

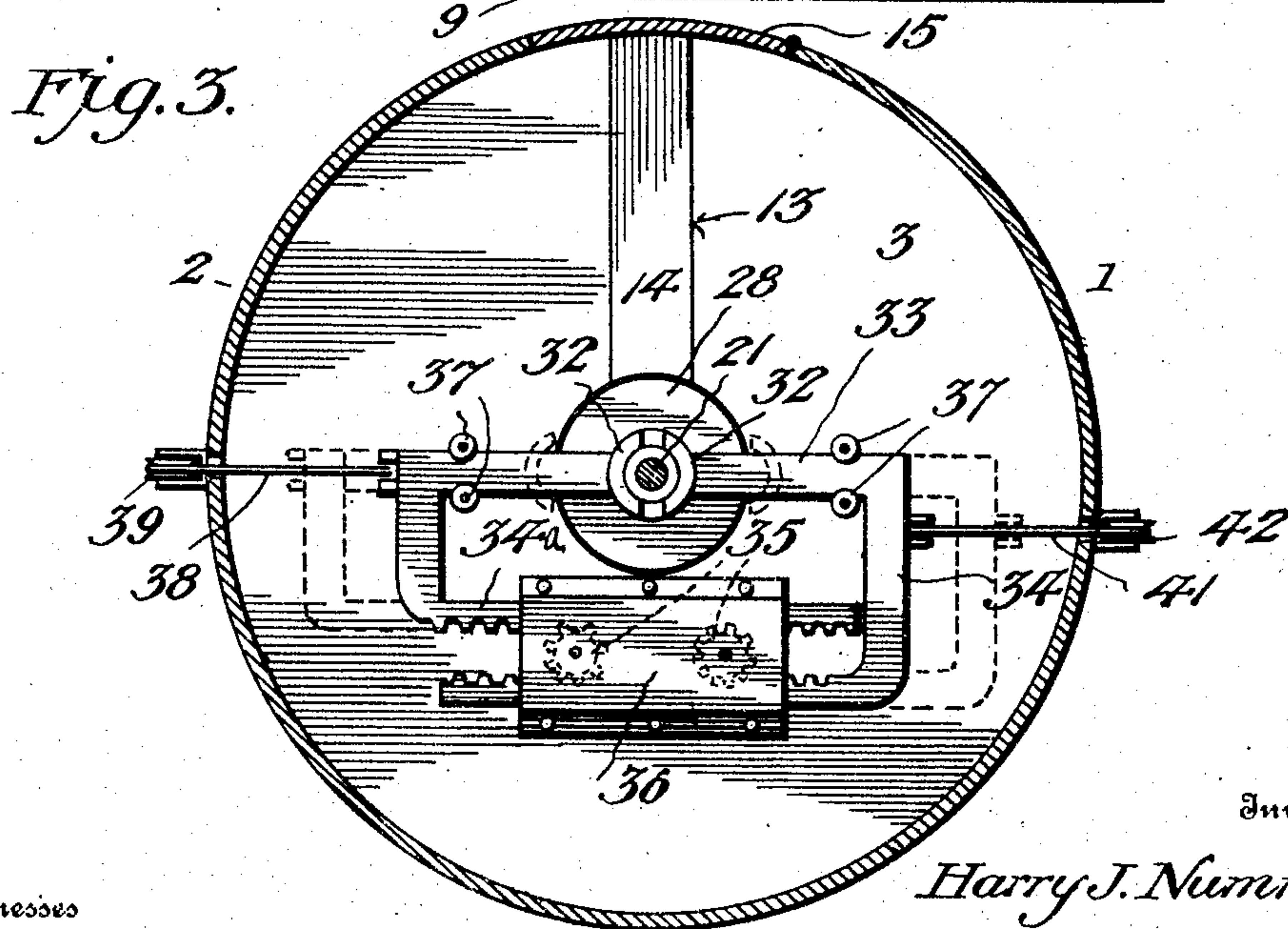
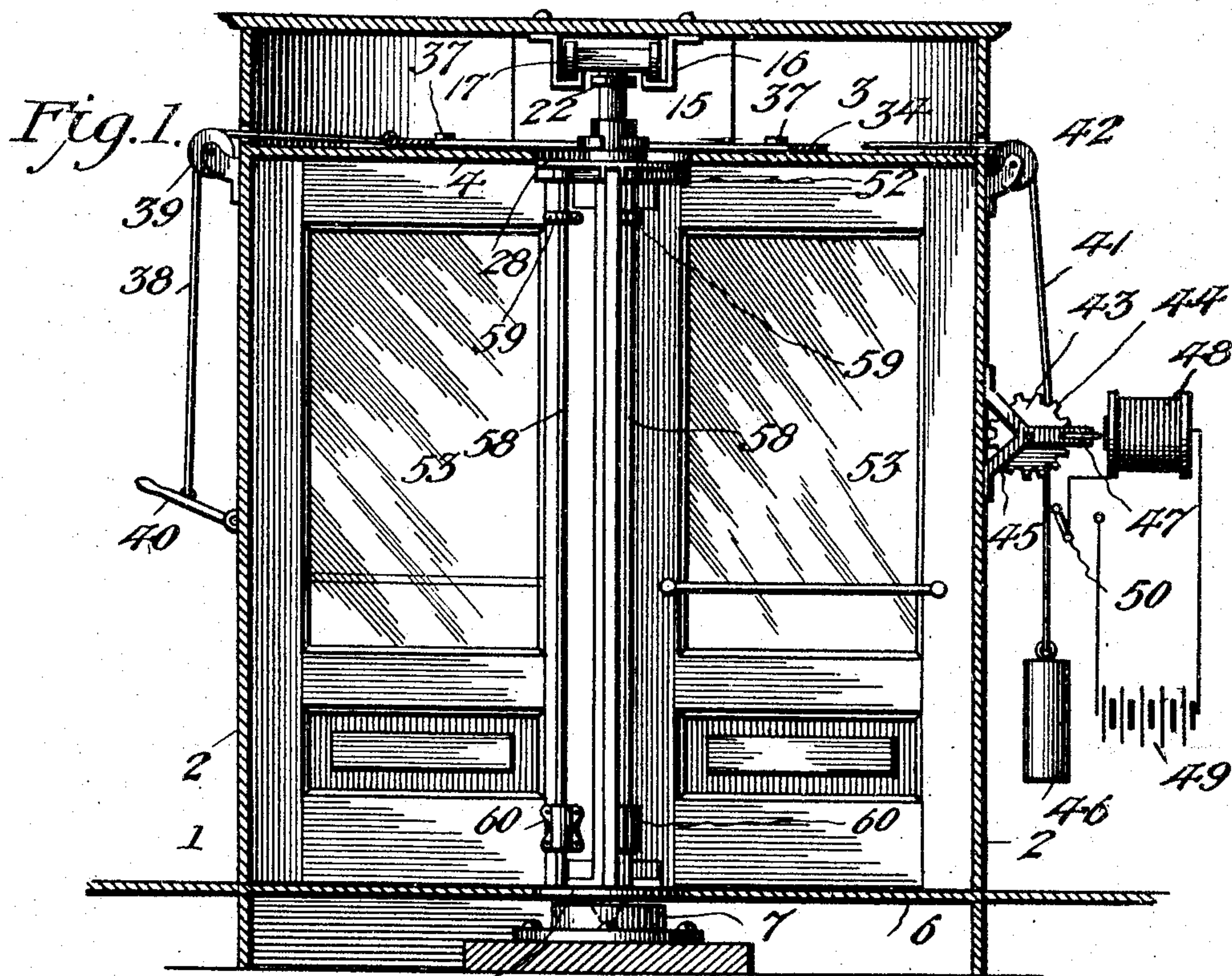
No. 780,906.

