

No. 615,464.

Patented Dec. 6, 1898.

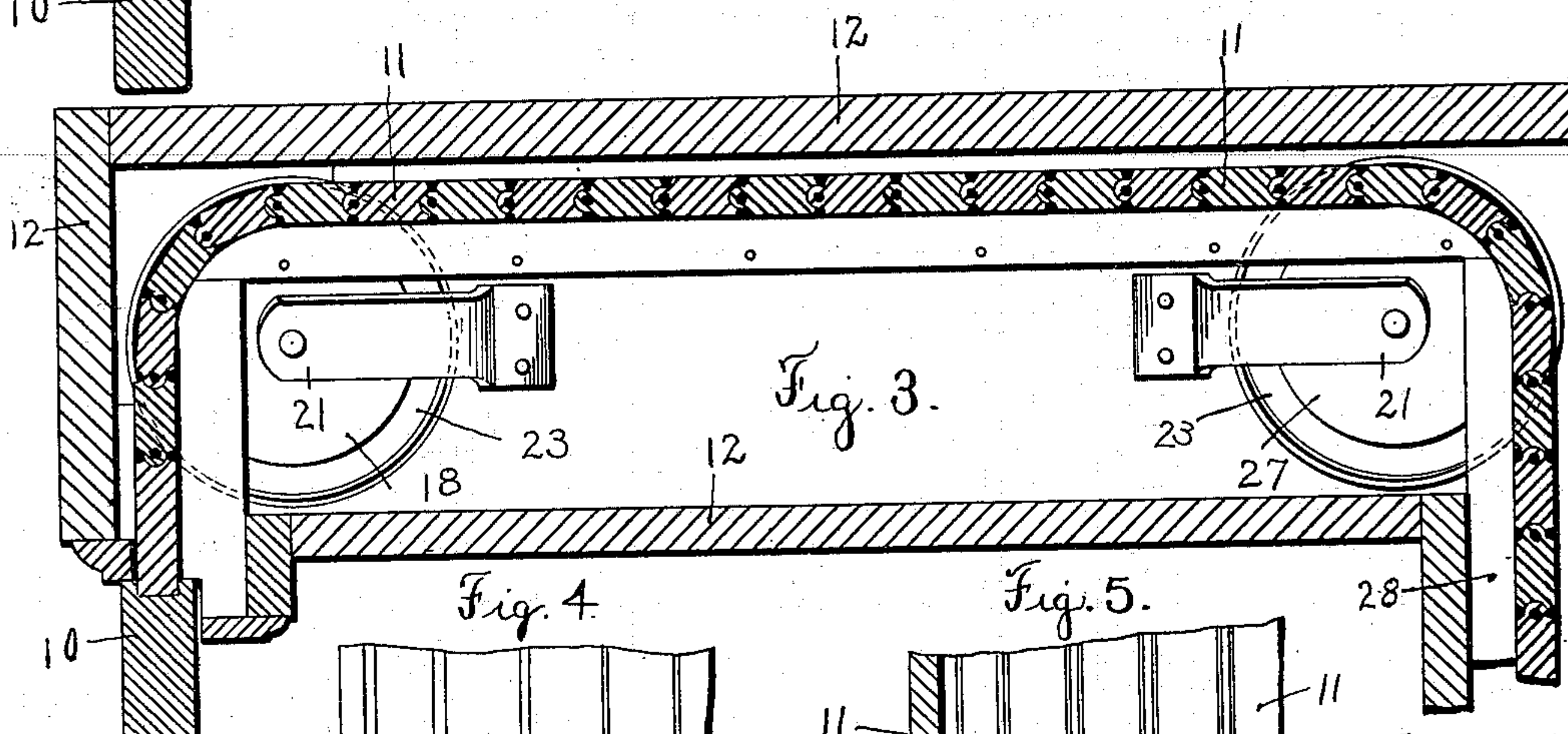
