

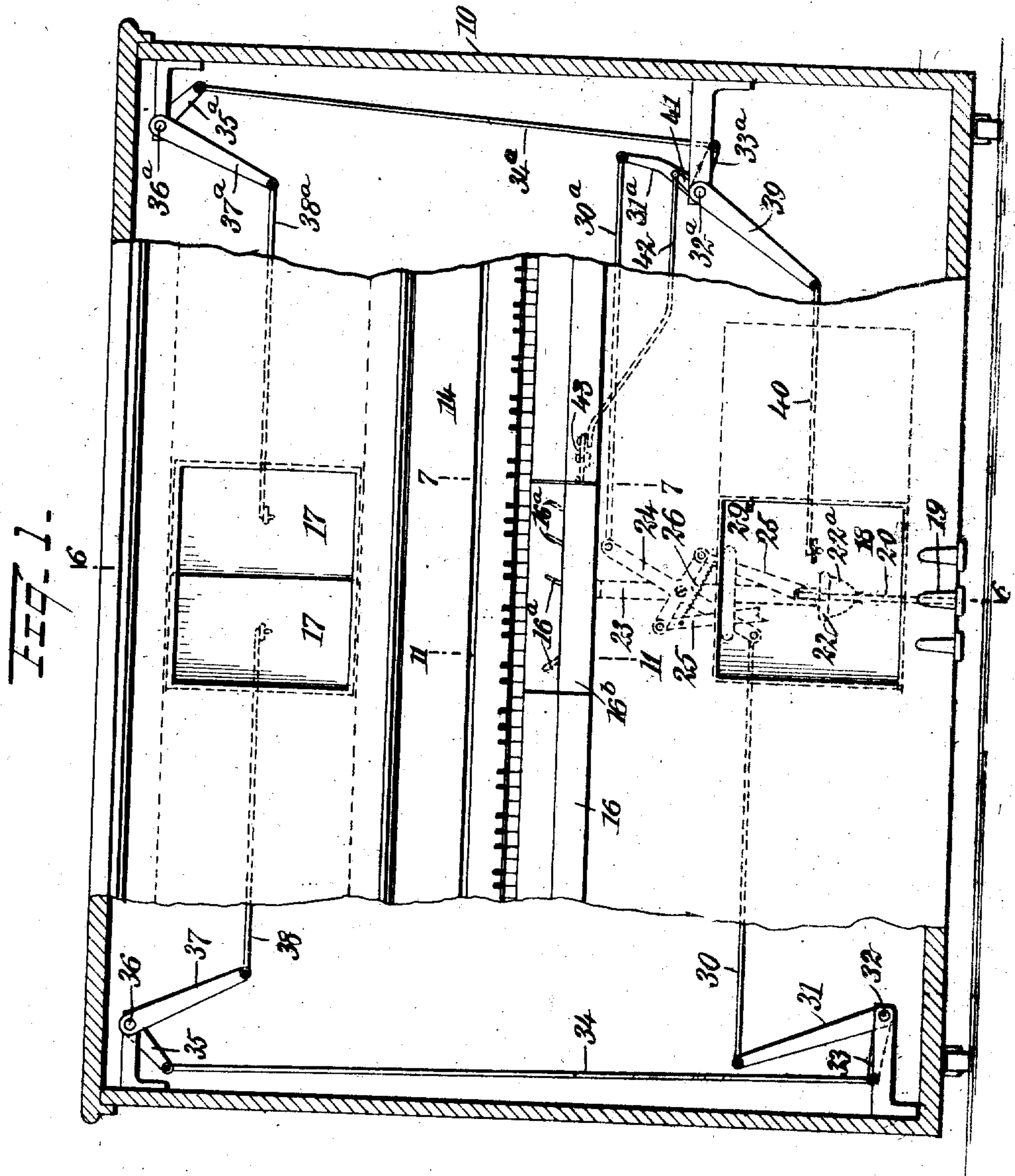
No. 894,695.

PATENTED JULY 28, 1908.

C. E. PRYOR.
PIANO PLAYER ATTACHMENT.

APPLICATION FILED AUG. 29, 1907.

5 SHEETS—SHEET 1.



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5 SHEETS—SHEET 2.

Fig. 2.

