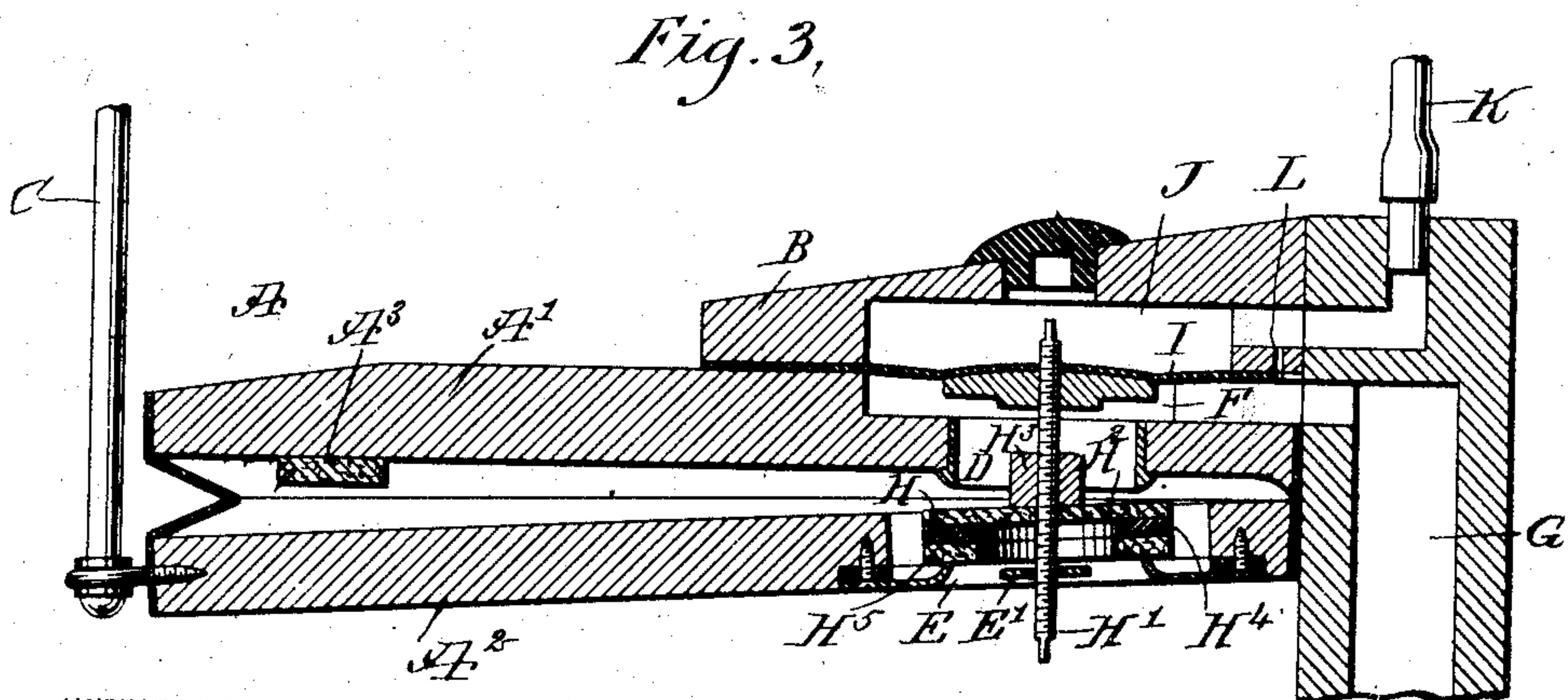
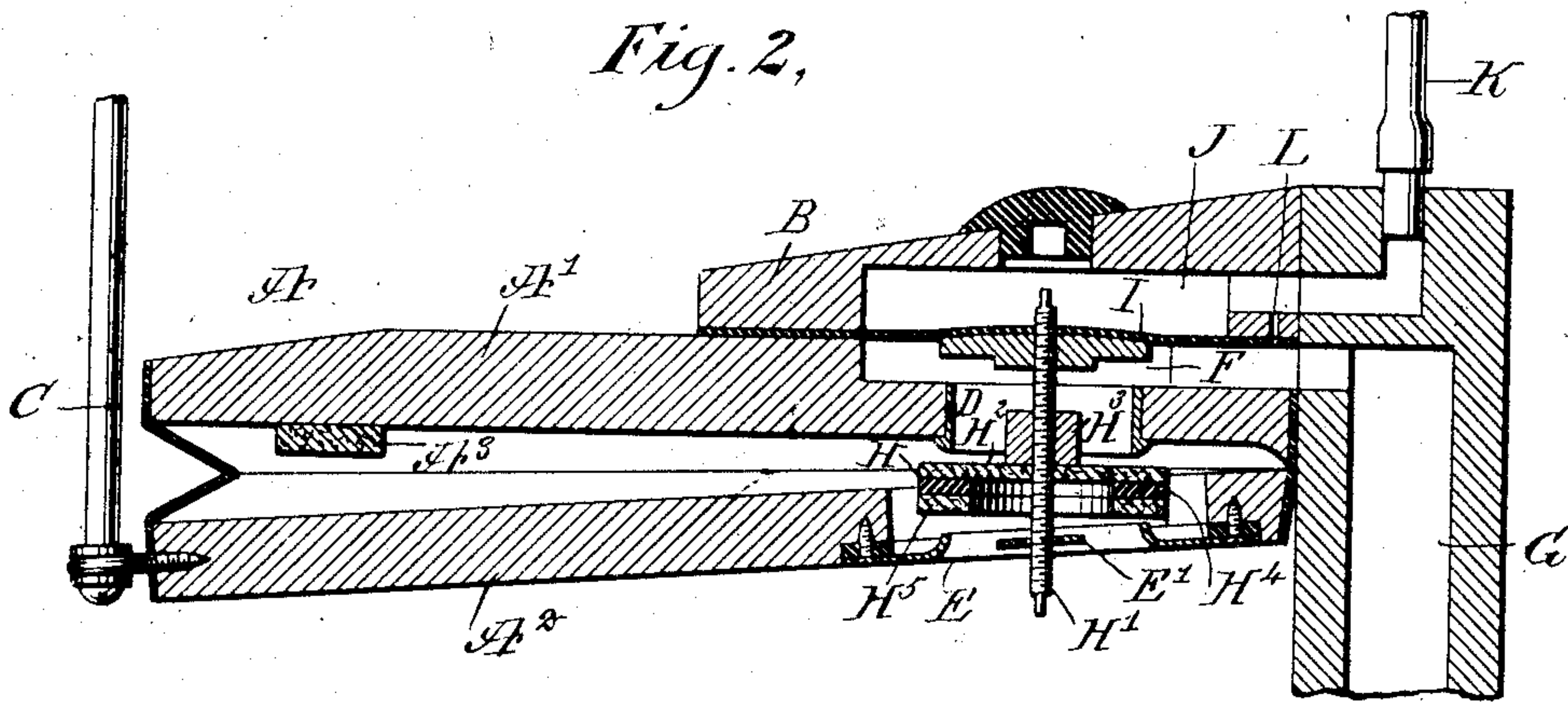