PATENTED JAN. 24, 1905.

H. J. NUMRICH.
REVOLVING DOOR.

APPLICATION FILED APR. 13, 1904.

3 SHEETS—SHEET 1.



Inventor

Harry J. Numrich,

By

Victor J. Evans

Attorney

Witnesses

Geo. A. C. M. C. M.
Hubert D. Lawson.

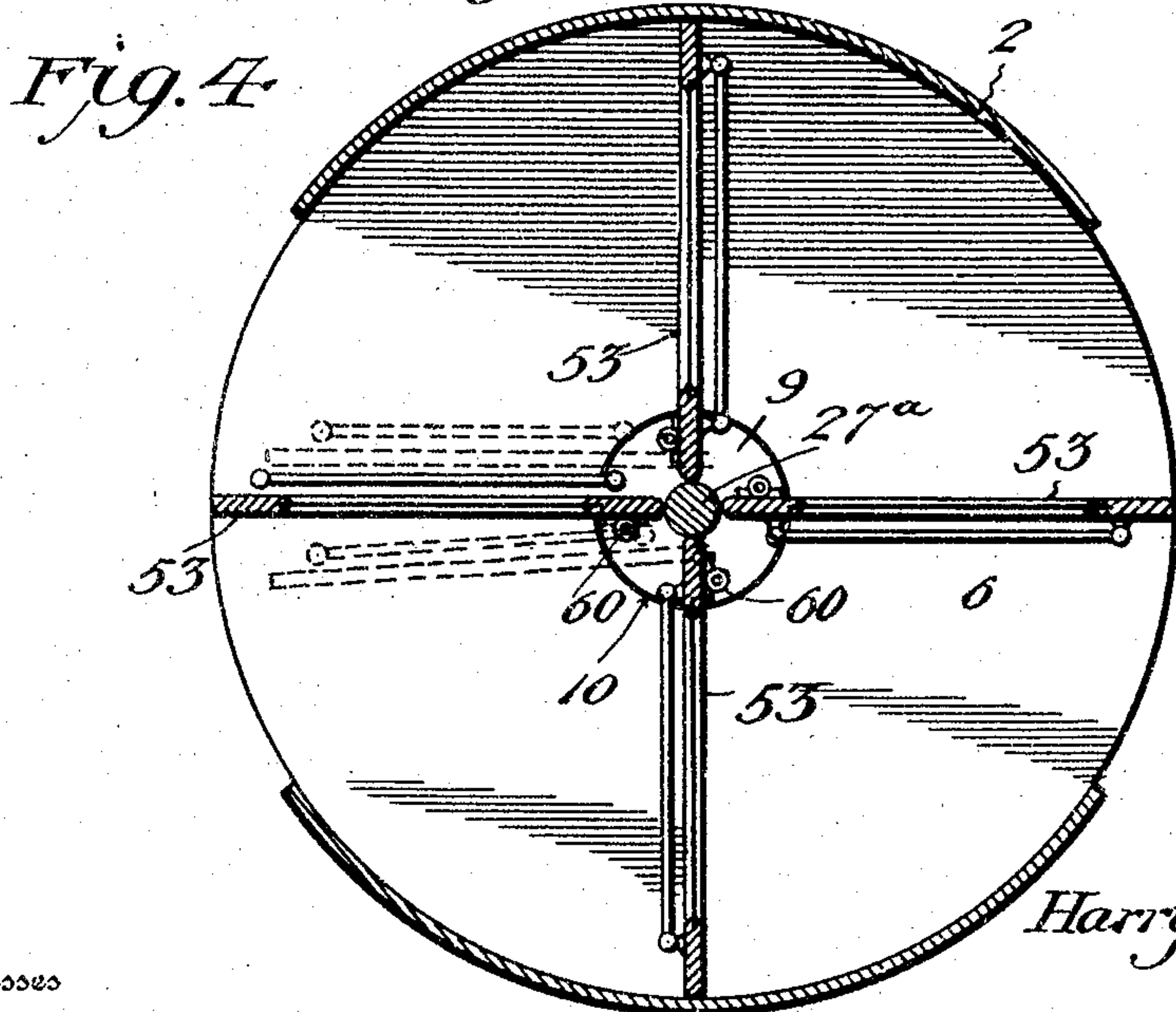
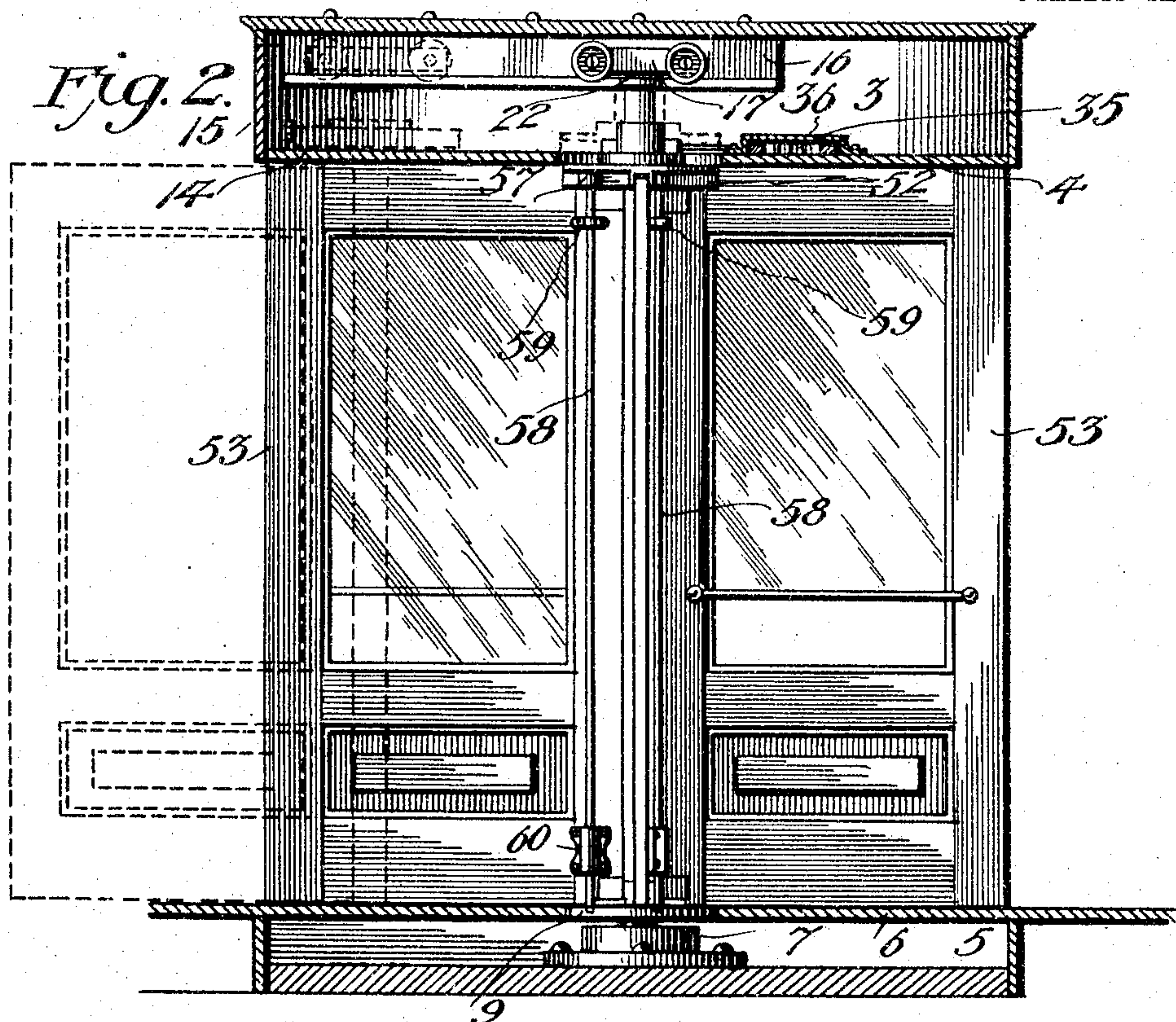
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3 SHEETS—SHEET 2.