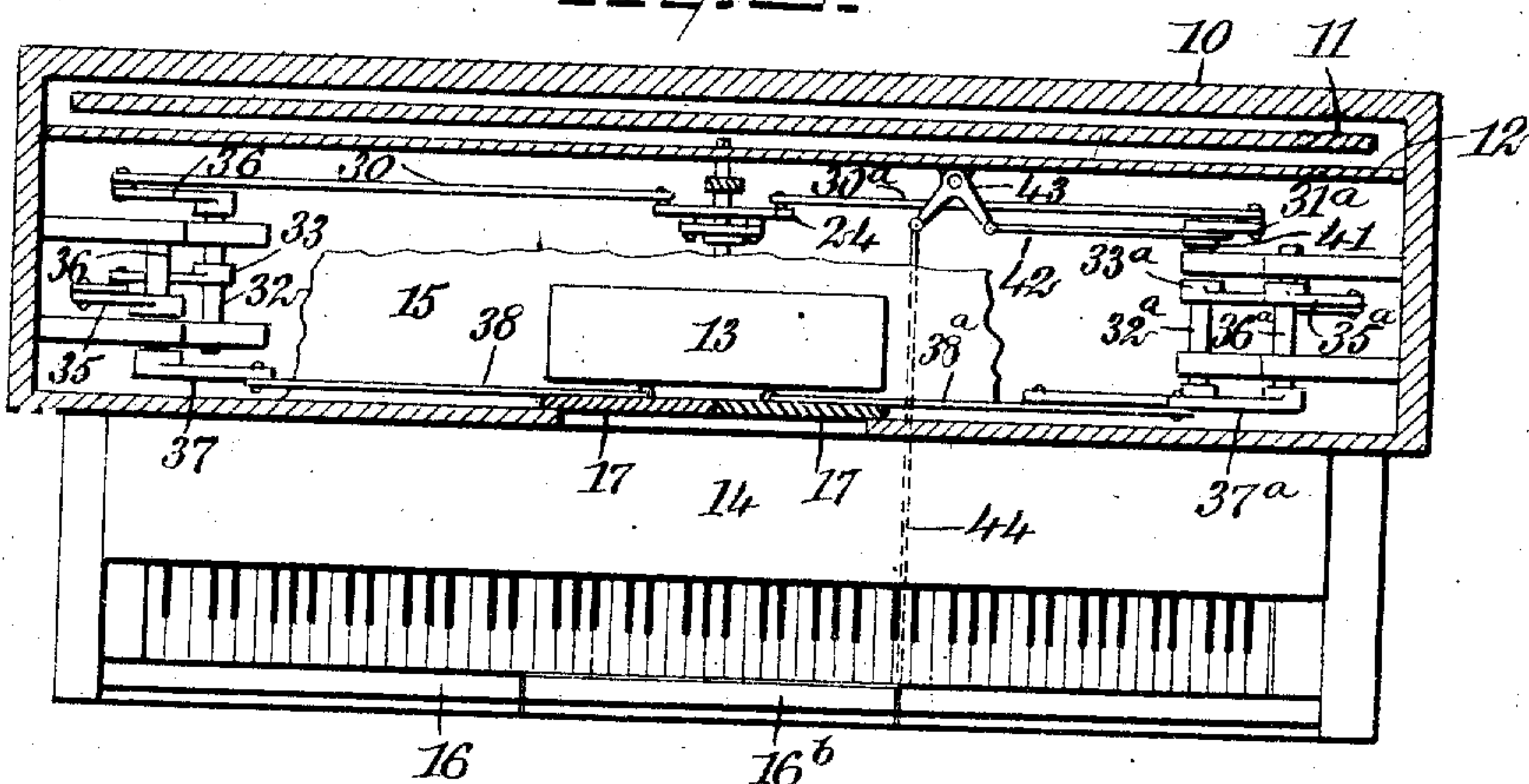
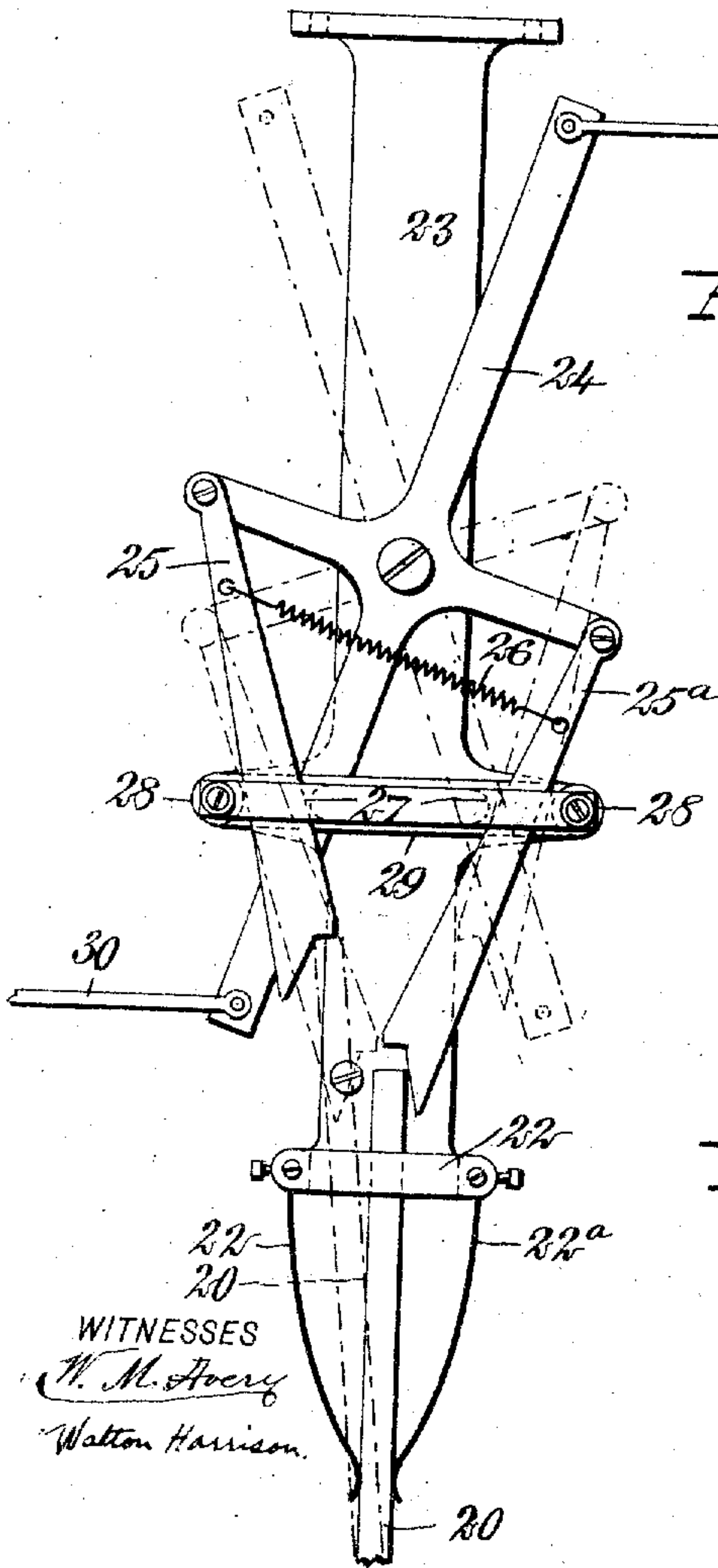


Fig. 3.



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Fig. 5.

