

(No Model.)

2 Sheets—Sheet 1.

J. H. MORLEY.  
SLIDING DOOR.

No. 408,502.

Patented Aug. 6, 1889.

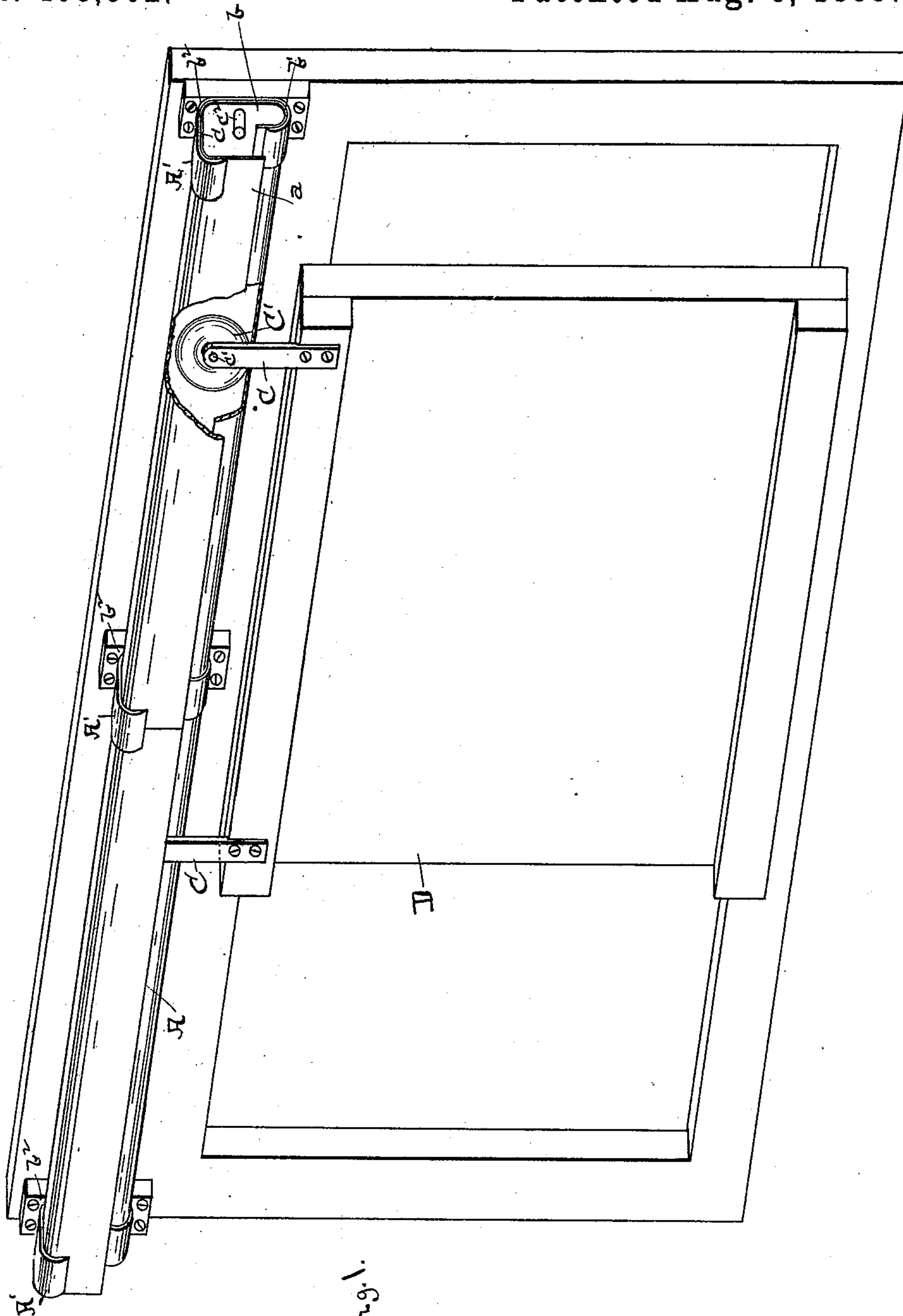


Fig. 1.

