

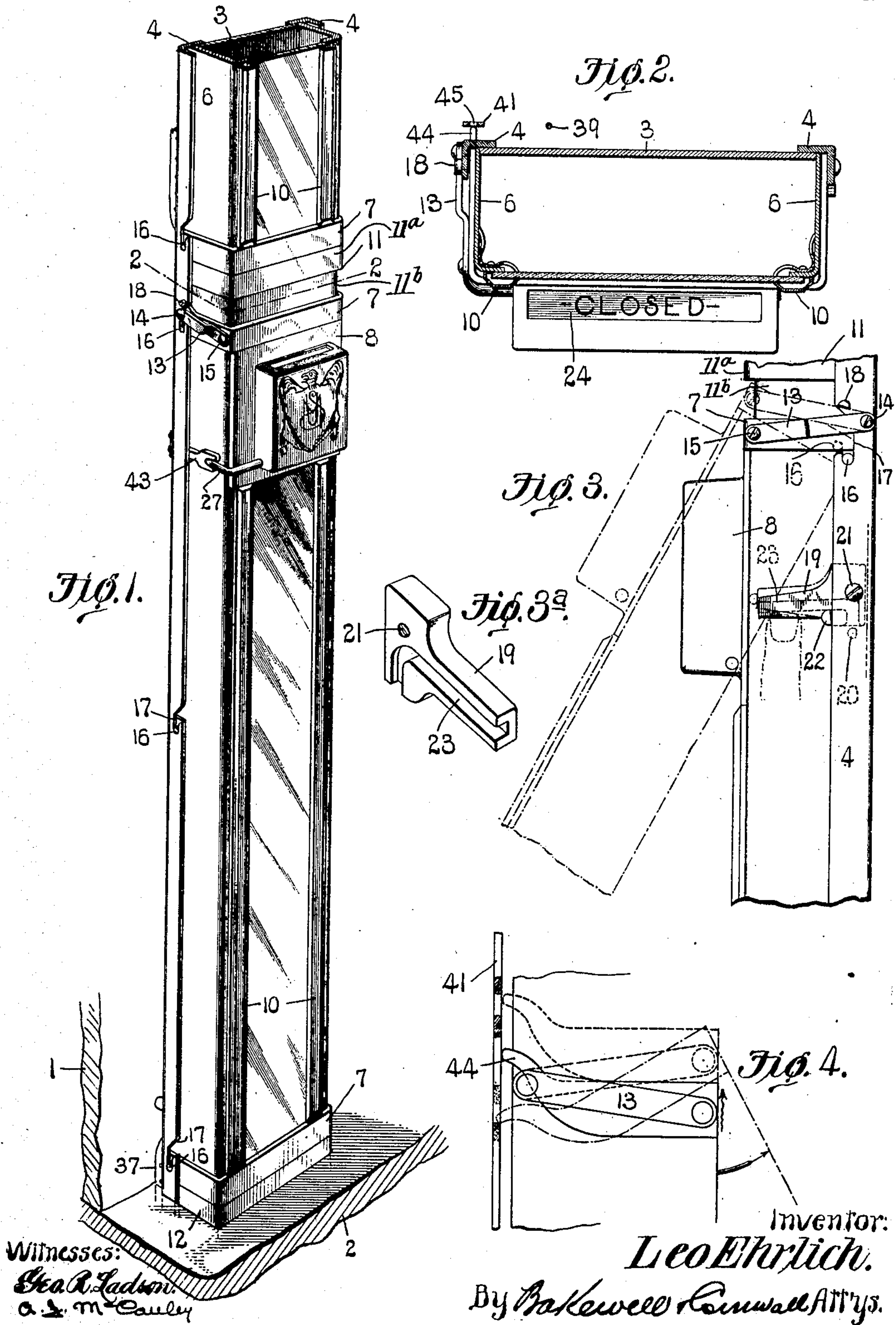
L. EHRLICH.
MAIL CHUTE.

APPLICATION FILED AUG. 10, 1907.

913,113.

Patented Feb. 23, 1909.