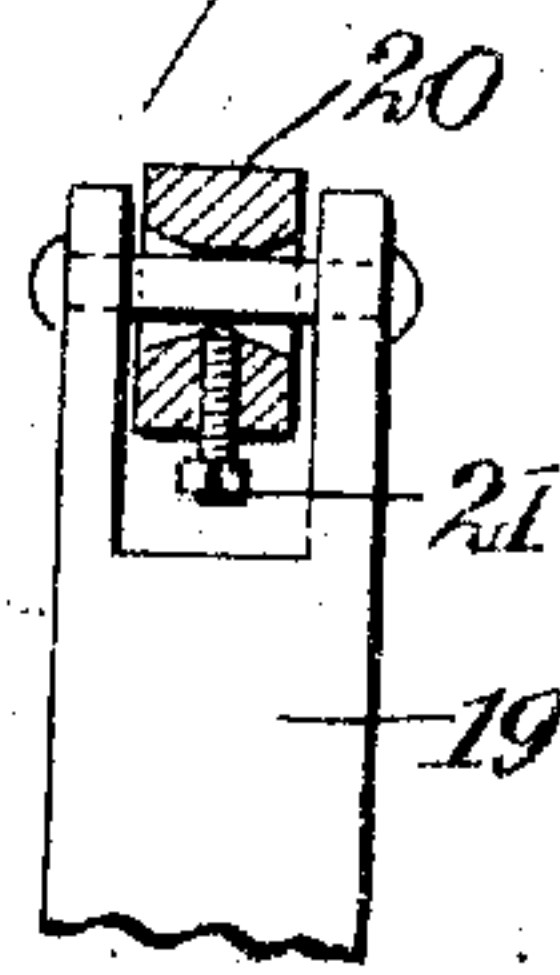
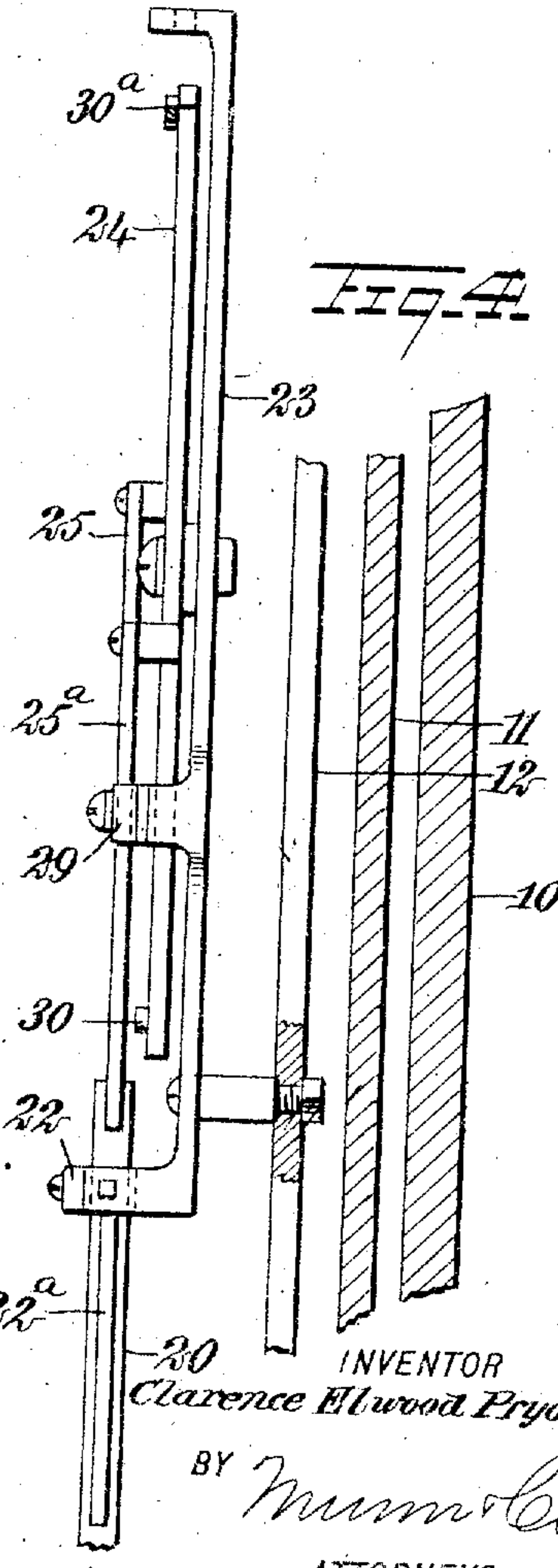


Fig. 4.



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5 SHEETS—SHEET 3.

Fig. 6.