WITNESSES:

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*J. E. Chapman*

INVENTOR

*J. H. Morley*  
BY *James Chapman*  
ATTORNEYS.

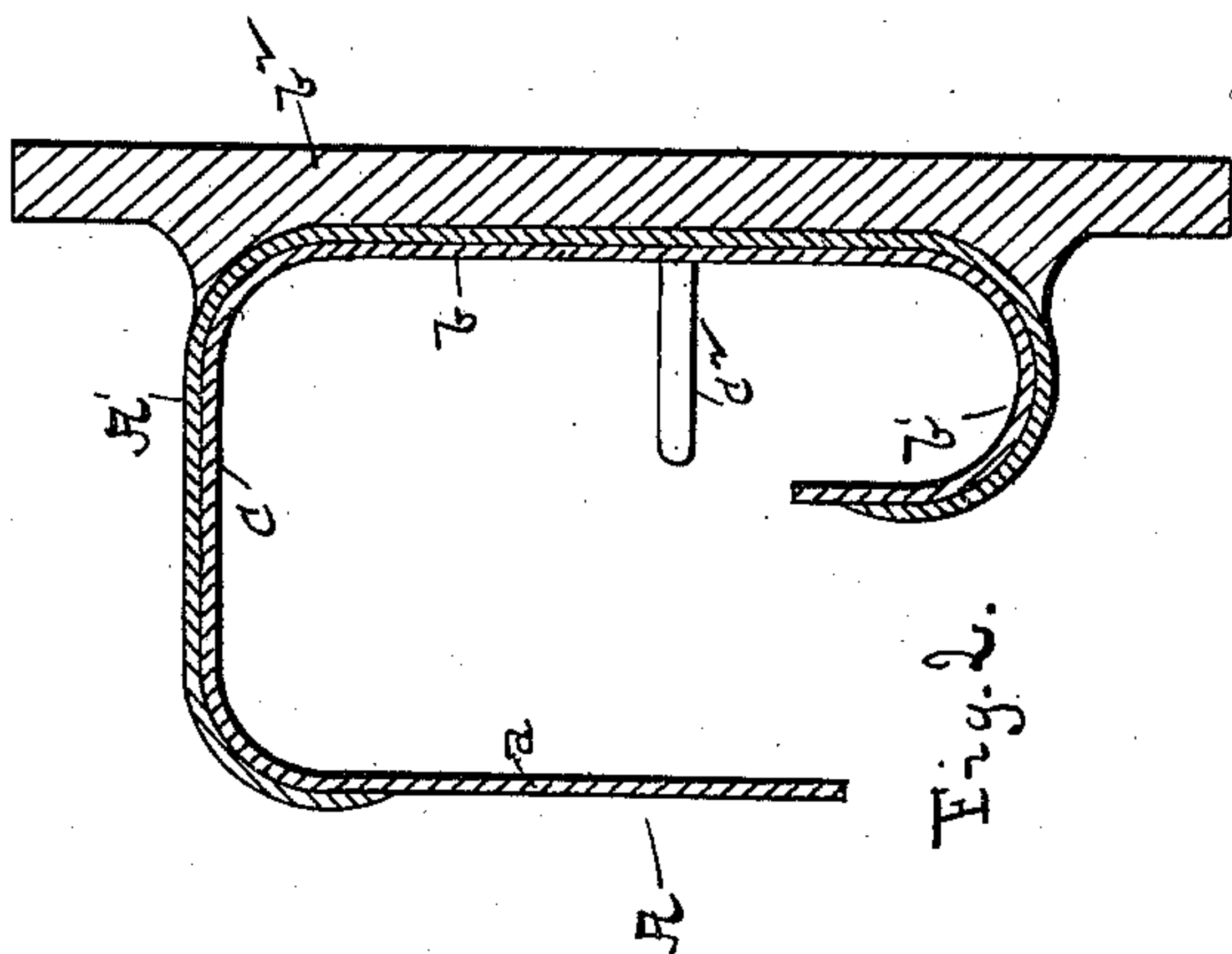
