

No. 622,091.

Patented Mar. 28, 1899.

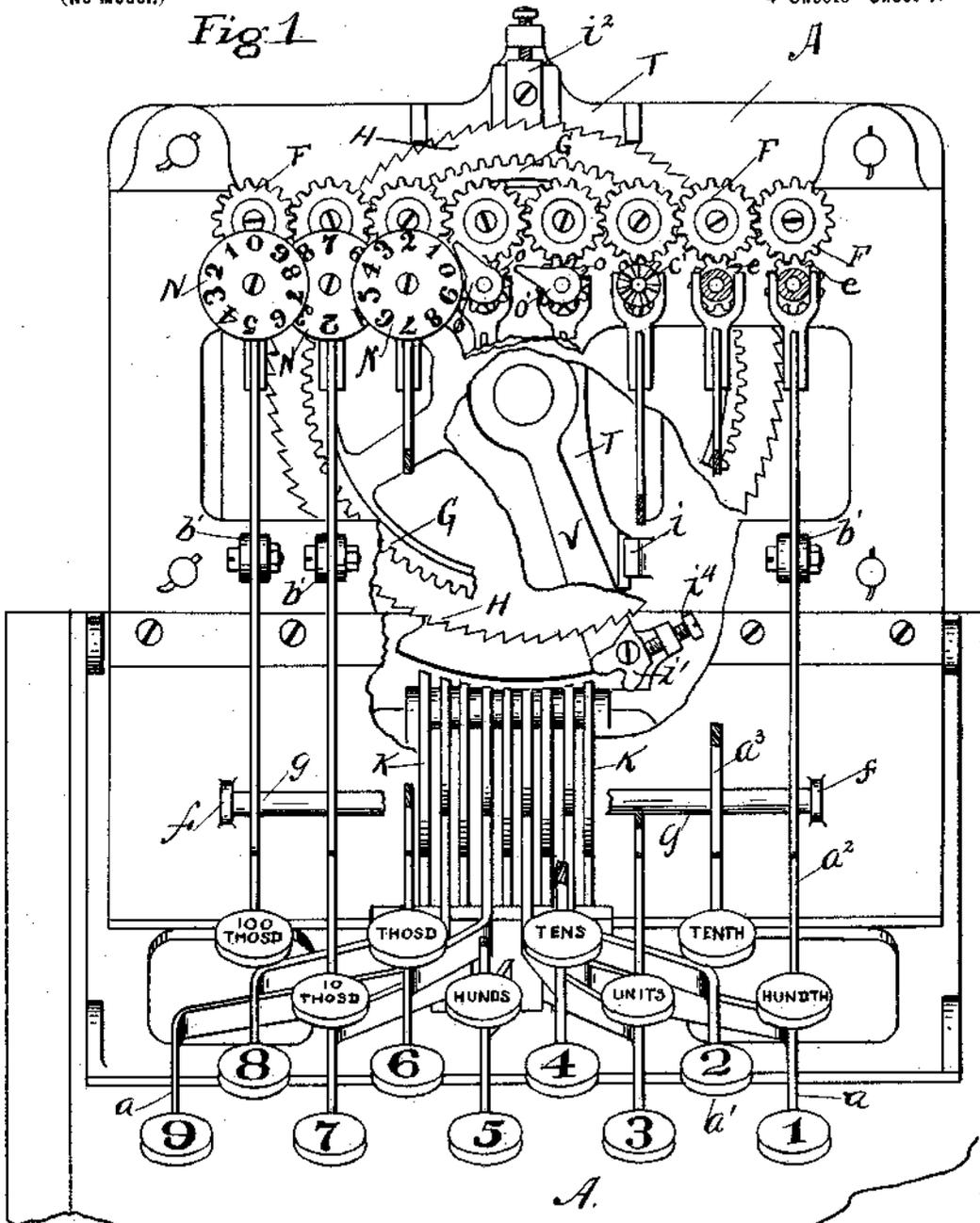
J. A. TURCK.
ADDING MACHINE AND REGISTER.

(Application filed Mar. 15, 1898.)

(No Model.)