Inventor
Harry J. Numrich,

Witnesses

Geo. Ackman Jr.
Herbert Dawson.

By

Victor J. Evans
Attorney

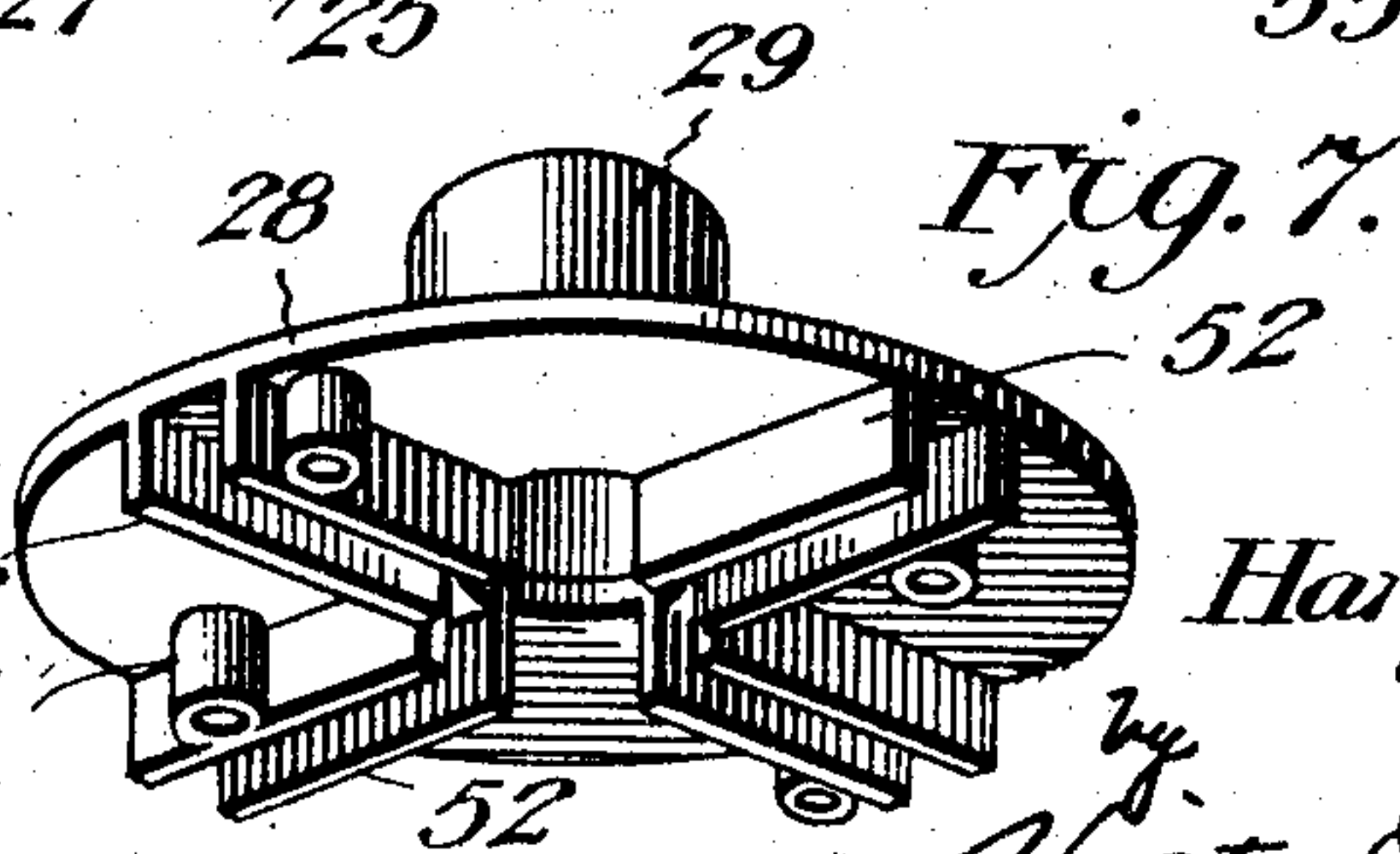
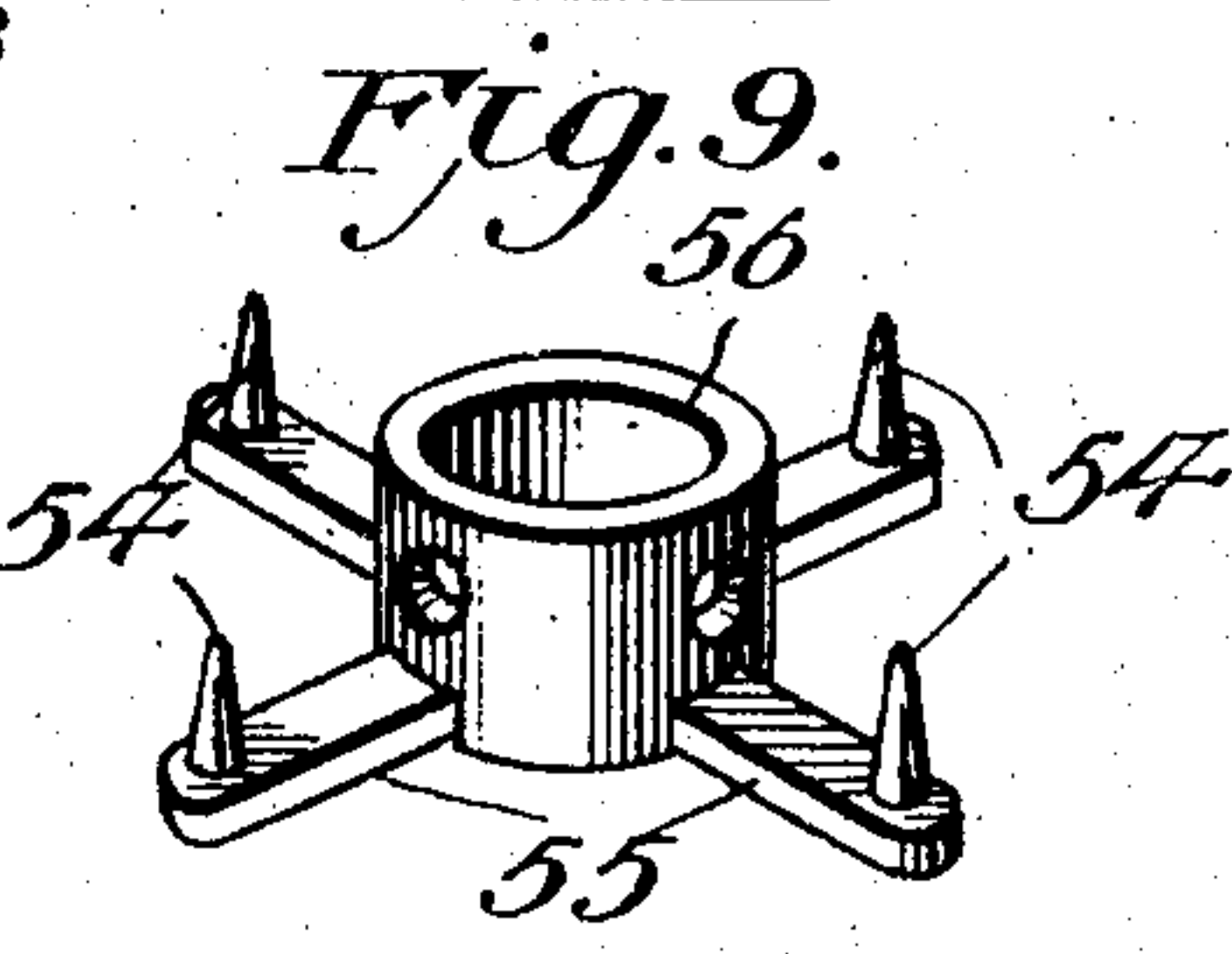
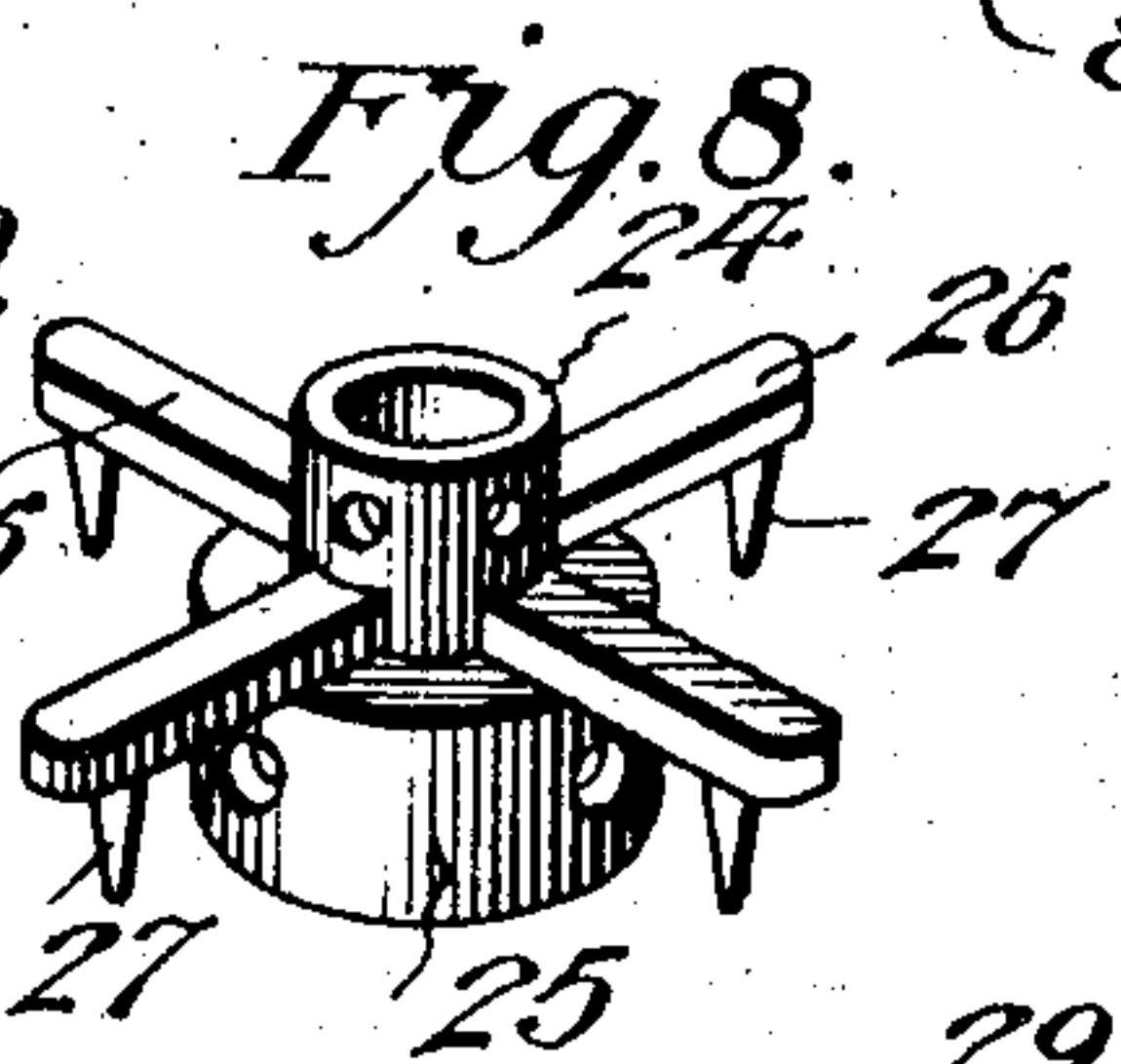