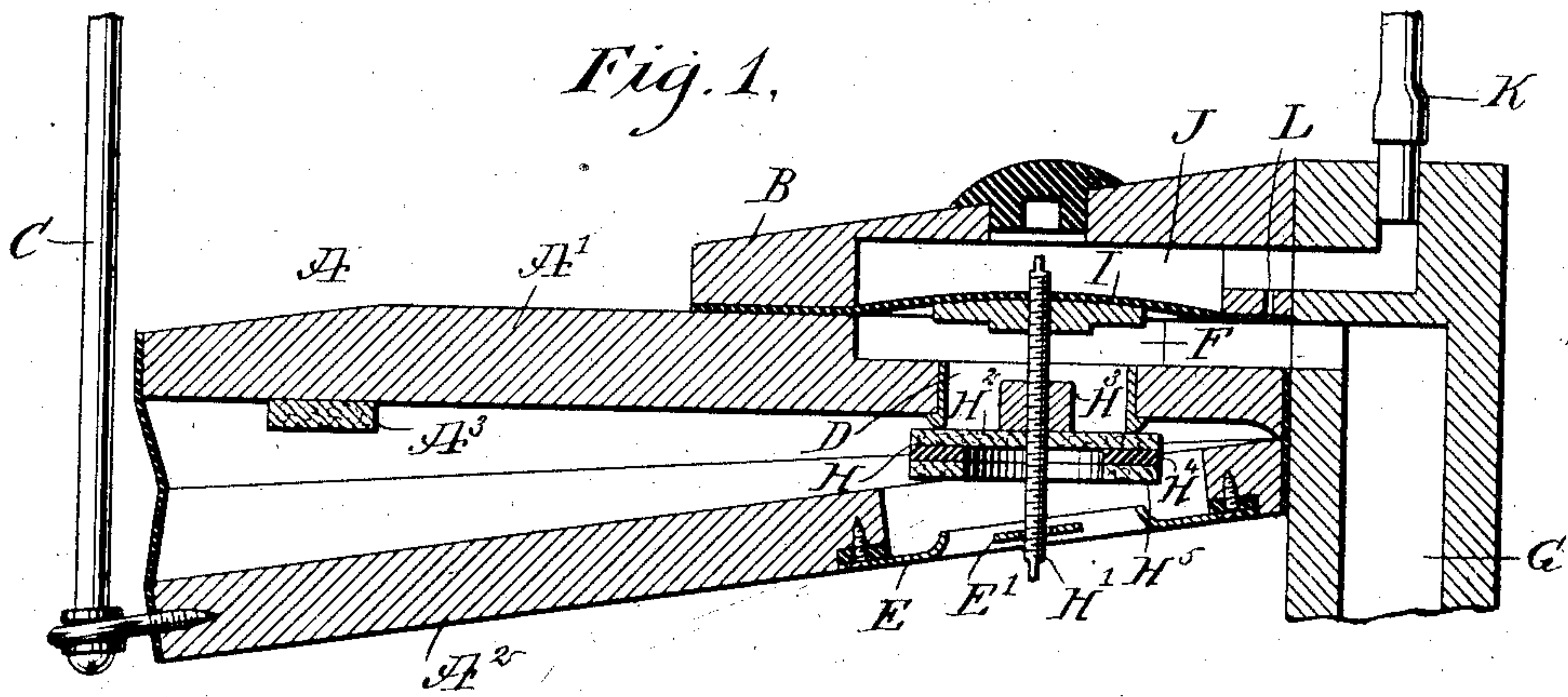


