

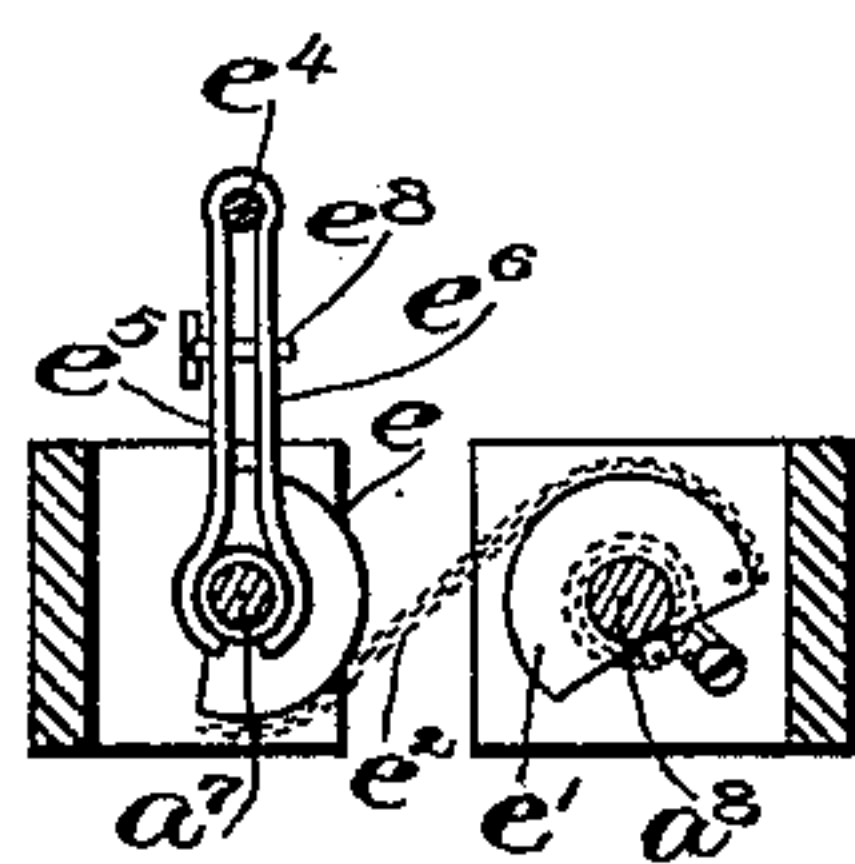
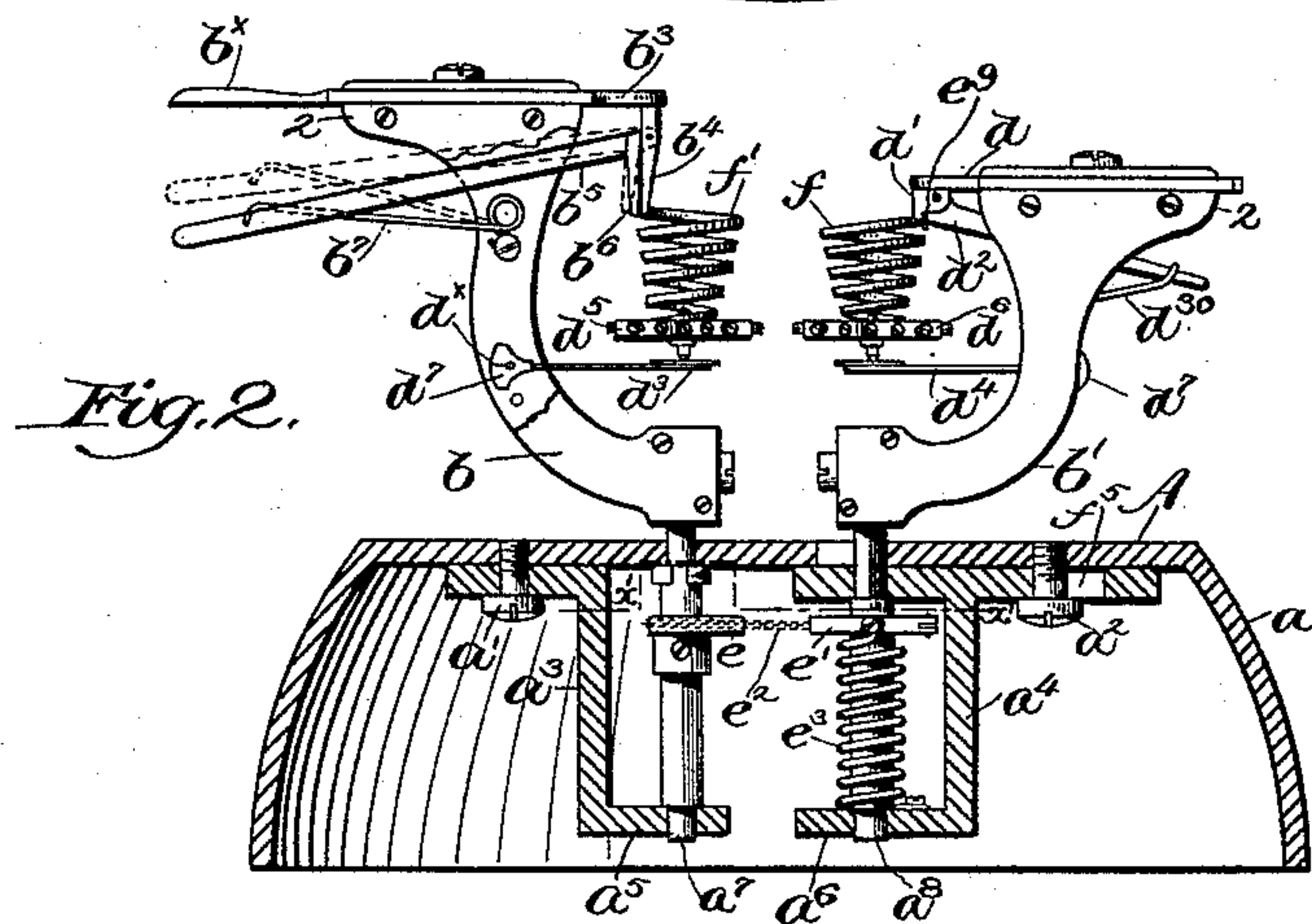
