by rods *k k'* to levers *l l'* having arms *m m'*, which carry at their free ends types 1 2, and so on, corresponding, respectively, to the numbered levers *h h'* and slots *g*. These levers *l m* and *l' m'* are preferably located outside the rear cover *c* of the casing *a*, the levers *l m* being fulcrumed loosely on a spindle *n*, which is radial to a point at some distance to the right of the center of the stem *b* in a plane at right angles to the latter, and the levers *l' m'* on a similar spindle *n'*, radial to a corresponding point to the left of the stem *b*. The spindles *n n'* are carried by brackets *o o'*, fixed to the plate *f* and projecting through the rear cover *c*. The free ends of the levers *l l'* are normally held, preferably, against the outer side of the rear cover *c* by springs l^2, which connect the said levers to the casing *a*. The connecting-rods *k k'*, which work freely through the plate *f* and rear cover *c*, are capable of longitudinal extension and adjustment by spring and nut devices *p*, (or other means,) which, operating in combination with the levers *l l'* and casing

a, normally maintain the levers *h h'* at a uniform level at their free ends within the slots *g* of the sleeve *e*.

Within the enlarged space *e'* of the sleeve *e* is placed a ring or other shoulder-piece *q*, which is preferably circular and movable along the stem *b*. The ring *q* is normally held against the shoulder e^2 of the space *e'* by a spiral spring *r*, which preferably surrounds the stem *b* between the near cover *c* of the casing *a* and the ring *q*. To the ring *q* are fixed the ends of rods *s*, which slide through corresponding holes in the rear cover *c*, beyond which they are fixed at their other ends to a block or plate *t*, having, preferably, a rubber or other cushion face, across which are held and caused to travel a tape *u* and inking-ribbon *v*, as hereinafter more particularly described.

The foregoing mechanism when used as a workman's time-recorder is operated by a key *w* or analogous instrument or by either of a series of such keys, each key being distinct and of separate construction, according to the respective numbers or marks to be represented and recorded thereby. Each key has a central hole or chamber corresponding to and closely fitting (but capable of sliding on) the triangular or other specially-shaped projecting portion of the stem *b*, so that the key can only be placed in one position on the stem *b*.

Projecting circumferentially from and preferably at right angles to the shank of each key at its open end or other suitable part is preferably a prong or other projection (or in lieu of a projection a slot may be used) or series thereof, corresponding in direction, when the key is placed on the stem *b*, to that of the levers *h h'* to be operated for recording the desired numbers or marks and to that of the slots *g*, which contain the said levers. For instance, the key *w*, (shown in Figs. 1, 2, 4, and 5,) has two opposite prongs *x x'* for registering the numbers "4" "5," so that on a workman represented by that number entering a factory and passing the key *w* onto the stem *b* the prongs *x x'* can only enter the opposite slots *g*, which contain the levers *h h'*, indicating, respectively, the figures "5" "4," and on pushing the key *w* the prongs *x x'* strike the free ends of those levers on their front edges, thereby constraining the said ends of the levers 5 4 rearward, as shown by dotted lines in Fig. 1, and causing the connecting-rods *k k'* of the said levers to be extended (by means of the spring devices *p*) without affecting the corresponding levers *l l'*, held against the rear cover *c* by the springs l^2, and their stamping-arms *m m'*, carrying the types 5' 4'. Meanwhile the prongs *x x'* have cleared the said ends of the levers 5 4 and the end of the key *w* strikes and pushes rearward the ring or shoulder-piece *q*, thereby compressing the spring *r* and pushing outward (by the rods *s*) the cushioned plate *t*, bearing the tape *u* and inking-ribbon *v*, until the latter are pressed upon the dial *y* (having raised type or other suitably-arranged numerals) and hands *y'* of a clock actuated by ordinary clockwork, and a record of the time at which the key *w* was inserted thereby impressed upon the tape *u*. On then withdrawing the key *w* the cushioned plate *t* and ring *q* are returned by the spring *r* to their normal positions or so that the ring *q* is stopped by the shoulder e^2, when the prongs *x x'* will have arrived against the free ends of the said levers 5 4 (which have meanwhile been returned to their normal positions by the spring devices *p* of the rods *k k'*) on their rear edges, so that on the further retraction of the key *w* the said ends of the levers 5 4 are constrained into the forward (dotted) positions, which causes their connecting-rods *k k'* to push rearward their corresponding levers *l l'* and thereby throw their arms *m m'*, having the types 5 4, forward into the dotted position against the inking-ribbon *v*, tape *u*, and cushioned plate *t* or so as to stamp the numbers "4" "5" upon the tape *u* within the previously-made impression of the clock-dial *y* and hands *y'*, as shown in Fig. 10.