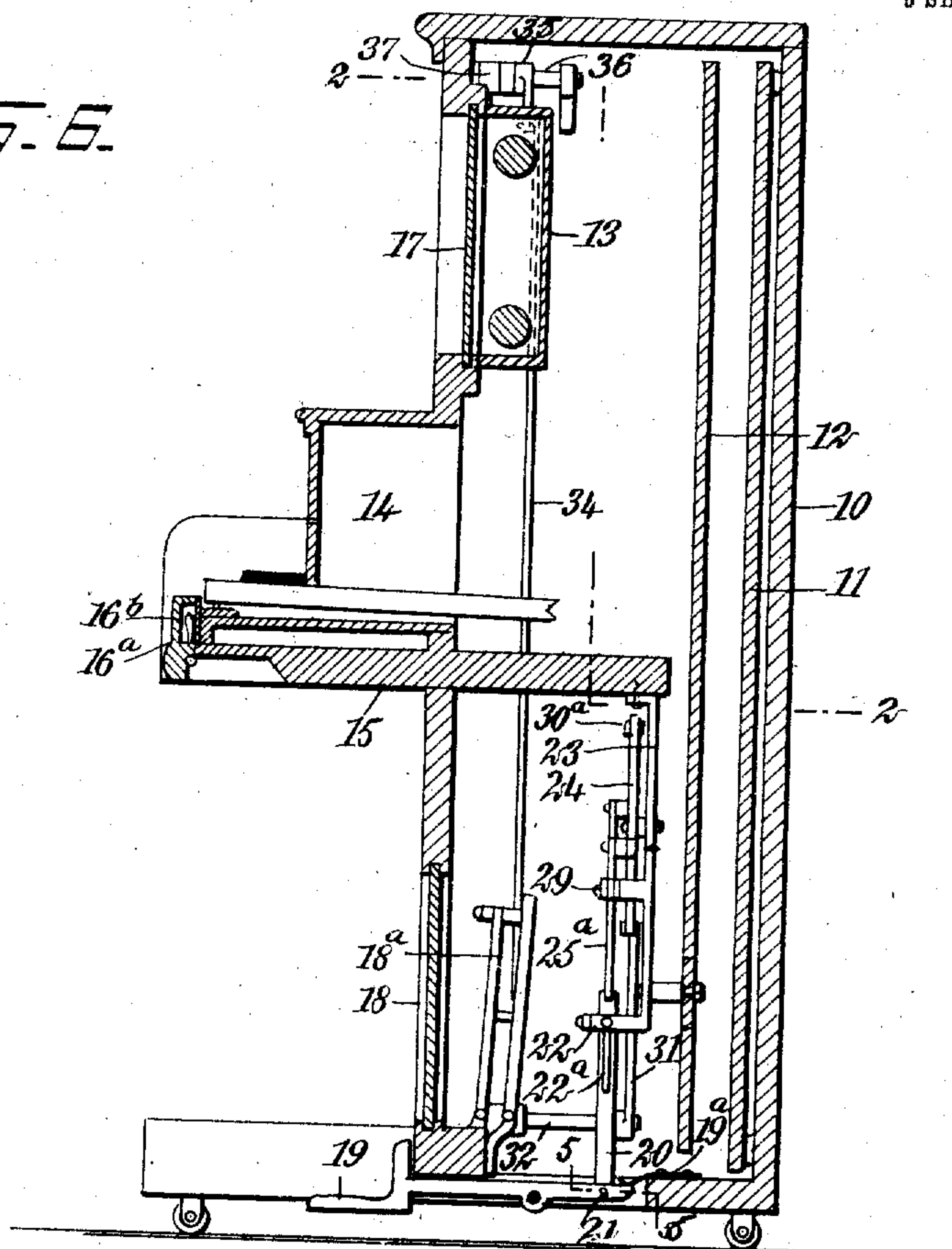
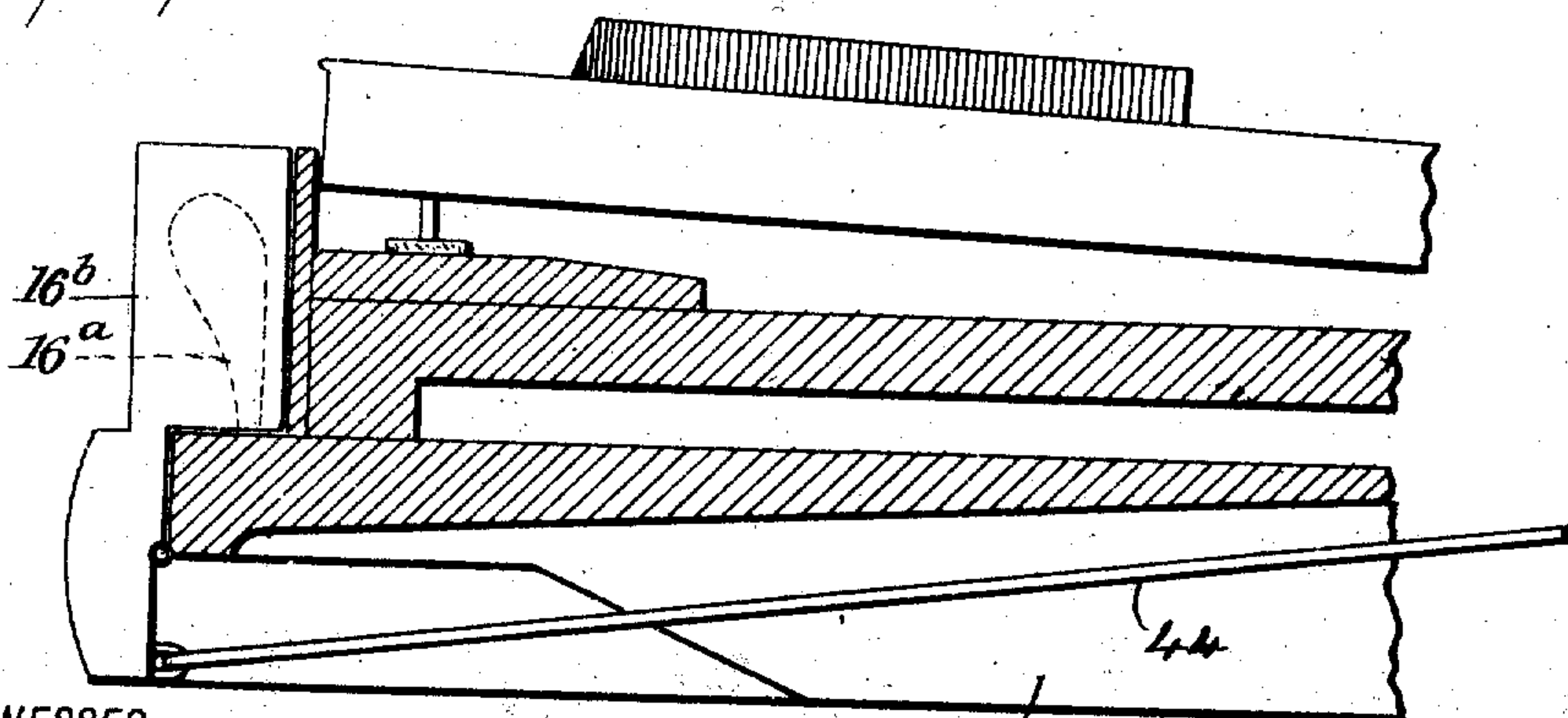


Fig. 7.