H. MEYER.

PNEUMATIC ACTION.

APPLICATION FILED SEPT. 13, 1907.

2 SHEETS—SHEET 1.



WITNESSES

Edward Thorpe.  
Rev. G. Hoster,

INVENTOR

Hermann Meyer

BY

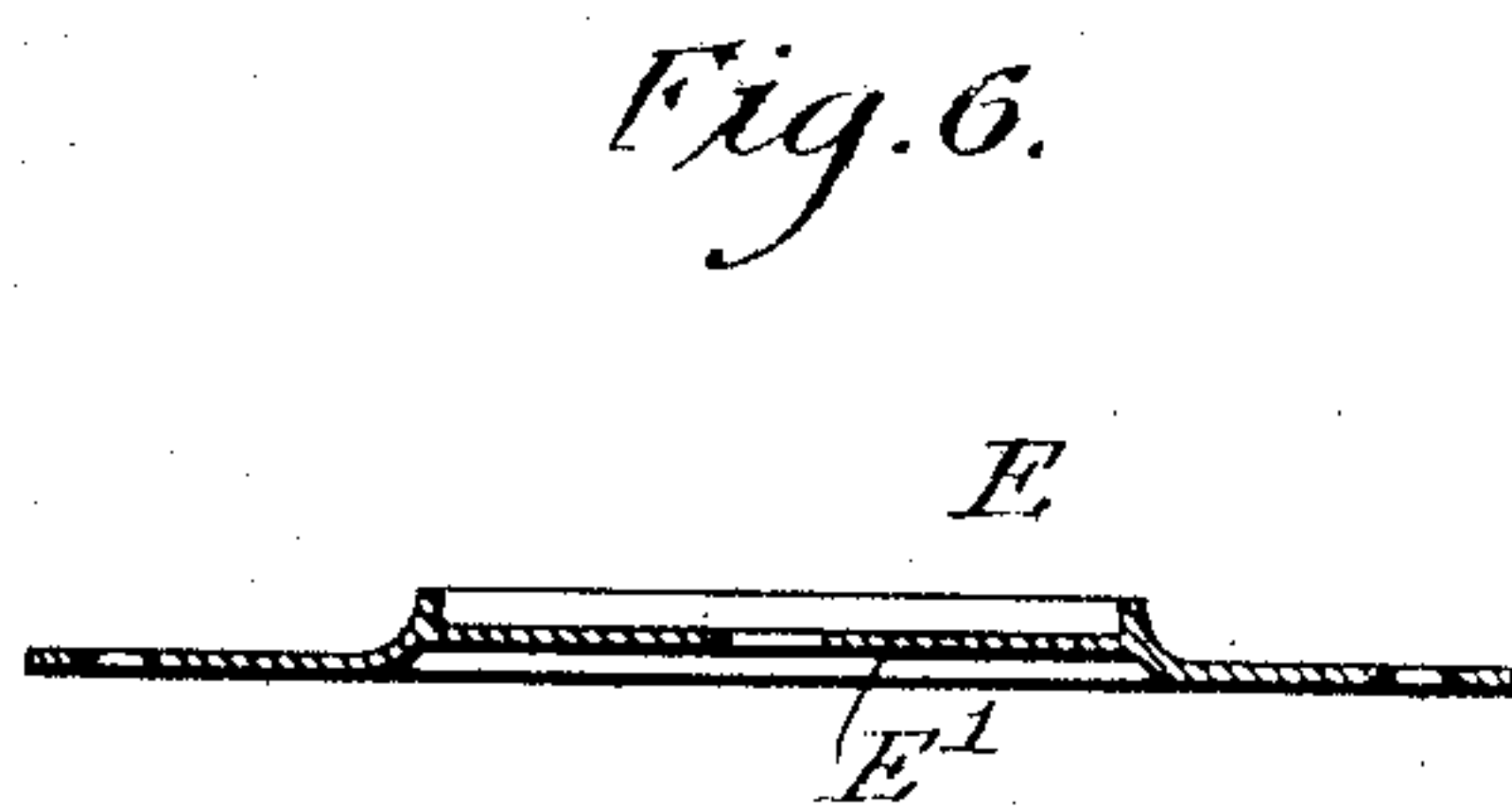
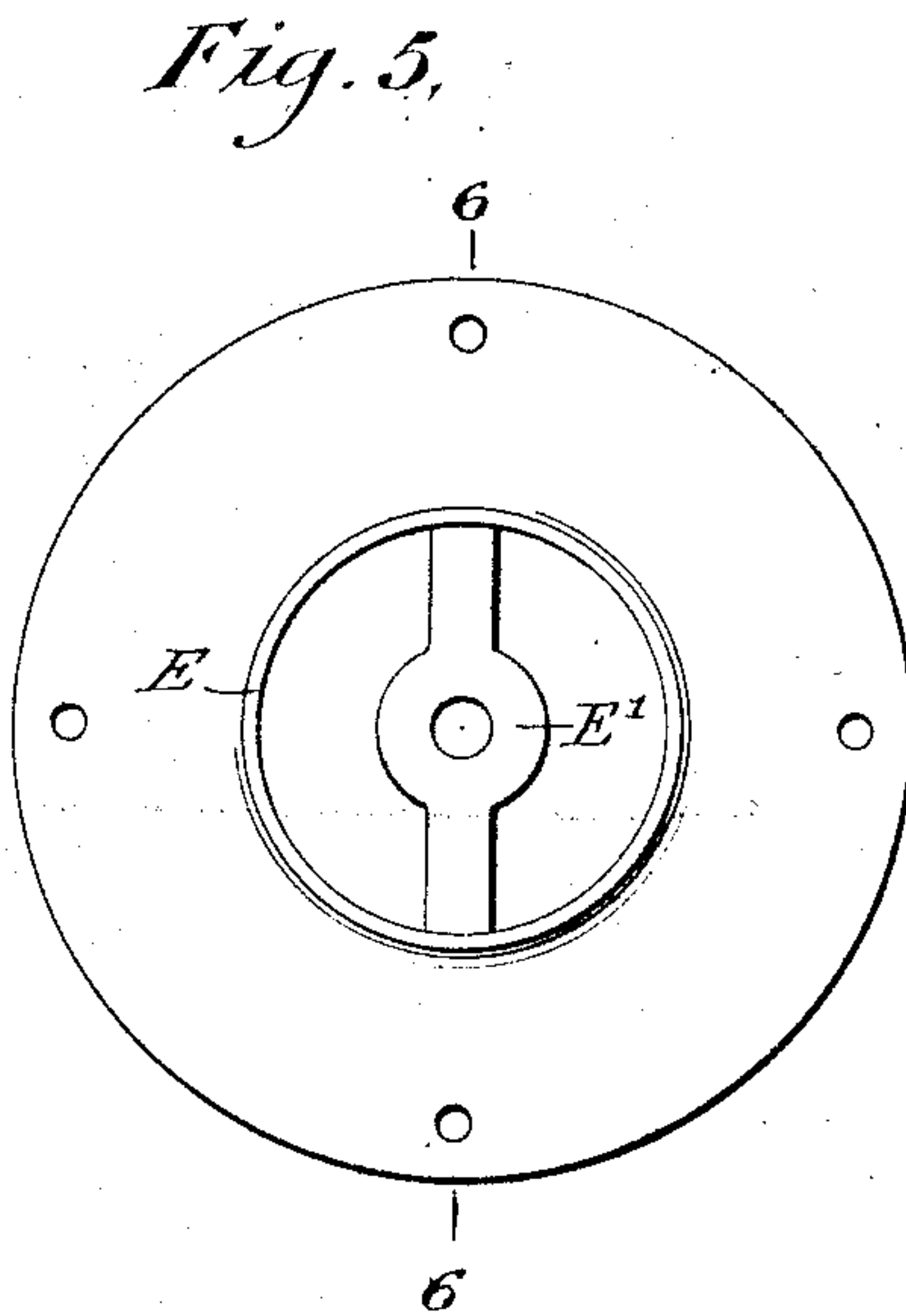