3 SHEETS—SHEET 1.



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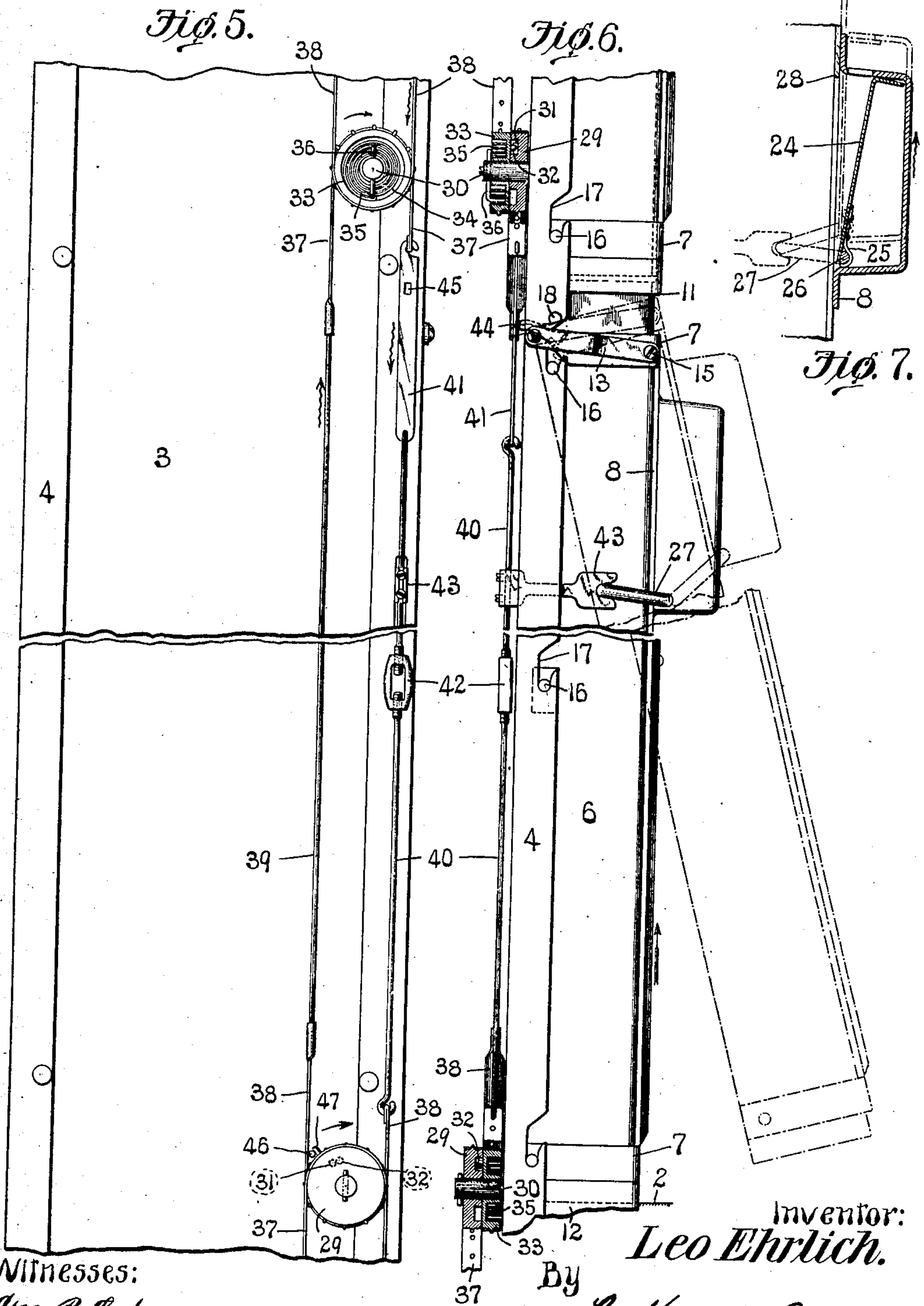
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 11.

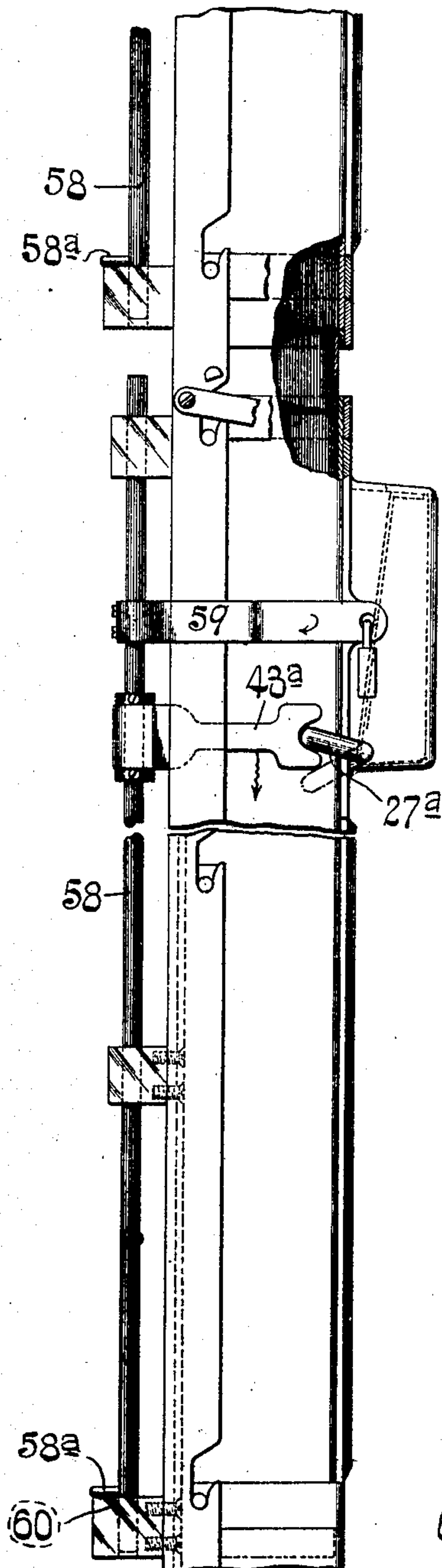


Fig. 9.

