

DOOR.

1,092,501.

2 SHEETS—SHEET 1.

Fig. 1.

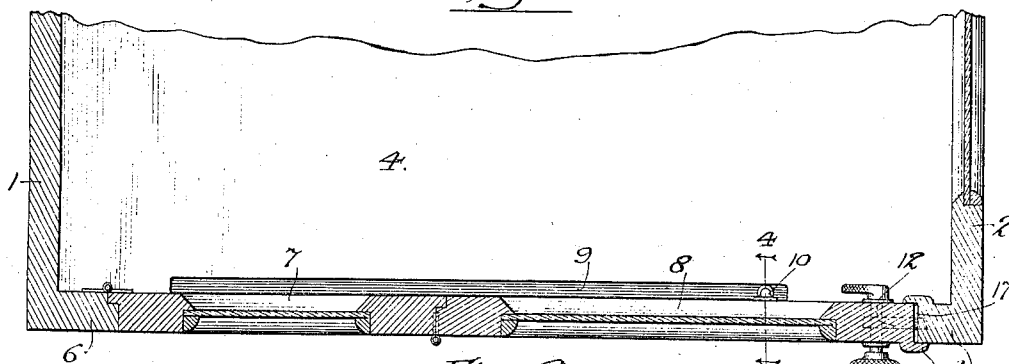


Fig. 2.

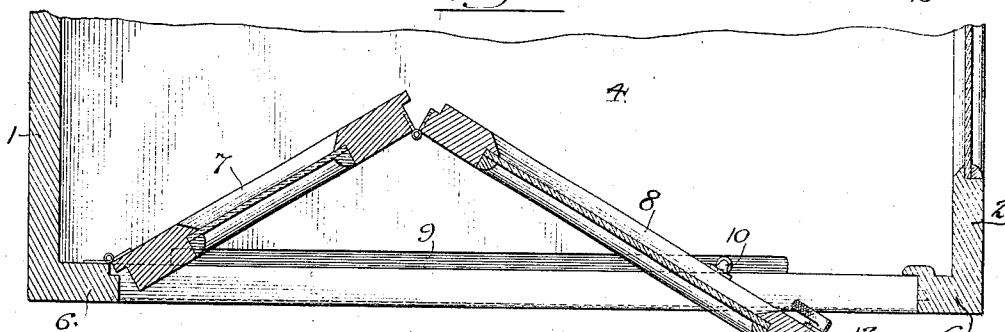
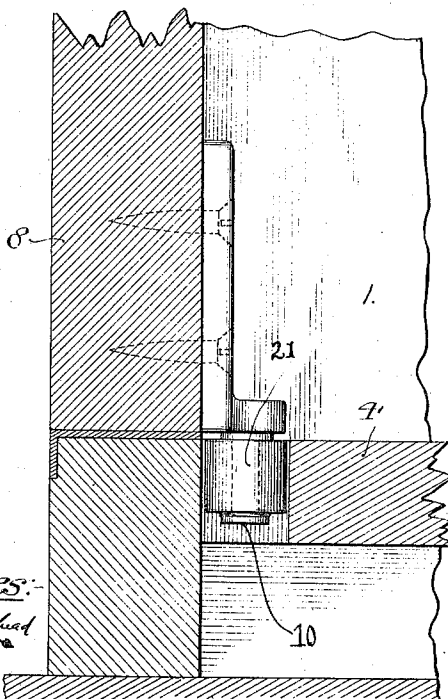


Fig. 4.