4 Sheets—Sheet 1.

Fig 1



Witnesses

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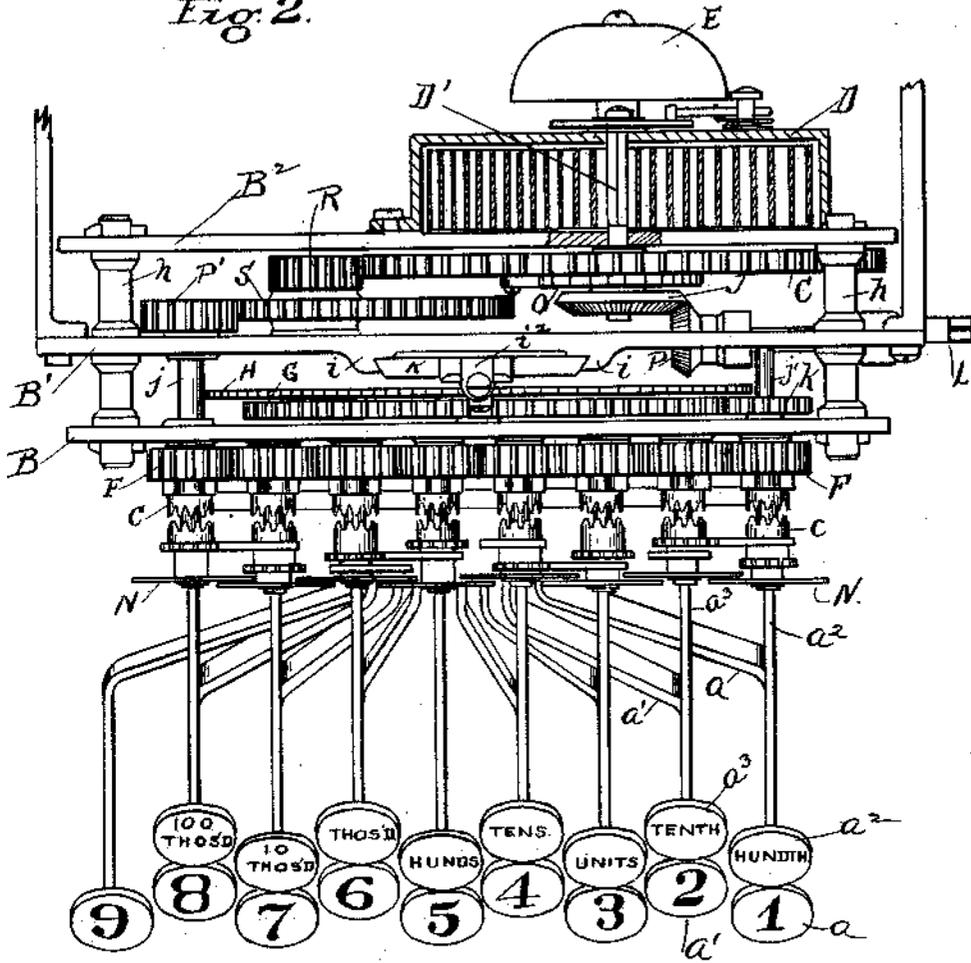
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4 Sheets—Sheet 2.

Fig 2.



Witnesses

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Fig. 7.

