July 17, 1923. 1,462,302

E. J. G. PHILLIPS

SLIDING DOORS AND TRACKS THEREFOR

Filed Sept. 25, 1922 2 Sheets-Sheet 1

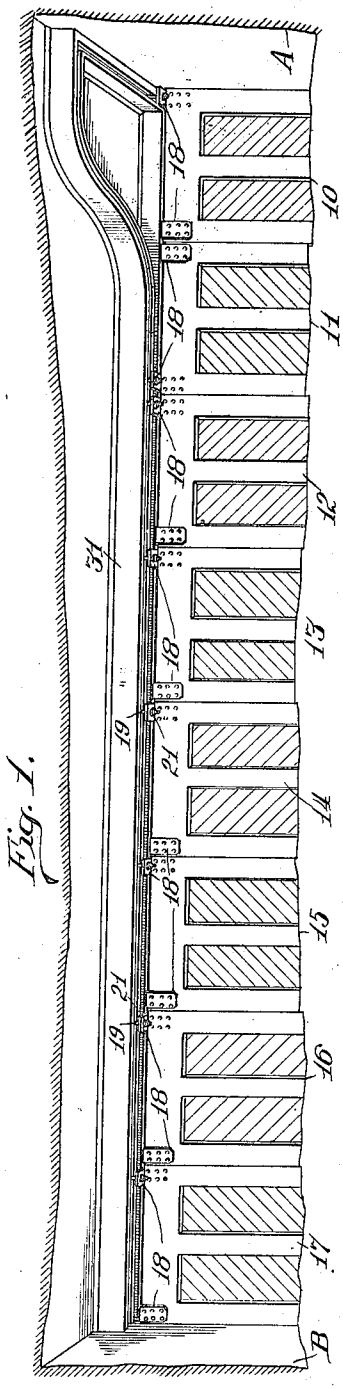


Fig. 1.

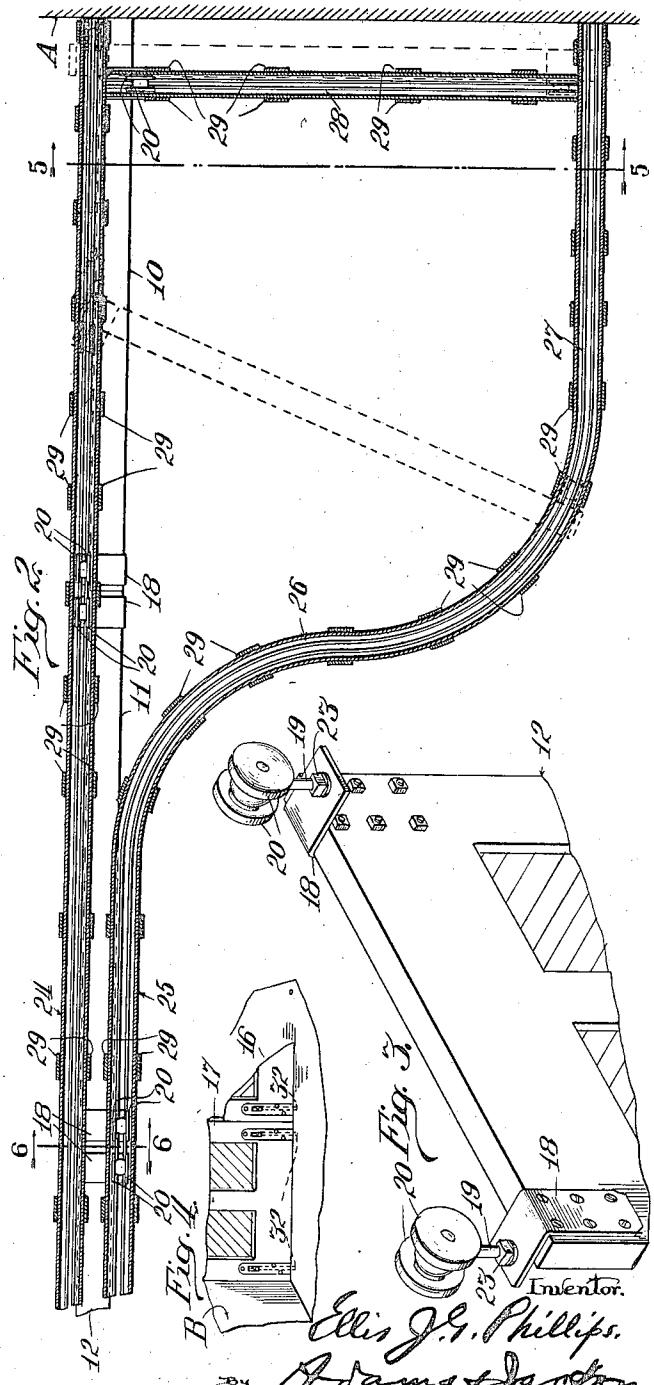


Fig. 2.