The tape *u* and inking-ribbon *v* may be held and moved across the face of the plate *t* as follows: *z z'* (see Figs. 6, 7, 8, and 9) are arms projecting from opposite sides of the cushioned plate *t*, and each carrying at its outer end a pair of rubber or other rollers *a'*, having an intermediate fixed gage bar or pin *b'*, between which and the rollers *a'*, respectively, pass the tape *u* and inking-ribbon *v*, which are thereby held taut at the required distance apart across the face of the plate *t*. The tape *u* passes to the rollers *a'* at one side of the apparatus from a feed-roller (not shown) suitably mounted within the framework inclosing the entire apparatus or at any other convenient place, and from the opposite rollers *a'* on the other side the tape *u* passes between rollers *c'*, having on their spindles engaging spur-wheels *d'* of equal diameter for insuring a uniform rotation of the rollers *c'*. On the spindle of one of the rollers *c'* is fixed a spur-pinion *f'*, which is engaged by a spur-wheel f^2, having a spindle *o'*, on which is fixed a ratchet-wheel *p'*, engaged by a pawl *q'*, which is carried by the ratchet-lever q^2, whose free end is engaged and controlled by a pin *r'*, projecting from the arm *z'*, so that on the movement of the plate *t* in the direction of the clock-dial *y* the ratchet-lever q^2 is moved to a similar extent and by its pawl *q'* partially rotates the ratchet-wheel *p'* in the direction of its arrow, thereby partially rotating spur-wheel f^2 and rollers *c'* in the direction of their arrows and so drawing the tape *u* from between the rollers *a'* and pin *b'* and removing the previously-impressed portion of the tape *u* from the plate *t*, whereby a fresh portion of the tape *u* is brought over the face of the plate *t* for receiving the next impression. By means of the spur-wheel f^2 and pin-

ion f' a multiplied movement of the stroke of the plate t toward the clock-dial y is imparted to the rollers c', this multiplied movement corresponding to that necessitated by the difference between the stroke of the plate t and the diameter of the clock-dial y or the length of tape u equivalent to this diameter for removal from the plate t preparatory to a fresh stroke and impression. It is evident that when the said stroke of the plate t is made equal to the diameter of the clock-dial the spur-wheel and pinion f^2 and f' may be dispensed with and the ratchet-wheel p' fixed directly on the spindle of one of the rollers c'. The inking-ribbon v, which may be moved in the opposite direction to the tape u, passes from a suitable feed (not shown) to the rollers a' between a pair of rollers s', having engaging spur-wheels t', which are actuated by a ratchet-wheel u' and ratchet-lever v', having the pawl v^2, the said ratchet-lever being engaged by the pin w', projecting from the arm z in a similar manner to the tape movement, except that the multiplying-wheel and pinion used for the latter are dispensed with, as only a small movement of the inking-ribbon v comparatively with that of the tape u is required. The tape and ribbon devices described are carried by brackets x^2 x^3, preferably secured to opposite sides, respectively, of the casing a.