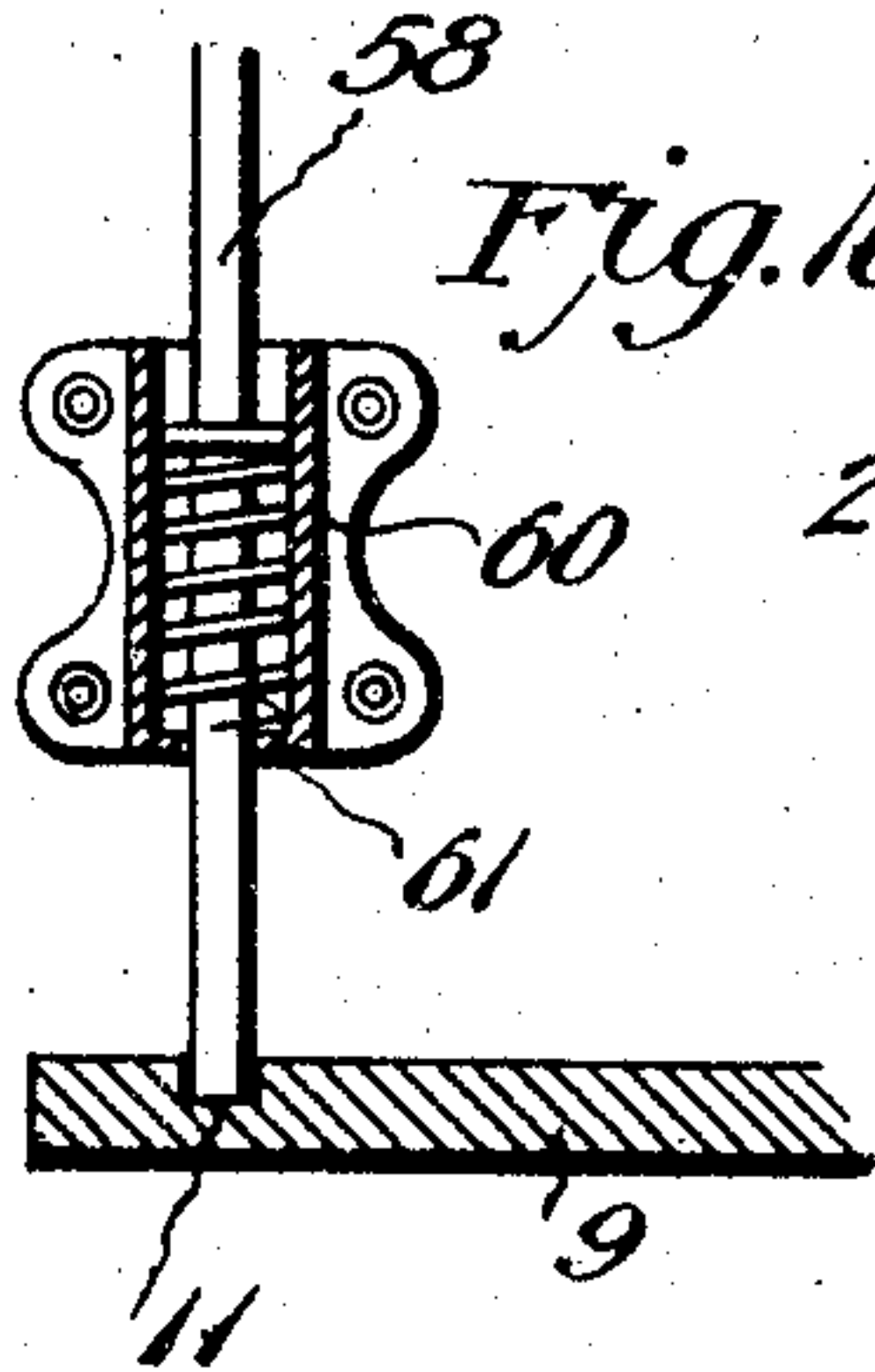
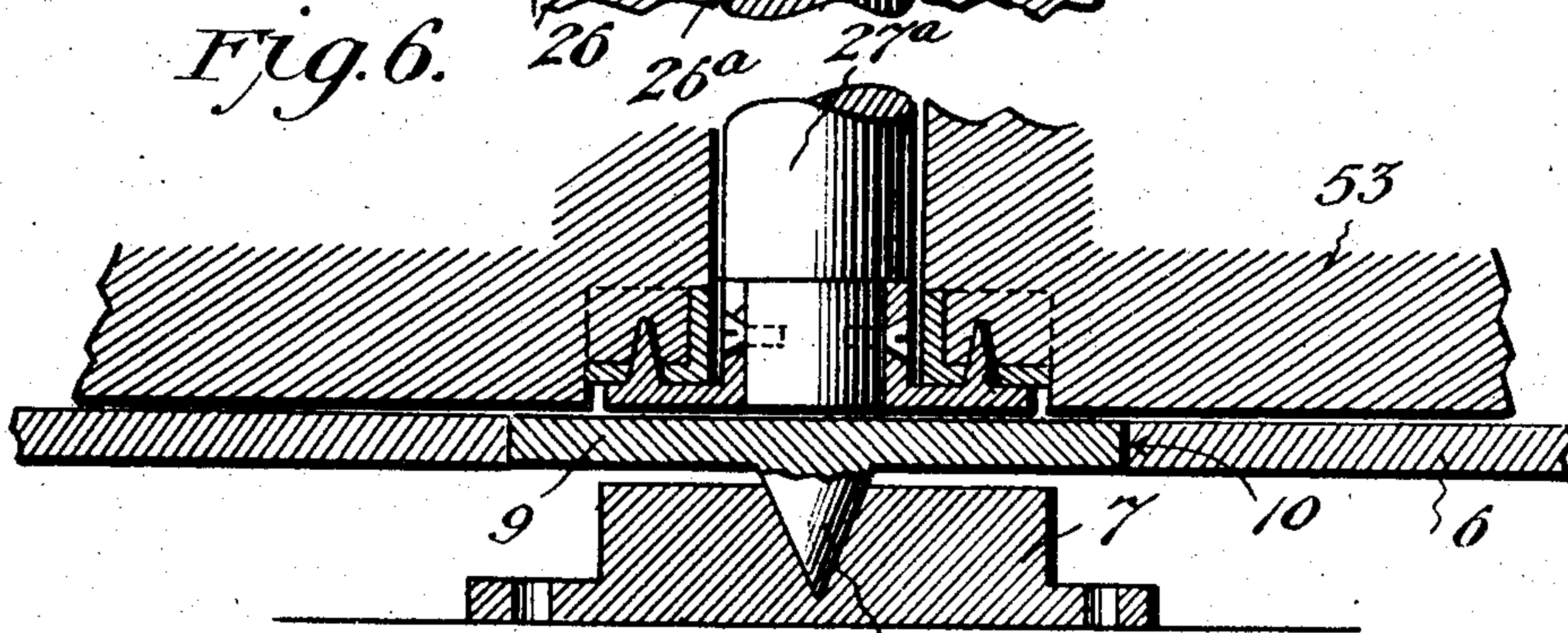
