

No. 704.854.

Patented July 15, 1902.

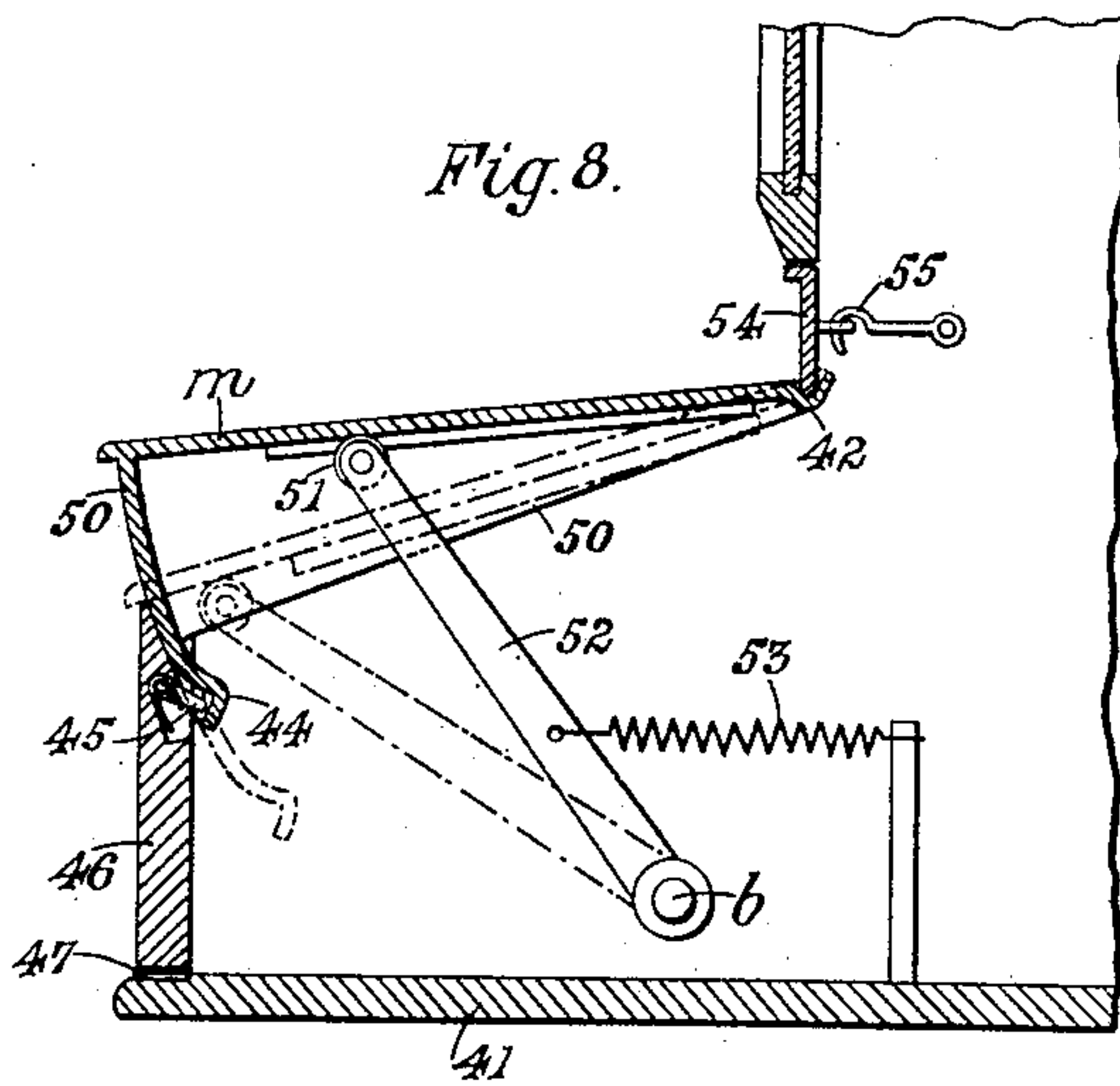
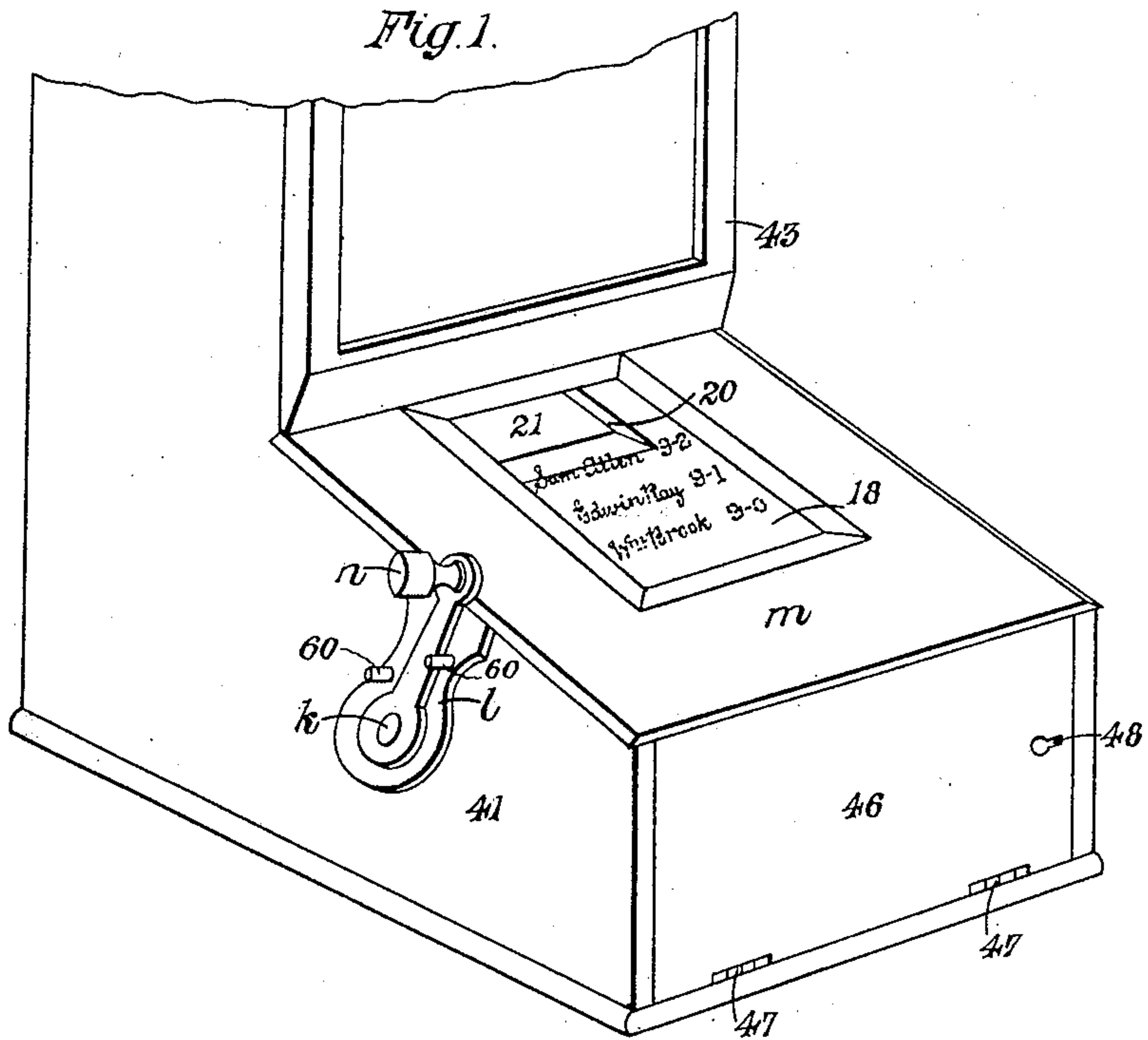
F. BROOK.

