

(No Model.)

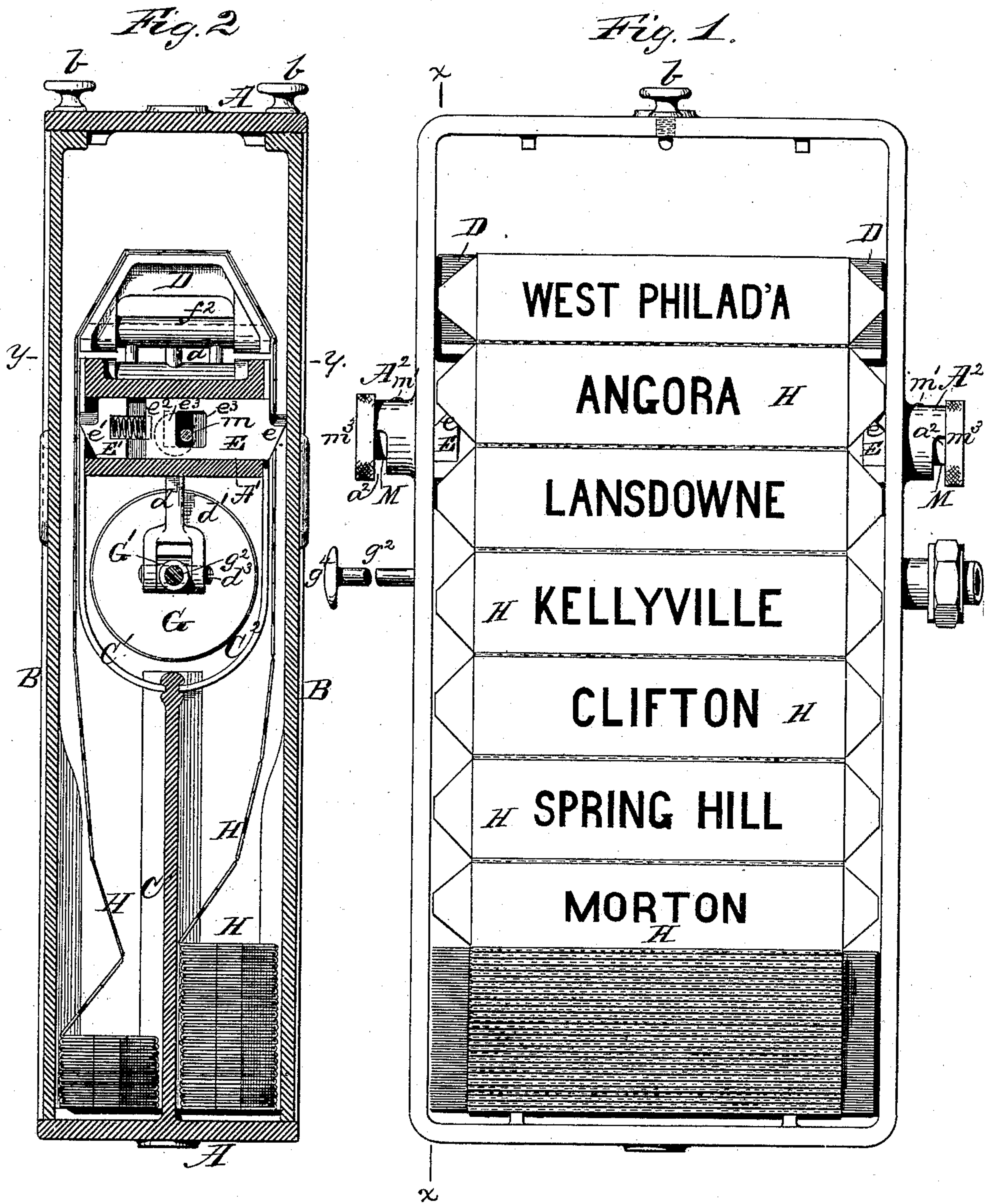
3 Sheets—Sheet 1.

E. S. BOYNTON.

STATION INDICATOR.

No. 257,282.

Patented May 2, 1882.



Witnesses
L. J. Gordon
John W. Ripley

Inventor
Edward Stanley Bryant

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3 Sheets—Sheet 2.