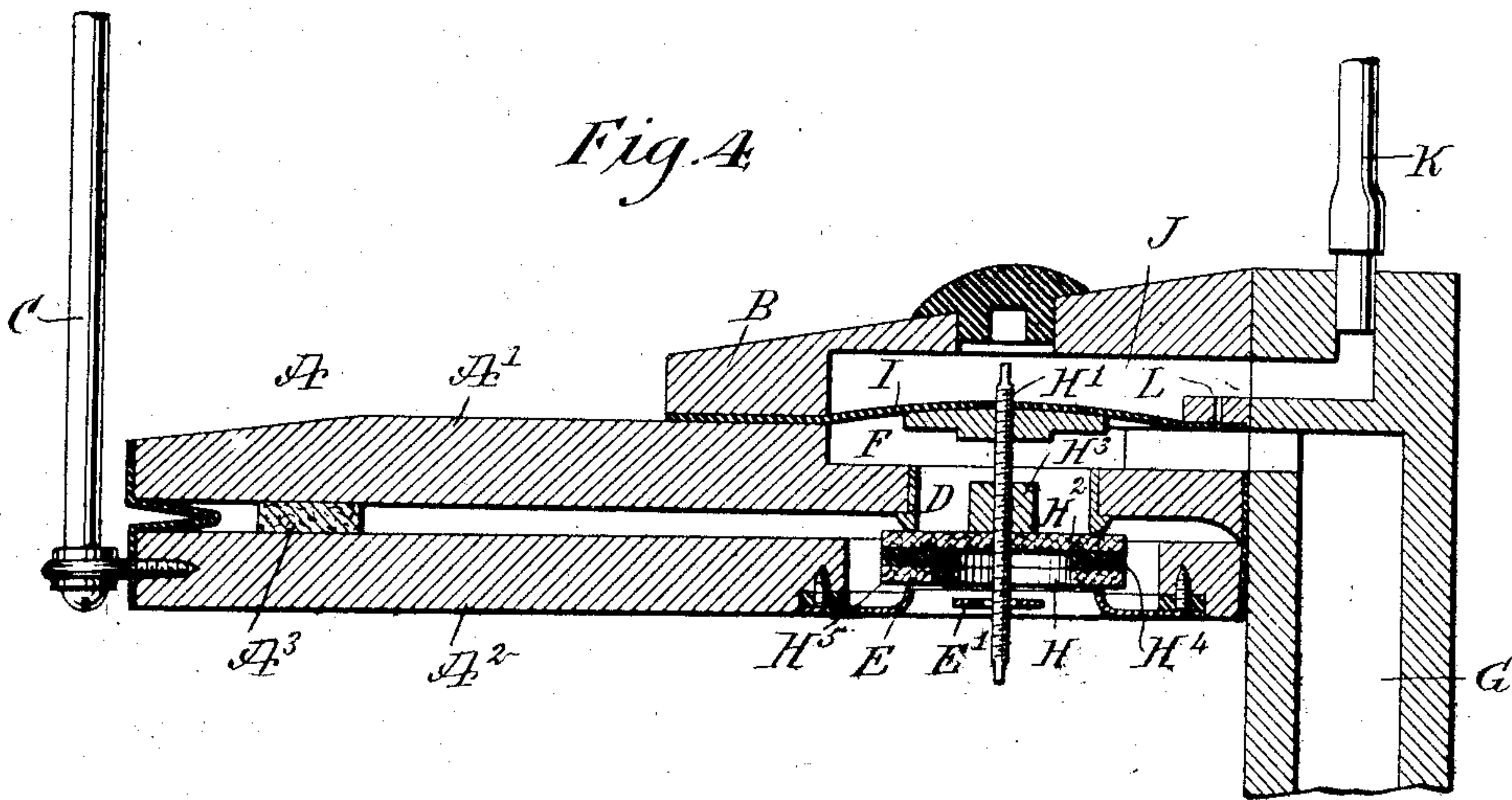
Mum & Co  
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2 SHEETS—SHEET 2.