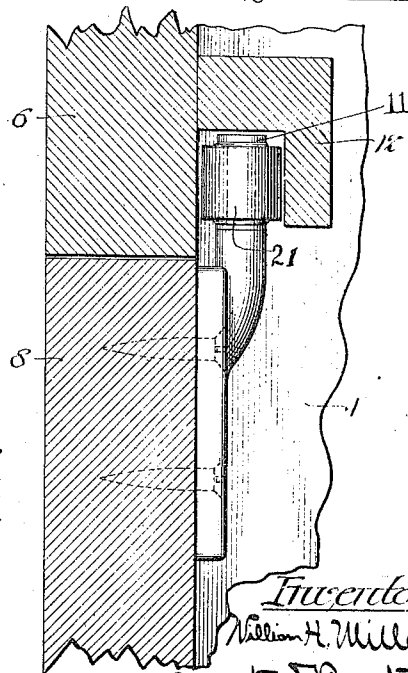
Fig. 5



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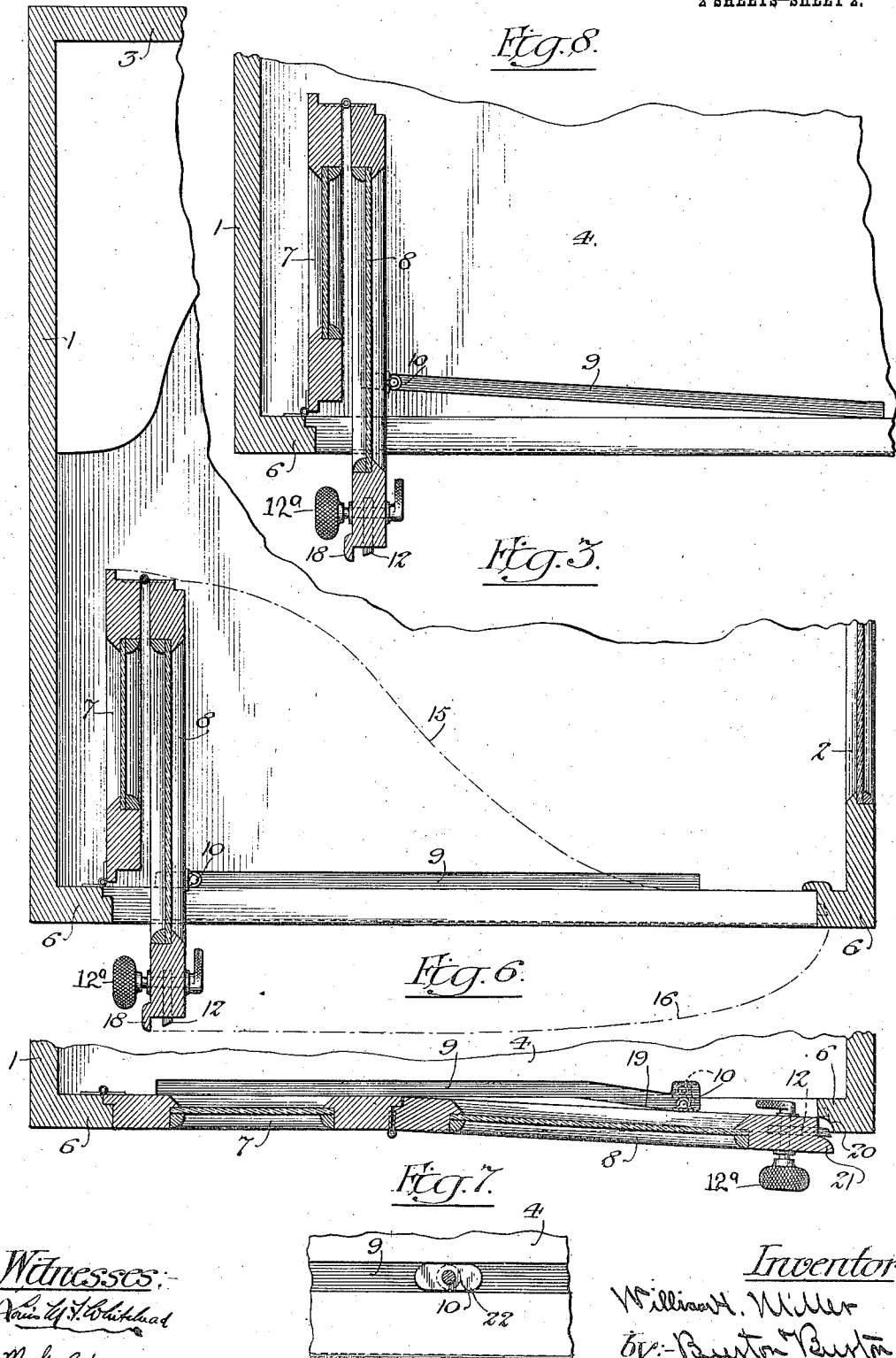
DOOR.

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1,092,501.

Patented Apr. 7, 1914.

2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

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DOOR.

1,092,501.

Specification of Letters Patent.

Patented Apr. 7, 1914.

Application filed November 20, 1911. Serial No. 661,197.

To all whom it may concern:

Be it known that I, WILLIAM H. MILLER, a citizen of the United States, residing at Peru, in the county of Miami and State of Indiana, have invented new and useful Improvements in Doors, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved construction of a door and its mountings, especially adapted for any situation in which it is desirable to restrict closely the space required for the movement of the door in passing from closed to open position, as, for instance, in booths, closets and wardrobes.

It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings: Figure 1 is a horizontal section of a portion of a booth or cabinet equipped with a door embodying this invention, the door being shown in closed position. Fig. 2 is a detail view similar to Fig. 1 showing the door in partly open position. Fig. 3 is a similar view showing the door at wide open position. Fig. 4 is a detail section at the line 4-4 on Fig. 1 showing the guiding engagement of the door at the bottom. Fig. 5 is a similar detail view showing the guiding engagement of the door at the top. Fig. 6 is a detail view similar to Fig. 1 showing a slight modification of the bottom guide track. Fig. 7 is a detail view showing a modification of the device on the door for engaging the track at the bottom. Fig. 8 is a view similar to Fig. 3 showing a modification in respect to the trend of the track.