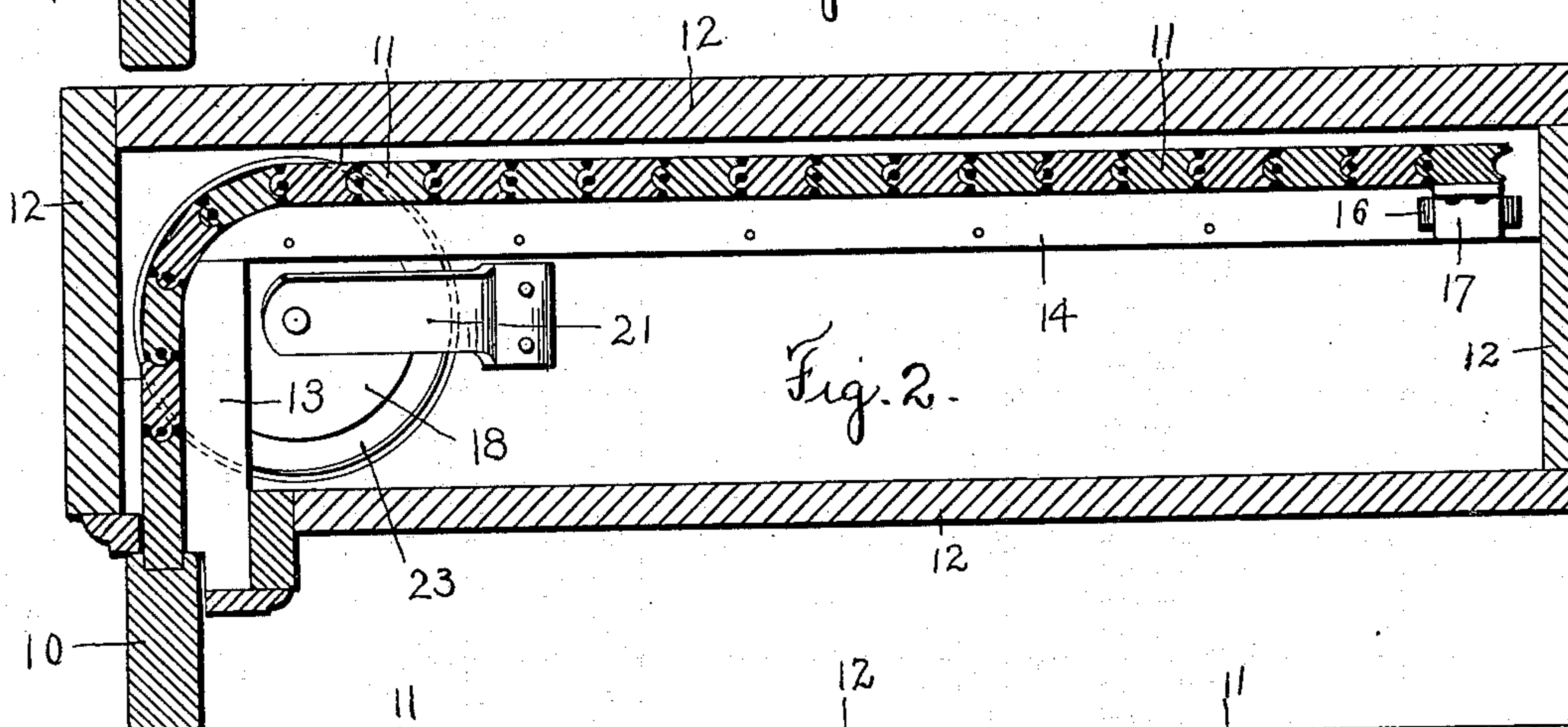
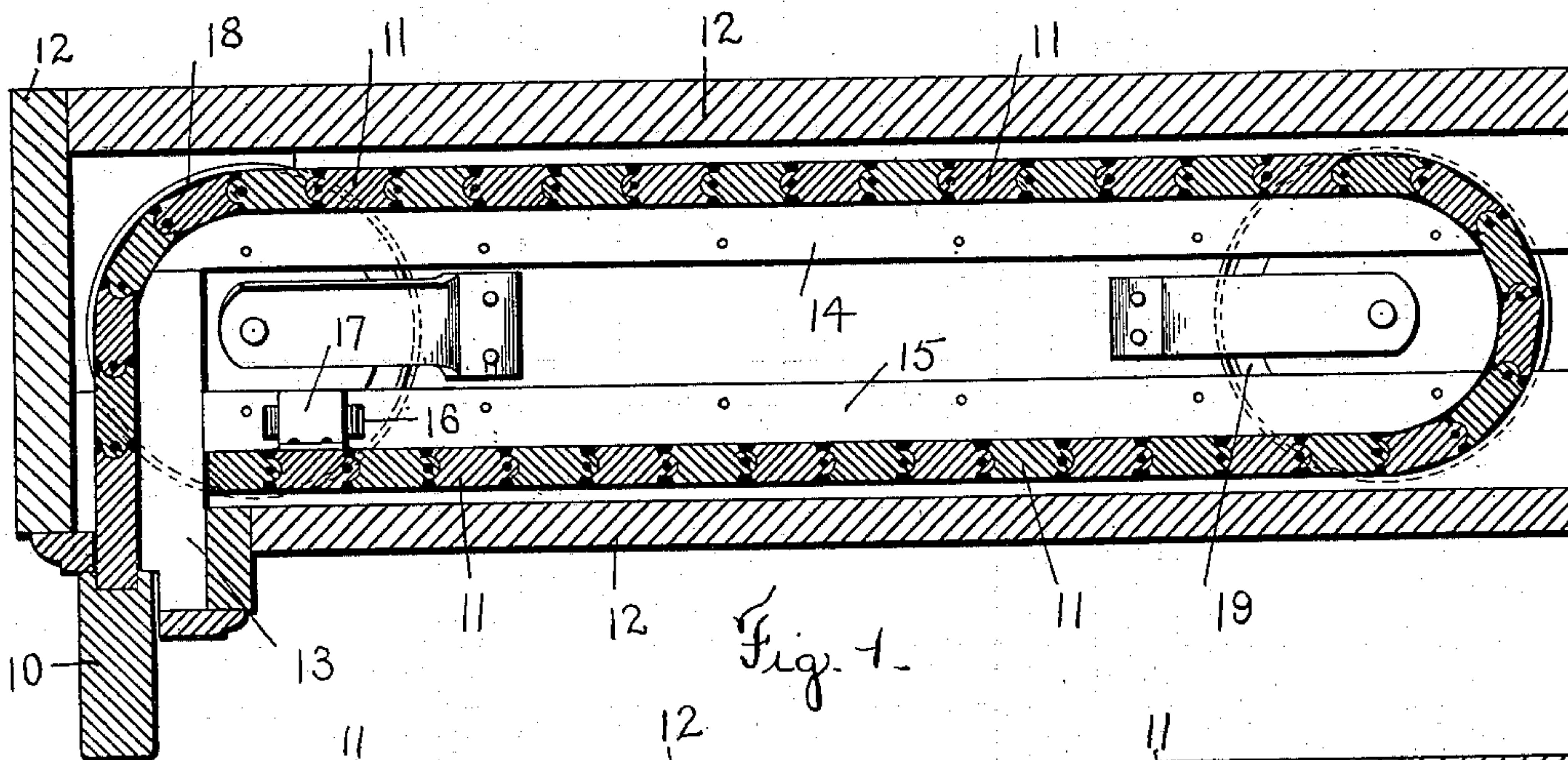
A. S. SPAULDING.