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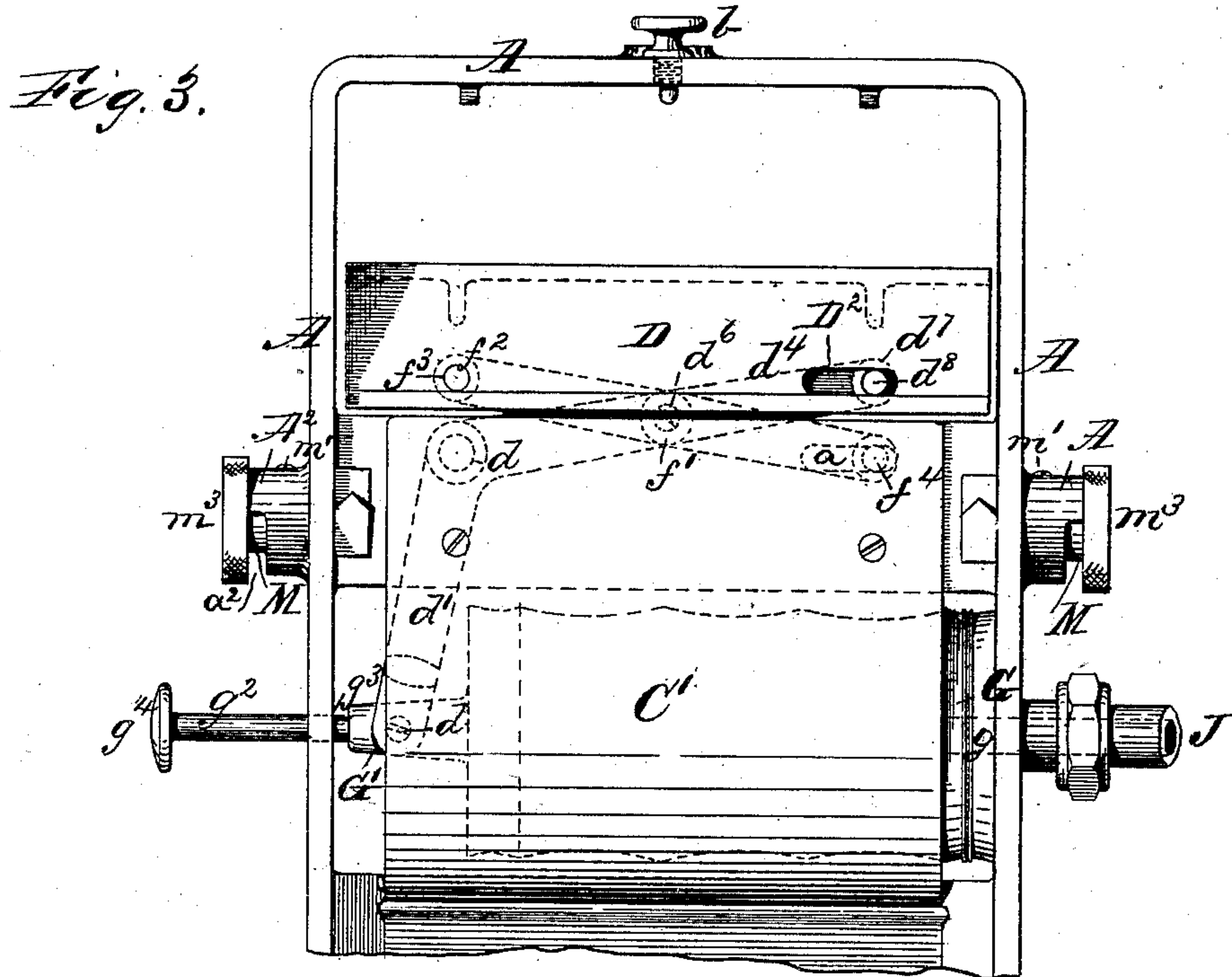
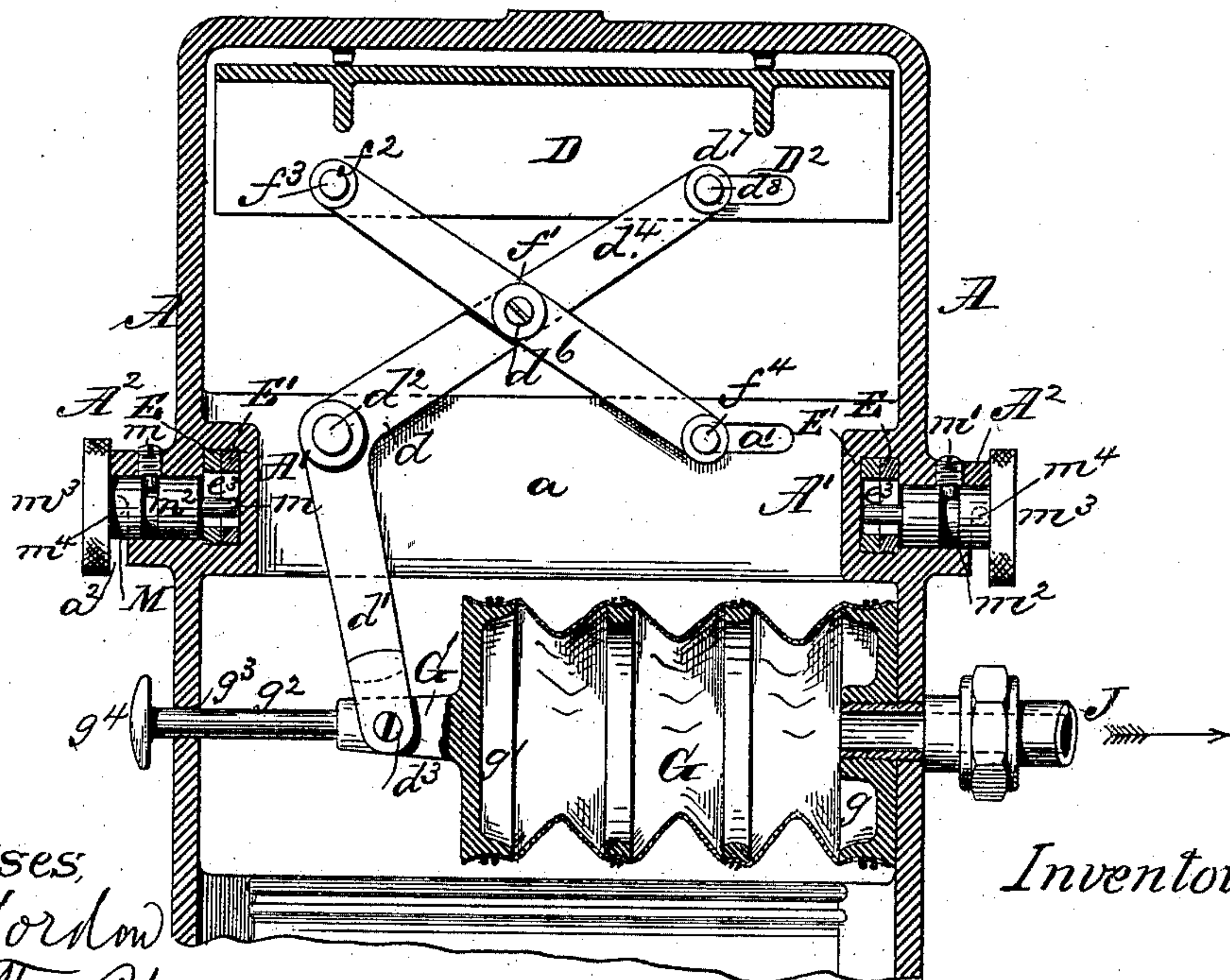


