

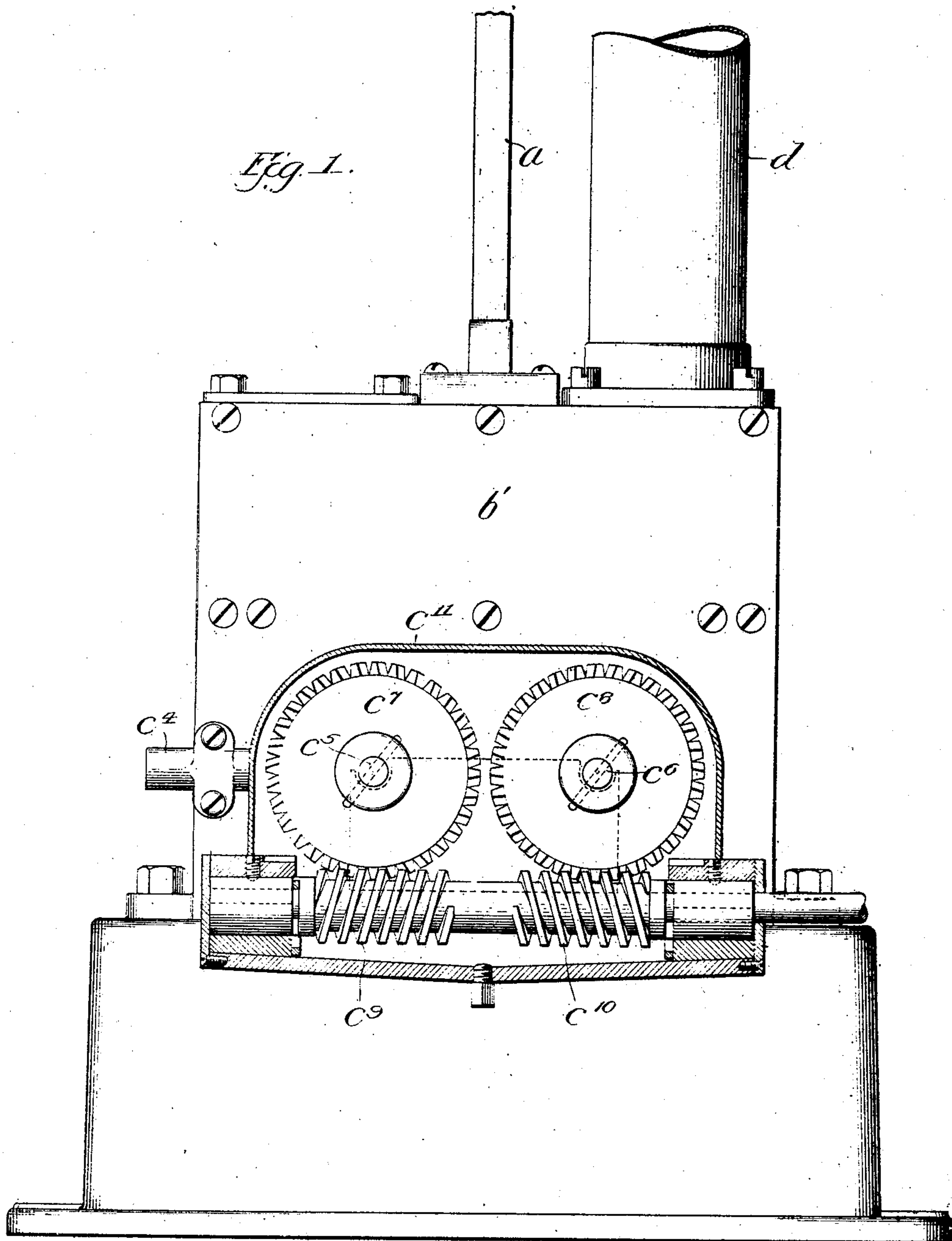
No. 841,851

PATENTED JAN. 22, 1907.

H. M. CRANE.
PNEUMATIC TICKET DISTRIBUTING SYSTEM.

APPLICATION FILED APR. 19, 1906.