Fig. 3.

Fig. 4.

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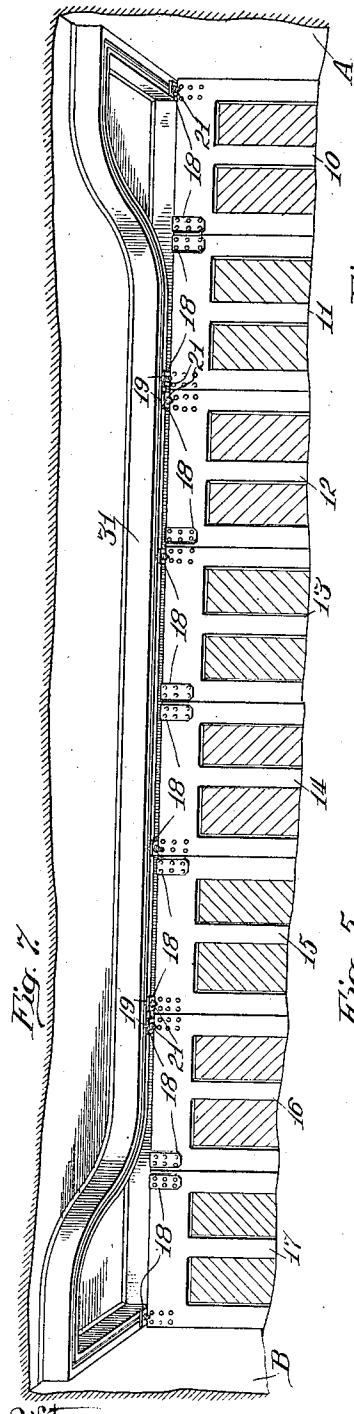


Fig. 7.

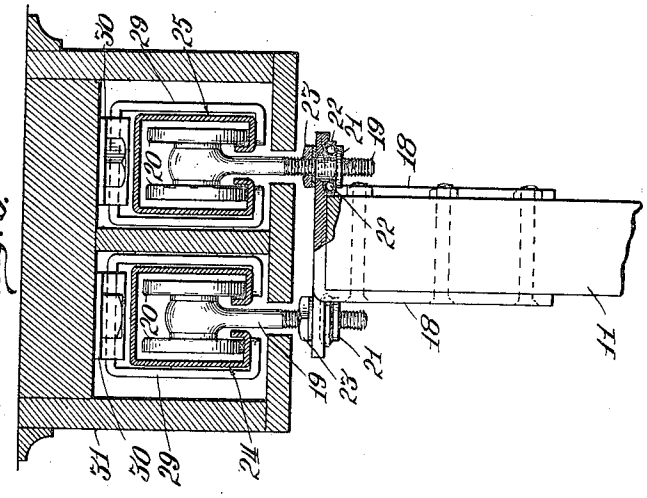


Fig. 6.