Fig. 4.



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Fig. 5.

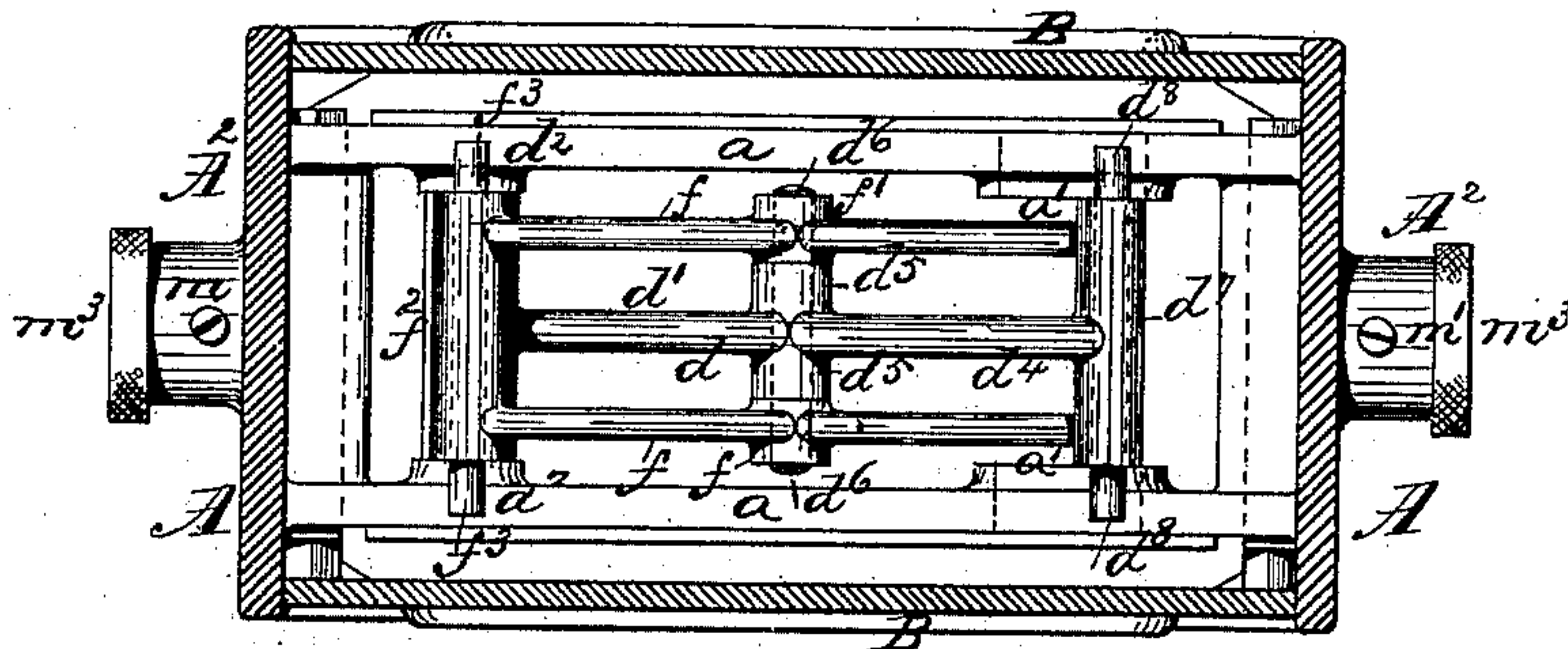
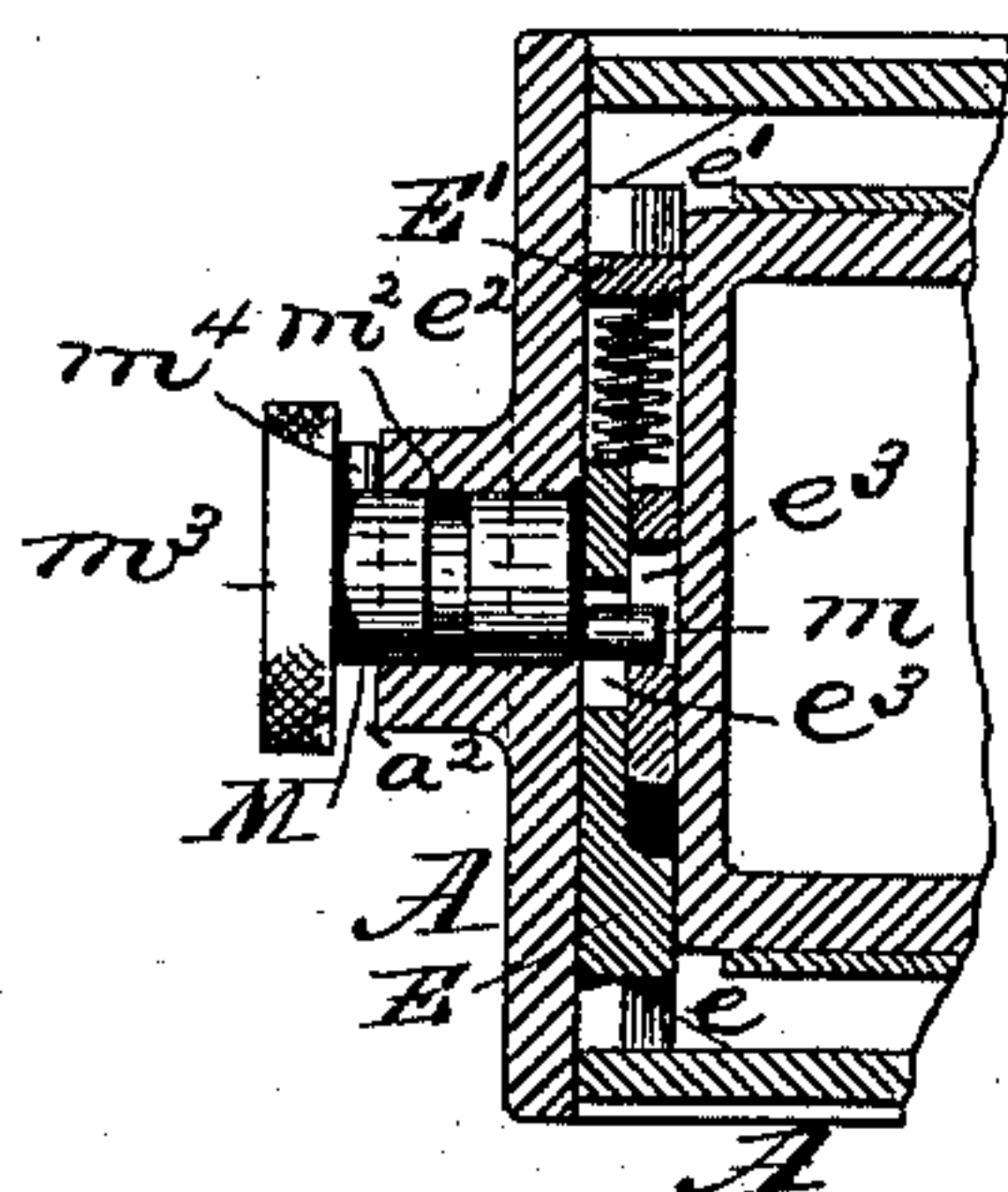