TIME RECORDER FOR WORKMEN OR SERVANTS OR LIKE APPARATUS.

(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 1



Witnesses:

Power S. Elliott

J. B. Keeler

Inventor

Frank Brook

By

James L. Norris

Atty

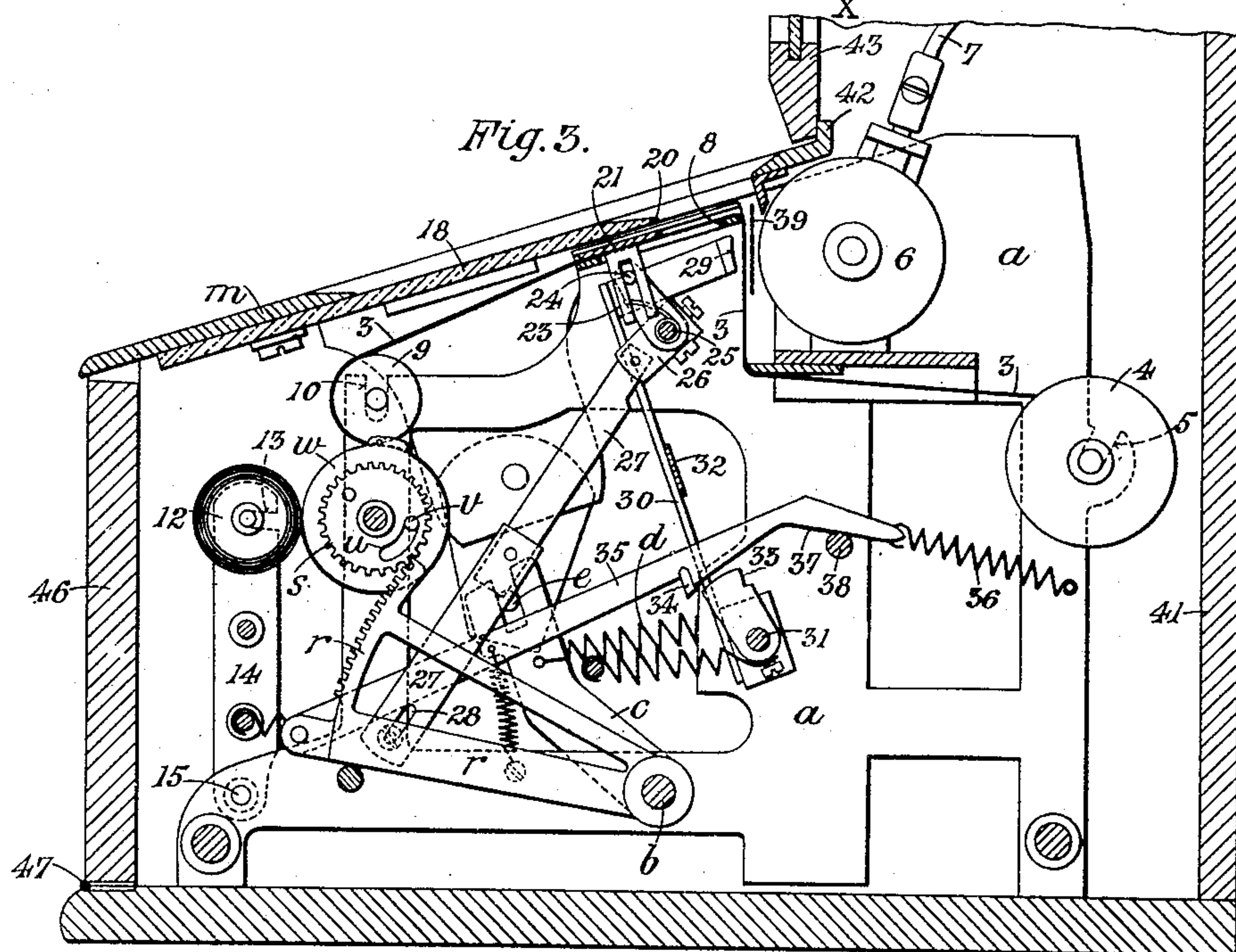
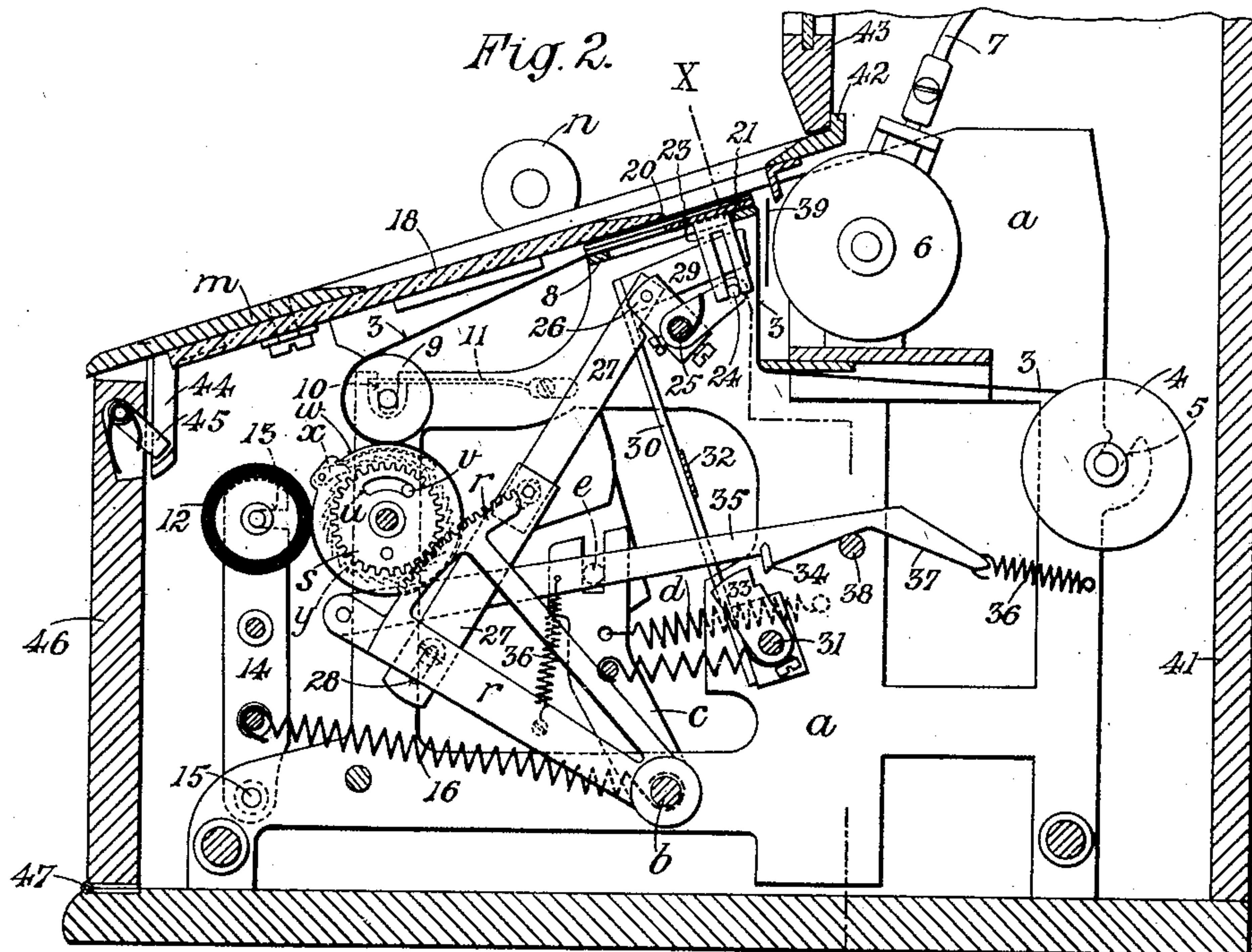
F. BROOK.

