

L. EFFENBERGER.  
AUTOMATIC DOOR OPENING APPARATUS.  
APPLICATION FILED SEPT. 17, 1908.

935,475.

Patented Sept. 28, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

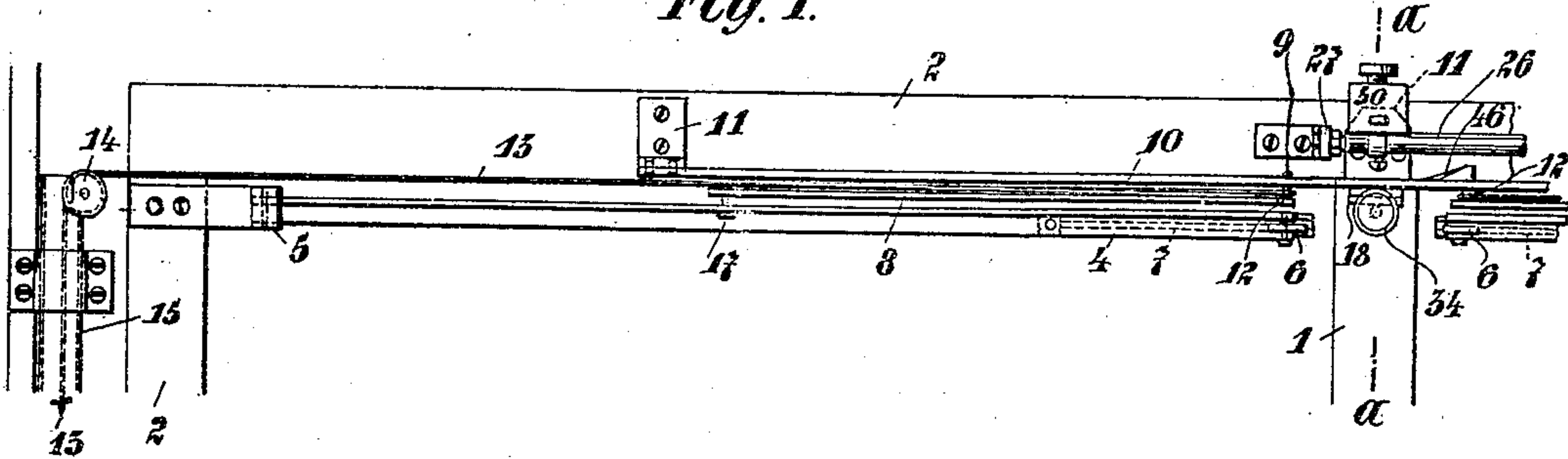
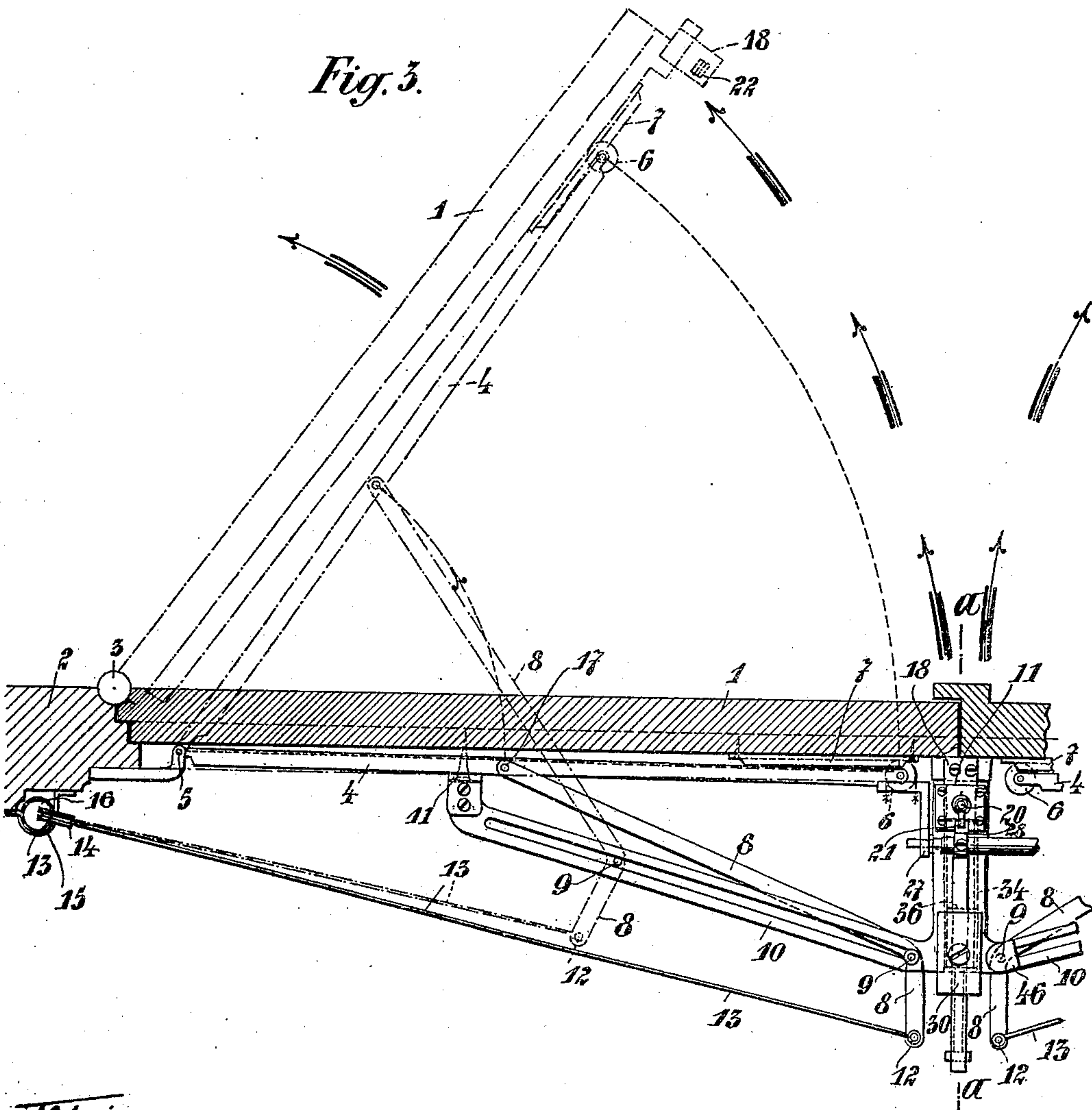