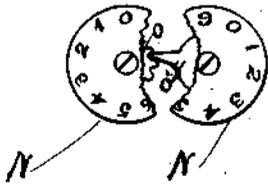
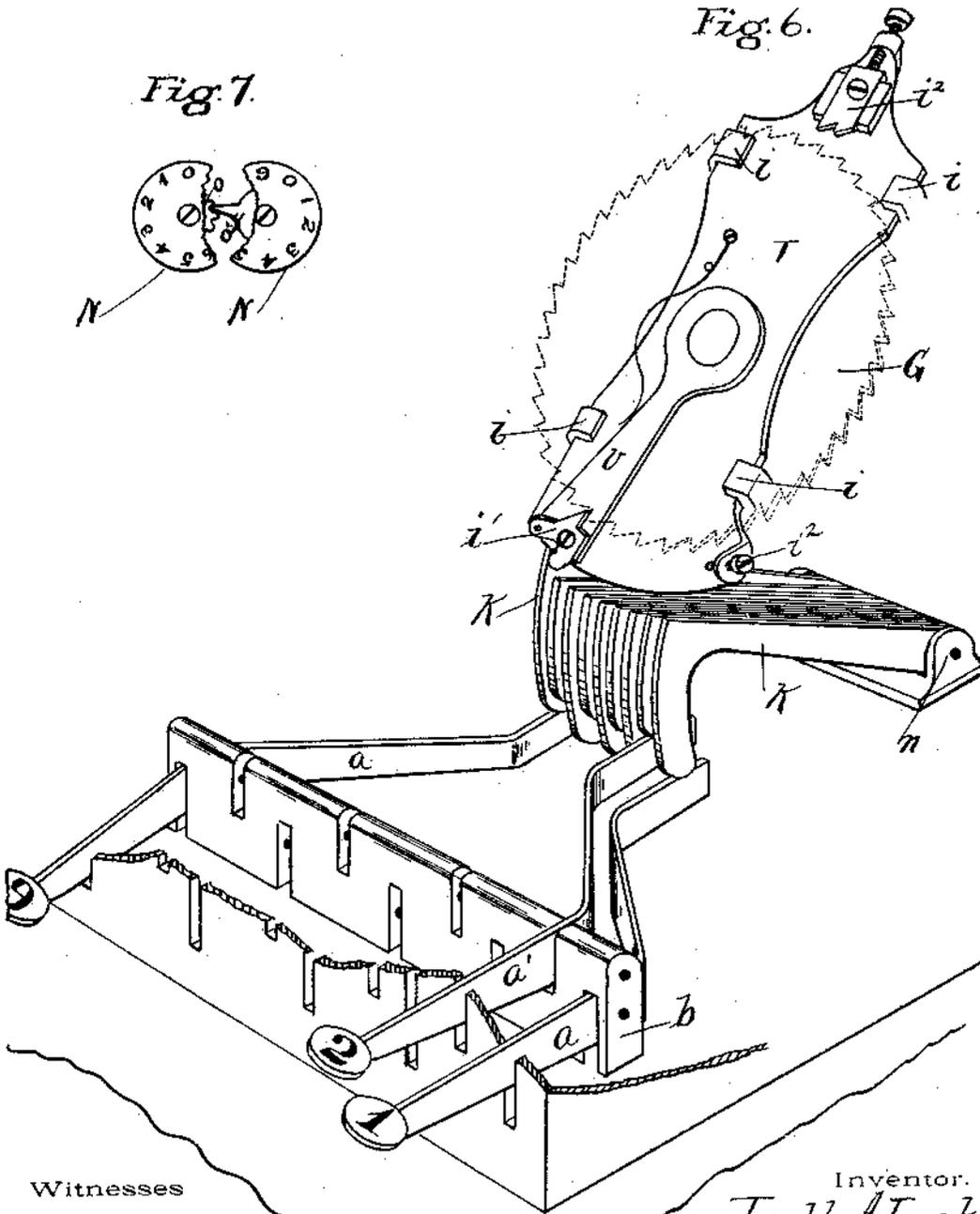


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH A. TURCK, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF THREE-FIFTHS TO HORACE THURSTON AND ALFRED CALDWELL, OF SAME PLACE.

ADDING-MACHINE AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 622,091, dated March 28, 1899.

Application filed March 15, 1898. Serial No. 673,933. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. TURCK, of Providence, in the county of Providence and State of Rhode Island, have invented certain
5 new and useful Improvements in Adding-Machines and Registers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon,
10 which form a part of this specification.

This invention relates to adding-machines and registers.

It is fully explained and illustrated in this
15 specification and the accompanying drawings.

Figure 1 shows a front elevation of the machine with the upper part of the case removed to show the mechanism. Fig. 2 represents a top view of the mechanism. Fig. 3 is a side
20 elevation with part of the case removed. Fig. 4 represents the spring-motor that operates the mechanism with the alarm-bell. Fig. 5 is a side view of the parts shown in Fig. 4. Fig. 6 is a perspective view of the parts that
25 decide the number counted on a dial, according to which key-lever is operated. Fig. 7 is a detail representation of the parts whereby one dial turns the next when ten has been counted on the first.

The object is to produce a machine by means of which one or more columns of figures can be added together and the total amount shown on a series of dials and in which the mechanism shall be simple and effective and not liable to get out of order.
35

The construction and operation are described as clearly as possible with special reference to the drawings.