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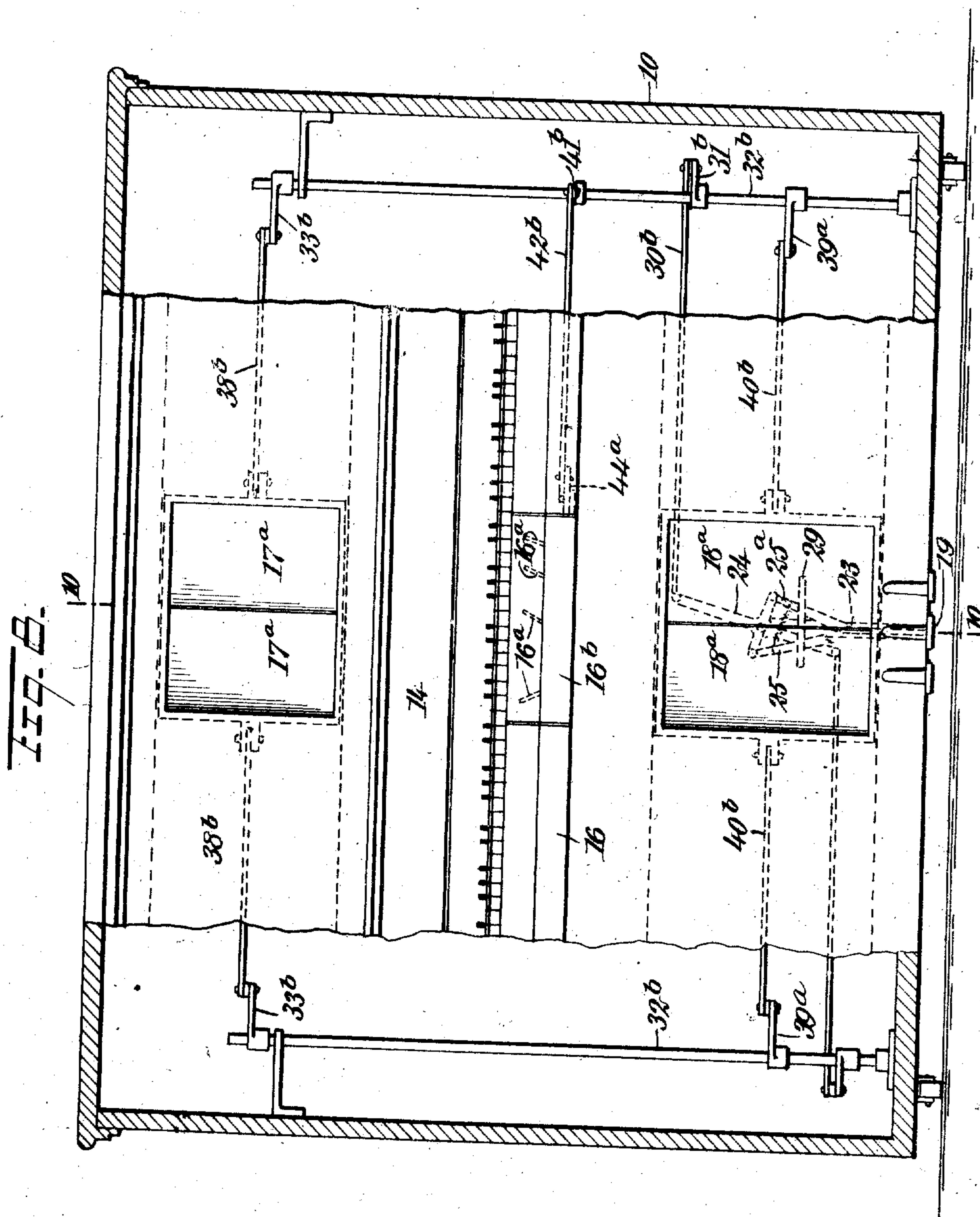
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6 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

Fig. 9.

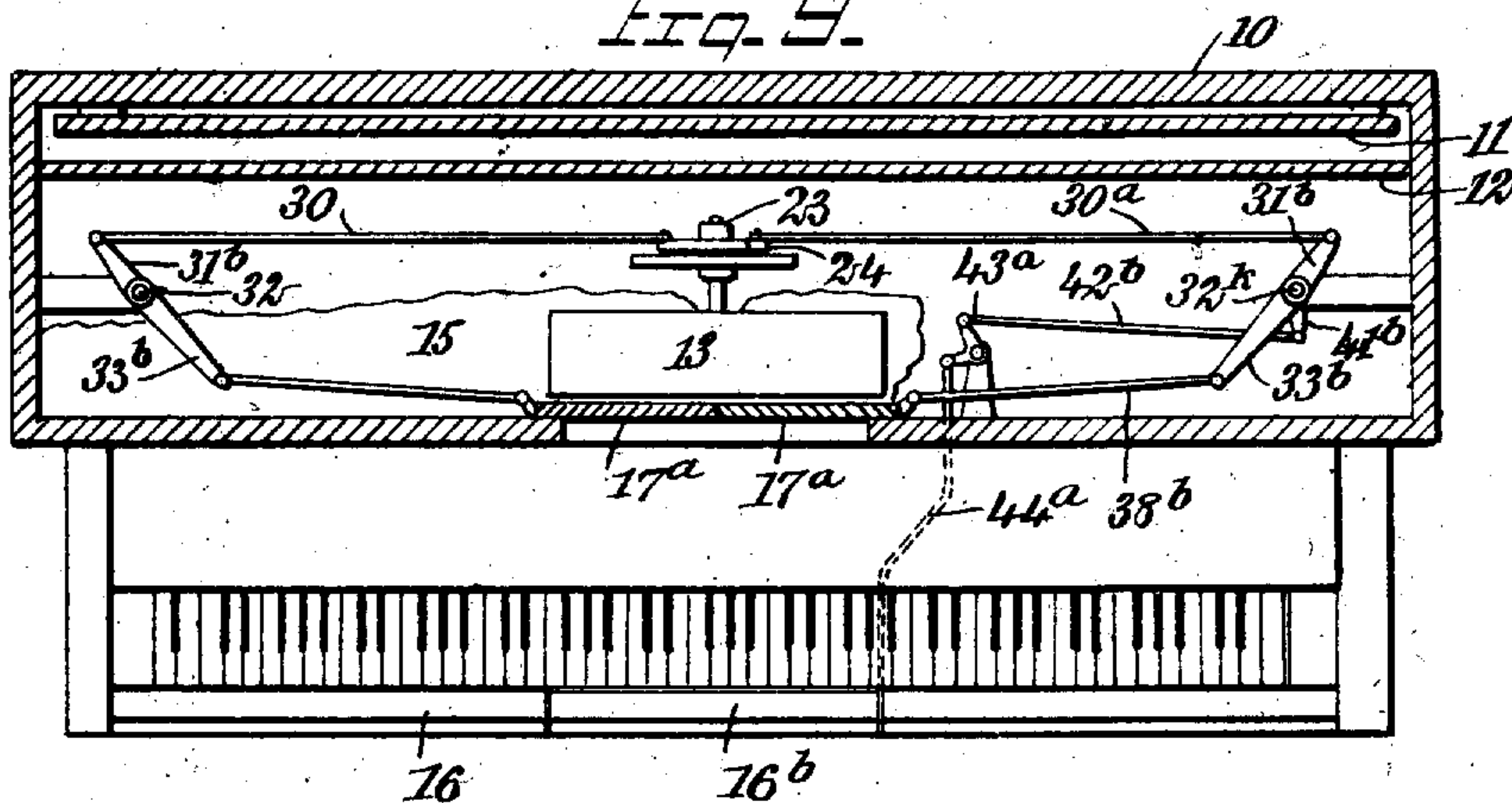


Fig. 10.