4 SHEETS—SHEET 1.



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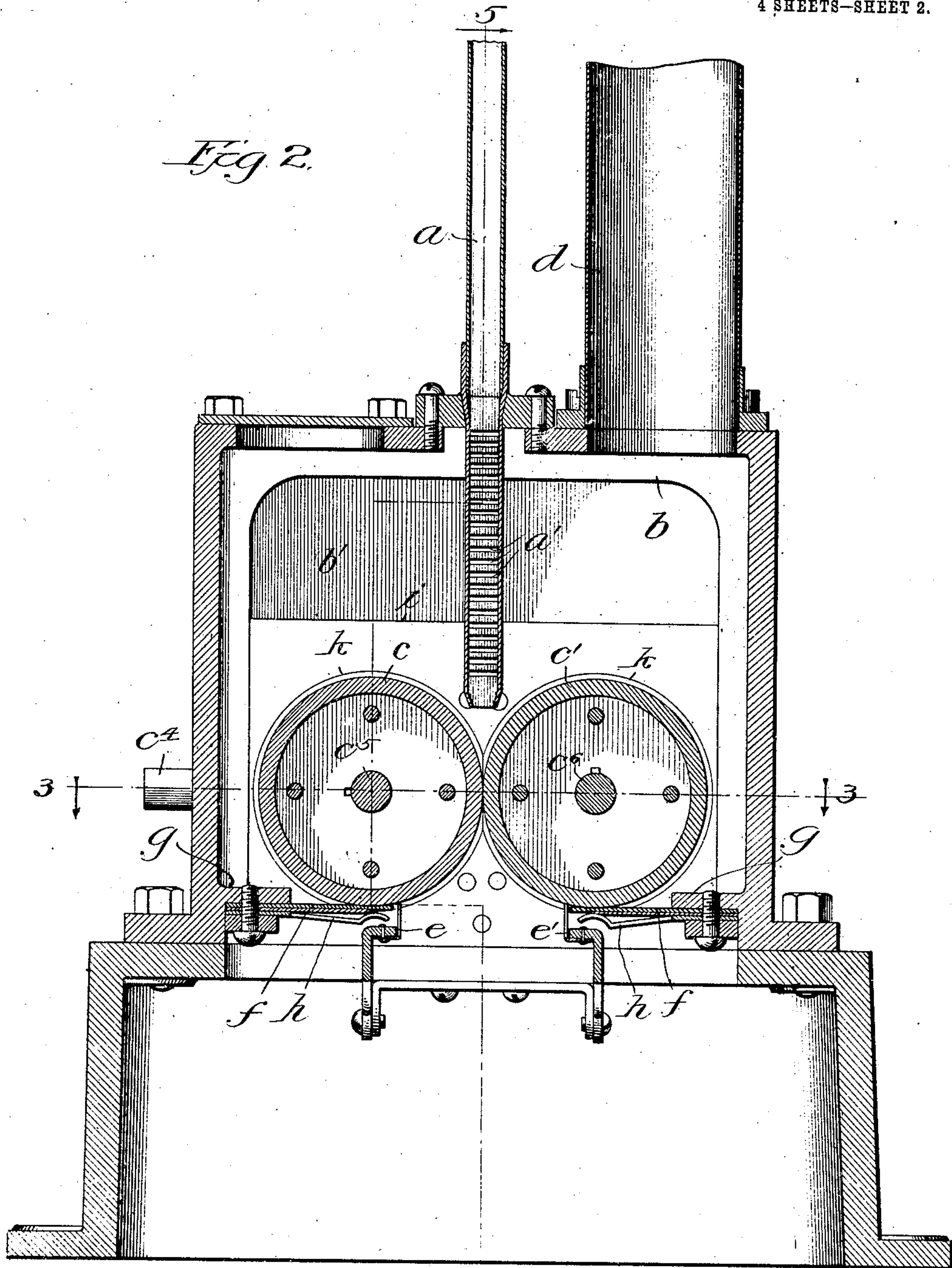
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig 3.