Fig. 3.



Witnesses

H. C. Barkley  
L. A. Sands.

Inventor

Lorenz Effenberg.  
by his Attorney Frank S. Abmeyer.

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Fig. 2.

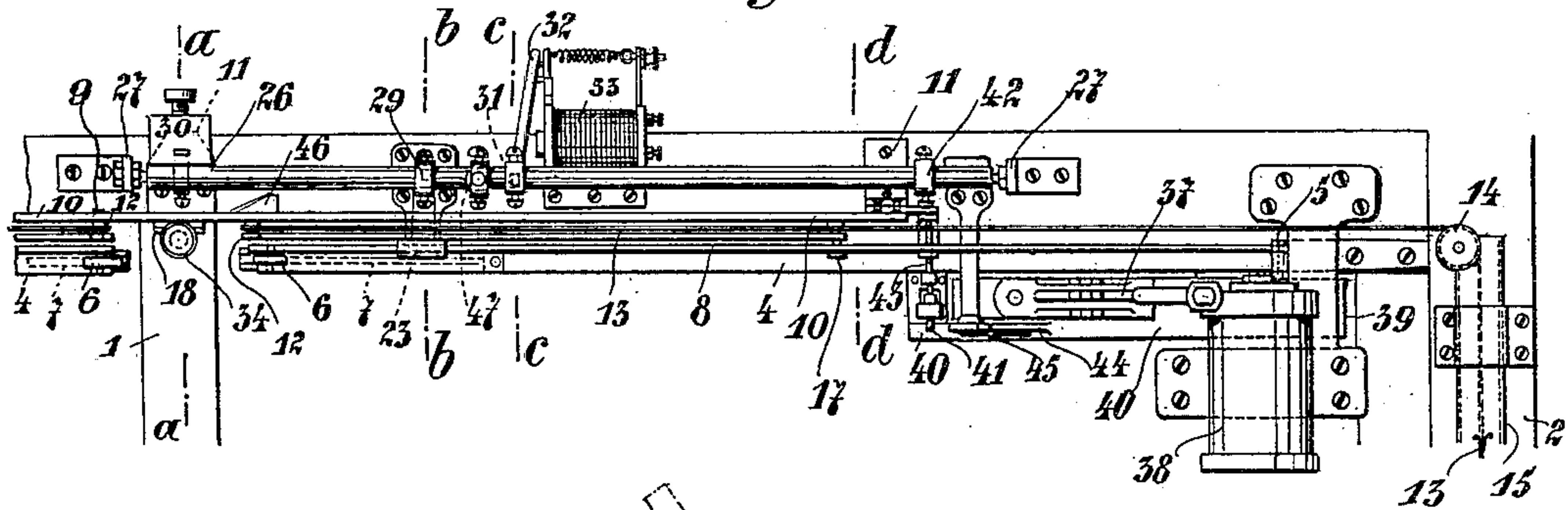
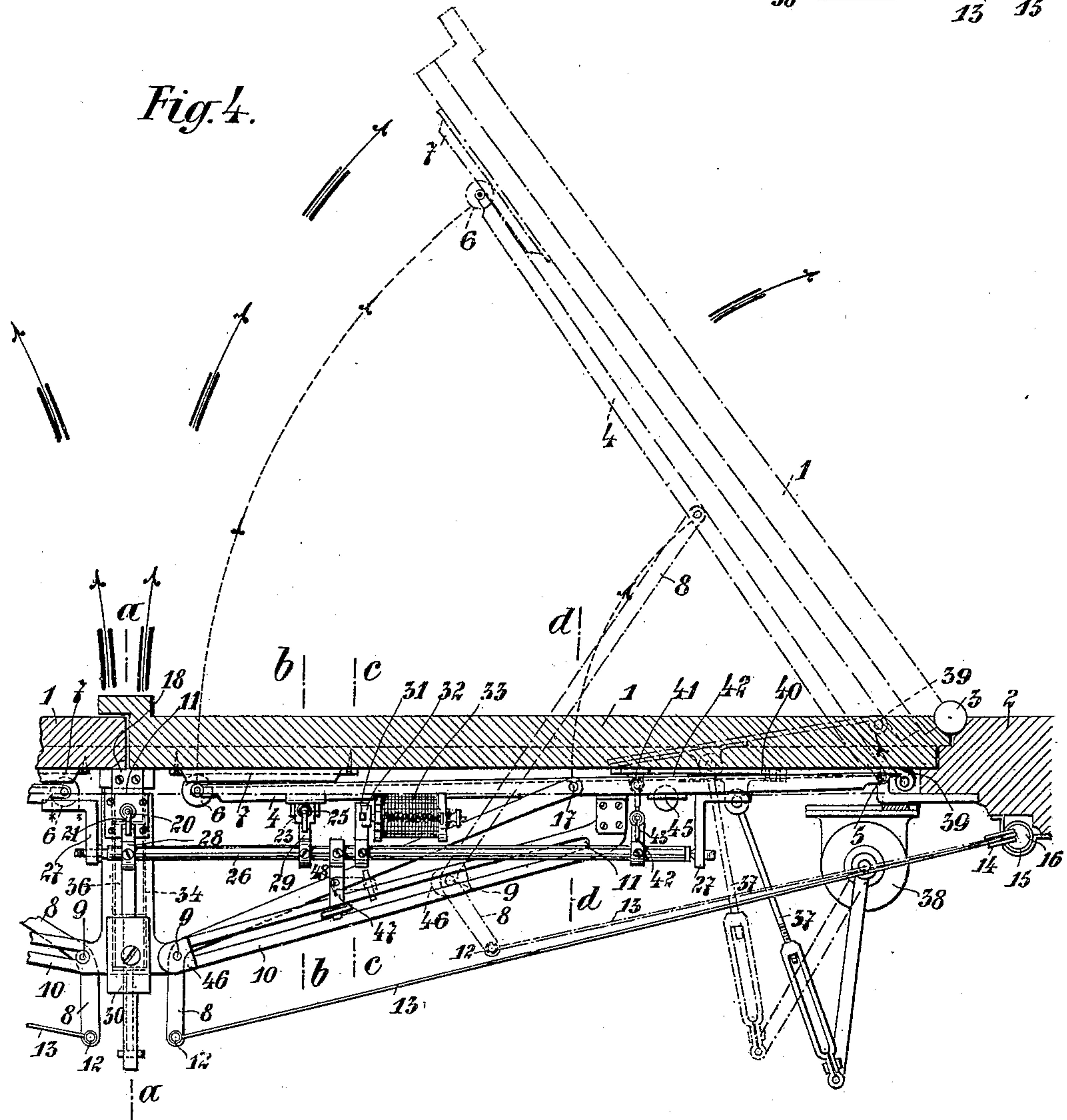


Fig. 4.



Witnesses  
R. C. Dackley.  
L. A. Sands.