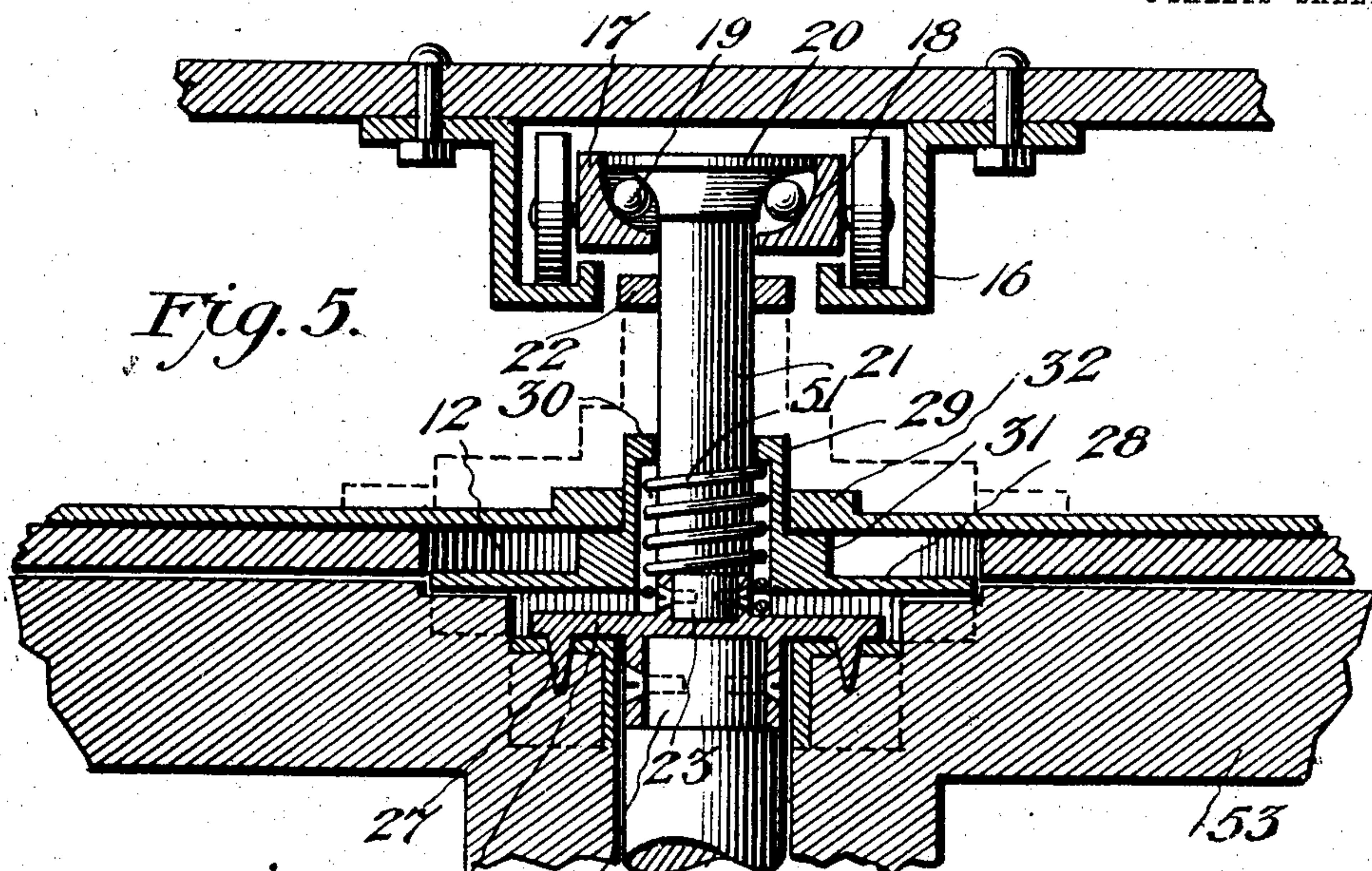
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3 SHEETS—SHEET 3.