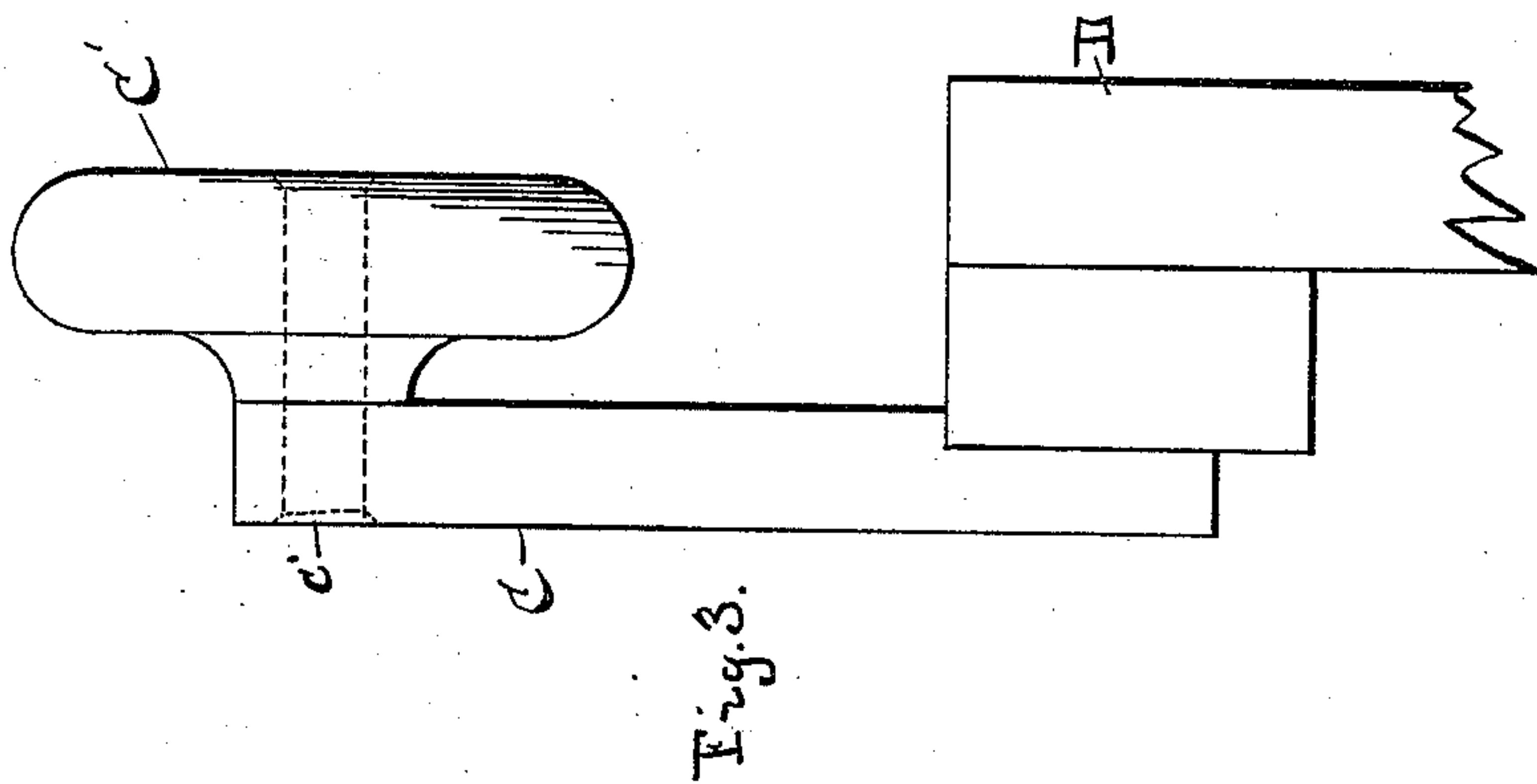
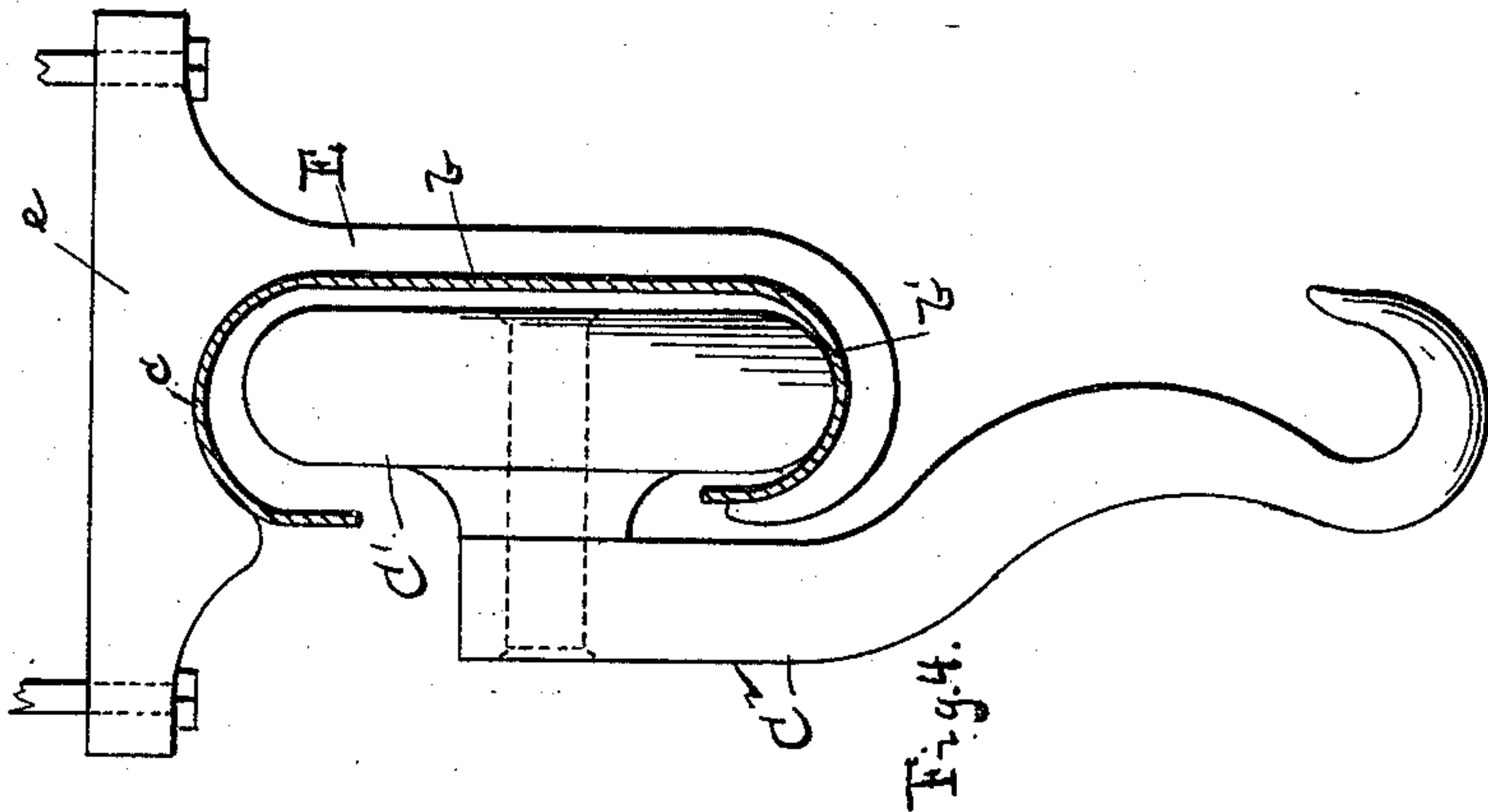
(No Model.)