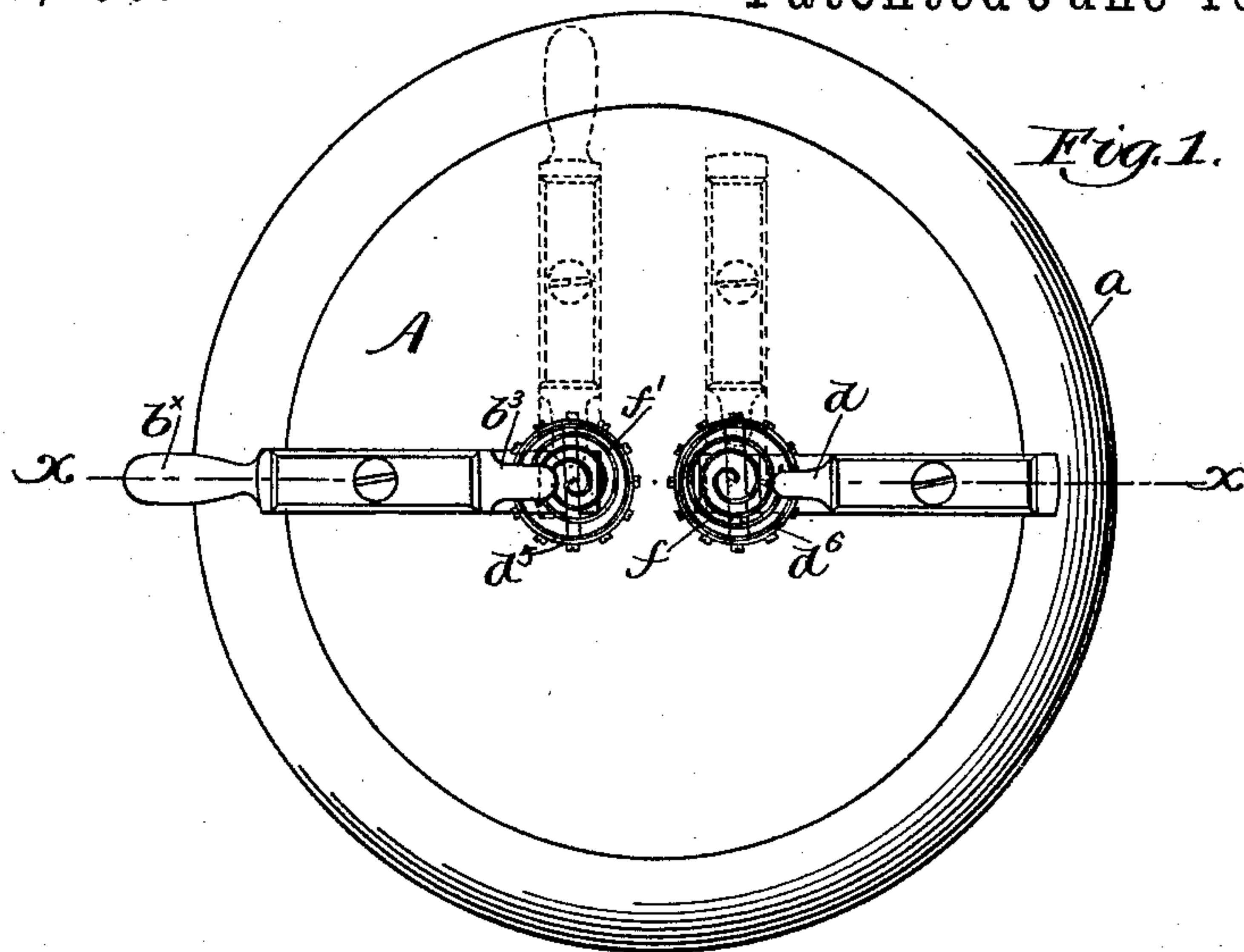
(No Model.)