The door constituting the present invention is shown in the drawings and will be described as applied to a booth, such, for example, as a telephone booth. The invention, it will be understood, is not limited to use in such a booth, but the construction of the booth may be described, so far as necessary to indicate the relation of the door thereto.

The drawings show a booth comprising opposite side walls, 1 and 2; rear wall, 3; floor, 4, and a ceiling, not shown. Rudiments, only, of the front wall, 6, constituting the door casing are shown, the booth being illustrated as only slightly wider than the door, but this is of course immaterial.

The door comprises two members, 7 and 8, the member, 7, being narrower than the member, 8, the two being hinged together at the outer surface of their vertical abutting edges so as to fold inward with respect to the cavity. The narrower member, 7, is hinged to the cabinet at the other vertical edge and at the inner surface, and usually for compactness when used in a cabinet as illustrated, this vertical hinged edge of the member, 7, will be at or close to the side wall, 1, of the cabinet, so that the door when open will stand folded close alongside said side wall, as shown in Fig. 3. The member, 8, is provided with a trunnion-like projection, 10, from its lower edge, positioned at a distance from the edge which is hinged to the member, 7, approximately equal to the width of said member, 7. The floor of the cabinet has a guide slot, 9, which, in the construction shown is parallel to the door at the closed position of the latter and immediately adjacent to the plane of the rear or inner surface of the door. When it is in this precise position, the trunnion device on the member, 8, which engages said slot is positioned so that the distances from the hinged edge of the member, 8, to the remote side of the trunnion and to the hinged edge of the member, 7, are equal. The member, 8, may be provided with a corresponding trunnion-like projection, 11, from its upper edge in vertical alinement with the trunnion device, 10, and a track for the same is most conveniently provided by mounting an angle-shaped bar, 12, upon the door casing or wall of the cabinet having the aperture closed by the door, immediately above said aperture, with one lip of the angle bar depending so as to form a channel between the same and the wall or casing 6, upon which the bar is mounted. The member, 8, is provided at its free vertical edge with any convenient form of latching device, 12, for engaging the casing or margin of the door opening in the wall, 6, and the difference in widths between the members, 7 and 8, is designed so as to be sufficient to accommodate such latching device and leave adequate hand room for operating the same within the area of the excess of width of the member, 8, over the member, 7, which projects beyond the member, 7, and the cabinet wall at the open position of the door, as shown in Fig. 3.

The operation of this structure is that when the latch is released and the handle,

12^a, pulled in the natural movement for opening the door, the first movement outward causes the member, 8, to fulcrum about a vertical line at the engagement of its trunnions, 10 and 11, with the tracks, 9 and 12, respectively, with the effect of buckling the door inward at the hinge or joint between the members, 7 and 8, "breaking" this joint and bringing the members to a position at which folding toward each other occurs easily when the member, 8, is pushed toward the side wall, 1, causing the trunnions, 10 and 11, to follow the tracks, 9 and 12, respectively, until the two members, 7 and 8, are folded against each other at the side of the cabinet. In this movement, it will be seen that the utmost intrusion of the door into the cabinet space is the path of the hinged-together edges of the two members, 7 and 8, swinging in the arc of a circle about the opposite hinged edge of the member, 7. In following this path, the member, 8, will not at any point pass inward beyond the dotted line, 15, which merges in the circular path of swing of said hinged edges of the two members. It will thus be seen that a door constructed as described can be swung inward with respect to the cabinet which it closes with very small allowance of space for that purpose, and that the allowance of space outside the cabinet for the swinging of the door being that required for the path of the free edge of the member, 8, indicated by a dotted line, 16, is very much less even than that required within the cabinet; and the device is therefore adapted for any situation in which the space for swinging a door is thus narrowly restricted.