FLEXIBLE DOOR.

(Application filed June 25, 1897.)

3 Sheets—Sheet 1.

(No Model.)



Witnesses.

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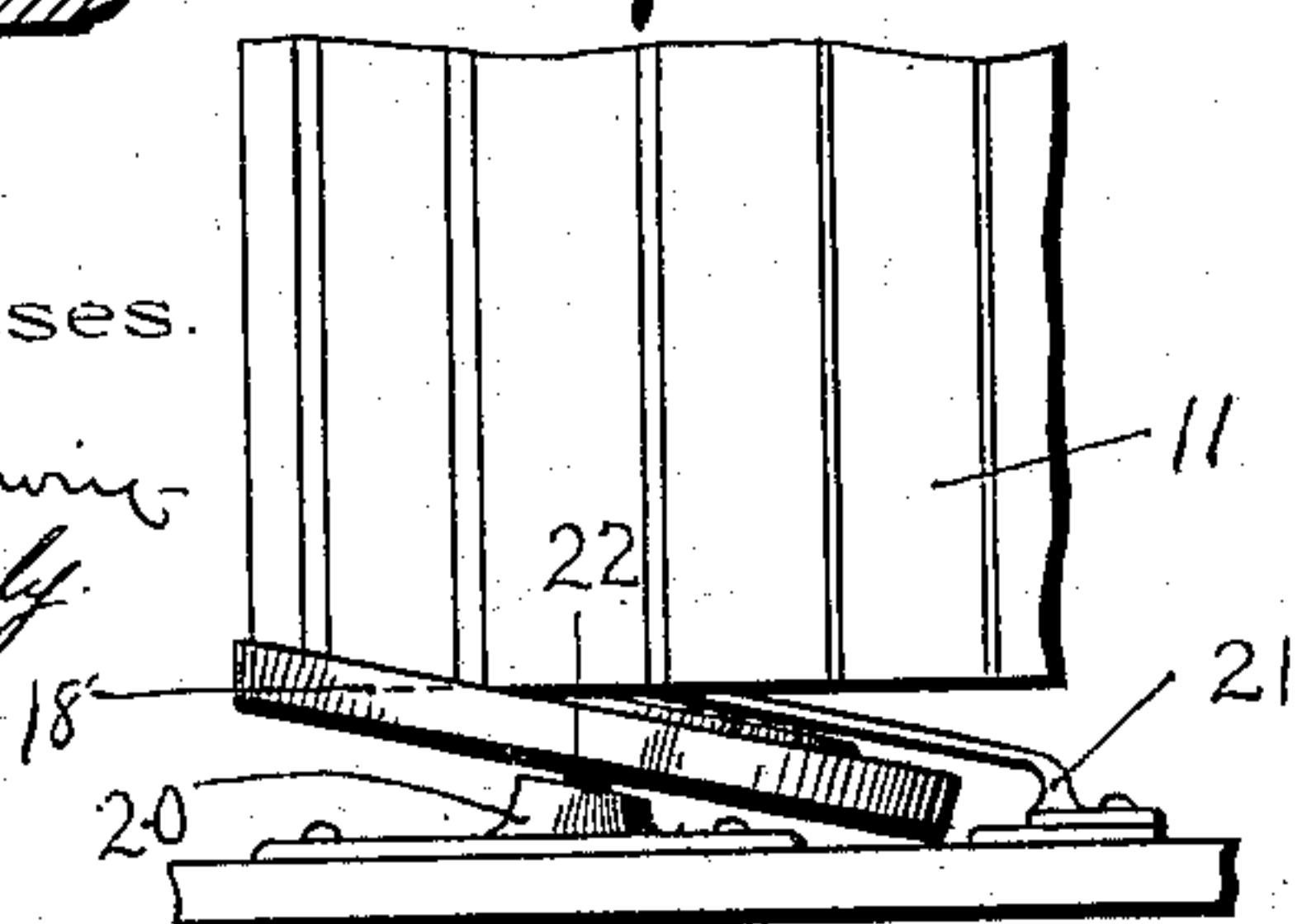
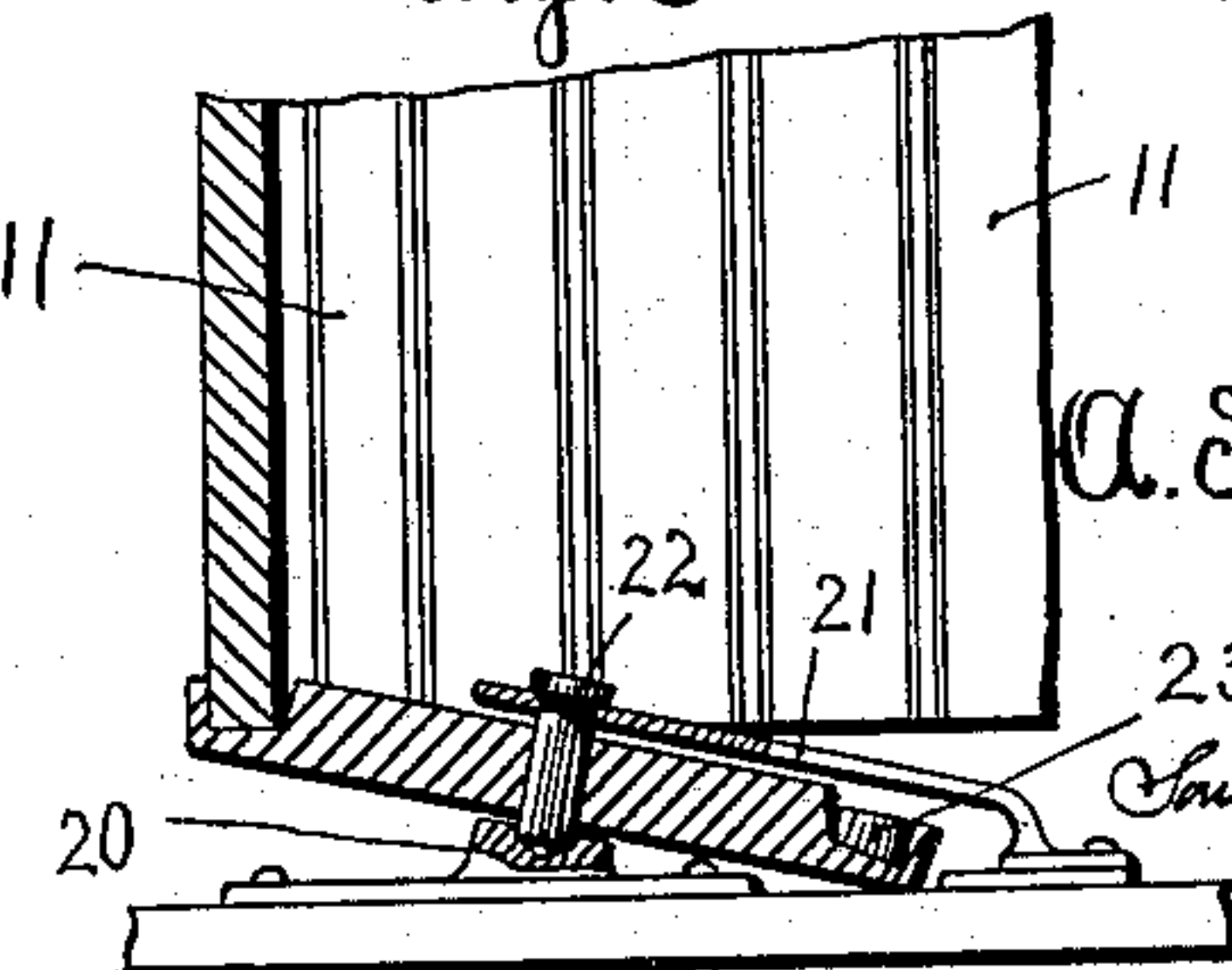