WITNESSES

*Edward Thorpe*  
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# UNITED STATES PATENT OFFICE.

HERMANN MEYER, OF NEW YORK, N. Y.

## PNEUMATIC ACTION.

No. 882,402.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed September 13, 1907. Serial No. 392,740.

*To all whom it may concern:*

Be it known that I, HERMANN MEYER, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Pneumatic Action, of which the following is a full, clear, and exact description.

The invention relates to self-players, self-playing pianos and like musical instruments, and its object is to provide a new and improved pneumatic action arranged to insure a quick response of the pneumatic whenever a tracker board opening is uncovered or covered up by the note sheet, to reduce undue fluttering of the diaphragm and to allow convenient access for adjusting the working parts to a nicety.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a cross section of the improvement showing the valve open to the atmosphere and closed to the suction chamber, the pneumatic being inflated; Fig. 2 is a like view of the same, showing the valve in an intermediate position, that is, partly open to the atmosphere and partly open to the suction chamber, the pneumatic being partly collapsed; Fig. 3 is a similar view of the same showing the valve closed to the atmosphere and fully open to the suction chamber; Fig. 4 is a similar view of the same showing the valve closed to the suction chamber and partly open to the atmosphere, the pneumatic being completely collapsed; Fig. 5 is an enlarged plan view of the valve seat open to the atmosphere, and Fig. 6 is a sectional elevation of the same on the line 6—6 of Fig. 5.

The pneumatic A has its fixed member A' attached to a support B, and the movable member A<sup>2</sup> of the pneumatic A is connected at its free end by a rod C with the piano action or the strikers, to be actuated by the pneumatic action. A felted or a cushioned stop A<sup>3</sup> is attached to the fixed member A' within the pneumatic A, to limit the closing movement of the movable member A<sup>2</sup> and to cushion the same.

The fixed member A' and the movable

member A<sup>2</sup> of the pneumatic A are provided with oppositely disposed valve seats D and E, respectively, of which the valve seat E leads to the atmosphere and the valve seat D leads to the suction chamber F connected with the wind chest G, from which the air is exhausted by the usual air-exhausting devices. Between the valve seats D and E is arranged a valve H adapted to be seated on either valve seat D or E, the valve H having its valve stem H' in the form of a screw rod screwing in the diaphragm I interposed between the suction chamber F and the air chamber J connected by a tube K with an opening in the tracker board of the instrument.

On the stem H' is secured a button H<sup>3</sup> attached centrally to the flexible face H<sup>2</sup> of the valve H, so that the valve H moves with the stem but is yieldingly mounted thereon, the stem H' being guided at its lower end in a guideway E' forming part of the valve seat E. The leak connection between the chamber F and J is by the use of a leak hole L, as plainly indicated in Figs. 1, 2, 3 and 4.

The valve H has its upper face H<sup>2</sup> made of felt or other suitable material, and on the top of the said face H<sup>2</sup> is secured the button H<sup>3</sup> in which screws the stem H' of the valve. The facing H<sup>2</sup> of the valve is attached to a ring H<sup>4</sup> of wood or other material, covered at its lower or under side by a facing H<sup>5</sup> of felt or other material. The facing H<sup>2</sup> is adapted to be seated on the valve seat D and the facing H<sup>5</sup> is adapted to be seated on the valve seat E, and by mounting the stem on the valve H' in the manner described it is evident that the valve is yieldingly held on the stem as the facing H<sup>2</sup> is capable of yielding to insure proper seating of the valve H on the valve seat E, as hereinafter more fully explained and shown in Fig. 3.