TIME RECORDER FOR WORKMEN OR SERVANTS OR LIKE APPARATUS.

(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 2.



Witnesses:
Paul S. Ernst
W. B. Keefe

Inventor
Frank Brook
 By *James L. Norris*
Atty

F. BROOK.

TIME RECORDER FOR WORKMEN OR SERVANTS OR LIKE APPARATUS.

(Application filed Feb. 27, 1902.)

(No Model.)

4 Sheets—Sheet 3.

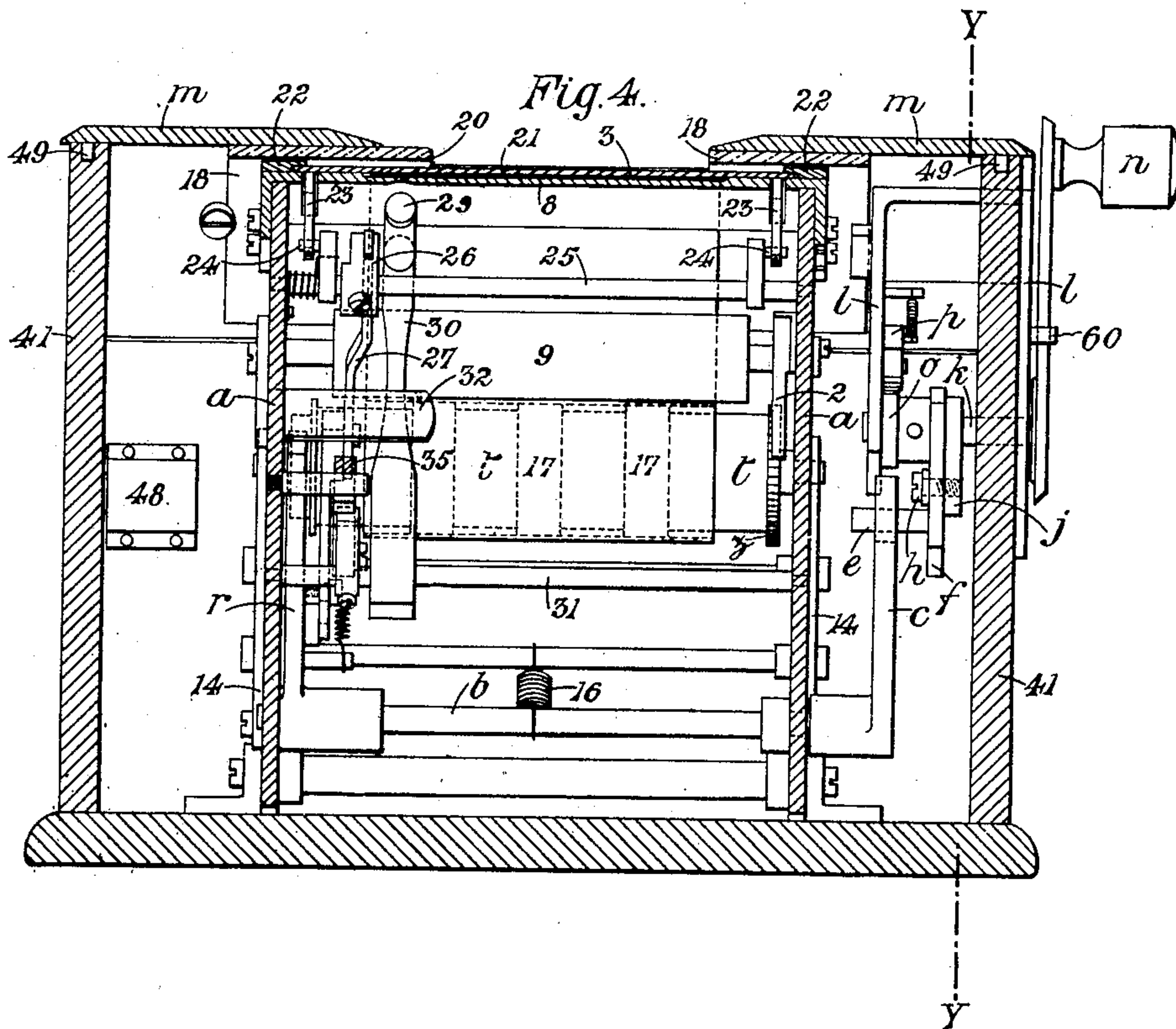
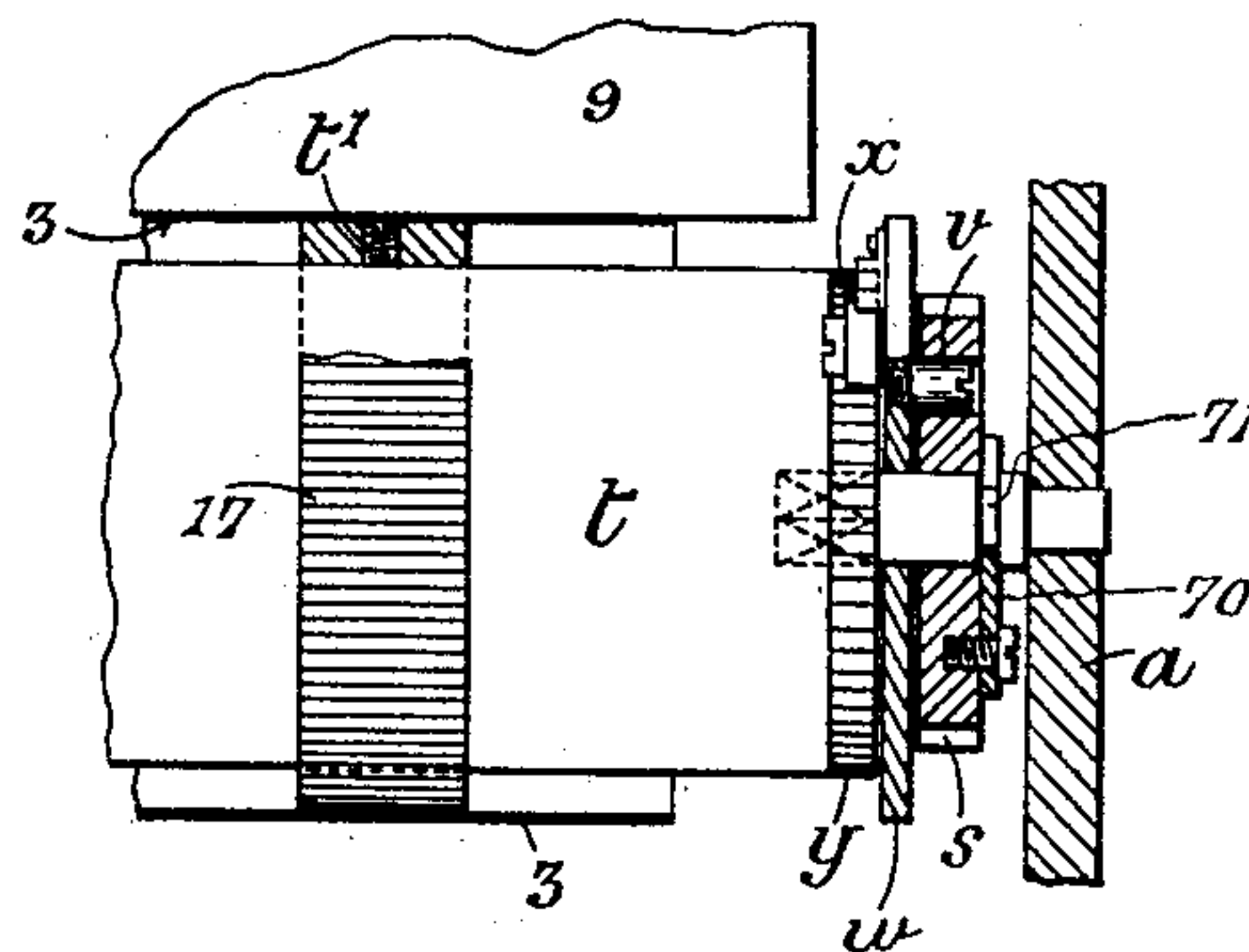


Fig. 7.