Fig. 5.



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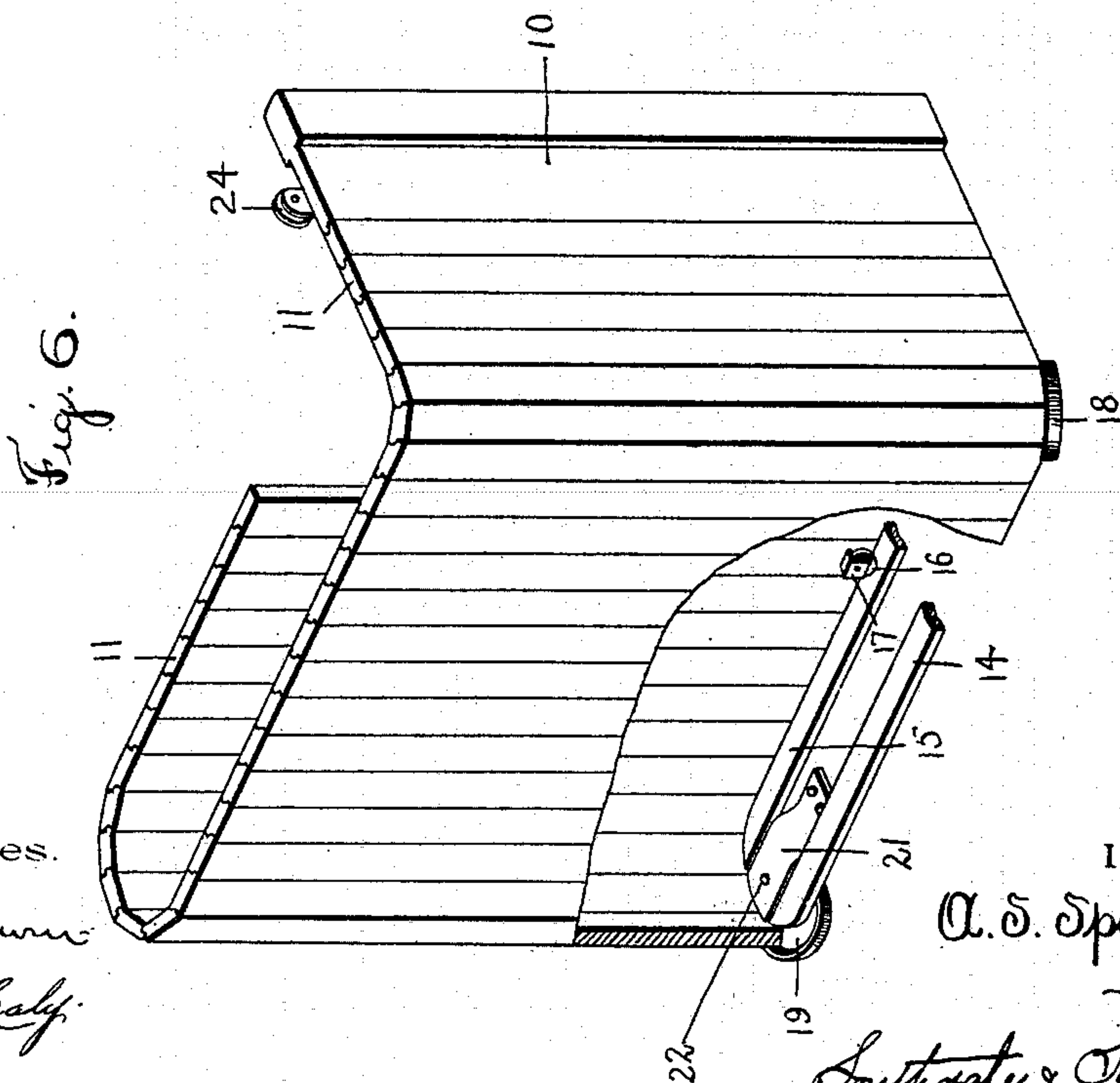
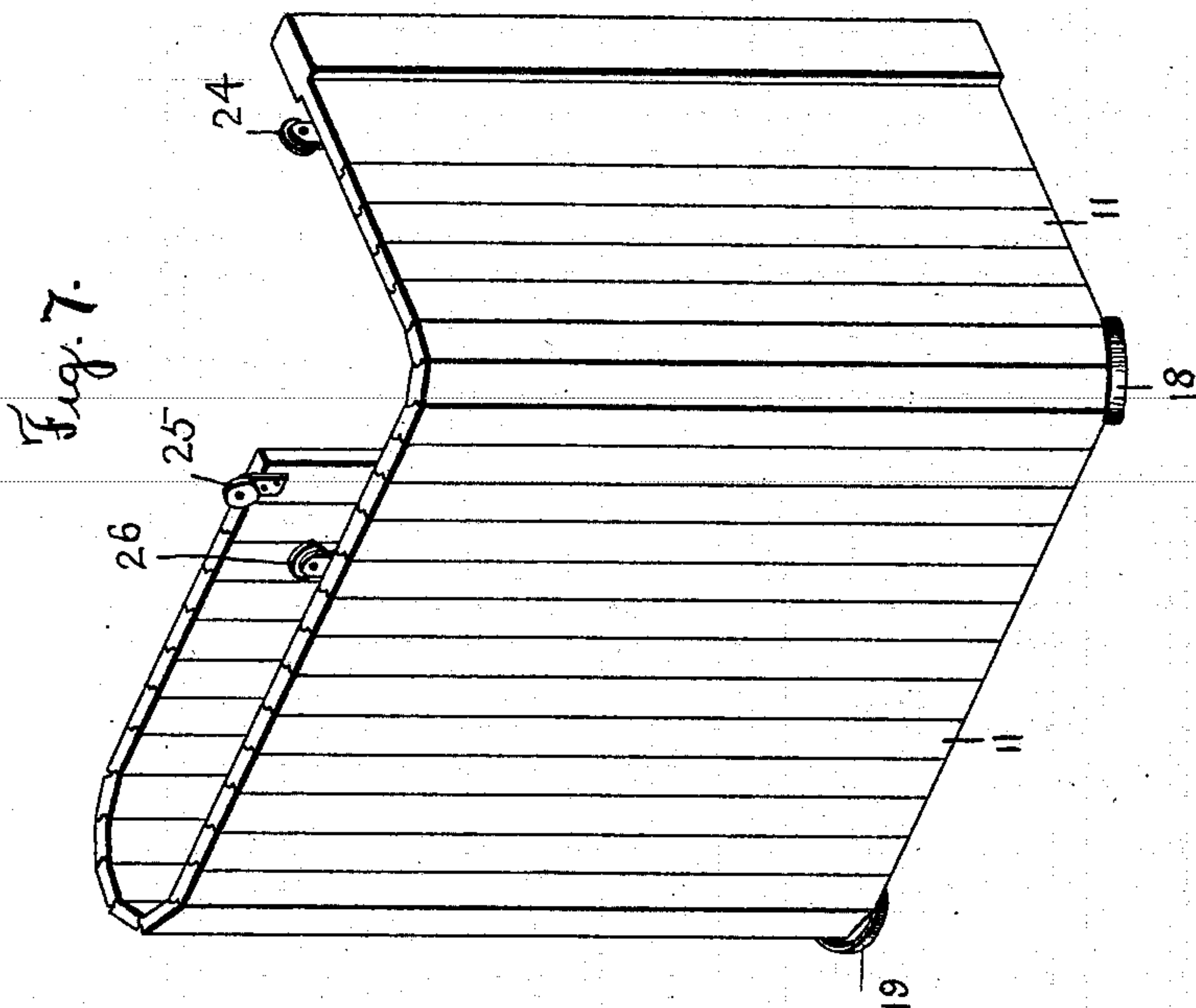
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**3 Sheets—Sheet 2.**