2 Sheets—Sheet 2.

J. H. MORLEY.  
SLIDING DOOR.

No. 408,502.

Patented Aug. 6, 1889.



WITNESSES:

*Lincoln M. Brown*  
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# UNITED STATES PATENT OFFICE.

JAMES H. MORLEY, OF FLORENCE, ASSIGNOR OF ONE-HALF TO GEORGE NIGHTINGALE, OF HOLYOKE, MASSACHUSETTS.

## SLIDING DOOR.

SPECIFICATION forming part of Letters Patent No. 408,502, dated August 6, 1889.

Application filed December 3, 1888. Serial No. 292,573. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. MORLEY, of Florence, in the county of Hampshire and State of Massachusetts, have invented a new and useful Improvement in Trolley-Tracks, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to the construction of tracks for supporting a carriage suspended therefrom and having wheels bearing upon the track, known as "trolley-tracks," and has especial reference to tracks of this nature designed to be used for supporting sliding doors and gates and for the transportation of goods, merchandise, &c., from point to point within stores, warehouses, and other buildings. In the former of these uses—viz., supporting the doors of cars and the outer doors of buildings—it is important that the tread or portion of the track traversed by the rollers or wheels be protected from rain and snow, which by forming ice would be liable to obstruct the track and interfere with, if it did not entirely prevent, the movement of the door; and in both of said uses it is desirable to secure the greatest rigidity and resisting strength with the least possible weight and amount of material in the track itself. To secure these ends, such tracks have been made of tubular, or substantially tubular, form from sheet and wrought metal, with a longitudinal slot or opening in the lower side thereof, through which slot extends the hanger or carrier, which is suspended from the axle uniting two wheels or rollers bearing upon the inner surface of the tube upon opposite sides of said slot or opening. Such form of track has been found to be open to the objection that any considerable weight suspended from the axle of the rollers will cause the tube to expand upon either side of the slot or opening in such manner as to widen the latter and permit the rollers to escape from the tube, thus entirely destroying the track. To overcome this objection, it has been proposed in one instance to curve the sides of the tube inwardly and then upwardly upon each side of the opening, thus forming a "rounded trough" upon either side of the latter, within which travel rollers

whose peripheries conform in cross-section to the curvature of said troughs. The last-mentioned track, however, is itself open to the serious objections that it necessitates the use of complicated and expensive machinery to secure the desired conformation of the tube, thus greatly increasing the cost of manufacture, and that it necessitates the use of two rollers or wheels for each hanger, thereby doubling the amount of friction to be overcome and the amount of power required to move the load carried by the hanger. A further objection to this form of track is that it must be supported in the vertical plane of the slot or opening or directly overhead, and it is therefore not adapted to be used in positions which require the track to be secured to the side of a building or car—such as door-supporting tracks, for example.

It is the object of my invention to provide a track which is of such shape in cross-section as to secure the maximum amount of rigidity and resisting strength with a minimum quantity of material employed, which can be quickly manufactured by means of the ordinary sheet-metal-bending or cornice-machines at a trifling cost, in which a single tread which is perfectly protected from obstructions is employed, and which, while requiring but one roller or wheel for each hanger, can be suspended directly overhead or from the side, at will.

To these ends my invention consists in the track and its hanger, hereinafter fully described, and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several figures, Figure 1 is a perspective view of the track as used to support a car or other door. Fig. 2 is a cross-section of the track as constructed for out-of-door use. Fig. 3 is an end elevation of one of the hangers and its roller. Fig. 4 is an end elevation of one of the brackets and a cross-section of the track as constructed for overhead use within buildings.

The letter A designates the track, which, as shown in Figs. 1 and 2, is composed of the vertical and parallel sides *a b*, united by the



substantially horizontal top portion *c*, the side *b* being curved inwardly and upwardly at the bottom to form the trough-shaped tread *b'*, the inner edge of which preferably lies slightly above the plane of the lower edge of side *a*, as shown in Fig. 2. The track thus shaped can be readily formed from sheet metal on the usual form of machine for bending sheet metal—such as a cornice-machine, for example—the operation being performed very quickly and at a trifling cost. This form of the track is supported by brackets *A'*, preferably made of cast or wrought iron, which conform to the shape of the track in cross-section, as shown in Fig. 2, and overlap the track at top and bottom sufficiently to hold the latter securely. The brackets *A'* are of proper width and are so located as to embrace the meeting ends of the separate sections of the track, as shown in Fig. 1, so that no other fastening devices are required to hold a track of any length securely in position. At their rear sides the brackets are provided with a suitable base *b<sup>2</sup>*, having suitable screw-holes for securing them to the side of a car or building. It will be observed that the track can thus be erected very rapidly by even an unskilled workman, and as rapidly removed.