The form of the case and the relative arrangement of the mechanism are best seen in Fig. 3. The case A is preferably made of metal in proper shape to accommodate the enclosed mechanism. To the bottom of the case A a casting A' is securely fastened to support
40 all the mechanism except the key-levers. This casting A' has the front plate B secured to it, and the second and third plates B' and B² are attached to plate B by studs *h h*, and between the three plates a large part of the running mechanism is held.
50

There are four rows of key-levers, the two lower rows of which, *a a'*, are held on pivots in a slotted plate *b*, (see Fig. 6,) attached to the bottom plate of the case. The two upper rows of key-levers *a² a³* are held on pivots
55 in slotted studs *b'*, attached to the front plate B. (See Fig. 1.) A series of spur gear-wheels F F—represented as eight in this case, but which may be more or less, according to the intended capacity of the machine—are held
60 to turn freely except the two outside ones on studs fast in the front plate B. (See Fig. 1.) This series of gears F engage with each other and receive motion through a train of gear-wheels, (see Fig. 2,) consisting of the gear P',
65 held on a shaft J, to which the first gear F to the left is fast. The gear P' engages with the gear S and a pinion-gear R, fast on the side of gear S, engages with the gear C, which is held free to turn on the shaft of the motor D, but
70 which is turned in one direction by a ratchet-wheel fast on said motor-shaft, and which engages a pawl *t'*, fast on the wheel C.

A series of studs *c² c³*, equal in number to the gears F, are held fast in the front plate B
75 just below those gears, and each stud carries a sleeve with a half of a clutch *c'* on its outer end and a gear *e* on its inner end that engages in the gear F above it. (See Fig. 1.)

Each stud *c²* has a sleeve held to turn on
80 its outer half, on the outer end of which is held a dial N with figures on its face, and on the inner end of the sleeve the other half of the clutch *c'* is held. The gears F have a width of face sufficient to allow the sleeve to
85 carry the inner half-clutch *c'* into engagement with the outer half without sliding the gear *e* out of engagement with the gear F.

The sliding of the inner half of the clutches into the outer halves to turn the dials N is
90 done by the two upper rows of key-levers *a²* and *a³*, (see Fig. 3,) which indicate or bring into action the particular dial on which the number indicated by one of the two lower rows of key-levers *a a'* shall be registered—
95 that is, if the figure "5" in the sum of "2,500" is to be added the upper key-lever marked "hundreds" (see Fig. 1) is pressed down to bring the proper dial into action, and then the key-lever 5 in the lower row is pressed
100

down and that number counted on that dial. This will explain the relative purpose of the two sets of key-levers $a a'$ and $a^2 a^3$.

The arrangement and operation of the mechanism that is employed in the counting controlled by the first and second row of key-levers $a a'$ on each dial, as indicated by the two upper rows of key-levers, are this: In Fig. 2 will be seen a gear-wheel G and a ratchet-wheel H, held to turn on a stud s' , fast in the front plate B. The gear G receives motion from a gear k , fast on a shaft carrying the first gear F to the right. This motion is conveyed from the gear G to the ratchet-wheel H, which is fastened to it.

A plate T is held to slide in ways $i i$ on the face of the middle plate B'. This plate T has an adjustable dog i secured to its upper end, (see Fig. 6,) and a swinging lever V is loosely pivoted to the center of the sliding plate T. A movable dog i' is held on the lower end of the plate T, and a tooth on this dog engages in the teeth of the ratchet-wheel H when the plate T is pushed up by one of the key-levers a , as shown in Fig. 6. When the plate T is down, which is when no key-lever of the first or second row is in use, the teeth in the dog i' at the top engage in the teeth of the wheel T and prevent it from turning. At this time when the plate T is down the lever V, being free, will be thrown over against the adjusting-screw i' in readiness for operation by the spring p , as in Fig. 1. When a figure—say "9"—is to be counted on any one of the dials N, the key-lever operating that dial is depressed, which, as before described, throws the clutch into engagement so as to connect that dial with the gear F over it. Then by pressing down the lever 9 of the lower row the inner end of it will raise the plate T by one of the knee-levers K over it, so as to engage the dog i' in the teeth of the wheel H and at the same time push out the dog i' at the top and leave the wheel H free to be turned by the wheel G until the lever V brings up against the raised lever 9, when that number will have been counted on the dial that was connected previously by one of the two upper rows of key-levers $a^2 a^3$, as described.