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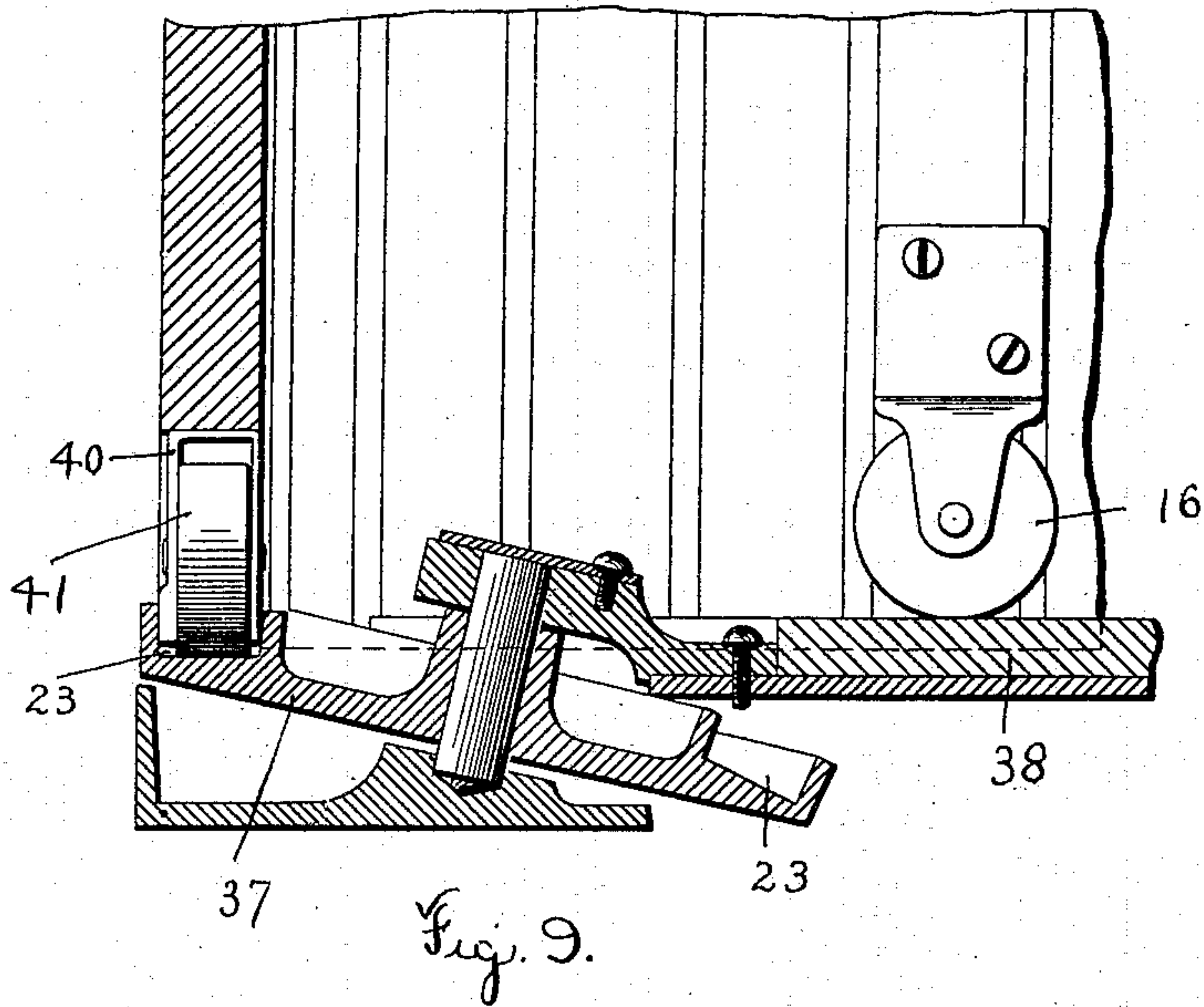
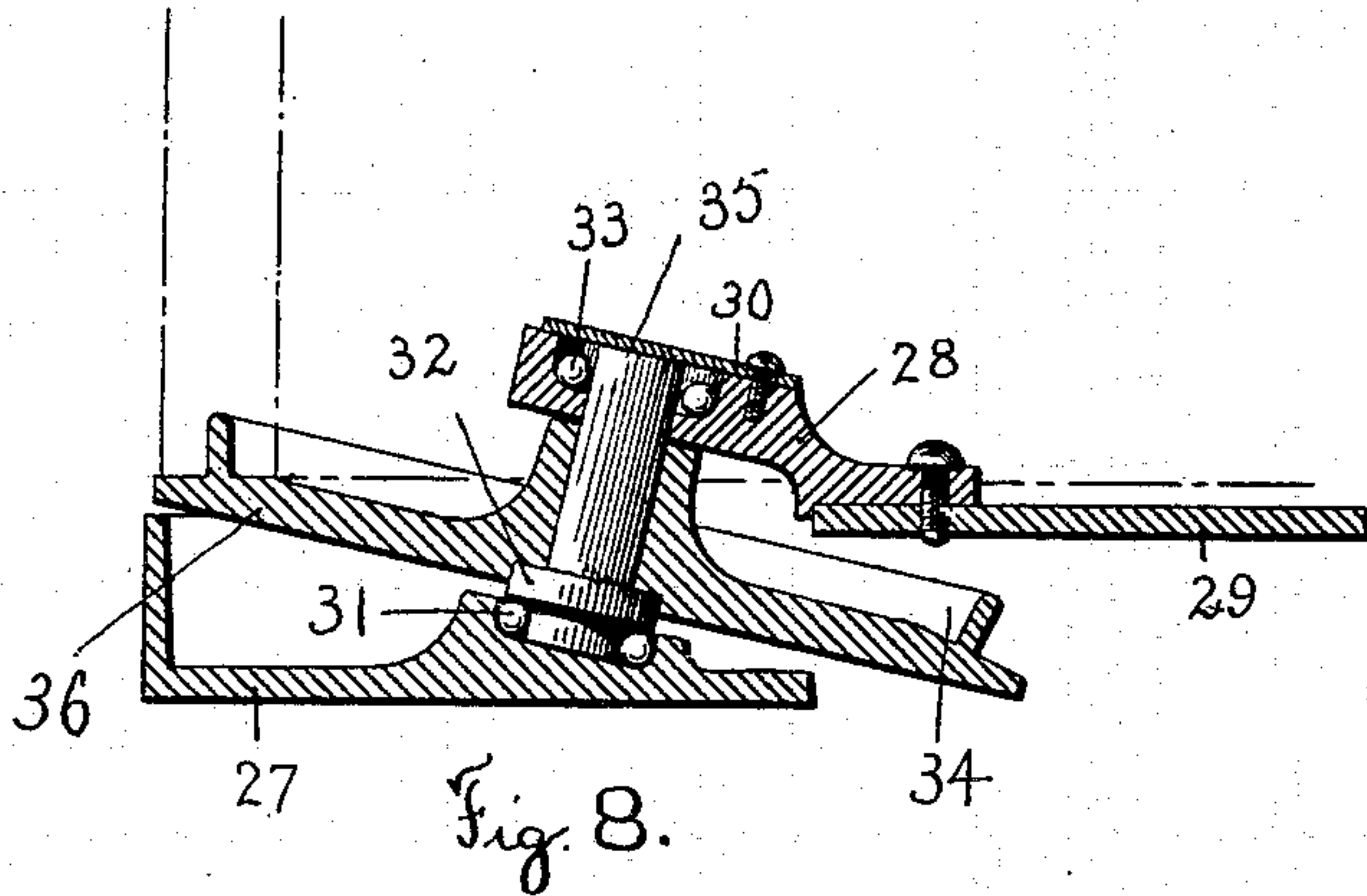
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