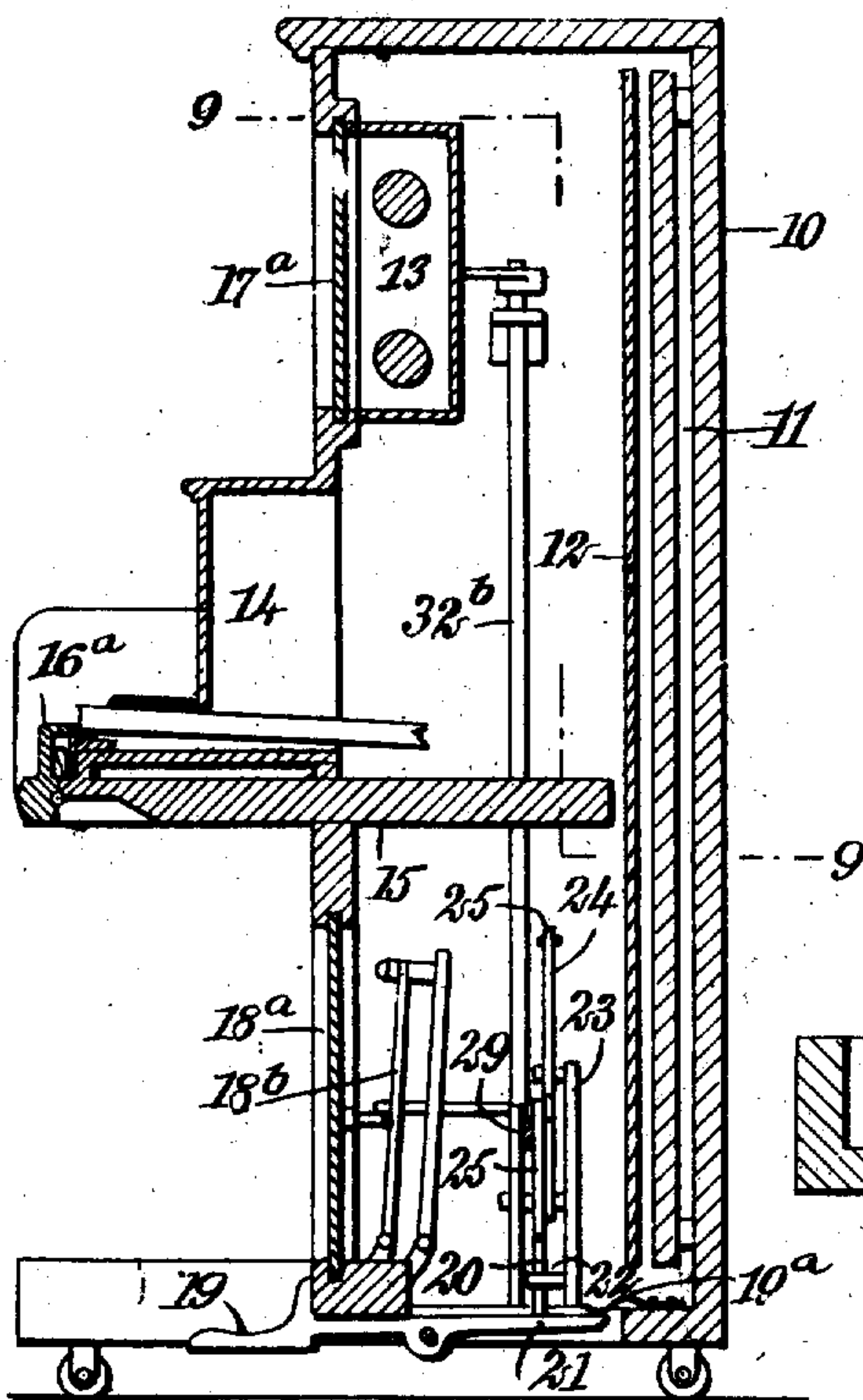
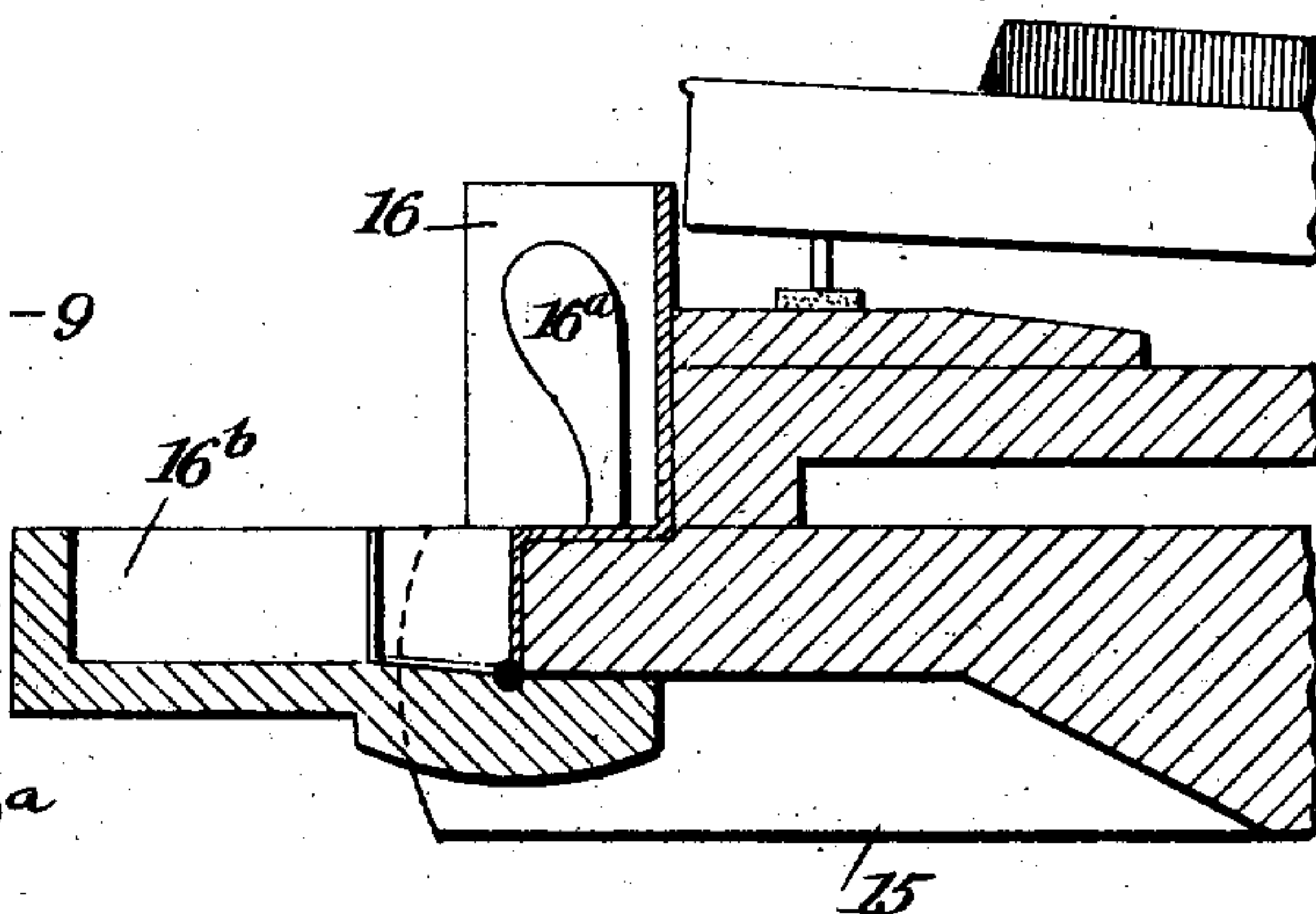