Witnesses:
 Bruce S. Elliott
[Signature]

Inventor
 Frank Brook
 By *[Signature]*
 James L. Norrie
 Atty

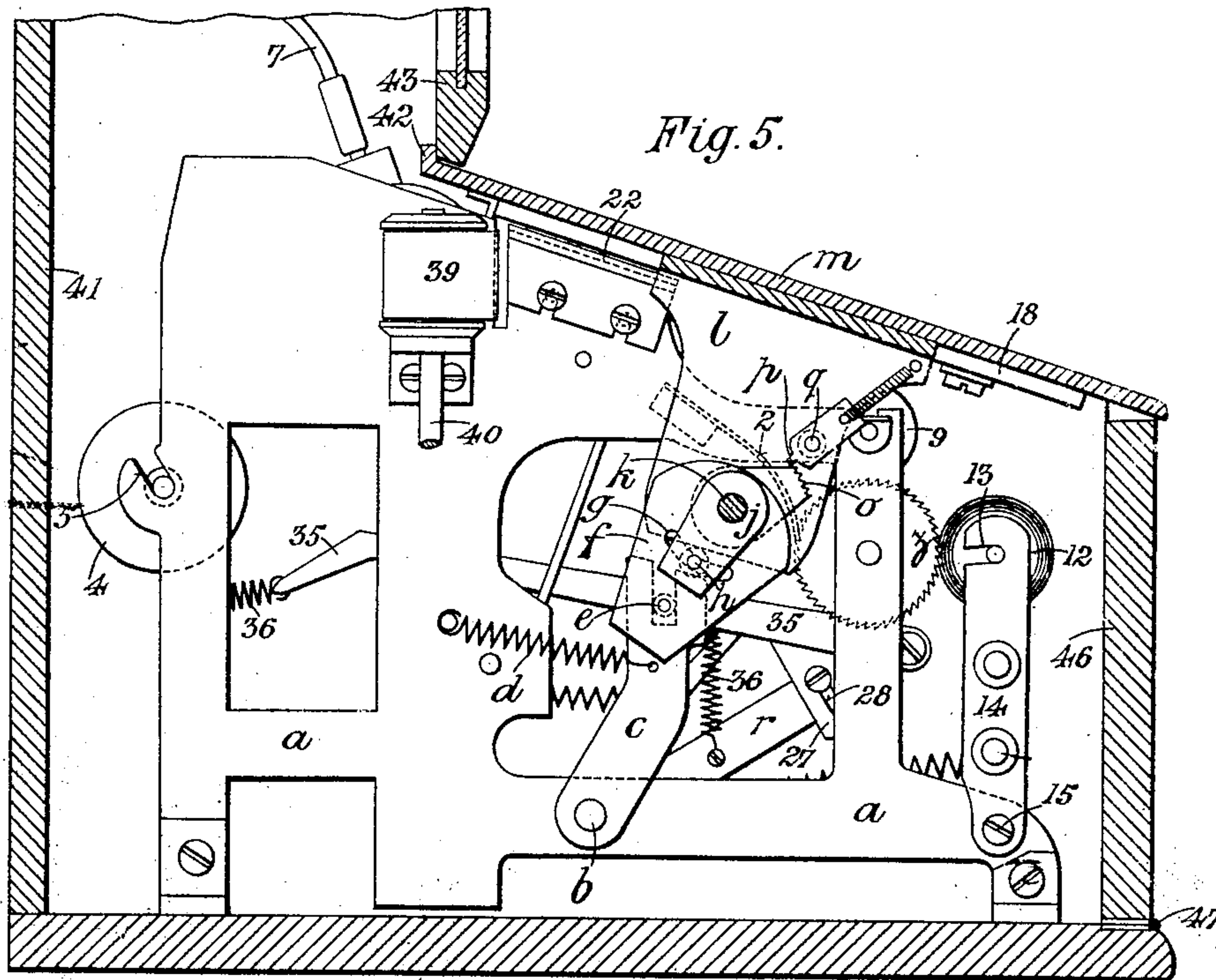
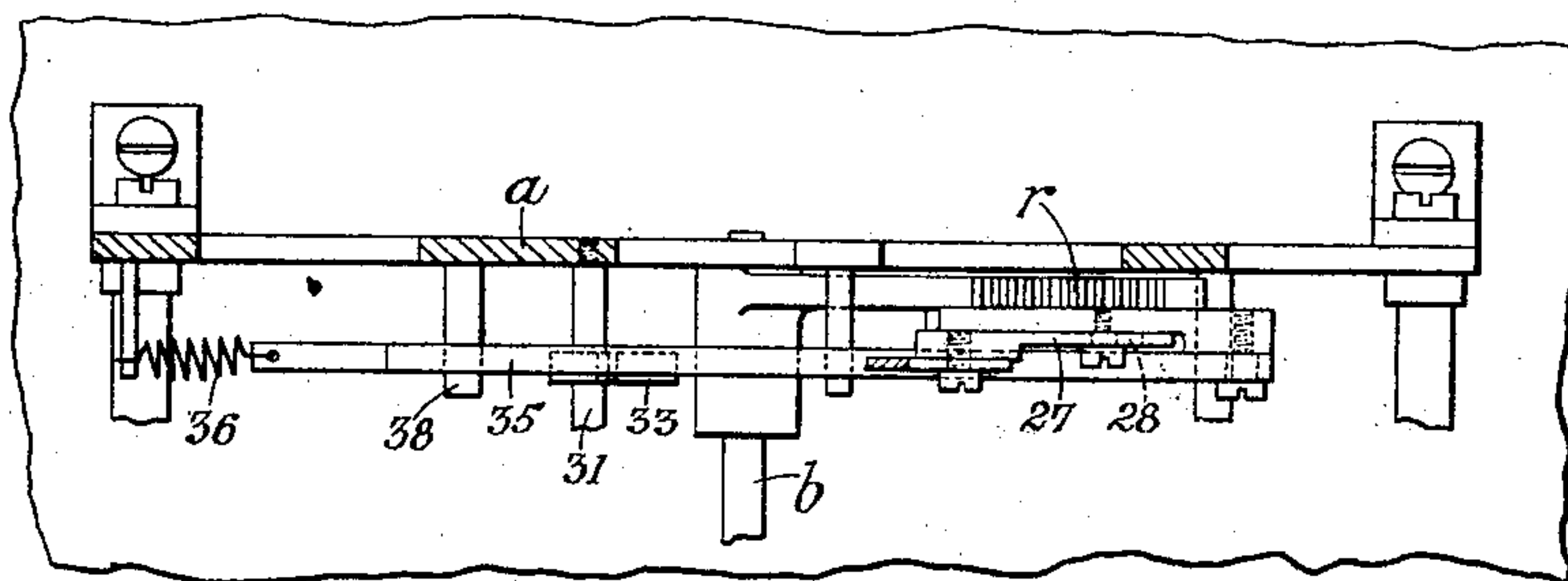


Fig. 6.