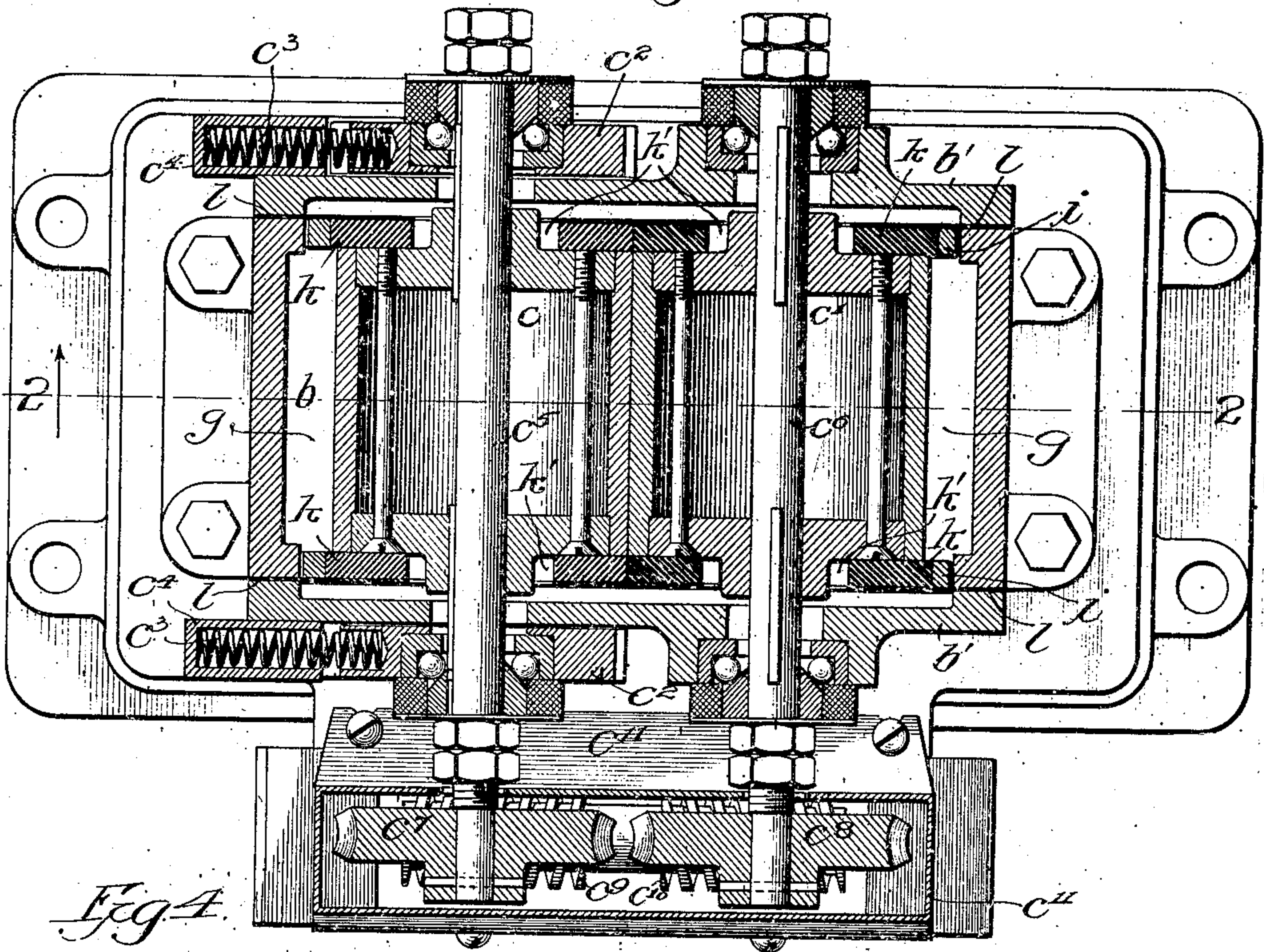