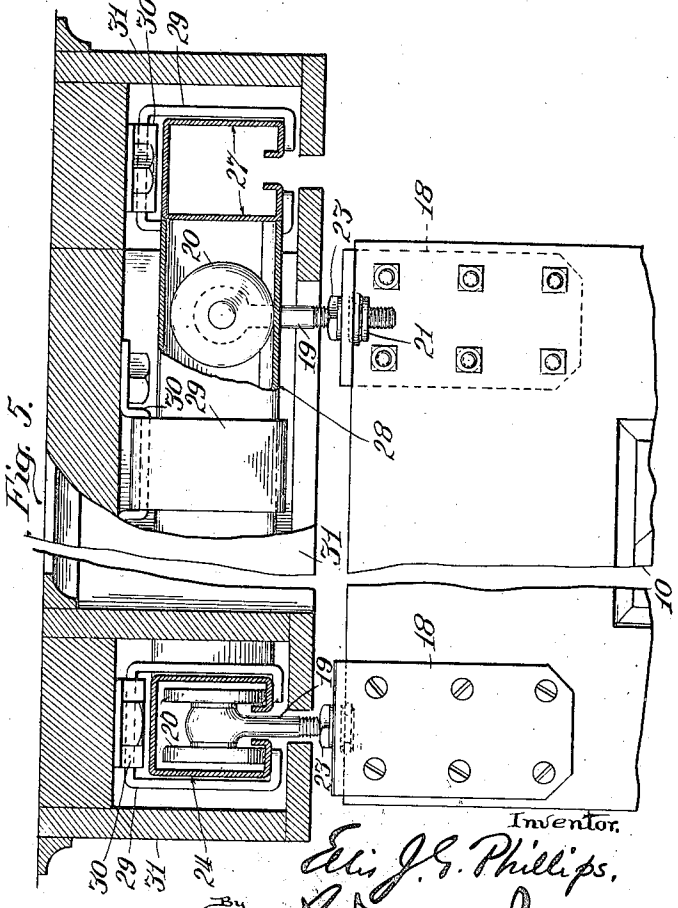


Fig. 5.

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UNITED STATES PATENT OFFICE.

ELLIS J. G. PHILLIPS, OF AURORA, ILLINOIS, ASSIGNOR TO RICHARDS-WILCOX MANUFACTURING COMPANY, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS.

SLIDING DOOR AND TRACKS THEREFOR.

Application filed September 25, 1922. Serial No. 590,466.

To all whom it may concern:

Be it known that I, ELLIS J. G. PHILLIPS, a citizen of the United States, and a resident of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Sliding Doors and Tracks Therefor, of which the following is a specification, reference being had to the accompanying drawings.

In many buildings, such for example as gymnasiums, schools, and other places where a comparatively large number of persons assemble it is desirable to divide the floor space of such a building by movable partitions so that such space may be utilized as one large room or a plurality of smaller rooms. Such movable partitions are best made in the form of doors that abut at their edges as thereby not only is each room made more nearly proof against sounds emanating from an adjoining room but the doors do not detract from the appearance of the rooms as other forms of partitions are apt to do. It is the leading object of my invention to provide novel means for suspending a plurality of such doors from overhead tracks in such manner that they can be readily moved from their alined edge-to-edge closing position to a position alongside of each other and substantially parallel with a side wall of the room, or in other words, at right angles to their position when serving as a partition. I accomplish this object by the construction and arrangement of parts shown in the drawings and hereinafter particularly described. That which I believe to be new will be set forth in the claims.

In the drawings,—

Fig. 1 is a perspective view of the upper portion of a series of sliding doors suspended by my improved means, the doors being shown in closed position;

Fig. 2 is a horizontal section through that portion of the tracks that are shown at the right-hand side of Fig. 1,—the housing that is shown in Fig. 1 as enclosing the tracks being omitted—the view also showing in dotted lines the right-hand door turned at right angles into fully-opened position and the next-succeeding door partly turned to bring it into position to lie alongside of said right-hand door;

Fig. 3 is a perspective view of the upper portion of one of the doors shown in Fig. 1 and showing the manner of arranging the two wheeled carriers that support the door from the overhead tracks;

Fig. 4 is a detail illustrating the means for locking each door to the floor when in its closed position;

Fig. 5 is an enlarged cross-sectional view taken on the line 5—5 of Fig. 2, certain portions being broken away;

Fig. 6 is an enlarged cross-sectional view taken on the line 6—6 of Fig. 2; and

Fig. 7 is a view similar to Fig. 1 but showing a modification in the construction of the tracks whereby the doors may be moved to either side of the doorway or part of them to one side and the remainder to the other side.

In the several figures of the drawings,—A and B indicate respectively the opposite side walls of a room which it is desired to divide into separate spaces or rooms by a movable partition extending across the room between said walls. Such partition is here shown as made up of a plurality of independently movable sliding doors, such doors in the construction illustrated being eight in number and, for convenience, being respectively indicated by the numerals 10 to 17 inclusive. Each of these doors has secured to it, as best shown in Fig. 3, two aprons 18, the two aprons of each door being secured to opposite faces of the door and adjacent to the side edges thereof. Each apron is bent to provide an approximately horizontal portion that extends over the upper edge of the door and is of sufficient length to extend at some distance beyond the opposite face of the door. Through such projecting portion of each apron is an opening through which passes the screw-threaded lower end of a pendant or hanger bar 19 that at its upper end is journaled upon the axle of a pair of wheels 20, such parts 19 and 20 constituting an ordinary wheeled carrier or trolley adapted to run upon overhead tracks. To allow the doors to turn relatively to the wheeled carriers, as is necessary in view of the track construction hereinafter described, the connection between each pendant 19 and its apron 18 is necessarily loose enough to permit a swiveling action of the doors with their pendants, and to ensure the turning being an