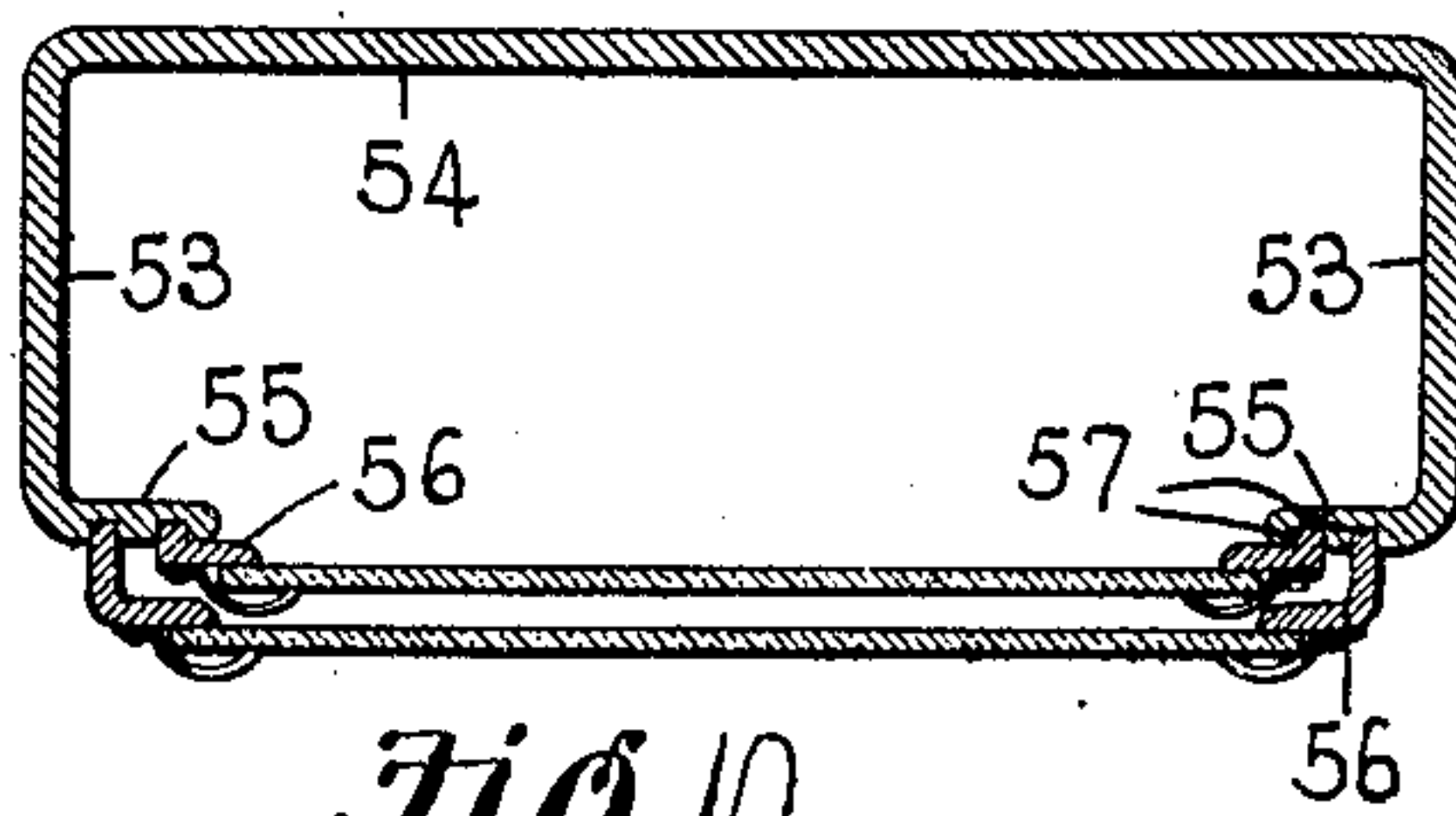
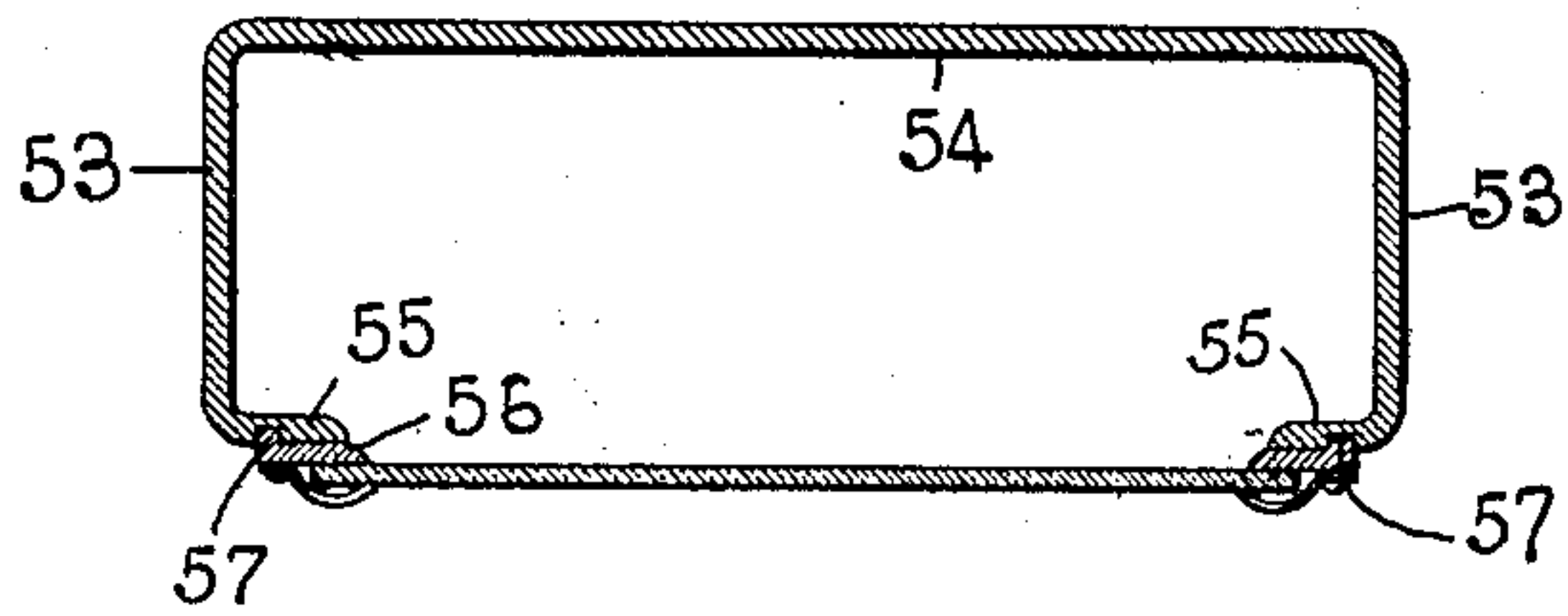