Witnesses:

Brice S. Elliott

J. B. Keefe

Inventor

Frank Brook

By

James L. Norris

Atty

UNITED STATES PATENT OFFICE.

FRANK BROOK, OF LINDLEY, HUDDERSFIELD, ENGLAND, ASSIGNOR TO
PETER MACMASTER, OF HAMPSTEAD, COUNTY OF MIDDLESEX, ENG-
LAND.

TIME-RECORDER FOR WORKMEN OR SERVANTS OR LIKE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 704,854, dated July 15, 1902.

Application filed February 27, 1902. Serial No. 95,960. (No model.)

To all whom it may concern:

Be it known that I, FRANK BROOK, a sub-
ject of the King of Great Britain, residing at
Lindley, Huddersfield, Yorkshire, England,
5 have invented certain new and useful Im-
provements in Time-Recorders for Workmen
or Servants or Like Apparatus, of which the
following is a specification.

The invention aims to construct a time-re-
10 corder which shall be simple in its construc-
tion, strong, durable, efficient in its operation,
and comparatively inexpensive to set up; and
to this end it consists of the novel combination
and arrangement of parts hereinafter more
15 specifically described, illustrated in the ac-
companying drawings, and particularly point-
ed out in the claims hereunto appended.

In describing the invention in detail refer-
ence is had to the accompanying drawings,
20 forming a part of this specification, wherein
like reference characters indicate correspond-
ing parts throughout the several views, and
in which—

Figure 1 is a perspective view of the exte-
25 rior of the lower portion of the improved ap-
paratus. Fig. 2 is a side elevation, partly in
vertical section, of the improved mechanism.
Fig. 3 is a similar view to Fig. 2, showing the
parts in the position which they occupy when
30 the actuating-lever is depressed. Fig. 4 is a
section on the line X X, Fig. 2; and Fig. 5, a
section on the line Y Y, Fig. 4. Figs. 6 and 7
are respectively a sectional plan and a front
elevation drawn to an enlarged scale and illus-
35 trating details of construction. Fig. 8 is a
longitudinal section showing an improved de-
pressible lid or table.

Like characters indicate corresponding
parts throughout the drawings.

40 *a* is the frame of the mechanism. *b* is a
rock-shaft pivotally mounted in the lower
part of the said frame and serving to distrib-
ute the motive power to the several auxiliary
mechanisms, as hereinafter described. This
45 rock-shaft is provided with an arm *c*, which is
acted upon by a spring *d* sufficiently strong
to return all the parts to their normal posi-
tions after being displaced, as hereinafter de-
scribed. The arm *c* is forked at its outer end
50 to receive a pin *e*, whereby it receives motion,

as hereinafter described. The pin *e* is fixed
to a lever *f*, which is adjustably mounted, by
means of a slot *g*, set-screw *h*, and arm *j*, on a
shaft *k*, pivotally mounted in brackets *l* on the
cover *m* of the machine and provided with an 55
external handle *n*, which preferably moves
between stops 60 60 for limiting its travel.
By these means the cover *m* can be readily
detached, carrying with it the handle *n* and
driving-pin *e*. The shaft *k* is also provided 60
with an arc-shaped rack *o*, Fig. 5, for engag-
ing with a spring-controlled pawl *p*, pivoted
at *q*, which pawl when the handle *n* is moved
away from either of its limiting positions is
deflected from its normal position, Fig. 5, and 65
clicks over the teeth of the rack *o* and pre-
vents the return of the handle *n* so long as the
rack *o* is engaged with the pawl *p*; but when
the rack has passed out of engagement with
the pawl the handle can be moved back again. 70
By this means I prevent incomplete opera-
tion of the several auxiliary mechanisms here-
inafter described.

The rock-shaft *b* bears a toothed segment
r, which gears with a pinion *s*, mounted so as 75
to turn on the arbor of the paper-feed roller
t and prevented from moving axially thereon
by means of a plate 70, screwed to the said
pinion and engaging with a groove 71 in the
said arbor, Fig. 7. The pinion *s* is, moreover, 80
provided with an arc-shaped slot *u*, into which
extends a pin *v* on a pawl-carrier *w*, also
mounted so as to turn on the arbor of the
feed-roller *t*. The pawl *x* of the pawl-carrier
w engages with a ratchet-wheel *y*, formed on 85
the adjacent end of the feed-roller *t*, the other
end of the said roller being provided with a
second ratchet-wheel *z*, which engages with
a retaining-pawl 2, mounted on the frame *a*,
for preventing backward rotation of the said 90
roller. By these means when the rock-shaft
b is turned by actuating the handle *n*, as
above mentioned, the pinion *s* will turn freely
through a small angle before driving the pawl-
carrier *w* and feed-roller *t*, this dwell or retar- 95
dation being sufficient to enable the time to be
printed on the recording-strip, as hereinafter
described, before the said strip begins to move
into position to receive the autograph. On
the return of the said rock-shaft to its nor- 100

mal position by the spring *d* the feed-roller is held back by its retaining-pawl 2, while the pinion and pawl-carrier are returned to their original positions by the toothed segment, the pin *v* meanwhile moving back to the other end of its slot, so as to provide the lost motion on again actuating the handle *n*.