W. D. OLNEY.

APPARATUS FOR TESTING WATCH BALANCES.

No. 429,699.

Patented June 10, 1890.



Witnesses

Edgar A. Goddin
Maurice L. Emery-

Inventor

William D. Olney,
by Crosby & Gregory
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM D. OLNEY, OF WALTHAM, MASSACHUSETTS.

APPARATUS FOR TESTING WATCH-BALANCES.

SPECIFICATION forming part of Letters Patent No. 429,699, dated June 10, 1890.

Application filed December 3, 1889. Serial No. 332,484. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. OLNEY, of Waltham, county of Middlesex, State of Massachusetts, have invented an Improvement in
5 Apparatus for Testing Watch-Balances, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object to provide a novel and efficient apparatus of simple construction for testing balances of watches and like mechanism.

In accordance with my invention two spindles or shafts supported by a suitable base
15 and having fastened to them brackets, to which the springs of the balances are secured, have mounted upon them disks, to which are connected the ends of a band or chain, one
20 spindle being engaged by a friction device, by which both spindles are held in proper working position.

Other features in which my invention consists will be pointed out in the claims at the
25 end of this specification.

Figure 1 is a top or plan view of an apparatus embodying my invention; Fig. 2, a section through the base on line $x x$, Fig. 1, the upper part of the apparatus being in elevation; and Fig. 3, a sectional detail on line $x' x'$, Fig. 2, looking down.

The base A, to support the working parts of the apparatus, as herein shown, forms part of an annular ring a .

35 The base A has secured to its under side, as by screws $a' a^2$, brackets $a^3 a^4$, having extended arms $a^5 a^6$, in which are stepped upright shafts or spindles $a^7 a^8$, which are extended up through the base and have secured
40 to them above the said base one end of curved uprights $b b'$, herein shown as slotted, each upright being preferably enlarged or made wider at its upper end, as at 2. The curved slotted upright b has secured to its upper end
45 a bar b^3 , shown as provided with a handle b^x , and having a depending arm b^4 , forming one jaw of a pair of nippers, it being provided, as shown, with a slot, in which is pivoted one end of a lever b^5 , extended through the slotted
50 upright, the said lever having secured to it the movable jaw b^6 of the said nippers. The

lever b^5 is engaged at or near its rear end by a spring b^7 , secured to the upright b , which spring acts to force the movable jaw b^6 toward the fixed jaw b^4 . The curved slotted upright
55 b' is also provided at its upper end with a bar d , having a depending lug d' , forming a fixed jaw of a pair of nippers, the movable jaw of which is a lever d^2 , having one end pivoted to the fixed jaw and its other end
60 extended through the slotted upright and engaged at its end by a spring d^{30} .