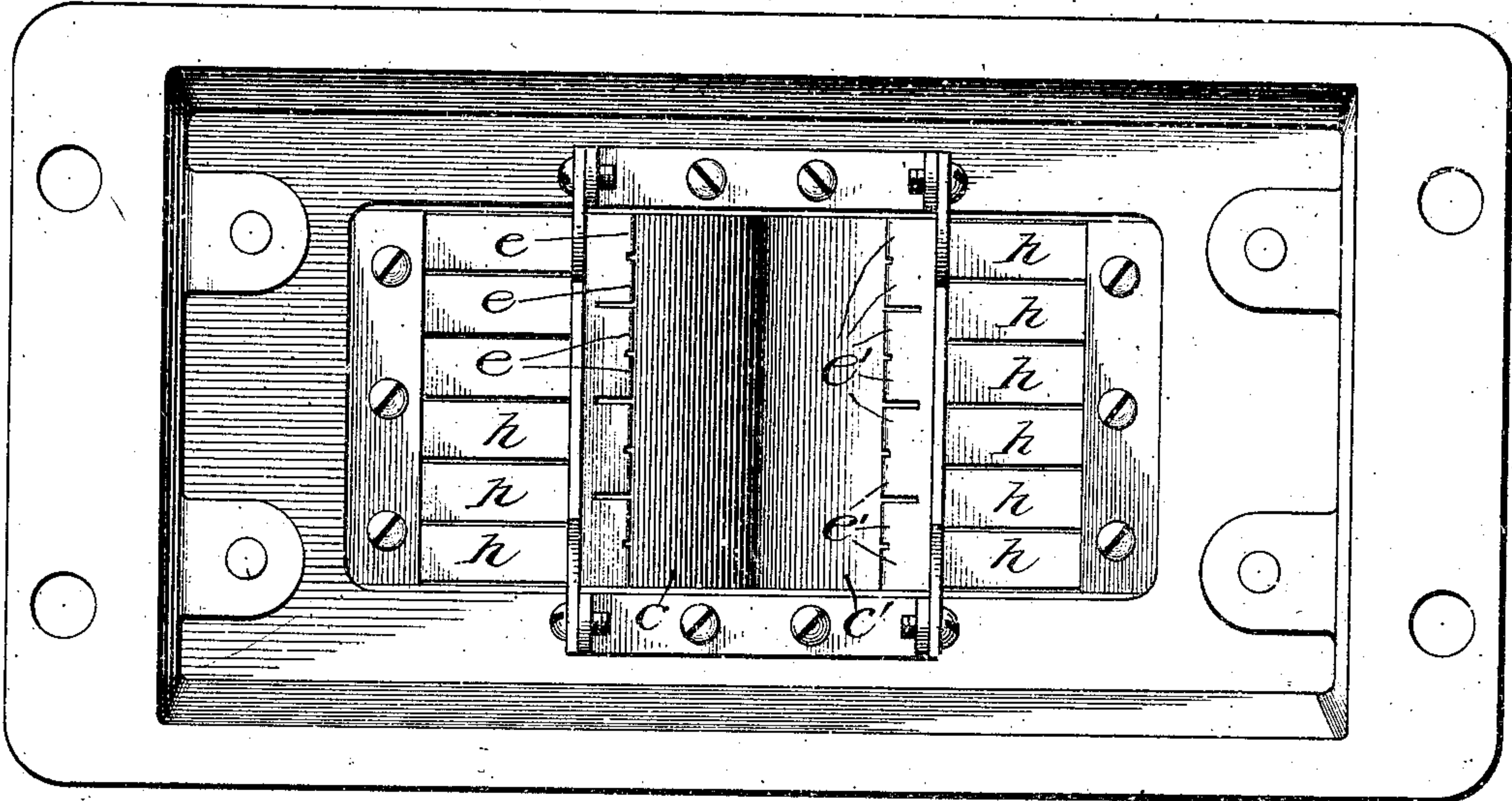