Witnesses

Geo. Ackerman
Arthur D. Lawson

Inventor

Harry J. Numrich,

by *Victor J. Evans*
Attorney

UNITED STATES PATENT OFFICE.

HARRY J. NUMRICH, OF MINNEAPOLIS, MINNESOTA.

REVOLVING DOOR.

SPECIFICATION forming part of Letters Patent No. 780,906, dated January 24, 1905.

Application filed April 13, 1904. Serial No. 203,049.

To all whom it may concern:

Be it known that I, HARRY J. NUMRICH, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Revolving Doors, of which the following is a specification.

My invention relates to new and useful improvements in revolving doors; and its object is to provide doors with means whereby the same may be automatically disconnected, so as to permit them to be swung independently in any direction, thereby permitting rapid exit of persons in the event of a panic or in any other emergency.

Another object is to provide means whereby the revolving doors can be speedily removed from the exit, if so desired, without injury to them.

With the above and other objects in view the invention consists of a revoluble spindle to which are hinged doors, and this spindle and the doors are located directly above a revoluble base. The doors are locked to the base by spring-pressed rods, which are seated in a cap having grooves therein for the reception of the upper edges of the doors, thereby holding said doors against independent movement. The cap is spring-pressed and is held in position upon the doors by means of latches. The spindle and the parts connected thereto are supported from a truck which is mounted on a track within the ceiling of the exit and which extends to an outlet.

The invention also consists of means for automatically releasing the latches from the cap, thereby permitting said cap and the locking-rods to spring upward automatically and releasing the dogs therefrom. The doors are thus permitted to swing in any direction independently of each other and, if desired, can be moved from the exit by sliding the truck upon its track.

The invention also consists of the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a central transverse section

through an exit having my improved revolving door therein, said door being shown in elevation. Fig. 2 is a central longitudinal section therethrough, showing the door in elevation and showing in dotted lines a position to which the door can be moved subsequent to its release from the cap. Fig. 3 is a horizontal section through the ceiling of the exit. Fig. 4 is a horizontal section through the exit and door. Fig. 5 is an enlarged vertical transverse section through the upper portion of the door and the parts connected thereto. Fig. 6 is a similar view through the lower portion of the door and its support. Fig. 7 is a perspective view of the cap detached. Figs. 8 and 9 are detail views of the hinges of the door, and Fig. 10 is an elevation of the lower portion of one of the locking-rods and showing its spring-casing in section.

Referring to the figures by numerals of reference, 1 is an exit having curved side walls 2, which are concentric with the center thereof, and a compartment 3 is formed above the ceiling 4 and another compartment 5 is formed below the exit-floor 6. Arranged within the compartment 5 at the center thereof is a bar 7, in the center of which is revolubly mounted a tapered lug 8, which extends downward from the center of a circular base-plate 9, which is revolubly mounted within an aperture 10, formed in the floor 6 at the center of the exit. This base-plate 9 has a series of recesses 11 in its upper face which are spaced apart at regular intervals and are located adjacent the periphery of the plate. A circular aperture 12 is formed in the ceiling 4 at the center of the exit, and extending from one side of this aperture to the front of the exit is a slot 13, which is normally closed by a slide 14. A door 15 closes the front of the compartment 3, and when in such position retains the slide 14 in position in the slot 13. Depending from the top of compartment 3 and extending above the aperture 12 and slot 13 are parallel angle-irons 16, which form a track for a truck 17. This truck has a recess 18 therein, in which are arranged balls 19, which form bearings for a cone 20, located at the upper end of a rod 21. A collar 22 is secured to the rod 21 adjacent truck 17 and the lower end

of the rod is reduced in diameter, as shown at 23, and projects into and is secured to a collar 24, which extends upward from the center of a sleeve 25. Arms 26 extend laterally from collar 24 at right angles to each other and have downwardly-projecting pintles 27. Sleeve 25 overlaps the reduced end 26^a of a spindle 27^a, which is substantially equal in length to the distance between the floor and the ceiling of the exit.

A circular cap 28 is slidably mounted on the rod 21 and has a tubular extension 29, provided with an inwardly-extending flange 30, which loosely bears upon the rod 21. The tubular extension 29 is stepped to form an annular shoulder 31, which normally contacts with oppositely-arranged yokes 32, formed at the inner ends of sliding latches 33. L-shaped arms 34^a are formed at the outer ends of these latches, and the ends thereof overlap and are toothed to form racks 34, which engage opposite sides of gears 35. These gears are journaled between the ceiling 4 and an angular plate 36 secured thereon, and said plate also forms a guide for the racks 34. Rollers 37 are employed for guiding the latches 33. A cable 38 extends from one of the latches 33 through one side of compartment 3 and over a pulley 39 to an operating-lever 40, and another flexible strip 41 extends from the other latch 33 through one side of compartment 3 and over a pulley 42. This strip 41 is wound about a pulley 43, to which is secured a gear 44, journaled in a bracket 45, and a weight 46 is connected to the free end of strip 41. A sliding pin 47 normally engages the gear 44 and forms the armature of a magnet 48, which is included within a circuit with a source 49 of electricity. A switch 50 is employed for completing the circuit from the source through the magnet.

A spring 51 is mounted upon the rod 21 and is inclosed by the tubular extension 29 of cap 28. This spring is normally compressed and tensioned, and the ends thereof bear on the flange 30 and the arms 26, respectively. Parallel flanges 52 extend from the center of the periphery of the lower face of cap 28 and are spaced apart sufficient distances to receive the upper edges of doors 53. The lower edges of these doors are mounted on pintles 54, extending upwardly from laterally-projecting arms 55, which extend from the sleeve 56, secured to the lower end of spindle 27^a. The doors are mounted on the pintles 27 and 54 and, as is obvious, are prevented from swinging independently of each other by the flanges 52 on the cap 28. Secured to the cap adjacent each pair of flanges 52 is a tubular extension 57, and these extensions receive rods 58, which are slidably mounted on the doors 53, adjacent the inner edges thereof. The lower ends of these rods project into the recesses 11 in base 9, and therefore said base is caused to rotate with the doors and prevents

lateral movement thereof. Guide-straps 59 are secured upon the doors for the purpose of holding the rods 58 thereto, and casings 60 are also secured to said doors and extend over the rods. In each casing is arranged a coiled spring 61, which is normally tensioned and exerts an upward pressure on the rod 58.