The slotted uprights $b b'$ sustain supports
65 $d^3 d^4$ for the pivots of the watch-balances $d^5 d^6$, each support being shown as a bar pivoted in the slotted uprights $b b'$, as at d^x , only one of the said pivots being shown, and preferably each lever is provided with a counterbalancing-weight d^7 , through which the pivot d^x
70 is extended.

The shafts or spindles $a^7 a^8$ have mounted upon them, as shown, segments of disks $e e'$, having connected to them the opposite ends of a chain or band e^2 , and the spindle a^8 is encircled by a spiral spring e^3 , having one end
75 fastened, as herein shown, to the disk e' and its other end to the arm a^6 of the bracket a^4 . The spring e^3 acts to turn the spindles a^8 to maintain the chain or band taut, and thereby cause the uprights b' to be moved with the
80 same force and to the same extent as the upright b . The uprights are maintained in their proper working position by a friction device, shown as a bent bar passed about a stud e^4
85 on the base and having its arms $e^5 e^6$ engaging the spindle a^7 , and preferably adjustably forced toward each other by a set-screw e^8 . (See Fig. 3.)

In operation the standard-balance d^6 , preferably provided with a pin or stud e^9 , secured
90 to the end of the spring f of the said balance, is placed with its pivot resting upon the support d^4 , and the stud e^9 held between the jaws $d' d^2$. The balance d^5 to be tested is supported at its pivot upon the support d^3 , and
95 the end of its spring f' is placed between the jaws $b^4 b^6$. The operator then turns the uprights toward each other, as indicated by dotted lines, Fig. 1, as by means of the handle b^x on the bar b^3 , and then back again into
100 their full-line position to set the balances in motion. If the balance d^5 vibrates in unison

with the balance d^6 , its spring f' is of the proper length; but if not the vibration is stopped by hand or allowed to cease, and the spring f' is grasped by the jaws at another point and this operation repeated until the balance d^5 vibrates in unison with the balance d^6 .

The bracket a^4 is provided with a slot f^5 , through which the set-screw a^2 is extended, and by which the said bracket may be adjusted with relation to the bracket a^3 to bring the balance d^6 nearer to or remove it from the balance d^5 to allow balances of different diameters to be tested.

By means of the friction device engaging the spindle a^7 the uprights b b' are held maintained in proper working position after pressure is removed from the upright b .

I claim—

1. In an apparatus for testing watch-balances, a base, spindles a^7 a^8 , supported thereby, uprights secured to said spindles, supports for the balance-pivots, disks on the spindles a^7 a^8 , and a band or chain connecting said disks, combined with a friction device engaging one of the said spindles to hold the uprights in proper working position, substantially as described.

2. In an apparatus for testing watch-balances, a base, spindles a^7 a^8 , supported thereby, uprights secured to said spindles, supports for the balance-pivots, disks on the spindles a^7 a^8 , and a band or chain connecting said disks, combined with a spiral spring on one of said spindles and a friction device engaging the other of said spindles, substantially as described.

3. In an apparatus for testing watch-bal-

ances, a base, spindles a^7 a^8 , supported thereby, uprights secured to said spindles, counterbalanced supports for the balance-pivots, disks on the spindles a^7 a^8 , and a band or chain connecting said disks, combined with a spiral spring on one of said spindles and a friction device engaging the other of said spindles, substantially as described.

4. In an apparatus for testing watch-balances, the combination, with a base, of spindles a^7 a^8 , uprights secured thereto and provided with nippers, a counterbalanced support sustained by each upright, disks on said spindles, a chain or band connecting said disks, a spring to rotate one of said spindles, and a friction device, to operate substantially as described.

5. In an apparatus for testing watch-balances, the combination, with a base, of spindles a^7 a^8 , brackets a^3 a^4 , secured to said base and supporting said spindles, one of the said brackets being adjustable with relation to the other, curved uprights secured to the spindles and provided with nippers, counterbalanced supports pivoted to said uprights, disks e e' on the said spindles, a chain or band connecting said disks, a spring e^3 , and a friction device, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM D. OLNEY.

Witnesses:

JAMES H. CHURCHILL,
E. J. BENNETT.