ALGENON S. SPAULDING, OF BLOOMSBURG, PENNSYLVANIA.

## FLEXIBLE DOOR.

SPECIFICATION forming part of Letters Patent No. 615,464, dated December 6, 1898.

Application filed June 25, 1897. Serial No. 642,243. (No model.)

*To all whom it may concern:*

Be it known that I, ALGENON S. SPAULDING, a citizen of the United States, residing at Bloomsburg, in the county of Columbia and State of Pennsylvania, have invented a new and useful Improvement in Flexible Doors, of which the following is a specification.

My invention relates to that class of flexible doors or partitions which comprise a plurality of strips or sections hinged together; and the especial object of my invention is to provide a simple and efficient construction for supporting and guiding doors of this class, so that they will operate efficiently and will run with comparatively little friction.

To these ends my invention consists of the parts and combinations of parts, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying three sheets of drawings, Figure 1 is a sectional plan view of a flexible door constructed according to my invention. Fig. 2 is a similar view illustrating a construction employing a single deflecting-disk. Fig. 3 is a sectional plan view illustrating a construction employing two quarter-turn deflecting-disks. Figs. 4 and 5 are detail views illustrating the construction of a deflecting-disk and the manner in which the same is preferably supported. Fig. 6 is a perspective view, partially broken away, of a flexible door constructed according to my invention. Fig. 7 is a perspective view of a flexible door provided with a plurality of overhead trolleys. Fig. 8 is a sectional view illustrating a slightly-modified form of construction, and Fig. 9 is a sectional view illustrating a construction in which the flexible door is provided with trolleys for engaging the deflecting-disk.

The supporting and guiding devices which I preferably employ comprise track-sections and one or more inclined deflecting or supporting disks for guiding the door from one track-section to the next track-section.

One or more rollers are preferably secured near the lower edge of the door to cooperate with the track-sections, and the deflecting-disks are mounted on inclined axes to properly guide the door from one track-section to the next track-section.

The track-sections may extend at different relative angles with respect to each other, and the deflecting-disks may be mounted at different relative inclinations to support the door and to direct the same in the desired direction.

Referring to the drawings and in detail, the flexible door, as illustrated, comprises a front edge section 10 and a plurality of strips or sections 11, which are connected in the ordinary manner by means of suitable hinges. A pocket for receiving the door when the same is opened or pushed back is formed by boards or partitions 12. Arranged near the bottom of the pocket are the track-sections for supporting the door, and cooperating with said track-sections are one or more rollers 16, journaled in brackets 17, secured near the lower edge of the door.

As illustrated in Fig. 1, I may employ two track-sections 13 and 14, which cooperate with and are connected by an inclined deflecting-disk 18. The axis of the inclined deflecting-disk 18 is set at such an angle as to direct or deflect the door through substantially ninety degrees, so that the rollers 16 will pass smoothly from the track-section 13 to the track-section 14. Extending parallel with the track-section 14 is a third track-section 15. The track-sections 14 and 15 are connected by a deflecting-disk 19, arranged to deflect the door substantially through one hundred and eighty degrees or to direct the same back upon itself.

When the flexible door or partition is comparatively short, I may employ only two track-sections 13 and 14 and a single deflecting-disk 18, as illustrated in Fig. 2.

Fig. 3 illustrates a construction which I may use when a flexible door is employed for closing the front of a wardrobe or similar comparatively shallow construction. As illustrated in this figure, I employ three track-sections 13, 14, and 28. The track-sections 13 and 14 are arranged substantially at right angles to each other, and the track-section 28 extends substantially at right angles to the track-section 14. A quarter-turn deflecting-disk 18 is employed at the intersection of the tracks 13 and 14, and a similar deflecting-disk is employed at the intersection of the track-sections 14 and 28.