Fig. 11.



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UNITED STATES PATENT OFFICE.

CLARENCE ELWOOD PRYOR, OF BINGHAMTON, NEW YORK.

PIANO-PLAYER ATTACHMENT.

No. 894,695.

Specification of Letters Patent.

Patented July 28, 1908.

Application filed August 29, 1907. Serial No. 390,571.

To all whom it may concern:

Be it known that I, CLARENCE ELWOOD PRYOR, a citizen of the United States, and a resident of Binghamton, in the county of Broome and State of New York, have invented a new and Improved Piano-Player Attachment, of which the following is a full, clear and exact description.

My invention relates to musical instruments and more particularly to piano players having pneumatic action, my more particular purpose being to provide means under easy control of the operator for opening and closing the doors by the depression of a pedal or other simple movement.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a piano player equipped with my invention, the ends of the instrument being broken away to disclose my preferred arrangement of levers; Fig. 2 is a sectional plan taken on the line 2—2 of Fig. 6; Fig. 3 is an enlarged front elevation of the reversing mechanism used for manipulating the various lever mechanisms employed for opening and closing the doors; Fig. 4 is a side view, partly in section, and partly in elevation, of the mechanism shown in Fig. 3, and parts immediately associated therewith; Fig. 5 is a section upon the line 5—5 of Fig. 6 showing the connection between the reversing mechanism and the pedal; Fig. 6 is a vertical section through the entire piano player, taken upon the line 6—6 of Fig. 1; Fig. 7 is an enlarged cross section through the middle front portion of the key-bed of a piano, showing the door partially surrounding the expression levers; Fig. 8 is a front view partly in section and partly in elevation, showing a slightly different form of the invention, the principal difference being in the manner in which the doors are connected with the lever mechanisms for operating them; Fig. 9 is a sectional plan upon the line 9—9 of Fig. 10, and shows the arrangement of the sliding doors and levers, as arranged in the mechanism in Fig. 8; Fig. 10 is a vertical section upon the line 10—10 of Fig. 8; and Fig. 11 is an enlarged section, somewhat similar to Fig. 7, but showing the housing for the expression levers as open.

A piano back is shown at 10, a sounding board at 11, and a piano plate at 12. A music sheet and box appear at 13 and are

made in the usual form. The pneumatic action box is shown at 14, the key bed at 15, the lock strip at 16 and the expression levers at 16^a. The doors of the music sheet box are shown at 17, and at 18 appears the door to the bellows treadles. The doors 17 and 18 are adapted to slide back when not in use.

At 19 is the center pedal usually found on modern pianos and at 19^a is a spring for retracting the same.

All of the parts just mentioned being common and well known, no further description of them will be given. To the pedal 19 is pivoted a plunger 20, this plunger being perforated, as indicated in Fig. 5, for the purpose of allowing lateral radial movement of the plunger. A pointed set screw 21 is provided for facilitating this purpose. The plunger 20 extends loosely through a guide 22 and is engaged by springs 22^a disposed upon opposite sides of the plunger. The guide 22 is integral with a bracket 23 which may be secured upon any convenient part of the instrument. According to Figs. 1, 2 and 6 the bracket is mounted upon the key bed and piano plate, while in Figs. 8, 9 and 10 it is shown as fastened to the floor of the case. To the bracket 23 is pivoted a double tee-lever 24 from the arms of which swing pawls 25, 25^a, each pawl being fashioned at its lower end into a shallow fork for the purpose of engaging the plunger 20. A spring 26 restrains these pawls and keeps them close together, the pawls being limited by shoulders 27 and thimbles 28 upon a slideway 29. The double tee-lever is connected by rods 30, 30^a with levers 31, 31^a. The levers 31 and 31^a are mounted upon shafts 32, 32^a which carry levers 33 and 33^a. These levers actuate rods 34, 34^a connected with levers 35, 35^a mounted on shafts 36, 36^a, the latter carrying levers 37, 37^a, and these levers in turn actuate rods 38, 38^a connected to the doors 17. Mounted upon the shaft 32^a (Fig. 1) is an arm 39 and connected with this arm is a rod 40 for opening and closing the door 18. The shaft 32^a also carries an arm 41 rigidly mounted thereupon and a rod 42 connects this arm with a bell crank lever 43, the latter being connected with a rod 44 for the purpose of opening and closing the hinged door 16^b of the lock strip 16. While the drawings show my preferred form and construction for these parts, I do not limit myself to the particular form shown. The hinged door 16^b constitutes a closure member which covers the expression levers 16^a.