Fig. 10.

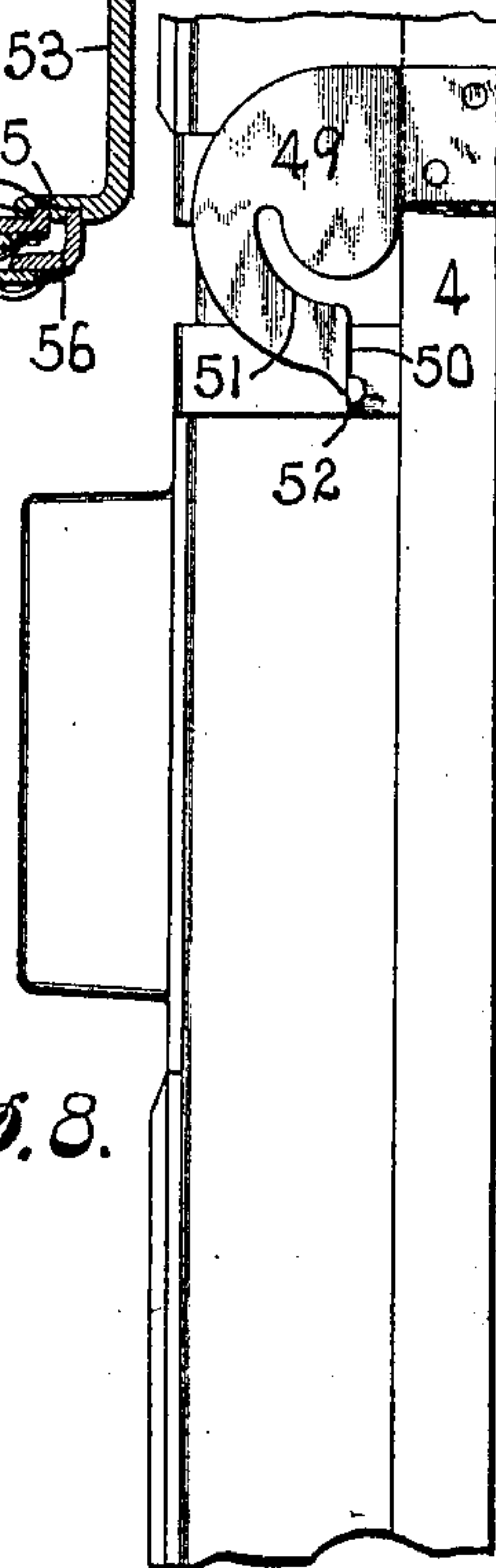
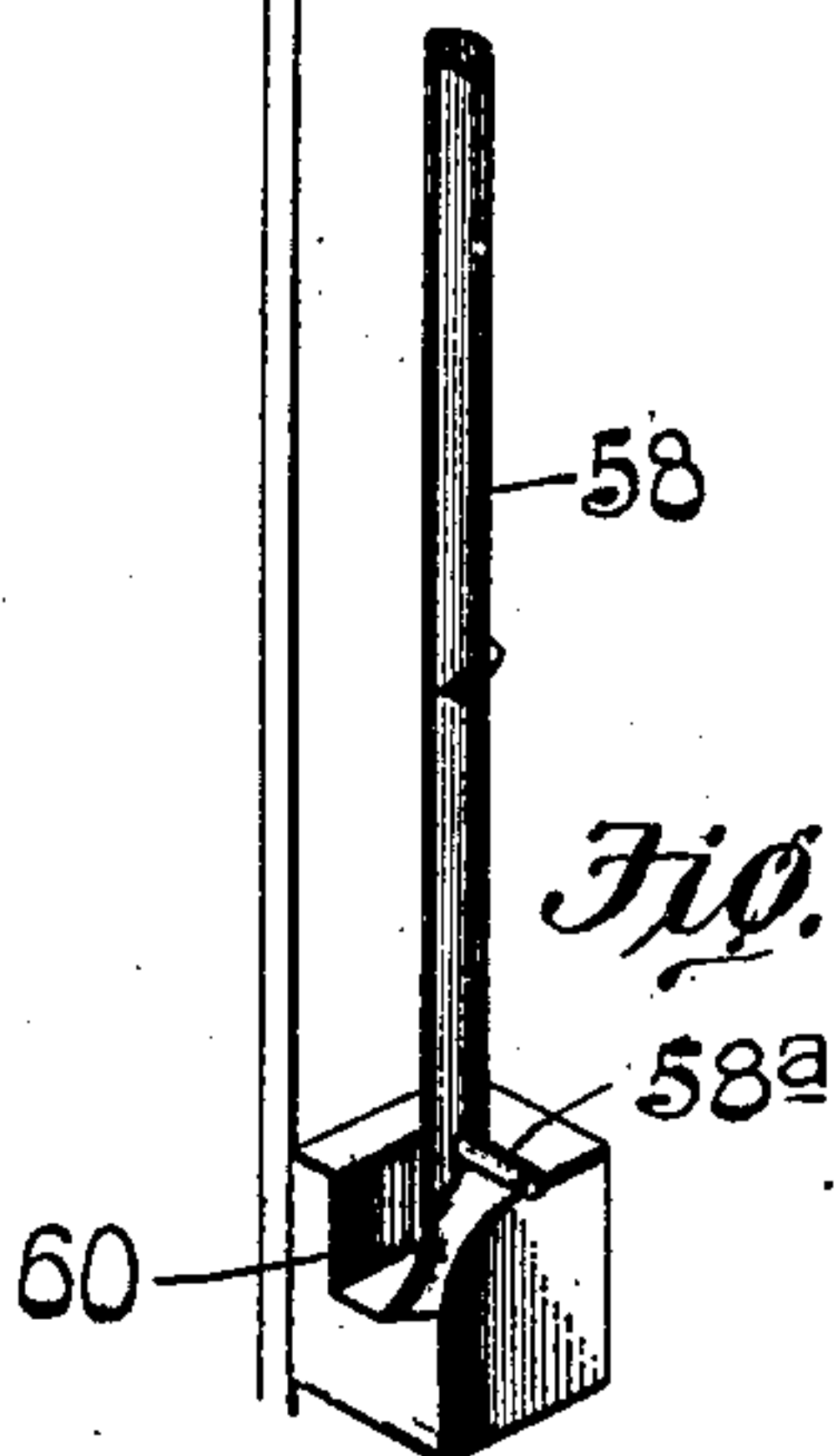