Fig 4.



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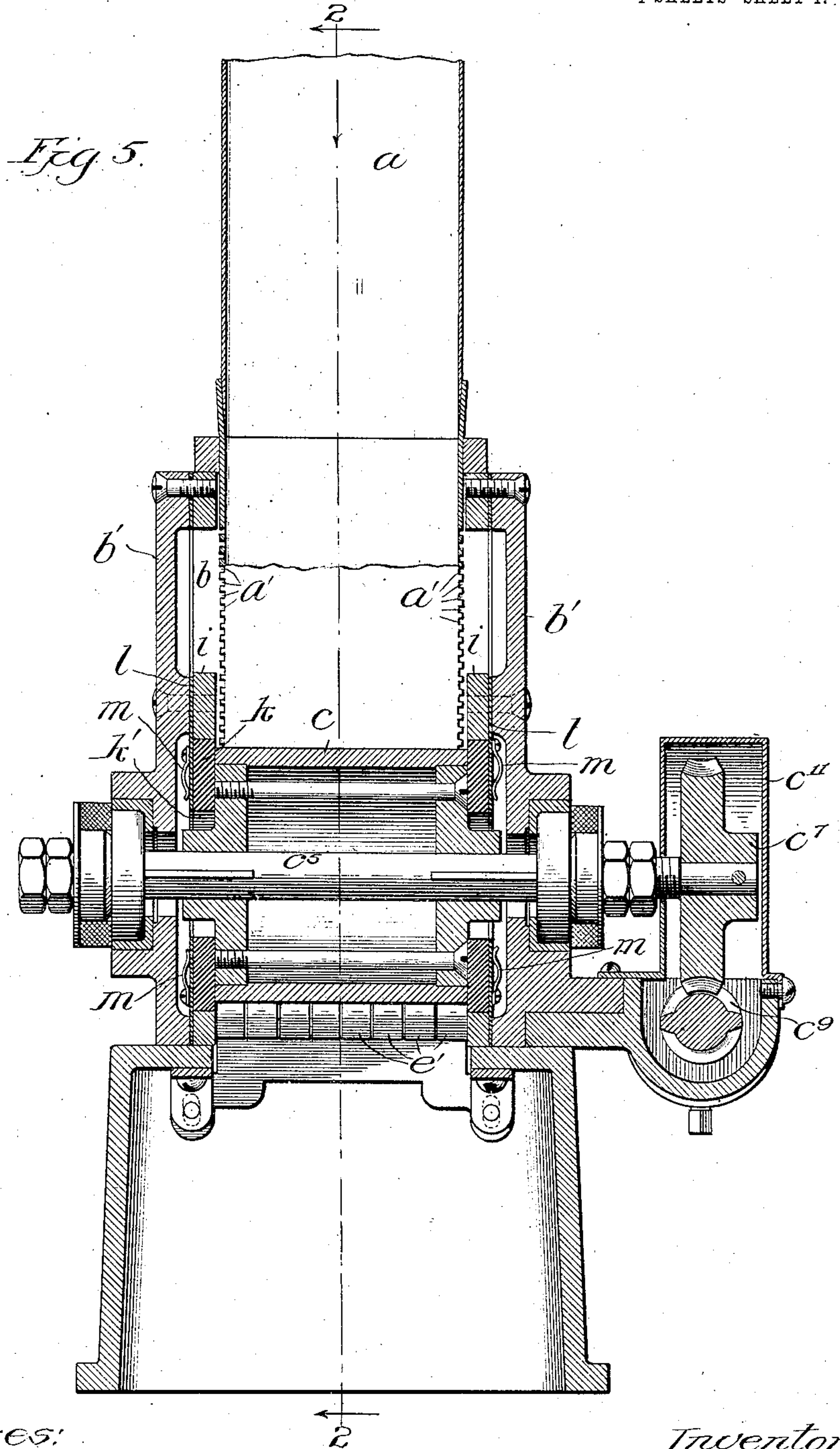
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

HENRY M. CRANE, OF NEW YORK, N. Y., ASSIGNOR TO WESTERN ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PNEUMATIC TICKET-DISTRIBUTING SYSTEM.

No. 841,851.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed April 19, 1906. Serial No. 312,716.

To all whom it may concern:

Be it known that I, HENRY M. CRANE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Pneumatic Ticket-Distributing Systems, of which the following is a full, clear, concise, and exact description.

My invention relates to a rotary receiving and discharge valve for pneumatic ticket-distributing systems, and has for its object to provide an improved and efficient device which will be reliable and certain in operation and which will automatically discharge tickets delivered into the valve-chamber to the exterior thereof.

My invention contemplates a rotary valve comprising a valve-chamber into which a ticket-delivering tube passes, the tube being arranged to deliver a ticket between a pair of oppositely-rotating rolls forming one wall of the chamber and adapted to discharge the ticket to the exterior of the chamber. An exhaust-tube is connected with the chamber to draw the air from the ticket-delivering tube and force the ticket therethrough into the valve-chamber. I provide means for rendering air-tight the opening in the chamber in which is located the rolls and also render air-tight the opening in the chamber-walls through which the shafts of the rolls project, so that an air-tight valve-chamber is provided.

The rotary valve of my invention has been found of especially advantageous use in connection with ticket-distributing systems of toll-exchanges. In such systems ticket-delivering tubes extend from the receiving-operator to the various sections of the switchboard where toll connections are to be put up, manual valves being located at such sections and arranged to discharge the tickets upon the face of the switchboard in front of the operators. A common ticket-return tube leads from the switchboard, said tube having sending-valves at the several switchboard-sections, and my automatic valve may be advantageously used at the end of such tube to properly discharge the large number of tickets passing therethrough.