Inventor  
Lorenz Effenberg  
by his Attorney James A. Munn

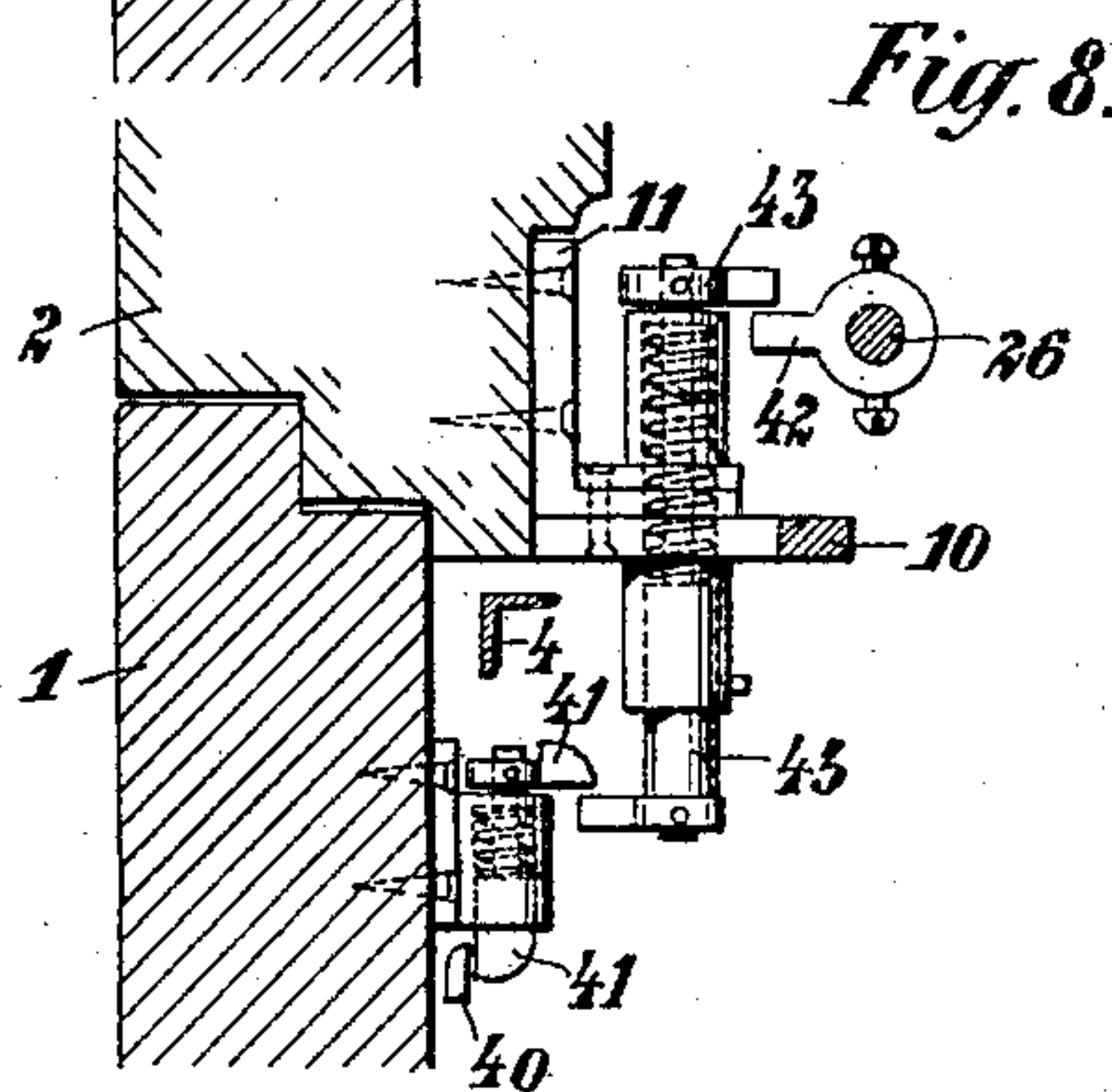
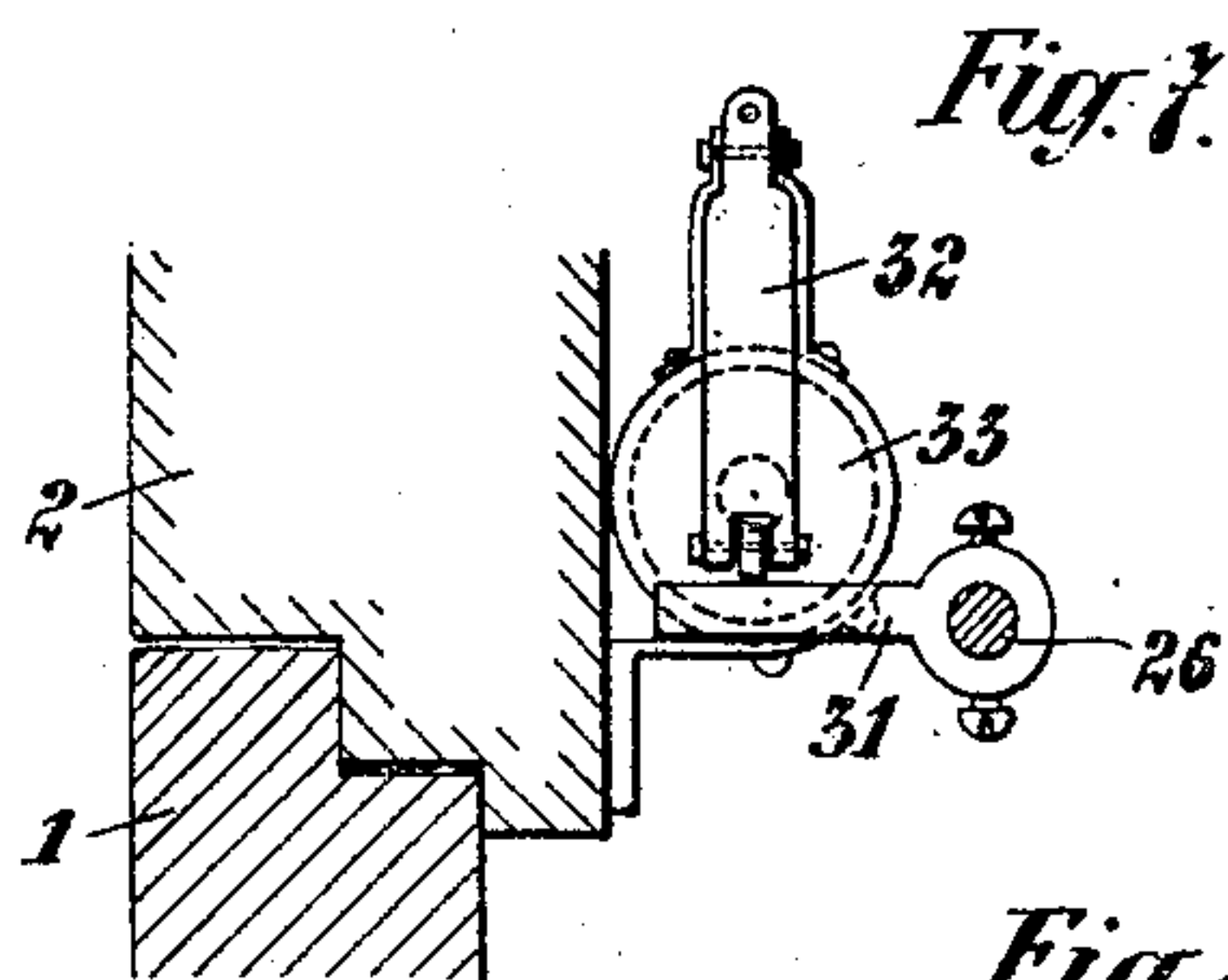