It will be noticed that by reason of the relative positions of the hinge of the member, 7, to the cabinet, the hinge of the two members, 7 and 8, to each other, and the fulcrum point of the member, 8, provided by the trunnions, 10 and 11. These three points being out of line, the first buckling inward of the door "breaking" the joint of the hinged-together edges of the members, 7 and 8, causes a thrust of the member, 8, away from the opposite hinged edge of the member, 7, to the cabinet, and toward the casing or margin of the door opening. This necessitates allowance in the door opening over the total width of the door, for this thrust, and will cause a crevice or crack, as shown at 17, between the door and the casing at closed position. This crevice or crack in the form shown in the several figures already described, is preferably closed by a lip molding, 18, applied upon the outer side of the member, 8, and projecting as a flange from the edge overlapping the adjacent casing. It is possible to avoid this crack or crevice by a slight change in the form of the tracks, 8 and 12. This modification is shown in Fig. 6, and con-

sists in forming the track for a short distance at the end occupied by the trunnions at the closed position of the door, as seen at 19, so that there is formed for the trunnions a short, directly transverse path at that end of the track sufficient to allow the abutting edge of the door to move directly in and out to any desired degree in the final closing and initial opening movement, and from the forward end of this transverse portion of the track it extends in a sloping direction back to the direct line of the remainder of its course. With this construction, it will be observed that upon the first outward movement of the door after releasing the latch, the member, 8, will pivot at its hinge to the member, 7, swinging out at the opposite edge until the trunnion strikes the outer side of the widened track, and only when this has occurred will the said member, 8, fulcrum over the trunnions for breaking the joint at the hinge, buckling the door inward and causing the edgewise thrust above mentioned. Obviously it would not ordinarily be necessary to make the outward extension, 19, of the slot sufficient to permit the opening movement of the door to the full extent of the thickness of the latter, although this can be done if desired. But by making this extension, 19, equal in length to about half the thickness of the door of the abutting casing no crevice is left between the door and casing at the inner half of the thickness when the door is closed; and by rabbeting out the casing over the outer half of the width or thickness, as shown at 20, and providing the edge of the door with a lip which fits into that rabbet, as shown at 21, the door and casing of the resulting form shown in Fig. 6, may match together when the door is closed as snugly as any door swinging about a hinge matches with its casing.

If in any case, it is found desirable to afford greater leverage for buckling the door for breaking the joint at the hinge between the two members, 7 and 8, than is afforded by the position of the trunnions, 10 and 11, which is involved in or results necessarily from the position of the trunnion tracks parallel with and immediately adjacent to the plane of the inner surface of the door when closed, such additional leverage may be obtained without increasing the excess of width of the member, 8, over the member, 7, and the resulting protrusion from the front of the cabinet of the member, 8, at open position of the door, by positioning the guide tracks so that they extend toward the side wall, 1, in a direction divergent from the plane of the door, and mounting the trunnions as much nearer the hinge of the two members, 7 and 8, to each other as the amount of said divergence of the tracks. This modification is illustrated in Fig. 8, which shows the lower track thus diver-

gently positioned. The corresponding change in the upper track will be obvious, and is not illustrated.

Because rollers traveling in grooves are sometimes unpleasantly noisy, it may be preferable to employ instead of the anti-friction rollers, 21, shown on the trunnions, 10 and 11, elongated shoes or slides, 22, in the guide tracks, 9 and 12, such shoes being swiveled or pivotally mounted on trunnion brackets similar to those which carry the rollers. These shoes will be made of any suitable hard material, such as lignum vitae or indurated fiber, adapted to rub against the wood without undue tendency to cut the same.

I claim:—

1. In combination with a casing having an opening, a door for closing the opening comprising two members of different width hinged together at a plane outward from the mid-thickness of the door, the narrower member being hinged to the casing at the margin of the opening and at a plane inward from the mid-thickness of the door, the wider member having a trunnion projecting from one end at a distance from the hinged-together edges and at a plane inward from the mid-thickness of the door, the casing having a track for the trunnion extending from the position of the trunnion at the closed position of the door in the general direction of the plane of the door at closed position to a point situated inward from said plane by the amount of the width of the inner member less the distance of the trunnion from the hinged together edges of the two members, said track being widened at the first-mentioned end to allow trans-

verse movement of the trunnion therein, less than the thickness of the door, and tapered thence to the normal width, the casing having its outer surface rabbeted at the edge to which the door closes, the edge of the door abutting said edge of the casing having a lip to engage the rabbet.

2. In combination with a casing having an opening, a door for closing the opening comprising two members of different width hinged together at a plane outward from the mid-thickness of the door, the narrower member being hinged to the casing at the margin of the opening and at a plane inward from the mid-thickness of the door, the wider member having a trunnion projecting from one end at a distance from the hinged-together edges and at a plane inward from the mid-thickness of the door, the casing having a track for the trunnion extending from the position of the trunnion at the closed position of the door in the general direction of the plane of the door at closed position to a point situated inward from said plane by the amount of the width of the inner member less the distance of the trunnion from the hinged together edges of the two members, said track having at its first-mentioned end a transverse portion adapted to permit the transverse movement of the trunnion therein.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 16th day of November, 1911.

WILLIAM H. MILLER.

Witnesses:

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M. GERTRUDE ADY.