The paper recording-strip 3 is stored on a magazine-spool 4, having detachable flanges and turning in slots 5 in the frame *a*. From this spool the paper passes beneath the time-wheels 6, which are driven from a clock through a flexible shaft 7 in any suitable known manner, then passes up in front of the said time-wheels and over an inclined writing-table 8, where the autograph is written. By this arrangement the time is printed on the same side of the paper as that on which the autograph is afterward written. From the table 8 the paper passes to a friction-roller 9, which is mounted in bearings 10, secured to springs 11, whereby it is pressed against the feed-roller *t*. The paper strip passes around the front of the friction-roller 9, between the friction and feed rollers, and then around the under side of the feed-roller to the receiving-roller 12, which is mounted in slots 13 in a frame 14, oscillating about pivots 15 in the frame *a*, and acted upon by a spring 16, so as to hold the said receiving-roller against the feed-roller *t*. The said feed-roller is preferably formed with milled or otherwise externally-roughened rings 17, projecting from its surface, to grip the paper. These rings are preferably made separately from the roller *t* and are secured in position, for example, by means of set-screws *t'*, Fig. 7, so as to enable them to be replaced by similar rings of different diameter in order to vary the amount of paper fed at each actuation of the handle *n*, or the pinion and toothed segment can be interchanged for others having a different velocity ratio. This adjustment can also be effected by a system of intermediate wheels.

In the cover *m* there is formed an opening having a glass 18 beneath it, this glass being provided with an aperture 20, arranged above the table 8 and adapted to be opened and closed by a shutter 21 to enable the autograph to be written on the strip 3, the glazed opening extending forward for a short distance to enable the last two or three records on the said strip to be seen from the exterior. The shutter 21 slides in guides 22 on the table 8 and is provided with downwardly-extending forks 23, in each of which moves a crank-pin 24 on an arbor 25, pivotally mounted in the frame *a* and provided with an arm 26. The said arm is pivotally connected to the segment-arm *r* by means of a link 27 through a slot 28, so that the shutter 21 will not begin to uncover the strip until the time has been printed thereon, as hereinafter described.

The printing-hammer 29 is mounted on a spring-arm 30, which is fixed on a spring-con-

trolled hammer-shaft 31, whereby the inner or shaft end of the said spring-arm is held against a stop 32 in such a position that the hammer normally stands close against the opposite side of the strip 3 to that on which the record is to be made. The hub of the hammer 29 is provided with a projection 33, which is preferably faced with steel or other wear-resisting metal, with which engages a similarly-faced projection 34 on a bar or link 35, which is pivotally connected at one end to the toothed segment-arm *r*. The bar 35 is controlled by springs 36, so as to normally hold the two projections 33 34 in engagement with each other. The said bar is, moreover, provided with a cam-surface 37, engaging with a fixed pin 38 and adapted during the longitudinal motion of the said bar, when the hammer has been drawn back a sufficient distance during the oscillation of the rock-shaft *b*, to move the bar 35, so as to disengage the projection 34 from the projection 33 on the hub of the hammer 29, and thus allow the said hammer on its return to strike the recording-strip 3 and bring it into contact with the type-wheels 6 and inking-ribbon 39, lying between said strip and type-wheels. While the time is being printed the feed-roller *t* is at rest, as above described, and after the hammer has struck the ribbon the lost motion in the wheel *s* will have been taken up, and the pin *v* will then be driven, thus moving the paper forward and bringing the time-print onto the table 8 to enable the autograph to be written thereon with the time in view.

The inking-ribbon 39 is arranged on two spools or rollers secured on shafts 40, mounted to run, with a suitable amount of friction, in bearings on the frame *a* and alternately driven in any suitable manner—for example, through bevel or other spur gearing—from a longitudinally-movable shaft, which is itself driven by a pawl-and-ratchet gearing from the actuating rock-shaft *b*, the longitudinal motion of the said shaft being obtained through levers from a pin or stud on the inking-ribbon itself, and a separate lever being preferably provided near each spool or roller. In order to insure that the teeth of such spur-gearing shall come into gear when the said shaft is moved longitudinally, one of each pair of interengaging wheels can be mounted on its shaft, so as to provide a small amount of lost motion, thus enabling one of the pair to move sufficiently to bring the said wheels into gear with each other.

The operation of my improved apparatus is as follows, viz: On pushing backward the handle *n* the hammer 29 is first actuated to print the time on the strip, after which the feed-roller *t* and shutter 21 are operated simultaneously to feed the part of the paper 3 onto which the autograph is to be written into position beneath the aperture 20 and to open the said aperture, the time-print remaining beneath the glass—for example, at

the right-hand side of the said aperture. The autograph is then written on the paper, the handle *n* being meanwhile held in its rearmost position. On releasing the handle the spring *d* returns the parts to their original positions, the autograph being then covered by the shutter 21.

The lid or cover *m* of the casing 41 is secured in position by hooks 42, which extend beneath the lower edge of the upper door 43 of the casing 41, and by a catch or loop 44, secured beneath its front edge and engaging with a spring-pawl 45 on the front wall 46 of the casing. This front wall is made separately and is hinged at 47 to the casing 41, a lock 48 being provided for holding it in its closed position. Steady-pins 49 are also provided at the sides of the cover *m*, these pins fitting into corresponding holes in the side walls of the casing 41. By these means on either opening the door 43 or the front wall 46 of the case the cover or lid *m* can be readily removed, so as to obtain access to the interior, and replaced without unscrewing or interfering with any of the parts of the mechanism. Moreover, the said cover can be readily placed in position and automatically secured when both the door 43 and front wall 46 are locked.

In the modification shown in Fig. 8 the handle *n* is dispensed with and the rock-shaft *b* is actuated from the cover or lid *m*, which is made depressible. In this arrangement the said cover or lid is provided with extensions or wings 50, sliding in the walls of the case, and in the front arc-shaped part of which is formed the catch 44. The under side of this cover or lid bears on antifriction-rollers 51 at the ends of levers 52, fixed to the ends of the rock-shaft *b*. Springs 53, secured to the levers 52, assist in maintaining the rock-shaft *b* and the connected parts in their normal position, Fig. 2, and also serve to return the said cover or lid to its uppermost position when displaced. The hooks 42, which in this case form a hinge, engage with the lower edge of a plate 54, detachably secured to the casing 41 by hooks 55 or other suitable means. The action of the levers 52 can be assisted by similarly-acting spring-pressed or counterbalanced arms mounted in the casing 41.