It will be noted in the foregoing apparatus, first, that the cipher is not employed in the various combinations of numbers to be recorded, and, secondly, that neither of the two left-hand levers h', with their stamping-arms m', numbered "1" "2," for recording hundreds, can be used in combination with any other left-hand lever h' and arm m' (indicating tens) which on being operated simultaneously with the "100" or "200" lever and arm will interfere with or foul the latter on striking the plate t, so that the use of all the several combinations otherwise obtainable are restricted accordingly. The "100" and "200" stamping-arms m' are arranged to strike the plate t at a point to the left of that common to the other left-hand arms m'. If desirable to utilize the "100" or "200" stamping-arm m' with either of the said prohibited arms m', their interference, on striking the plate t, may be prevented by pivoting the "100" and "200" levers h' at a suitable distance forward from the remaining left-hand levers h', indicating tens, as shown in Fig. 11, whereby the "100" or "200" lever h' is operated by the key after the other lever h' of the combined number has been operated and the arm m' of the latter returned by the spring l^2 to its normal position or clear of the plate t. For example, the key w^2 (shown in Figs. 11 and 12) has three prongs x^4 x^5 x^6 for operating, respectively, the "200," "10," and "5" levers h' h and so recording the number "215." In like manner, for recording any single number or combination thereof within the range of the apparatus, keys are used having, respectively, a prong or prongs in the proper position for operating the lever or levers whose stamping arms and types correspond to the desired number or combination to be recorded.

It will be understood that I do not limit myself to the particular means hereinbefore described for holding and moving longitudinally the tape and inking-ribbon across the face of the plate t, as it will be evident to a skilled mechanic that these functions may be effected in various ways without affecting my invention.

I claim as my invention—

1. In a recording apparatus, the combination of a key or other instrument, a tape and inking-ribbon, a clock-dial, and a movable type, the said key or other instrument when moved in one direction forcing the tape and ribbon against the clock-dial and when moved in the other direction forcing the type against the ribbon and tape, substantially as shown, and for the purpose described.

2. In a recording apparatus, the combination of a key having a prong or other projection and movable along a stem or other guide, a tape and inking-ribbon, and a type carried by a pivoted lever, the said lever being connected to a pivoted lever actuated by the key, substantially as shown, and for the purpose described.

3. In a recording apparatus, the combination of a key having a prong or other projection and movable along a stem or other guide, a ring or other shoulder-piece movable along the stem and connected to a plate carrying a tape and inking-ribbon, a spring for returning the said plate and ring, a clock-dial, and a type carried by a pivoted lever, the said lever being connected to a pivoted lever actuated by the key, substantially as shown, and for the purpose described.

4. In a recording apparatus, the combination of a key having a prong or other projection and a pivoted lever, which is normally held in one position by a spring, the said lever being adjustably connected to a pivoted lever actuated by the lever, substantially as shown, and for the purpose described.

5. In a recording apparatus, the combination, severally, with a series of keys, each key having a prong or prongs and movable along a central stem or other guide, of a ring or other shoulder-piece, preferably surrounding and movable along the stem, the said ring being connected to a plate carrying across its face a tape and inking-ribbon, a clock-dial having hands actuated by ordinary clockwork, a spring for returning the said plate and ring, a fixed tube or sleeve surrounding and concentric with the stem and ring, the said tube having longitudinal slots corresponding, respectively, to a series of pivoted levers movable at one end along the said slots and adjustably connected to a corresponding series of levers carrying types or marks and adjustably connected to a fixed part of the apparatus, substantially as shown, and for the purpose described.

6. In a recording apparatus, the combination of mechanism for moving longitudinally the tape and inking-ribbon, comprising, respectively, the plate t, having oppositely-projecting arms $z\,z'$, carrying rollers a' and intermediate pins b', pin r, engaging ratchet-lever q^2, having pawl q', ratchet-wheel p', spur-wheel f^2, and pinion f' for actuating the rollers c' of tape u, pin w', engaging ratchet-lever v, having pawl v^2, and ratchet-wheel u' for actuating the rollers s' of inking-ribbon v, substantially as shown and described.

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