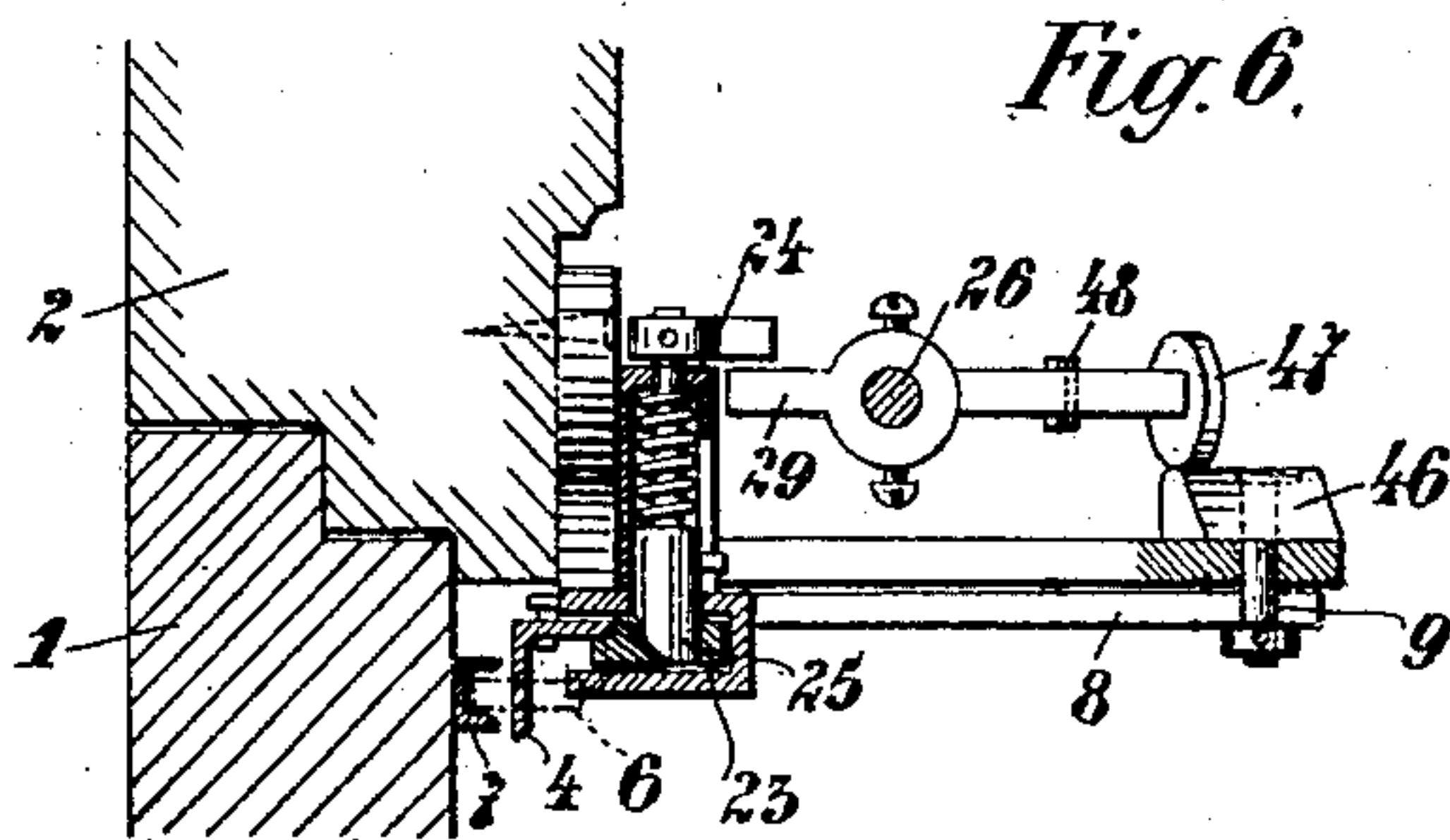
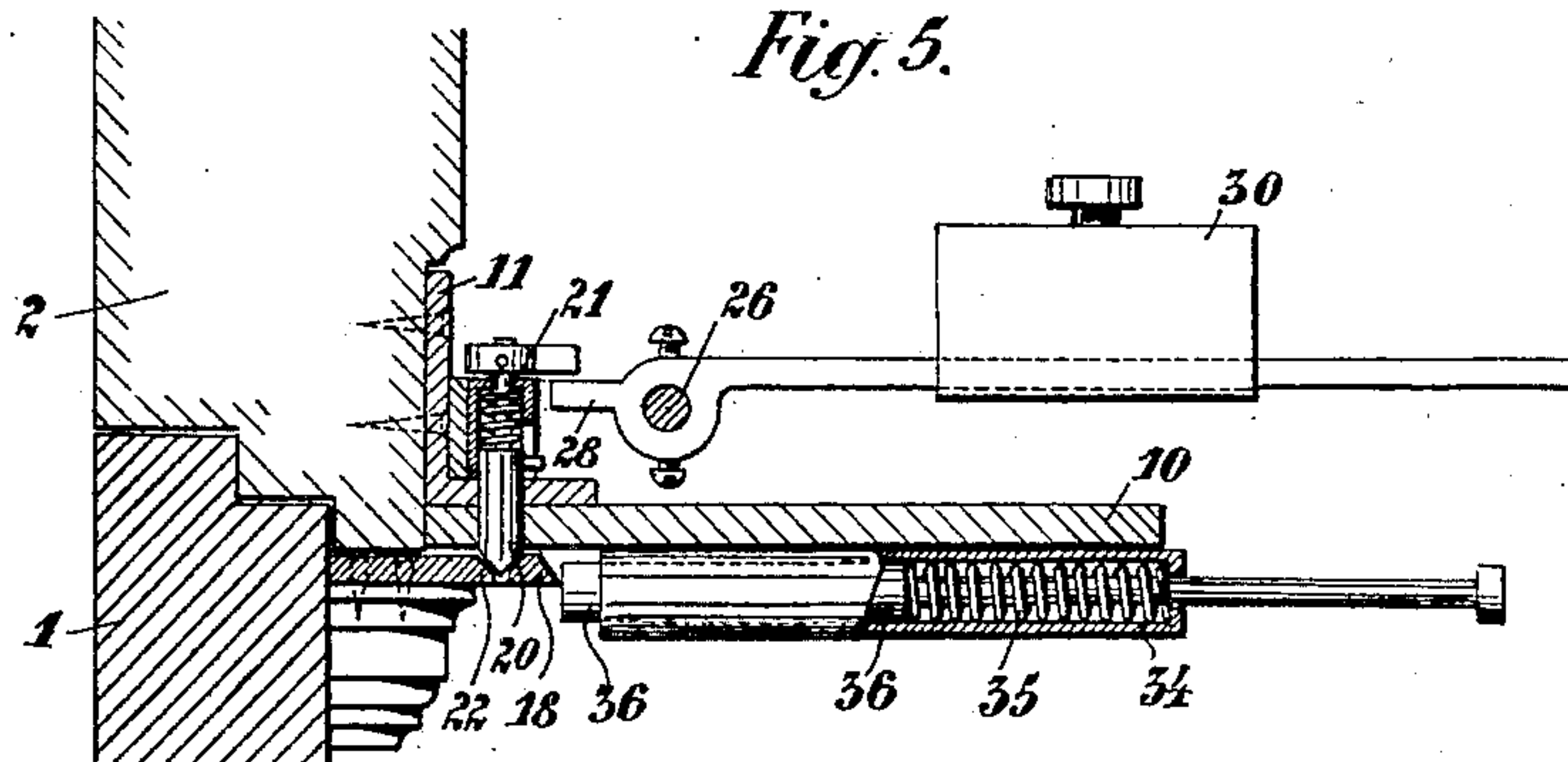