When the parts are in the positions above described, it will be understood that the doors will rotate in the manner of ordinary revolving doors. In the event of a panic or other emergency where it is deemed advisable to clear the exit, so as to permit persons to speedily pass therethrough, the doors can be quickly detached either manually or automatically. To automatically detach them, it merely becomes necessary to complete the circuit from the source 49 to magnet 48 by means of the switch 50. Armature 47 is then attracted to the magnet and releases the gear 44. Weight 46 will then draw the strip 41 downward and will pull the latch 33, to which it is connected, so as to remove its yoke 32 from position above the shoulder 31 of cap 28. This movement of the latch 33 will cause a corresponding movement of the other latch, motion being transmitted thereto through the racks 34. As soon as the yokes 32 are removed from position above the shoulder 31 the tensioned spring 51 will press the cap 28 upward and remove flanges 52 from engagement with the upper edges of doors 53, and the tubular extensions 57 will at the same time be withdrawn from rods 58. Springs 61 will also expand and raise rods 58 from engagement with recesses 11 and base 9. The doors 53 are then free to be swung in any direction independently of one another. Should it be desired to entirely remove the doors from the exit, door 15 can be opened and the truck 17 moved longitudinally on its track 16, thereby carrying rod 21 along the slot 13 and bringing the doors and the parts connected thereto out between the front ends of the side walls 2. In Fig. 4 I have shown in dotted lines the positions the doors may assume when detached from their holding devices, and in Fig. 2 I have shown by dotted lines the position the doors may assume while being withdrawn from the exit. In Fig. 3 I have shown in dotted lines the positions of the retracted latches 33, and in Fig. 5 dotted lines have been utilized to illustrate the position of the cap when raised from engagement with the doors. To release the doors manually, it is merely necessary to pull downward on lever 40, when the operation above described will be repeated.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing any of the advantages thereof, and I there-

fore reserve the right to make such changes as fairly fall within the scope of my invention.

Having thus described the invention, what is claimed as new is—

1. The combination with a spindle having doors hinged thereto; of a spring-pressed cap upon the spindle and normally engaging the doors, and means for locking the cap in engagement with the doors.

2. The combination with a revoluble spindle having doors hinged thereto; of a spring-pressed cap slidably mounted upon the spindle and engaging the doors, means for locking the cap in engagement with the doors, a revoluble base, and spring-controlled locking devices upon the doors and engaging the base.

3. The combination with a revoluble spindle, a support therefor, and doors hinged to the spindle; of a cap slidably mounted above the spindle and normally engaging the doors, means for automatically raising the cap from engagement with the doors, latches for holding the cap upon the doors, and means for simultaneously retracting the latches from the cap.

4. The combination with a revoluble spindle, a support therefor, and doors hinged to the spindle; of a cap slidably mounted above the spindle, flanges depending from the cap and adapted to overlap the doors, means for automatically raising the cap and flanges from the doors, retaining-latches normally engaging the cap to lock the same upon the doors, and means for retracting the latches simultaneously.

5. The combination with a revoluble spindle, a support therefor, and doors hinged to the spindle; of a revoluble base below the spindle and doors, spring-pressed rods connected to the doors and adapted to engage the base, a cap slidably mounted above the spindle and adapted to engage the doors and rods, means for automatically raising the cap to release the doors and rods, and latches for holding the cap upon the doors and rods.

6. The combination with a revoluble spindle, a support therefor, and doors hinged to the spindle; of a revoluble base below the spindle, rods slidably mounted upon the doors and adapted to engage the base, means for automatically releasing the rods from the base, a cap slidably mounted above the spindle, flanges thereon for engaging the doors, extensions thereon for engaging the rods, means for automatically releasing the cap from engagement with the doors and rods, and retaining-latches normally overlapping the cap.

7. The combination with a revoluble spindle, a support therefor, and doors hinged to the spindle; of a revoluble base below the spindle, rods slidably mounted upon the doors and adapted to engage the base, means for automatically releasing the rods from the base, a

cap slidably mounted above the spindle, flanges thereon for engaging the doors, extensions thereon for engaging the rods, means for automatically releasing the cap from engagement with the doors and rods, retaining-latches normally engaging the cap, and means for simultaneously retracting the latches from the cap to release the same.

8. The combination with a truck, a revoluble spindle supported therefrom, and doors hinged to the spindle; of a revoluble base-plate below the spindle, rods slidably mounted upon the doors and adapted to engage the base-plate, means for automatically retracting the rods from the plate, a spring-pressed cap adapted to bear upon the rods and hold them in engagement with the base-plate, and means for locking the cap upon the rods.

9. The combination with a truck, a revoluble spindle supported thereby, and doors hinged to the spindle; of a revoluble base-plate, rods slidably mounted upon the doors and adapted to engage the base-plate, means for automatically retracting the rods from the plate, a cap adapted to engage the doors and hold the rods in engagement with the plate, a spring for automatically releasing the cap from the doors and rods, and retaining means for the cap.

10. The combination with a truck, a revoluble spindle supported thereby, and doors hinged to the spindle; of a revoluble base-plate, rods slidably mounted upon the doors and adapted to engage the base-plate, means for automatically retracting the rods from the plate, a cap adapted to engage the doors and hold the rods in engagement with the plate, a spring for automatically releasing the cap from the doors and rods, latches normally engaging the cap to hold it upon the doors and rods, and means for simultaneously retracting the latches from the cap.

11. The combination with an exit comprising oppositely-disposed side walls, and a slotted ceiling; of a truck mounted above the ceiling, a rod revolvably mounted therein and adapted to travel within the slot, a revoluble stem connected to the rod and depending below the ceiling, doors hinged to the stem, a base-plate revolvably mounted in the bottom of the exit, rods slidably mounted upon the doors and adapted to engage the plate, means for automatically retracting the rods from the plate, a cap adapted to bear upon the rods and engage the doors, means for automatically raising the cap from the rods and doors, a latch for holding the cap in engaging position, and means for releasing the latch from the cap.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY J. NUMRICH.

Witnesses:

FRANK A. ZIEGELMAIER,
D. R. THOMAS.