Fig. 6.



UNITED STATES PATENT OFFICE.

EDWARD S. BOYNTON, OF BRIDGEPORT, CONNECTICUT.

STATION-INDICATOR.

SPECIFICATION forming part of Letters Patent No. 257,282, dated May 2, 1882.

Application filed September 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD STANLEY BOYNTON, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Station-Indicators, of which the following is a specification.

My invention relates to improvements in that class of indicators for which Letters Patent of the United States of America were granted to me, bearing date the 10th day of May, 1881, and numbered 241,283, in which the power for operating the mechanism for changing the position of the cards or indicating-surfaces is operated by means of a bellows or compressible chamber, which is collapsed from time to time by means of the vacuum obtained from the steam-motor.

According to the first part of my present invention the vacuum bellows or cylinder is arranged in a horizontal instead of a vertical position, one end of the said cylinder being affixed to the exterior case and provided with a suitable pipe-connection leading to the vacuum-chamber, while its opposite end is controlled in position by a rod sliding in suitable bearings formed on the opposite side of the exterior case, the piston-rod being extended sufficiently through the casing to allow of the application of a knob or handle for the purpose of operating the bellows or cylinder independently of the vacuum. The vertical motion to the card-elevator is obtained from the horizontal bellows or cylinder by means of compound levers operating in a manner similar to what are commonly known as "lazy tongs."

The second part of my invention relates to improvements in the construction and arrangement of the card-stops.

The accompanying drawings form part of this specification and describe what I consider the best means of carrying out the invention.

Figure 1 represents a front view of my improved device with the door removed, and showing the cards in working position. Fig. 2 is a vertical section on the line $x x$, Fig. 1. Fig. 3 is a front view of the case with the cards removed and showing the card-elevator in its lower position. Fig. 4 is a similar sec-

tional view, showing the card elevator up. Fig. 5 is a horizontal section on the line $y y$ of Fig. 2, illustrating the construction and operation of the parallel levers. Fig. 6 is a detailed section, illustrating the construction and operation of the card-stops. Fig. 7 is a sectional view of a portion of the lower part of the exterior case, showing the folding corners. Fig. 8 is a partial front view of the exterior case closed.

Similar letters of reference indicate like parts in all the figures.

A represents the exterior box or casing, and B B the doors thereof, which are held in position by set-screws $b b$.

C is the center case.

C' C² are guards secured to cross-bars $a a$ to protect the bellows from the action of the rising and falling cards.