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3 SHEETS—SHEET 3.



Witnesses  
L. C. Barkley.  
L. A. Sands.

Inventor  
Lorenz Effenberg  
by his Attorney Francis Appelman



# UNITED STATES PATENT OFFICE.

LORENZ EFFENBERGER, OF AGRAM, AUSTRIA-HUNGARY.

## AUTOMATIC DOOR-OPENING APPARATUS.

935,475.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed September 17, 1908. Serial No. 453,540.

*To all whom it may concern:*

Be it known that I, LORENZ EFFENBERGER, a subject of the Emperor of Austria-Hungary, residing at Agram, in Austria-Hungary, have invented certain new and useful Improvements in Automatic Door-Opening Apparatus, of which the following is a specification.

This invention relates to apparatus for automatically opening the doors of theaters, assembly rooms, places of amusement and the like.

A construction embodying the invention is shown in the annexed drawing in which—

Figures 1 and 2 are partial side views of the apparatus and Figs. 3 and 4 are plan views of Figs. 1 and 2 respectively. Figs. 5 to 8 are cross sections on the lines *a—**a*, *b—b*, *c—c*, and *d—d* of Figs. 2 and 4 respectively, but on a larger scale.

The door-leaves 1 are rotatable about hinges 3 in the frame 2 (Figs. 2 and 4). Near the median line, on the inside, levers 4 hinged to the frame at 5 abut against the leaves 1, each lever 4 having at its free end a roller 6 running on a rail 7 fixed to the respective door-leaf. Suitable means are provided for pressing the levers against the door-leaves. In the example illustrated the levers 4 are connected by pins 17 to rods 8 having pins 9 which engage slots in a bar 10 fixed to the door frame by means of brackets 11. Each rod 8 has at its free end a pin 12 to which is attached a cord 13 which passes over a roller 14 into a tube 15 and has a weight 16 attached to its lower end. Other means, for example springs, may be used for so loading the levers 4 that their ends bear from inside against the door leaves. The left hand door-leaf is normally closed and bolted to the lintel. While this leaf is thus bolted the respective lever 4 bears against it without opening it. The right hand door leaf is opened and closed each time the door is used in the ordinary course. In order that the respective lever 4 does not act while this takes place it is bolted to the lintel. The construction of these two bolt fastenings is as follows. The left hand door leaf has at its upper part a bolt plate 18 (Fig. 5) engaged by a bolt or pin 20 which is mounted in a case 21 fixed to the lintel and is thrust downward by a spring so that it enters a recess 22 in the bolt plate 18. The lever 4 acting on the right hand door

leaf carries a bolt plate 23 engaged by a spring loaded bolt 25 mounted in a casing 24. When both these bolts are acting the right hand door leaf can be freely opened and closed in the usual manner. For automatically opening both leaves of the door the two bolts 20 and 25 must be disengaged. This is effected by means of a spindle 26 mounted in bearings 27 and provided with two arms 28, 29 which engage under projections of the bolts 20 and 25. The spindle 26 is connected to a weight 30 and has an arm 31 engaging under a detent capable of being displaced by movement initiated from a distance for example the armature 32 of an electromagnet 33, so that the spindle is normally retained in a position in which the arms 28 and 29 engage under the projections of the bolts without lifting the latter. When, however, the electromagnet is energized by the closing of an electric circuit the armature 32 is attracted and releases the arm 31, so that the weight 30 can rotate the spindle 26 and cause the arms 28 and 29 to lift the bolts 20 and 25 respectively, whereupon the two door leaves are opened by the levers 4, as indicated by dotted lines in Fig. 2.