The improved apparatus can be somewhat further modified. For example, it can be used as a memorandum-clock, for which purpose the feed-roller is preferably arranged at the rear and the magazine-spool in front of the aperture 20.

An advantage of great value from the practical point of view obtained by my improved method of construction consists in that on removing the cover *m* and disconnecting the flexible shaft 7 the complete mechanism can be unscrewed or otherwise unfastened from the casing 41 and removed by an unskilled person, who can immediately replace it by a spare mechanism, and thus prevent any interruption of the record.

What I claim is—

1. The combination, in a time-recorder, of a frame, an actuating-shaft, a feed-roller pivotally mounted in said frame, a ratchet-wheel on said feed-roller, a feed-pawl engaging said ratchet-wheel, an oscillating pawl-carrier bearing said pawl, a wheel connected by a pin and slot to said pawl-carrier, and gearing connecting said wheel to the actuating-shaft of the apparatus, substantially as, and for the purpose, hereinbefore described.

2. The combination, in a time-recorder, of a frame, an actuating-shaft, a magazine-roller, a feed-roller pivotally mounted in said frame, a spring-pressed friction-roller bearing against said feed-roller, a ratchet-wheel on said feed-roller, a feed-pawl engaging with said ratchet-wheel, an oscillating pawl-carrier bearing said pawl, a wheel connected by a pin and slot to said pawl-carrier, gearing connecting said wheel to the actuating-shaft of the mechanism, and a receiving-roller, substantially as, and for the purposes, hereinbefore described.

3. The combination, in a time-recorder, of a magazine-roller, time-printing wheels, inking mechanism, a printing-hammer, an actuating-shaft, gearing connecting said hammer and said actuating-shaft, a stationary writing-table arranged above said hammer, a feed-roller, gearing having lost motion connecting said feed-roller and said actuating-shaft, a friction-roller coacting with said feed-roller, and a receiving-roller coacting with said feed-roller, substantially as, and for the purposes, hereinbefore described.

4. The combination, in a time-recorder, of a writing-table, a cover having an aperture arranged above the said writing-table, guides on said writing-table, a shutter movable in said guides, forks on said shutter, pivotally-mounted cranks engaging said forks, an actuating-shaft, and gearing having lost motion connecting said cranks and said actuating-shaft, substantially as, and for the purposes, hereinbefore described.

5. The combination in a time-recorder, of a frame, an actuating-shaft, a feed-roller, rings having roughened peripheral surfaces and fitting on the said feed-roller, means for securing said rings on said feed-roller, a ratchet-wheel on said feed-roller, a feed-pawl engaging said ratchet-wheel, an oscillating pawl-carrier bearing said pawl, a wheel connected by a pin and slot to said pawl-carrier, and gearing connecting said wheel to the actuating-shaft, substantially as described.

6. The combination, in a time-recorder, of a frame, an actuating-shaft, a magazine-roller pivotally mounted in said frame, time-printing mechanism, inking mechanism, a stationary writing-table, a feed-roller, a spring-pressed friction-roller engaging with said feed-roller, a receiving-roller, a detachable cover, an aperture formed in said cover and registering with said writing-table, a rock-shaft pivotally mounted on said cover, an ex-

ternal handle on said rock-shaft, a crank-arm on said rock-shaft, and a forked lever mounted on said actuating-shaft and engaging said crank-arm, substantially as described.

5 7. The combination, in a time-recorder, of a frame, an actuating-shaft, a magazine-roller pivotally mounted in said frame, time-printing mechanism, inking mechanism, a stationary writing-table, a feed-roller, a spring-pressed friction-roller engaging said feed-roller, a receiving-roller, a detachable cover, an aperture formed in said cover and registering with said writing-table, a rock-shaft pivotally mounted on said cover, an external handle on said rock-shaft, a crank-arm on said rock-shaft, a forked lever mounted on said actuating-shaft and engaging said crank-arm, an arc-shaped rack on said rock-shaft, and a pivoted spring-controlled pawl coacting with said rack, substantially as described.

8. The combination, in a time-recorder, of a casing, an actuating-shaft, a detachable cover to said casing, a rock-shaft pivotally mounted on said cover, an external handle on said rock-shaft, an arc-shaped rack on said rock-shaft, a pivoted spring-controlled pawl coacting with said rack, an internal lever-arm on said rock-shaft, a lever-arm on said actuating-shaft, and a pin and interengaging fork on said lever-arms, substantially as, and for the purposes, hereinbefore described.

9. In a time-recorder, the combination of a frame, an actuating-shaft, a spring controlling said actuating-shaft, means for oscillating said actuating-shaft, a magazine-roller, time-printing wheels, inking mechanism, a pivoted spring-pressed printing-hammer, a spring-controlled bar, linkwork connecting said bar to said actuating-shaft, interengaging projections on said hammer and said bar, a cam on said bar for tripping said projections, a stationary writing-table, a feed-roller,

gearing having lost motion connecting said feed-roller and said actuating-shaft, a spring-pressed friction-roller bearing against said feed-roller, a receiving-roller, a casing having an aperture arranged above said writing-table, a sliding shutter arranged beneath said aperture, guides for said shutter, and gearing having lost motion connecting said shutter and said actuating-shaft, substantially as described.

10. The combination, in a time-recorder, of a frame, a magazine-roller, time-printing wheels, a printing-hammer, inking mechanism, a writing-table rigidly fixed on said frame above said printing-hammer, a shutter mounted in guides over said table, a feed-roller, and friction and receiving rollers coacting with said feed-roller, the same being adapted to feed and print a recording-strip extending from said magazine-roller, between said time-printing wheels and said hammer, between said table and said shutter, over said friction-roller, between said friction-roller and said feed-roller, around said feed-roller and between said feed-roller and said receiving-roller, and onto said receiving-roller, substantially as described.

11. The combination, in a time-recorder, of a frame, an actuating-shaft, a feed-roller, rings having roughened peripheral surfaces and fitting onto said feed-roller, means for removably securing said rings on said feed-roller, and gearing connecting said actuating-shaft and said feed-roller, substantially as described.

In witness whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK BROOK.

Witnesses:

CHAS. EDW. FREEMAN,
C. H. CARR.