easy one I preferably interpose at the connection of the pendant with the apron an anti-friction bearing which, in the construction shown, (see Fig. 6) is provided by screwing up on the lower portion of the pendant a nut 21 against the enlarged head of which a series of balls 22 rest—the other half of the raceway for the balls being formed as there shown by a curved ring that fits in a recess in the lower face of the turned portion of the apron. It is evident that the door can be adjusted vertically as desired by turning of this nut 21, and when set as desired independent vertical movement of the door can be prevented by proper adjustment of another nut 23 located above the horizontal part of the apron. Any other desired anti-friction bearing means may of course be employed.

Turning now to the tracks upon which the wheels 20 of the carriers run, 24 and 25 indicate two such tracks that, for the greater portion of their length, lie adjacent to and parallel with each other—these parallel portions being spaced apart sufficiently to permit them to respectively receive the two sets of wheels 20 that are carried by each of the doors—except those on the end door 10. In other words, with the exception of said door 10 the wheels 20 of one carrier on each of the doors will travel in the track 24, while the wheels of the other carrier on the same door will travel in the track 25. A short distance from one of the side walls of the room—the wall A in Figs. 1 and 2—the track 25 is given a reverse or ogee curve, as indicated at 26, and from such curved portion continues as a straight section 27, which latter section is parallel with the track 24 and at a sufficient distance therefrom to permit the trolleys on the doors 11 to 17 inclusive to respectively travel along on the track 24 and the track section 27 and with the door at right angles to its closing position. Extending between the track 24 and the section 27 of the other track is a third track indicated by 28 which lies closely adjacent to the side wall A and parallel therewith, or in other words at right angles to the two parallel tracks 24, 25. On this track 28 run the trolley wheels 20 at the adjacent edge of the end door 10, while the other trolley wheels on the same door run on the main track 24, the swiveling connection of the door with the pendant permitting of course this standing of one set of the trolley wheels 20 in the track 28 that is at right angles to the main track that the other trolley wheels run upon. The cross track 28 is not shown as connected with either of the other tracks that it abuts against—that is, it does not open into either of the other tracks because, of course, the trolley wheels 20 at the adjacent edge portion of the door 10 are the only trolley means that run in that cross track, and it is not intended that such trolley means therein should at any time run in either of the main tracks.

All of the tracks may be of any desired construction, and as here shown each is formed of sheet metal sections each bent to form top and side walls, and having their lower marginal portions turned inwardly and upwardly to form rails for the wheels 20 to run upon—the construction being a well known form. The tracks will be supported as usual by brackets placed at intervals, such brackets conforming as usual in shape to the shape of the tracks that they support. The brackets shown are indicated by 29 and, as here shown, each is secured to an overhead beam or to the ceiling by bent metal pieces 30 that are bolted in place to such beam or ceiling. As here shown the various tracks are surrounded by a boxing 31, which boxing, however, may of course be omitted if desired. When employed it will have slots in its bottom wall of course for the passage therethrough of the hanger rods or pendants 19. By reference to Fig. 1 it will be seen that the bent aprons 18 at the abutting edges of the doors 10 and 11 are on the same sides of those two doors, and that the aprons adjacent to the abutting edges of the doors 11 and 12 are on the opposite sides of those two doors, whereas such aprons from there on toward the left hand side of Fig. 1 alternate with respect to the sides or faces of the doors. The exception from the general rule with respect to the arrangement of the aprons on the door 11 is due to the fact that the doors are narrower than the distance from the wall to the point where the curved portion 26 of the track 25 joins the long straight section of track, and hence it would not be feasible to have reversed the position of the aprons on the door 11 from that shown. However, if the showing of the width of the doors in Fig. 1 had been materially wider the aprons on the door 11 could have been arranged exactly with respect to all the other doors at the left thereof. The material thing with respect to the use of these tracks, so far as concerns all doors except that one that corresponds to the one marked 10, is that one of the trolley devices on each door runs on one of the tracks and the other trolley device on the other track, and that the track section 27 be spaced at the right distance from the straight track 24 to permit the doors to extend between them at approximately right angles to the position that such doors occupy when in closing position.