Fig. 8.

Fig. 12.



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UNITED STATES PATENT OFFICE.

LEO EHRLICH, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNITED STATES MAIL CHUTE EQUIPMENT COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

MAIL-CHUTE.

No. 913,113.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed August 10, 1907. Serial No. 388,006.

To all whom it may concern:

Be it known that I, LEO EHRLICH, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Mail-Chutes, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view, partly broken away, illustrating my improved mail chute; Fig. 2 is a horizontal sectional view taken approximately on the line 2—2 of Fig. 1; Fig. 3 is a fragmentary side elevation; Fig. 3^a is a detail view of the pivoted arm for holding one of the sections of the chute in position when it is swung outwardly to give access to the interior; Fig. 4 is a diagrammatic view of a portion of the means for closing the mail aperture gates; Fig. 5 is a fragmentary rear elevation; Fig. 6 is a fragmentary side elevation; Fig. 7 is a vertical sectional view illustrating a portion of the means for closing the mail aperture gates; Fig. 8 illustrates a modified form of the hinge at one end of the chute sections; Figs. 9 and 10 are horizontal sectional views showing modified forms of the tubular chute; and Figs. 11 and 12 are views of a modified form of mail chute.

This invention relates to new and useful improvements in mail chutes for public buildings, the object being to construct a chute in such a manner that the different sections composing the tube may be manipulated to give access to the interior of the tube.

Another object is to provide a mail chute in which all of the mail apertures above a section that is manipulated to give access to the interior are automatically closed, while the mail apertures below said section remain open.

With the above-mentioned principal objects in view, the invention consists in the construction, arrangement and combination of the several parts, all as will be hereinafter described and afterwards pointed out in the claims.

In the drawings, 1 indicates the vertical wall of a building, and 2 one of the floors thereof.