at all times when the piano is not operated automatically and when it is being played by hand. Likewise, all of the other doors or closure members are closed whenever the piano is not operated automatically and when it is being operated manually. When the piano is being played by the pneumatics, however, all of the doors must be open.

In the form shown in Figs. 8, 9 and 10, the construction differs a little from that shown in the other figures with respect to the location of the various arms and shafts upon which they are mounted, the essential principle, however, being the same in all cases. In Figs. 8, 9 and 10 the various doors are shown at 16^b, 17^a and 18^a. The doors 18^a are connected with rods 40^b which are pivoted to arms 39^a, the latter being mounted rigidly upon the rocking shafts 32^b. Similarly the doors 17^a are connected with rods 38^b which are pivoted to arms 33^b mounted rigidly upon the rocking shaft 32^b. The reversing mechanism operates a rod 30^b and an arm 31^b, the latter being also mounted upon the rocking shaft 32^b. Another arm 41^b, mounted upon this rocking shaft, is connected by a rod 42^b with a rod 44^a, which controls the opening and closing of the door 16^b above described. The bell crank 43^a (Fig. 9) is connected by the rod 44^a with the door 16^b. The reversing mechanism shown in Figs. 8, 9 and 10 is substantially the same as in Figs. 1 to 7 inclusive.

The operation of my device is as follows: Assuming the parts to be in the positions indicated in all of the figures except Fig. 11, and that the performer wishes to play by aid of pneumatics, he depresses the pedal 19. This causes the plunger 20 to rise and engage the lower end of the pawl 25^a and thus move the pawl upward. This causes the lever 24 to rock into the position indicated by broken lines in Fig. 3, and the movement, being transferred through the various arms, rocking shafts and rods connected therewith, opens all of the doors. When the plunger 20 thus rises and engages the lower end of the pawl 25^a, the latter travels obliquely upward, making, at the same moment, a slight radial movement. This is because the pawl is pivoted at its upper end and is guided at points adjacent its middle portion, as will be understood from Fig. 3. The movement of the pawl may be understood by contrasting the full and broken lines in Fig. 3. The upward movement of the plunger 20 and pawl 25^a, in rocking the tee-lever 24, causes the pawl 25 to descend, as indicated by broken lines in Fig. 3. The pawl 25 being guided by the shoulders 27 and 28, slips downwardly, as indicated by broken lines in Fig. 3, and is enabled to catch upon the upper end of the plunger 20, being held in position by a spring 26. The movement having been completed, that is to say, the plunger 20 being in its up-

permost position and the doors all being open, the operator removes his foot from the middle pedal 19. The spring 19^a now causes the plunger to free itself from the pawl 25^a and to drop into normal position. In doing this it is assisted by pressure of the springs 22 and 22^a. These springs tend to keep the plunger 20 properly centered; yet allow it a slight lateral movement necessary to accommodate itself to its changing position when in engagement with either of the pawls. This leaves the device in such condition that the plunger 20 is down, the pawl 25 is down and its lowermost end is in alinement with the upper end of the plunger 20 and the pawl 25 is out of the way of the plunger. The performer may now pull forward the bellows pedals for the purpose of playing by aid of pneumatics. When he wishes to close the doors he merely presses the pedal as before. The plunger 20 thereupon engages the pawl 25 and the movement being transmitted the various arms, rocking shafts and rods, causes the doors to close and the parts otherwise to assume their corresponding respective positions. The bellows pedals are now put back by hand.

In Fig. 11 the movable lock strip is shown as occupying its open position in order to enable the performer to operate the expression levers.

I do not limit myself to any particular number of doors to be used, neither do I limit myself to the particular construction shown and described for any particular part.

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

1. A device of the character described, comprising a case provided with doors, mechanism connected with said doors for opening and closing the latter, said mechanism including a lever, pawls connected with said lever for actuating the latter, a guide for directing said pawls so as to bring a predetermined portion of each pawl in succession into a definite position, and mechanism under control of the operator and provided with a plunger moving in a path through said predetermined position.

2. The combination of a plunger, means for controlling the same at will, a tee-lever, pawls mounted upon said tee-lever and adapted to be engaged by said plunger, one of said pawls being engaged when said plunger makes a movement, and the other of said pawls being engaged when said plunger makes a second movement of the same kind, doors to be opened and closed, and connections from said lever to said doors.

3. A device of the character described, comprising a tee-lever, pawls mounted upon opposite portions of said tee-lever and adapted to be actuated thereby, mechanism under control of the operator and provided with a

plunger for engaging first one and then the other of said pawls, doors to be opened and closed, and connections from said tee-lever to said doors.

5 4. In a device of the character described, the combination of a framework, a tee-lever mounted thereupon and adapted to rock, separate pawls engaging oppositely disposed portions of said tee-lever, a plunger for en-
10 gaging said pawls alternately, means under control of the operator for actuating said plunger, doors to be opened and closed, and a connection from said tee-lever to said doors.

15 5. A device of the character described, comprising a pivotally mounted lever, pawls connected with different portions of said lever, a movable member for engaging first

one and then the other of said pawls, springs connected with said movable member and tending to normally retain the same in a pre- 20 determined position yet allow said member a slight movement in consequence of the changing positions of the pawls, means under control of the operator for actuating said movable member, a guide for said pawls, 25 doors to be opened and closed, and a connection from said doors to said lever.

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

CLARENCE ELWOOD RYOR.

Witnesses:

LAVERNE M. TWINING.

HERBERT T. WALKER.