When the several parts are in the position illustrated in Fig. 1, the pneumatic A is inflated or in an open position, and the valve H is held to its seat D to disconnect the suction chamber F from the interior of the pneumatic A, now open to the atmosphere, by way of the uncovered valve seat E. Now when an aperture in the note sheet registers with the tracker board opening, then air passes from the said tracker board opening by way of a tube K into the chamber J, to act on the top of the diaphragm I, thus forcing the same downward and with it the stem H', whereby the valve H is moved off its seat



D (see Fig. 2), to connect the interior of the pneumatic A with the suction chamber F. When this takes place air is drawn out of the pneumatic A and consequently the latter  
 5 collapses, that is, the movable member A<sup>2</sup> swings upward towards the downwardly moving valve H, so that the seat E finally moves in engagement with the under face H<sup>5</sup> of the valve H, to close the valve seat E, as  
 10 plainly indicated in Fig. 3. The pneumatic A now collapses fully and remains in this position until the note sheet opening disconnects from the tracker board opening. The interior of the pneumatic A is now discon-  
 15 nected from the suction chamber F and open to the atmosphere. When this takes place, air from the chamber J is drawn by way of the leak opening L into the suction chamber F, so that the pressure on top of the dia-  
 20 phragm I is reduced and the diaphragm I now returns to its original position (see Fig. 4). When this takes place the valve H is reseated on the seat D and moved off the seat E, and atmospheric air now passes into  
 25 the pneumatic A, to inflate and open the same.

By yieldingly mounting the valve H on its stem H' the valve can readily assume an angular position relative to the valve stem  
 30 H', so that when the movable member A<sup>2</sup> of the pneumatic A moves upward on collapsing the pneumatic, then the portion of the valve seat E nearest the hinge end of the pneumatic first engages the corresponding  
 35 side of the facing H<sup>5</sup> and tilts the valve H relative to the valve stem for the whole facing H<sup>5</sup> to then meet the valve seat E on the upward swinging movable member A<sup>2</sup> of the pneumatic.

40 The valve seats D and E are preferably of metal and are located as near as possible to the hinge end of the pneumatic so that the movement of the valve is reduced to a minimum, a further reduction of the movement  
 45 of the valve being had by the movement of the movable member A<sup>2</sup> towards the valve H, as above described. By the arrangement described the pneumatic action is rendered very compact.

50 By attaching the stem H' of the valve H

to the diaphragm I and in the valve, and guiding the stem in the guideway E<sup>2</sup>, fluttering of the diaphragm I is prevented at the time air passes into the chamber J from the tracker board.

By making the stem H' in the form of a screw rod and extending the lower end thereof to the outside, the stem H' can be readily turned and screwed up or down in the valve H and the diaphragm I, to properly adjust  
 60 the latter when too tight or too loose.

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

1. A pneumatic action comprising a pneu- 65  
 matic provided with oppositely arranged valve seats in the fixed and movable members of the pneumatic, a diaphragm in alignment with the said valve seats, and a valve adapted to be seated on either valve seat and  
 70 having its stem screwing in the said diaphragm, the body of the valve being formed of a ring, a disk-shaped facing of flexible material secured to the said ring on one face thereof, and a button secured centrally to  
 75 the said facing and in which screws the said valve stem.

2. A pneumatic action comprising a pneu-  
 matic provided with oppositely arranged valve seats in the fixed and movable mem- 80  
 bers of the pneumatic, a diaphragm in alignment with the said valve seats, a valve adapted to be seated on either valve seat and having its stem screwing in the said dia-  
 85 phragm, the body of said valve being formed of a ring, a disk-shaped facing of flexible material secured to the said ring on one face thereof and a button secured centrally to the said facing and in which screws the said  
 90 valve stem, and a ring-shaped facing at the other side of the said ring, the said facings being adapted to be seated on the said valve seats.

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

HERMANN MEYER.

Witnesses:

THEO. G. HOSTER,  
 JOHN P. DAVIS.