Referring to Figs. 1 to 6, the tube sections of my mail chute consist of a back plate 3 which is preferably composed of pieces of sheet metal cut in appropriate lengths and connected together so as to extend practically throughout the length of the chute. This back plate may be flanged at its side edges, or provided with angles 4 at this point, as shown in the drawings. The back plate 3 is secured by suitable fastening devices to the vertical wall of the building in such a manner as to provide a space between said back plate and the vertical wall of the building. Each tube section consists, in addition to the back plate 3, of two angles 6 constituting the side walls of the tube and a portion of the front wall, the latter being made up principally of glass panels through which the condition of the tube may be seen. The angles 6 may be made up by forming a flange along one edge (the forward) of a sheet metal plate, as shown in Fig. 2. These angles are connected together at their upper and lower ends by means of straps 7 riveted or otherwise secured thereto. In addition to the straps 7 the angles have secured to them a plate 8 which contains the mail-receiving apertures and the frames 10 in which the glass panels are mounted. When it is desired to have more than one section of the tube between the floors of the building, a band 11 is secured to the back plate 3 intermediate the floors. The lower end of the upper section is located inside of an enlarged portion 11^a of the band 11 and the adjacent end of the lower section surrounds the lower end 11^b of said band. Bands 12 are secured to the back plate 3. These bands extend through the floors of the building and are practically duplicates of the bands 11. Links 13 are pivoted at 14 to the flanges 4 and pivoted at 15 to the side walls of the tubular section. Pins 16 are secured to the side walls of the tubular section and coöperate with slots 17 formed in the flanges 4. The means for locking the tube section composed of the front and two side walls in its normal position are the slot and pin connection just described, the pivoted links 13 and the bands 11 or 12, the lower end of said section being located inside of the latter. If desired, suitable provision could be made, and a padlock employed for locking this section in its normal position. When it is desired to obtain access

to a point at the interior of the chute the tube section at this point is raised manually until the pivoted links 13 engage the stops 18. Pins 16 will then be located at the open end of the slots 17, the lower end of the tube section is free from the band 12, and the said section may be swung outwardly. When the section is in its outward position the pins 16 at the top of the section rest upon the flanges 4 at the ends of the slots 17, as shown by dot and dash lines in Fig. 3.

Referring to Figs. 3 and 3^a, the tube section is held in its outward position by means of an arm 19 which coöperates with a pin 20. The arm 19 is pivoted at 21 to one of the flanges 4, and the pin 20 is secured to the side wall of the tube section. This arm 19 is provided with a lug 22 which normally engages the edge of the flange 4, and a slot 23 is formed on the inner face of the arm, as shown in Figs. 3 and 3^a. In the normal position of the parts, the pin 20 is in alinement with the vertical portion of the slot 23. When the tube section is raised and swung outwardly the pin 20 enters and passes through the slot 23. This action causes the arm 19 to rise slightly. When the pin 20 leaves the slot 23 the arm 19 falls to its normal position and prevents a return movement of said pin. When it is desired to restore the tube section to its normal position, the arm 19 is raised to bring the slot 23 into alinement with the pin 20. This slot and pin arrangement guides the movable tube section on its return movement so that the pins 16 will be brought into alinement with and enter the slots 17.

Referring to Fig. 7, the plate 8, in which is formed the mail-receiving apertures, has an offset which constitutes a housing for a gate 24, which gate is substantially in the form of an inverted L in cross section. The short leg of the gate is designed to move across and close the mail-receiving opening or be contained in the housing out of the way of the mail. This gate has leaf springs 25 secured to its front face, the lower free edges of which springs engage a rod 26 constituting a pivot rod for the gate. Rod 26 has a flattened face against which the gate is held by the springs 25. One end of the rod 26 extends outside the housing and is provided with a crank 27 by which rod 26 may be rocked and with it the gate 24 to its open and closed positions. When the gate is moved to its closed position it engages the edge 28 of the front wall of the tube section. If the crank 27 were moved too far on the stroke for closing the mail apertures, the springs 25 would yield and allow the rod 26 to rotate independently of the gate 24 after said gate has moved to its closed position. This is an advantage in my present invention since an accurate

adjustment of the means for moving the crank 27 is unnecessary.

Means for mechanically operating all of the gates is shown in Figs. 4 to 7. 29 indicates a sprocket wheel loosely mounted on a stud 30 which stud is secured to the back plate 3, see Fig. 6. An annular recess is formed in one side of the sprocket wheel 29, and a pin or lug 31 is secured thereto in this recess. The pin 31 is normally in engagement with a pin 32, which latter is secured to a sprocket wheel 33. The sprocket wheel 33 is loosely mounted on the stud 30 and is provided with an annular recess 34. A helical spring 35 is arranged in this recess 34 and has its inner end secured to the sprocket wheel 33, the outer end of said spring being secured to a stationary pin 36. If the sprocket wheel 29 were rotated for a part of a revolution, in the direction indicated by the arrow, its pin 31 would engage the pin 32 and rotate the sprocket 33 in the same direction. However, if this rotary movement were first imparted to the sprocket 33 its pin 32 would leave the pin 31 and the sprocket 29 would remain stationary. A pair of sprocket wheels which coöperate in the same manner and correspond in construction to those shown at 29 and 33, is located adjacent the lower end of each hinged tube section. Flexible bands 37 are provided with perforations for engagement with the teeth on the sprocket wheels 29, and similar bands 38 coöperate with teeth of sprocket wheels 33. Bands 37 are connected at one end to bands 38 by wires or cables 39, the opposite ends of said bands being connected by cables 40 and plates 41. Each cable 40 is preferably provided with a turn buckle 42. The end of each crank 27 which controls the mail gates is normally located in the bifurcated end of an arm 43, the opposite end of said arm being fastened to one of the cables 40. When one of the tube sections is moved upwardly, the crank 27, being engaged by the then stationary arm 43, is rocked and closes the mail aperture in said section. When the section is restored to its normal position the crank 27 again engages the bifurcated end of arm 43 and the downward movement of the section restores the mail aperture to an open position.