With the doors closed as in Fig. 1, and with their edges in contact as there shown, it is evident that an effective division wall or partition is provided across a room, and with the lower portions of the doors provided with locking bolts, as indicated at 32,

(see Fig. 4) such doors will be rigidly in alinement, as is desirable. Now, to move these doors out of closing position and alongside of the wall A that is adjacent to the end door 10, the bolts 32 will be pulled out of their keepers or sockets in the floor, after which the end door 10 will be turned so that its trolley that runs on the cross track 28 will move along such track, while its other trolley on the track 24 will move toward the end of such track. The result will be to turn that door 10 so that it stands at right angles to its former closed position and alongside of the wall A. The succeeding doors will each be moved toward the wall A, and as the trolley member that runs on the track 25 comes to the curved section 26 such trolley will follow along that curved section and along the straight end portion 27, whereas the other trolley on the door will move along the long straight section 24. The several doors will thus be brought one after the other to positions at right angles to their closing position and stand side by side at one side of the doorway, as will be readily appreciated from an inspection of Fig. 2.

In Fig. 7 I have shown a modification wherein the same number of doors is employed as in Fig. 1, but differing from Fig. 1 only in that the track 25 is shown as formed at both its ends with the curved and straight sections 26 and 27, and having the cross track member 28 provided at each end instead of at one end. As will be understood, so constructing the track as shown in this Fig. 7 will permit the doors to be all moved to either one side or the other of the room, or half or any number of the doors may be moved to one side, as already described, and the remaining doors moved in like manner to the other side.

By reason of the extension of the horizontal portions of the aprons 18 that each door carries to equal distances beyond the two faces of the doors such doors are located, when in operative position, in the plane of the space between the closely adjacent portions of the two main track members and hence are equally supported from such tracks and therefore are capable of being moved easily therealong.

What I claim as my invention and desire to secure by Letters Patent, is—

1. In combination, two overhead tracks that are parallel and adjacent for a portion of their length, one of said tracks near one of its ends curving away from the other track and terminating in a straight end portion that is parallel with said other track, a plurality of doors, and two carriers for each door that respectively travel upon said tracks, each of said doors having means extending beyond one of its faces for effecting a swiveling connection with a carrier on one of the tracks and means extending beyond the other of its faces for effecting a similar connection with a carrier on the other track.

2. In combination, two overhead tracks that are parallel and adjacent for a portion of their length, one of said tracks near one of its ends curving away from the other track and terminating in a straight end portion that is parallel with said other track, a plurality of doors adapted, when in closed position, to stand approximately in the plane of the space between the said adjacent parallel portions of the tracks, carriers movable along said two tracks, and means projecting beyond opposite faces of each door for swivelingly connecting each door with a carrier on each track.

3. In combination, two overhead tracks that are parallel and adjacent for a portion of their length, one of said tracks near one of its ends curving away from the other track and terminating in a straight end portion that is parallel with said other track, a plurality of doors adapted, when in closed position, to stand approximately in the plane of the space between the said adjacent parallel portions of the tracks, two aprons secured to opposite faces, respectively, of each door, each apron extending over the top of the door and projecting beyond the face thereof, and carriers movable along said two tracks, one apron on each door having swiveling connection with a carrier on one of the tracks and the other apron having a like connection with a carrier on the other track.

4. In combination, a system of overhead tracks comprising a straight track, a second track parallel with and adjacent to said first-named track for a portion of its length and near one of its ends curving away from said first-named track and terminating in a straight end portion that is parallel with the first-named track, a third track extending across the space between the first-named track and said straight end portion of the second-named track, a series of doors, two carriers for each door for movably suspending the doors from said tracks, one of the carriers for an end door of the series traveling on said third-named track with its other carrier on said first-named track, and the two carriers for each other door of the series traveling on the first-named and second-named tracks, respectively.

5. In combination, a plurality of independently-movable doors of substantially similar width adapted to close a doorway when arranged edge-to-edge or to stand face-to-face adjacent to one side of the doorway when the doorway is open, an overhead track system comprising two tracks that are parallel and in close proximity throughout their principal length but near one end are separated by the curving of one track to carry its end portion away from the other track to a

distance approximately equal to the width of one of the said doors and a third track extending at an angle to said other tracks and located between the more widely separated portions of said other tracks, a carrier connected with each of said doors near each edge thereof, one carrier of each door except an end door of the series traveling on one of said first-mentioned tracks and the other of said carriers traveling on the said parallel and curved track, the carriers for said end door traveling respectively on one of said first-named tracks and the said third or cross track, the connections between the several doors and their carriers being swiveling connection to permit the required turning of the doors into and out of closing position.

ELLIS J. G. PHILLIPS.