The construction of the deflecting-disks and the manner in which the same are preferably mounted are most clearly illustrated in Figs. 4 and 5. As shown in these figures, a casting or base-plate 20 may be fastened to the floor or any suitable support, and coöperating therewith is a bracket 21. An inclined stud 22, carrying the deflecting-disk, is journaled in the base-plate 21 and bracket 22.

The deflecting-disks are preferably provided near their outer edge with a circumferential groove 23, adapted to engage the lower edge of the door, and are sufficiently tipped or inclined, so that the bottom of the groove 23 upon the high side of the disk will be upon a higher level than the top of the flange outside of the groove 23 at the point where the flange passes under the door. By means of this arrangement the door can pass onto and off of an inclined deflecting-disk, so as to clear the outer flange thereof, while at the same time the groove 23 will prevent the door from slipping off from said deflecting-disk.

In practice I have ordinarily arranged the track-sections and trolleys 16 to support the bottom of the flexible door upon a level with the receiving-point of a deflecting-disk. By adopting this arrangement the inclination of the deflecting-disk will cause the door to be slightly raised as the door passes onto and around the deflecting-disk, lifting the trolleys 16 up a slight distance away from the track-sections, and I have found this an important point in practice, as I am thus enabled to use the deflecting-disk to support almost the entire weight of the door, the track-sections and trolleys being simply employed to properly support the door from one deflecting-disk to the next.

The studs carrying the inclined deflecting-disks may be journaled so that they will run with comparatively little friction, and, if desired, the deflecting-disks may be journaled or supported by means of suitable ball-bearings.

In some cases instead of providing the deflecting-disks with circumferential grooves to engage the lower edge of the door this arrangement may be reversed, and the lower edge of the door may be grooved to receive a circumferential flange extending up from the deflecting-disk, and I have illustrated such a construction in Fig. 8. As shown in this figure, a base-piece or casting 27 may be fastened in place upon the floor or other suitable support, and coöperating with said base-piece 27 is a bracket 28, secured upon one of the track-sections 29. A stud 35 is journaled in the base-piece 27 and bracket 28 by means of two sets of bearing-balls, the lower set of bearing-balls 31 being arranged in the base-piece 27 to engage a shoulder 32 upon the stud 35 and the upper set of bearing-balls 33 being arranged in the bracket-piece 28. A cover-plate 30 is secured in place on top of the bracket 28 to exclude dust from the bearing-balls 33. Fastened upon and turning

with the stud 35 is a deflecting-disk 36, which is provided near its outer edge with an upwardly-extending flange 34, adapted to fit into and engage a groove on the lower edge of the door.

In some cases the flexible door may be provided with trolleys for engaging with and coöperating with the deflecting-disks, and I have illustrated such a construction in Fig. 9. As shown in this figure, the inclined deflecting-disk 37 is journaled, substantially as before described, to coöperate with a track-section 38. A yoke-piece, as 40, is set into the lower edge of the flexible door, and journaled in the yoke-piece 40 is a trolley 41, which fits into the groove 23 of the deflecting-disk, and by adopting this construction the friction of the lower edge of the door upon its deflecting-disk may be diminished.

The doors mounted according to my invention may be supported or hung at their upper edge in any desired manner.

As shown most clearly in Fig. 6, the flexible door is preferably provided with an overhead trolley 24 near its front edge. This trolley 24 may be arranged to coöperate with any of the ordinary overhead track sections or ways, which track-sections do not need to be herein described or illustrated in detail. In situations which require comparatively short flexible doors or partitions, which ordinarily employ a single overhead trolley 24 near the front edge of the door and a single trolley 16 at the lower edge of the door, near the rear end, by arranging two trolleys in this manner it will be seen that the door will be supported at diagonally opposite corners, and I have found in practice that small doors or partitions supported in this manner can be operated smoothly and with very little tendency for the same to cramp or bind. If desired, however, the flexible doors may be provided with a plurality of overhead trolleys, as illustrated at 24, 25, and 26 in Fig. 7, said trolleys being arranged to coöperate with any of the ordinary overhead tracks, which may be bent or curved to correspond with the path of the door.

I am aware that changes may be made in the construction of flexible doors by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the forms which I have shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. The combination of a flexible door or partition, an inclined disk for supporting and deflecting said door, and means for preventing the door from slipping off from said disk, substantially as described.

2. The combination of a flexible door and an inclined deflecting-disk, one of said parts having a retaining-groove engaging the other part, substantially as described.

3. The combination of a flexible door, and



an inclined disk provided with a groove for engaging the lower edge of said door, substantially as described.

4. The combination in a flexible door, an inclined deflecting-disk for supporting and deflecting said door, ball-bearings for supporting said disk, and means for preventing the door from slipping off of the disk, substantially as described.

5. The combination of a flexible door, track-sections extending at an angle with respect to each other, and an inclined grooved deflecting-disk for deflecting the door from one track-section to the other track-section, the lower edge of the door engaging the groove in said disk, substantially as described.

6. The combination of track-sections extending at an angle with respect to each other, a flexible door, and a roller mounted on said door in position to cooperate with said track-sections, and an inclined deflecting-disk for supporting and deflecting said door, and

means carried by the disk for preventing the door from slipping from said disk, said means, by the inclination of the disk, moved from engagement with the door, so that the door may leave the disk at the proper point, substantially as described.

7. The combination with track-sections arranged at an angle with respect to each other, a flexible door, a roller mounted on said door in position to cooperate with said track-sections, an inclined deflecting-disk arranged at the intersection of said tracks, and provided with a groove for engaging the lower edge of the flexible door, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALGENON S. SPAULDING.

Witnesses:

G. M. QUICK,

JNO. R. TOWNSEND.