The mechanism for closing all of the mail apertures above a tube section when said section is swung outwardly, is shown in Figs. 4, 5 and 6. A finger 44 projects rearwardly from the upper end of each section, see Fig. 6. When one of the sections is raised this finger 44 is brought into alinement with a hole 45 in the plate 41, as shown by dotted lines in Fig. 4. When the section is swung outwardly the finger 44 enters the hole 45 and pulls the

plate 41 downwardly. This downward movement of the plate 41 pulls the band 37 downwardly and rocks the sprocket 29 in the direction indicated by the arrow. It will be remembered that a rotation of the sprocket 29 in this direction will rotate the sprocket 33, and place the spring 35 under tension. The rotation of this sprocket 33 will impart a downward movement to all of the cables 40 above the moved section, the bifurcated arms which are carried by said cables 40 rocking the cranks 27 and thereby closing the mail apertures above the moved section. The sprocket 33 at the bottom of the moved section moved in the direction indicated by the arrow when said section swung outwardly, but it will be understood that the adjacent sprocket 29 remained stationary since the sprocket 33 is free to move in this direction without disturbing the sprocket 29. When the moved tube section is returned to its normal position the movement of the finger 44 allows the springs 35 to rotate the sprockets to their home position, and it will be obvious that this movement will restore the mail aperture gates which have been closed to their open position.

The return movement of the sprocket wheels is caused by the energy stored in the springs 35, but this movement is positively limited by a stop 46 which coöperates with pin 47, the latter being secured to one of said sprocket wheels. It is essential that one of these stops be provided at the lower end of the mail chute, and if desired they may also be located on the superposed sections.

If desired, the fingers 44 at the upper end of the tube sections may be removed and the mail aperture gates controlled by manually moving the bifurcated arm 43.

Fig. 8 illustrates a modified form of hinge which may be used in lieu of the pivoted links 13. This hinge comprises stationary members 49 secured to the flanges 4 on each side of the back plate. These members 49 are preferably located adjacent the upper end of each section and are provided with a vertical edge 50 which terminates at a curved slot 51. In the normal position of the parts, a pin 52, which is secured to the movable section, bears against the vertical edge 50. When the movable section is raised and swung outwardly, the pin 52 travels along the vertical edge 50 and passes into the curved slot 51.

In Figs. 9 and 10 I have illustrated modified forms of the tube section. In these modifications the tube comprises side walls 53 which are formed integral with a back plate 54 and have inturned flanges 55 at their outer end. The movable sections are composed of the glass panels and their frames 56, which frames are provided with

tongues 57 that coöperate with grooves in flanges 55. These movable sections are adapted to slide vertically and may be provided with a modified form of the mechanism herein shown for controlling the mail aperture gates.

In Figs. 11 and 12, I have shown a modified form of mail chute in which instead of a movable plate 41 there is a rotatable rod 58 on which the bifurcated arm 43^a is slidably mounted. The crank end 27^a of the closure for the aperture engages the bifurcated end of this arm 43^a. 59 is a locking hasp fixed to the rod 58 and by this hasp 59 the rod 58 is rotated. Rod 58 is provided with a pin 58^a at its lower end which engages a cam face 60 in one of the bearing blocks for the rod. Thus, as the rod 58 is rotated it is also moved in a vertical direction, and consequently the crank 27^a is rocked. Should it be desired at any time to close the aperture in any particular chute, it is only necessary to open the chute so as to enable the closure to be moved over the aperture and then close the chute, locating the crank 27^a beneath the lower end of arm 43^a, as shown in dotted lines. When the hasp arm 59 is locked it is obvious that the aperture in that particular section is locked in its closed position.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A mail chute having a mail-receiving aperture, a closure for said aperture, and means whereby the removal of a portion of said chute operates said closure; substantially as described.

2. A mail chute having mail-receiving apertures, closures for said apertures, and means whereby the removal of a portion of said chute operates said closures; substantially as described.

3. A mail chute having a movable section, mail-receiving apertures, closures for said apertures, and means for operating said closures controlled by the movable section; substantially as described.

4. A mail chute having a movable section, locking means for said movable section, mail-receiving apertures, closures for said apertures, and means for operating said closures controlled by the movable section; substantially as described.

5. A mail chute having a movable section, mail-receiving apertures, closures for said apertures, and means controlled by the movable section for operating the closures above said section; substantially as described.

6. A mail chute having movable sections, locking means for said movable sections, mail-receiving apertures, closures for said apertures, and means controlled by a mov-

able section for operating the closures above said section; substantially as described.