On each dial-sleeve is put a gear o of ten teeth and a plate o' with one tooth. (See Fig. 7.) The gears and plates are placed in alternate order on the dial-sleeves, so that the plate on one sleeve will come opposite to the gear on the next sleeve, and when ten has been counted on one dial the plate o' , by means of its single tooth, will move the dial to the left of it one tooth of its gear o and count one on that dial.

An opening H' is made in the case over each dial, through which the upper figure on the dial can be seen. (See Fig. 3.)

An alarm-bell E is attached to the case D of the motor to give notice when the motor is nearly run down, that it may be wound up again. It operates the bell by means of a plate c' , fast on the shaft D' of the motor.

This plate c' has a tooth c' on one side that catches into a recess c in a wheel c , that is held on a pivot in the case D and turns the wheel one space at each turn of the shaft of the motor. A pin d is put in the wheel c' , that, after so many turns of the motor-shaft D', comes in contact with the dog y , which is held on the pivot of the bell-hammer e^2 , and the dog by a projection on its end engaging a projection on the hammer throws it back, and a spring d' causes it to return and strike the bell when the pin d has passed the dog y . The motor is wound up by means of a key applied to the outer end of a short shaft L', held on the plate B'. A bevel-gear P on the inner end of the shaft engages in a bevel-gear J on the ratchet-wheel O, fast on the motor-shaft D.

Each key-lever of the upper series $a^2 a^3$ has a projecting catch g' on its under side, and a rocking bar g is held in bearings on the plate B, so that when one of those key-levers is depressed its catch will engage with the bar g and be held until released by the depression of another of the same levers turning down the bar g .

It will be seen by Fig. 2 that the keys are arranged to count from units up to one million to the left and to count decimals to one hundredths to the right—that is, eight columns of figures—and the counting may begin on any one of those columns. If the units-column is taken first, the key marked "units" is first depressed to engage the clutch on the third dial, and the catch g' on that key will catch on the bar g , so it will be held until released, as will be described. Then all the figures in the units-column can be run over in succession on the figure-keys $a a'$ and added into one sum on the dials. Then another column can be added in the same way, and in pressing down the key to engage the dial-clutch the units-key lever will be disengaged from the bar g and carried back to its place by its spring l .

Having thus described my improvements, I claim as my invention and desire to secure by Letters Patent—

1. In an adding-machine counting mechanism, the combination of a ratchet-wheel a sliding plate, a toothed dog secured to the top of said plate and arranged to engage in said ratchet-wheel when the plate is slid down, a swinging arm held on the plate, a toothed dog secured to the lower end of said swinging arm and arranged to engage in said ratchet-plate when the plate is slid up, with a series of key-levers to raise said plate, and means for moving said ratchet-wheel when said plate is raised, substantially as described.

2. In an adding-machine the combination of a series of gear-wheels held on studs stationary in a plate and always engaged with each other, a second series of studs also held stationary in said plate below said gears, a sleeve held to slide on each lower stationary stud having a half-clutch on one end and a gear-wheel on the other and always engaging

with the gear above it, a sleeve on the outer
end of each stud of the second series, having
a dial on one end and a half-clutch on the
other end, a series of key-levers to throw the
5 inner half-clutches with gears, into engage-
ment with the outer half-clutches with dials,
a motor and means for conveying motion from
said motor to the gears, substantially as de-
scribed.

10 3. In an adding-machine having a series of
dials, a series of key-levers to engage them
with the motor, and another set of key-levers
to operate the counting mechanism, a project-
ing catch on the under side of each of the

dial-engaging key-levers, a rocking bar ar- 15
ranged to receive each projecting catch when
the key is depressed and hold the key-levers
while the counting-key levers are in use, in
combination with a motor and counting mech-
anism, substantially as described. 20

In testimony whereof I have hereunto set
my hand this 25th day of February, A. D.
1898.

JOSEPH A. TURCK.

In presence of—

HOWARD E. BARLOW,
BENJ. ARNOLD.