D is the card-elevator, held in position by the operating-levers d .

G is the vacuum bellows or cylinder, which is arranged in a horizontal position, one end or cap, g , being rigidly affixed to one side of the case A, while its opposite cap, g' , is controlled in position by a rod, g^2 , sliding in suitable bearings, g^3 , formed in the opposite side of the exterior case, A. The piston-rod g^2 is extended sufficiently through the case A to allow of the application of a knob or handle, g^4 , for the purpose of operating the bellows or cylinder G independently of the action of the vacuum.

J is the air-passage leading from the bellows or cylinder G to the vacuum-chamber.

G' is an extension formed on the end cap, g' , of the cylinder G, and adapted to be embraced by the forked end of the arm d' of the L-lever d , which is pivoted at $d^2 d^2$ to cross-bars $a a$, forming part of the main case A. The forked end of the arm d' is connected to the extension G' by means of a screw-pin, d^3 . The long arm d^4 of the L-lever d is provided with lateral bearings $d^5 d^5$, Fig. 5, adapted to receive a central pin, d^6 , which also passes through bearings $f' f'$, formed centrally in parallel bars $f f$, the upper ends of each of which are connected to a cross-piece, f^2 , provided with pinions f^3 , working in bearings formed in opposite sides of the card-elevator

D, while the lower ends are connected to a bar, f^4 , working in slots $a' a'$, formed in the cross-bars $a a$. The extreme end of the long arm d^4 of the L-lever d is provided with a cross-bar, d^7 , formed at each end with studs or pins d^8 , working in slotted bearings D^2 , formed in the card-elevator D.

H H represent the cards, which are formed and hinged together in a similar manner to that described in Letters Patent No. 241,283, hereinbefore referred to.

I I, Fig. 7, represent the folding corners, which are also described in the said specification.

E E' are the card-stops, which in the present instance are in pairs on opposite sides of the apparatus, each pair being formed of two slotted plates so constructed as to work side by side within boxes or cases A' , forming part of the main case A. The two stops E E' are provided with a spiral spring, e^2 , so arranged that the tendency of the same shall be to cause the beveled ends $e e'$ of the stops E E' to bear against the front or rear of the case at will and hold the cards in position. One only of each pair of stops is employed at a time, according to the direction of motion of the cards, the stop E or E' from time to time being held out of position by means of a pin, m , formed eccentrically on the end of a short shaft, M, working in bearings A^2 , formed on or affixed to the main casing A. The short shafts M are retained in position by means of screw-pins m' , passing through the bearings A^2 and received in circular slots m^2 in the short shafts M. The short shafts M are provided with thumb-screws m^3 , for the purpose of imparting a partial revolution to the shaft, when desired, in order to alter and control the position of the card-stops E E', as desired. The eccentric-pins m , formed on the ends of the short shafts M and received in slots $e^3 e^3$, so formed in the ends of each pair of card-stops E E' that by turning the shafts M in one direction or the

other either one or other of the stops E E' will be drawn out of action, as desired. The extent of motion of the short shafts M is limited by means of pins or stops m^4 , working in slots a^2 , formed in the bearings A^2 .

Although I have specially described my invention as adapted to be operated by means of vacuum, it will be readily understood that by very slightly modifying the apparatus it may be readily adapted for use with pressure. The apparatus may be also employed for other than station-indicating purposes.

The operation of this machine is similar to the operation of the machine described in Letters Patent No. 241,283, hereinbefore referred to.

I claim as my invention—

1. In a station-indicator or similar instrument, the combination, substantially as before set forth, of a card-elevator, a vacuum or pressure cylinder, a lever connected to the piston or piston-rod of said cylinder, and lazy-tongs connecting such lever with the card-elevator.

2. In a station-indicator or similar instrument, the combination, substantially as before set forth, of a series of hinged cards and the spring card-stops E E', constructed with inclines at their lower sides and with square shoulders above, so as to permit the ascent but prevent the descent of a card.

3. In a station-indicator or similar instrument, the combination, with a series of hinged cards, of the card-stops E E', controlled in position by eccentric-pins m , operated by shafts M and thumb-screws m^3 , substantially as shown and described.

In testimony whereof I have hereunto set my hand, at New York city, this 21st day of September, 1881.

EDWARD STANLEY BOYNTON.

Witnesses:

W. L. BENNEM,
JOHN W. RIPLEY.