Below the bar 10 is fixed a cylinder 34 (Fig. 5) containing a piston 36 acted on by a spring 35. This piston bears against the left hand door leaf, by abutting, for example, against the bolt plate 18. When the bolts 20 and 25 have been unfastened the spring loaded piston 36 assists the weights 16 in opening the door.

The right hand door leaf may be provided with a door closing device of any suitable kind. This device must however only be operative when the door is opened and closed in the ordinary course and must be disengaged when both door-leaves are to be automatically opened. For this purpose the arm 37 of the door closer 38 is not, as is usually the case, directly connected to the door leaf, but to a rod 40 pivoted at 39 and normally engaged by a spring loaded pin 41 carried by the door leaf (Fig. 8). When the door is to be automatically opened the pin 41 is disengaged by means of the spindle 26, arm 42 and slide rod 43. The rod 40 and arm 37 of the door closer then remain in the position indicated by dotted lines in Fig. 4. The rod 40 engages over a fixed guide roller 45 by means of a rail 44.



The sliding pin 9 of one of the rods 8 has above the rail 10 a projection 46 with an inclined sliding surface. The spindle 26 has a bi-partite arm 47 the outer spring pressed part of which carries a roller and is rotatable about a vertical pivot 48 fixed to the inner part. The said outer part yields elastically when during the automatic opening of the doors the projection 46 moves toward the right (Fig. 4) on the rail 10. While the two door leaves are being closed the inclined sliding surface of the projection 46, moving toward the left, passes under the roller carried by the arm 47 and lifts the said arm, the outer part of which does not elastically yield in this direction. The spindle 26 and arms 20, 25, 31 and 42 are by this means rotated back until the roller of the armature 32 projects over the arm 31 and locks the spindle.

The walls of the recess 22 in the plate 18, and the end surfaces of the bolt 20, are inclined so that if a rush is made by the public the bolt yields and allows the door to open. The apparatus described is particularly suitable for the doors of theaters and other public places. It enables all the doors to be quickly and simultaneously opened at the end of the performance or meeting, or in case of panic, and thus affords security that in case of danger a free exit will be rapidly available.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. In apparatus for automatically opening doors, more particularly for theaters and the like, the combination of two door leaves, pressure levers adapted to act against the inner sides of the door leaves respectively, means for normally locking one of the door leaves, means for normally locking the pressure lever of the other leaf, devices operatable from a distance for simultaneously disengaging said locking means and prime movers operating on the pressure levers to throw open the door leaves.

2. In apparatus for opening doors the combination with two door leaves and a door frame of pressure levers hinged to the door frame, slotted bars connected to the door frame, rods connected to said levers and having pins which engage the slots in the said bars, means for operating each of said rods, a bolt plate on one door leaf, a bolt 20 mounted on the door frame engaging said plate, a bolt plate and bolt for locking the pressure lever of the other door leaf, and a rotatable spindle provided with arms adapted to disengage said bolts when said

spindle is released by remote-controlled means.

3. In apparatus for automatically opening doors, the combination of two door leaves, pressure levers adapted to act against the inner sides of said leaves respectively, means for locking one of said leaves, means for normally locking the pressure lever of the other leaf, an automatic door closer operative on the latter leaf and means for unlocking said locking devices and simultaneously disengaging the door closer.

4. In apparatus for opening doors the combination with two door leaves and a door frame of pressure levers hinged to the door frame, slotted bars connected to the door frame, rods connected to said levers and having pins which engage the slots in the said bars, means for operating each of said rods, a bolt plate on one door leaf, a bolt 20 mounted on the door frame engaging said plate, a bolt plate and bolt for locking the pressure lever of the other door leaf, and a rotatable spindle provided with arms adapted to disengage said bolts when said spindle is released by remote-controlled means, and means for returning the parts to their initial position automatically when the doors are again closed.

5. In apparatus for automatically opening doors, more particularly for theaters and the like, the combination of two door leaves, pressure levers adapted to act against the inner sides of the door leaves respectively, means for normally locking one of the door leaves and the pressure lever of the other freely openable and closable door leaf, devices operatable from a distance for simultaneously disengaging said locking means and prime movers operating on the pressure levers to throw open the door leaves, and a thrust spring adapted to assist in the initial opening movement of the doors.

6. In apparatus for automatically opening doors the combination of two door leaves, pressure levers adapted to act against the inner sides of the door leaves to open them, means for normally locking one of the door leaves comprising a bevel ended bolt adapted to be unfastened by excessive pressure against said door leaf, means for locking the pressure lever of the other door leaf, and a remote controlled device for releasing both locking means.

In witness whereof I have signed this specification in the presence of two witnesses.

LORENZ EFFENBERGER.

Witnesses:

ANDREW THELEMON,  
MICHAEL TRINOR.