7. A mail chute having a movable section, a mail-receiving aperture, a closure for said aperture, and means controlled by said movable section for opening and closing said aperture and holding said closure in either position; substantially as described.

8. A mail chute having movable sections, mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being connected together, and means controlled by each movable section for operating the closures above said section; substantially as described.

9. A mail chute having movable sections, locking means for said movable sections, mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being connected together, and means controlled by a movable section for operating the closures above said section only; substantially as described.

10. A mail chute having movable sections, locking means for said movable sections, mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being connected together, and means controlled by a movable section for operating the closures above said section; substantially as described.

11. A mail chute having movable sections, mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being connected together, and means controlled by a movable section for opening and closing the apertures above said section and holding said closures in either position; substantially as described.

12. A mail chute having movable sections, mail-receiving apertures, closures for said apertures, and means controlled by the movable sections, whereby the mail-receiving apertures above a section moved out of its normal position are closed; substantially as described.

13. A mail chute having outwardly movable sections, mail-receiving apertures, closures for said apertures, and means controlled by the movable sections whereby the mail-receiving apertures above an outwardly moved section are closed; substantially as described.

14. A mail chute having movable sections, mail-receiving apertures, closures for said apertures, said closures being connected together, and means controlled by the movable sections whereby the mail-receiving apertures above a section only are closed when said section is moved out of its normal position; substantially as described.

15. A mail chute having mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being

connected together, and mechanical means whereby the closures above a horizontal plane may be operated independently of the closures below said plane; substantially as described.

16. A mail chute having mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being connected together, and mechanical means whereby the closures above a horizontal plane may be opened and closed independently of the closures below said plane; substantially as described.

17. A mail chute having mail-receiving apertures in different horizontal planes, closures for said apertures, said closures being yieldingly connected together, and means for simultaneously opening and closing a plurality of apertures above a horizontal plane independently of the closures below said plane and holding said closures in either position; substantially as described.

18. A mail chute having mail-receiving apertures, closures for said apertures, said closures being mechanically connected together by means whereby a plurality of said closures may be operated independently of the remaining closures; substantially as described.

19. A mail chute having mail-receiving apertures, closures for said apertures, said closures being mechanically connected together by means whereby a plurality of said closures may be opened and closed independently of the remaining closures; substantially as described.

20. A mail chute having mail-receiving apertures, closures for said apertures, and means comprising yielding members for connecting said closures together whereby a plurality of said closures may be operated independently of the remaining closures; substantially as described.

21. A mail chute having mail-receiving apertures, closures for said apertures, and independently operable mechanical connections between said closures; substantially as described.

22. A mail chute having mail-receiving apertures, closures for said apertures, and independently or collectively operable mechanical connections between said closures; substantially as described.

23. A mail chute having mail-receiving apertures, closures for said apertures, and mechanical means whereby a plurality of said closures may be operated simultaneously independently of the remaining closures; substantially as described.

24. A mail chute having a plurality of mail-receiving apertures, movable closures for said apertures, vertically movable members constituting connections between said closures, and means whereby a plurality of

said connections may be moved independently of the remaining connections; substantially as described.

25. A mail chute having mail-receiving apertures, movable closures for said apertures, and means for connecting said closures together, said means including cooperating members movable independently or collectively; substantially as described.

26. A mail chute having mail-receiving apertures, movable closures for said apertures, and means whereby the closures are yieldingly connected together, said means including cooperating members movable independently or collectively; substantially as described.

27. A mail chute having mail-receiving apertures, movable closures for said apertures, and means whereby the closures are connected together, said means including sprocket wheels movable independently or collectively; substantially as described.

28. A mail chute having mail-receiving apertures, movable closures for said apertures, and means whereby the closures are connected together, said means including connections between sprocket wheels, said connections being movable independently or collectively; substantially as described.

29. A mail chute having movable sections, mail-receiving apertures, movable closures for said apertures, means whereby the closures are connected together, said means including connections between sprocket wheels, which connections are movable independently or collectively, and means controlled by the movable sections for moving said connections; substantially as described.

30. A mail chute having movable sections, mail-receiving apertures, movable closures for said apertures, means whereby the clo-

sures are connected together, said means including connections between sprocket wheels, which connections are movable independently or collectively, and means carried by each movable section for operating the connections above said section; substantially as described.

31. A mail chute having a plurality of mail-receiving apertures, movable closures for said apertures, said closures being yieldingly connected together, and means for moving the connections independently or collectively; substantially as described.

32. In a mail chute, a section movable vertically and outwardly, and means for locking said section in its normal and outward positions; substantially as described.

33. A mail chute having a mail-receiving aperture, a closure for said aperture, a crank extending from said closure, and an arm having a bifurcation in one end for receiving said crank, said arm being capable of cooperation with said crank when said crank is not in engagement with said bifurcation; substantially as described.

34. A mail chute comprising, in combination, a support, a swinging chute section having a mail-receiving aperture, means for closing said aperture, means for locking said swinging chute section home, said locking means also cooperating with said closure to hold the same open or closed; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this sixth day of August 1907.

LEO EHRLICH.

Witnesses:

F. R. CORNWALL,
LENORE WILSON.