I will describe my invention more particularly by reference to the accompanying

drawings, which illustrate the preferred embodiment thereof, reserving for the appended claims a statement of the parts, improvements, and combinations which I consider novel with me.

Figure 1 is a front elevation of a rotary valve embodying my invention with the gear-hood removed. Fig. 2 is a central vertical section of the valve. Fig. 3 is a cross-sectional view on line 3 3 of Fig. 2. Fig. 4 is a bottom view of the valve, and Fig. 5 is a sectional view on line 5 5 of Fig. 2.

The same letters of reference are used to designate the same parts wherever shown.

The ticket-delivering tube *a* projects within the valve-chamber *b* in position to deliver a ticket between a pair of oppositely-rotating rolls *c c'*, which form the lower wall of the chamber, said rolls engaging each other and being adapted to discharge a ticket to the exterior of the chamber. An exhaust-tube *d* communicates with the chamber *b* to exhaust the air from the delivery-tube *a* and force the ticket therethrough. A pair of deflecting-strippers *e e'* are mounted outside the chamber in engagement with the rolls *c c'* to prevent tickets from adhering to the rolls and to insure their discharge from the chamber.

In order to permit a ticket to pass easily between the rolls and to take up any wear between the contacting surfaces of the rolls, one of the rolls *c* is yieldingly mounted, being provided with bearings *c² c²*, which are capable of lateral movement against the tension of springs *c³ c³*, the springs being provided with protecting-hoods *c⁴ c⁴*, secured to the frame of the valve, as shown in Fig. 3.

The shafts *c⁵ c⁶* of the rolls *c c'* respectively project through openings in the wall *b'* of the valve and are connected upon the outside of the chamber with gears *c⁷ c⁸*, respectively arranged to be driven by left and right worms *c⁹ c¹⁰*. A hood *c¹¹* is carried by the frame of the valve-chamber to inclose and protect the gearing.

In order to render air-tight the opening in the chamber in which is located the pair of rolls *c c'*, I provide strips *f*, preferably of fiber, secured to inwardly-projecting flanges *g g* of the walls of the chamber and bearing against the rolls *c c'*, springs *h h* being provided for maintaining said strips in engage-

ment with the rolls. The rolls *c c'* are splined to their shafts so as to permit the shafts to have their necessary end thrust without interfering with the adjustment of the rolls.

5 I provide means for rendering the openings through which the shafts of the rolls pass air-tight, and to this end a pair of plates *i i* are secured to opposite walls of the chamber, each plate having a pair of sealing-disks *k*, preferably of fiber, located in openings therein, said
10 disks having holes *k'* therein, through which the hubs and shafts of the rolls pass. Flexible gaskets *l*, preferably of leather, are secured between the plates *i* and the walls of the
15 chamber and to the disks *k*, said gaskets being preferably cemented to the sealing-disks *k*. Spring-fingers *m*, carried by the plates, are arranged to press against the gaskets over said disks to maintain the disks in en-
20 gagement with the rolls as the same are worn away, thus preventing air from escaping between the rolls and disks.

I provide a number of slits *a' a'* in the portion of the ticket-delivering tube projecting
25 within the valve-chamber, so that the air will be exhausted evenly from said tube and the ticket will not be diverted from a direct path to the rolls.

Having thus described my invention, I
30 claim—

1. In a pneumatic ticket-distributing system, the combination with a ticket-delivering tube, of an exhaust-tube, and a rotary valve connected with said tubes and adapted
35 to receive a ticket from said delivering-tube and discharge the same.

2. In a pneumatic ticket-distributing system, the combination with an air-tight valve-chamber, of a ticket-delivering tube communicating with said chamber, an exhaust-tube
40 connected with said chamber, and a pair of rotating rolls adapted to discharge a ticket from said chamber.

3. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a pair of oppositely-rotating rolls engaging each other and forming one wall of said chamber, a tube adapted to deliver a ticket
45 between said rolls, said rolls being thereupon adapted to discharge a ticket from the chamber, and an exhaust-tube connected with said chamber.

4. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with
55 said chamber, and a pair of oppositely-rotating discharge-rolls in an opening in said chamber, one of said rolls being yieldingly mounted in engagement with the other roll
60 to permit a ticket to pass between said rolls.

5. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said
65 chamber, an exhaust-tube connected with

said chamber, a pair of oppositely-rotating discharge-rolls in an opening in said chamber, laterally-movable bearings for one of said rolls, and springs engaging said bearings to maintain said roll in yielding engagement
70 with the other roll.

6. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube projecting within the chamber, an exhaust-tube connected
75 with said chamber, the portion of said tube within the chamber having slits therein to prevent a ticket from adhering to the side of said tube, and means for discharging a ticket from said chamber. 80

7. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a pair of oppositely-rotating engaging rolls forming one wall of said chamber, a tube projecting within the chamber adapted
85 to deliver a ticket between said rolls, and an exhaust-tube connected with said chamber, the portion of said tube within said chamber having slits in its walls to cause the delivering-tube to exhaust evenly and prevent
90 a ticket from adhering to said tube.

8. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with
95 said chamber, a pair of oppositely-rotating contacting rolls forming one wall of said chamber and adapted to discharge tickets therefrom, and deflecting-strippers engaging the rolls outside the chamber to prevent tickets
100 from adhering to said rolls.

9. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with
105 said chamber, a pair of rotating rolls in an opening of said chamber adapted to discharge tickets therefrom, and means for rendering said opening air-tight.

10. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with
110 said chamber, a pair of oppositely-rotating contacting rolls in an opening in said chamber adapted to discharge a ticket therefrom, sealing-strips secured to the walls of the chamber and engaging said rolls to maintain said opening air-tight, and springs engaging said strips to force them against said
115 rolls. 120

11. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with
125 said chamber, a pair of ticket-discharge rolls engaging each other and forming one wall of said chamber, and gearing for rotating said rolls in opposite directions.

12. In a pneumatic ticket-distributing sys- 130

tem, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with said chamber, a pair of ticket-discharge rolls engaging each other and forming one wall of said chamber, shafts for said rolls projecting through openings in the walls of said chamber, means for rendering said openings air-tight, gears connected with said shafts outside the chamber, and right and left worms engaging said gears to rotate said rolls in opposite directions.

13. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube communicating therewith, an exhaust-tube connected with said chamber, a pair of ticket-discharge rolls in an opening in said chamber, shafts for said rolls projecting through openings in the walls of said chamber, plates secured to the inner walls of said chamber, sealing-disks in openings in said plates, said disks engaging the ends of the rolls and having holes therein through which said shafts pass, and flexible gaskets secured between said plates and the walls of said chamber and to said disks.

14. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube connected therewith, an exhaust-tube connected with said chamber, a pair of ticket-discharge rolls in an opening in said chamber, shafts for said rolls projecting through openings in the walls of said chamber, plates secured to the inner walls of said chamber, fiber disks in openings in said plates, said disks engaging the ends of said rolls and having central openings therein through which said shafts pass, flexible gaskets secured between said plates and chamber-walls and to said disks, and springs

carried by said plates and bearing against the gaskets over said disks.

15. In a pneumatic ticket-distributing system, the combination with a ticket-delivering tube, of an exhaust-tube acting on said delivering-tube, and an automatic valve adapted to receive a ticket from said delivering-tube and discharge the same.

16. In a pneumatic ticket-distributing system, the combination with an air-tight valve-chamber, of a ticket-delivering tube communicating with said chamber, an exhaust-tube connected with said chamber, and a pair of rotating rolls forming a sealed wall for said chamber and adapted to receive a ticket from said delivering-tube and discharge the same.

17. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, an exhaust-tube connected with said chamber and adapted to exhaust the air from said ticket-delivering tube, a pair of rotating rolls in an open wall of said chamber adapted to discharge tickets therefrom, and means for rendering said opening air-tight.

18. In a pneumatic ticket-distributing system, the combination with a valve-chamber, of a ticket-delivering tube opening into said chamber, means for exhausting air from said chamber, a rotary valve for discharging a ticket from said chamber, and means for rendering the chamber air-tight.

In witness whereof I hereunto subscribe my name this 12th day of April, A. D. 1906.

HENRY M. CRANE.

Witnesses:

ALLEN E. WHITMAN.

ALDEN R. WHITMAN.