The letter *C* designates the hanger, having at its upper end the rearwardly-projecting stud *c'*, upon which is journaled the roller *C'*, the periphery of which conforms in cross-section to the curvature of tread *b'*, and which in diameter is slightly less than the distance between the bottom of said tread and the top of the track. The roller being entered within the track at one end of the latter, is retained therein laterally by the upturned edge of tread *b'* and suitable stops at the ends of the track—as, for example, pins *c<sup>2</sup>* will prevent its escape at such points—so that jumping the track is rendered impossible.

The door *D* is secured near each end to the inner side of one of the hangers *C* in such manner that its center of gravity lies in the vertical plane of the center of tread *b'* and rollers *C'*, and said rollers are thereby caused to run upon an even center without danger of binding against the sides of the track. The vertical side *a* affords perfect protection to the tread *b'* from rain and snow and insures the freedom thereof from obstructions under all circumstances, while the vertical sides, curved bottom, and horizontal top of the track secure the greatest amount of rigidity and stiffness with the least amount of material, so that the track, even when made from sheet metal, is capable of supporting heavy weights without being deflected from its true plane. By employing a single roller for each hanger, moreover, a minimum amount of friction is secured and the door can be moved back and forth with but slight effort.

In Fig. 4 I have illustrated the adaptation of the track to indoor use, in which the ver-

tical side *a*, being unnecessary, may be omitted, and the top of the track is preferably curved similarly to the bottom, as shown. The brackets *E* in this instance have their bases *e* at the top thereof, whereby they are adapted to be secured to the ceiling or other overhead support. The hanger *C<sup>2</sup>* is preferably curved, as shown, to bring its lower end in the vertical plane of the center of the track, and may terminate in a hook, as shown, or be provided with any suitable receptacle for the articles to be carried. The center of gravity of the weight is thus brought beneath the center of the roller, and steady and easy movement of the latter is assured. The brackets *E* support the meeting ends of the sections of the track in the same manner as previously described with reference to brackets *A'*, and the track can be as readily erected and removed as the form shown in Figs. 1 and 2.

In both forms of the track shown, it will be observed, the straight side *b* and the curved top and bottom insure the requisite amount of strength, while, there being but a single tread located on one side of the opening in the track, all danger of spreading is avoided. In both forms, also, the use of a single roller to each hanger insures a minimum amount of friction and an easy movement of the load.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The trolley-track herein described, of substantially tubular form, having a longitudinal opening in one side thereof, and having a single trough-shaped tread located at one side of said opening, substantially as set forth.

2. The trolley-track herein described, having one side thereof arranged at substantially a right angle to its top and bottom, said track having a longitudinal opening therein, and having a single trough-shaped tread located at one side of said opening, in combination with a hanger extending through said opening and carrying at its upper end a roller the periphery of which in cross-section corresponds substantially with the transverse contour of said tread, arranged and operating substantially as set forth.

3. The combination, with the trolley-track herein described, the same consisting of a substantially tubular body having a longitudinal opening therein and having at one side of said opening a trough-shaped tread, of supporting-brackets for said track conforming substantially to the shape thereof in cross-section, said brackets overlapping the meeting ends of the several sections of said track, arranged and operating substantially as set forth.

4. The trolley-track herein described, consisting of a substantially tubular body having the parallel sides *a b* and top *c*, said side *b* being curved inwardly and upwardly at the bottom to form the trough-shaped tread *b'*,



said track having an unobstructed opening between the bottom of said side *a* and the edge of said tread *b'*, substantially as set forth.

5 5. The combination, with the track A, having the parallel sides *a b* and top *c*, and having said side *b* curved inwardly and upwardly to form tread *b'*, of hanger C, projecting within said track between side *a* and said  
10 tread *b'*, said hanger being provided at its upper end with the laterally-projecting stud *c'* and having journaled upon said stud roller C', adapted to travel within said tread, arranged and operating substantially as and for  
15 the purpose set forth.

6. The combination, with track A and its supporting-bracket A', said track having the straight side *b*, top *c*, and curved tread *b'*, of hanger C, carrying at its upper end roller C', moving within said track, and a weight, as 20 door D, secured to said hanger, near the lower end of the latter, in such manner that the center of gravity of said weight will lie in the vertical plane of the transverse center of said roller, substantially as and for the pur- 25  
pose set forth.

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Witnesses:

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