O. L. SMITH.

SHOW CASE DOOR.

APPLICATION FILED APR. 26, 1911.

1,161,900.

Patented Nov. 30, 1915.

2 SHEETS—SHEET 1.

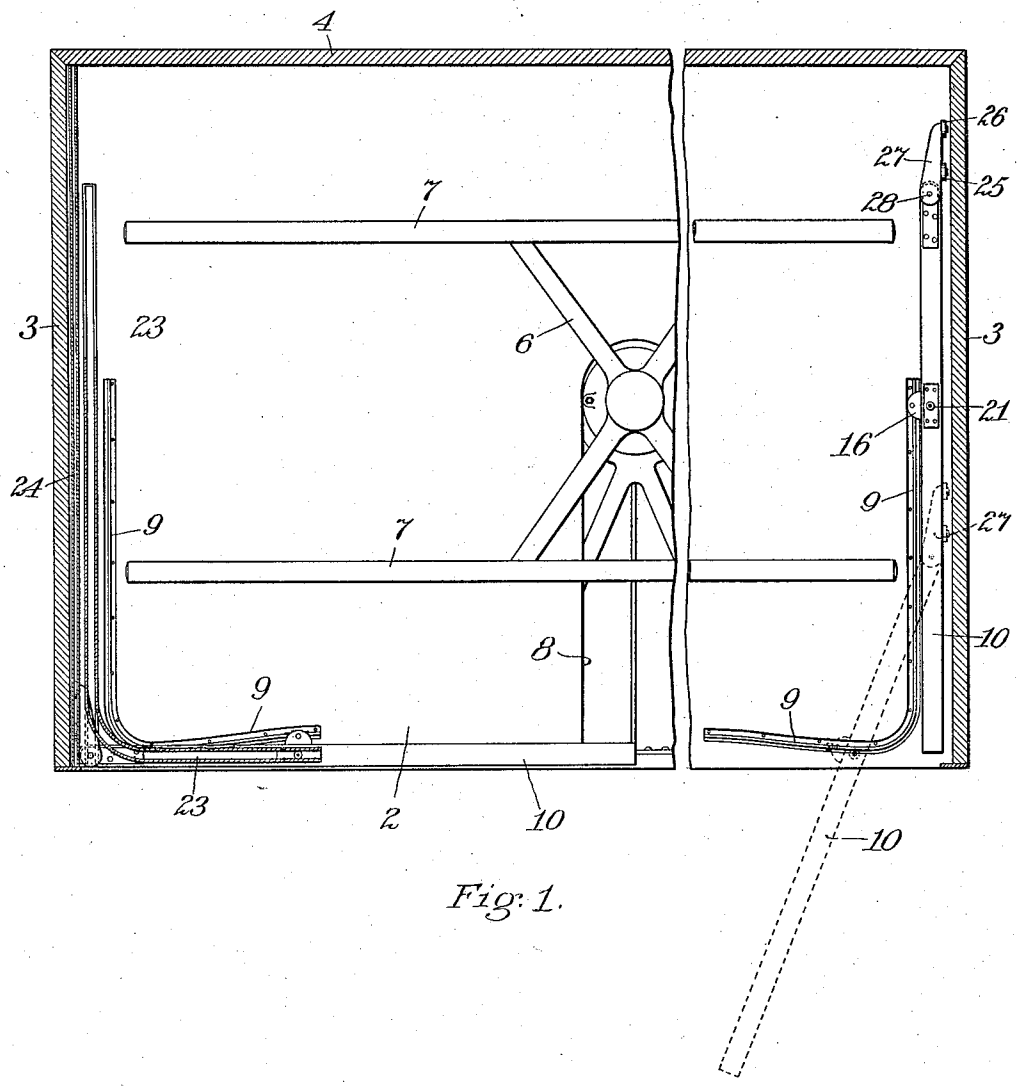


Fig. 1.

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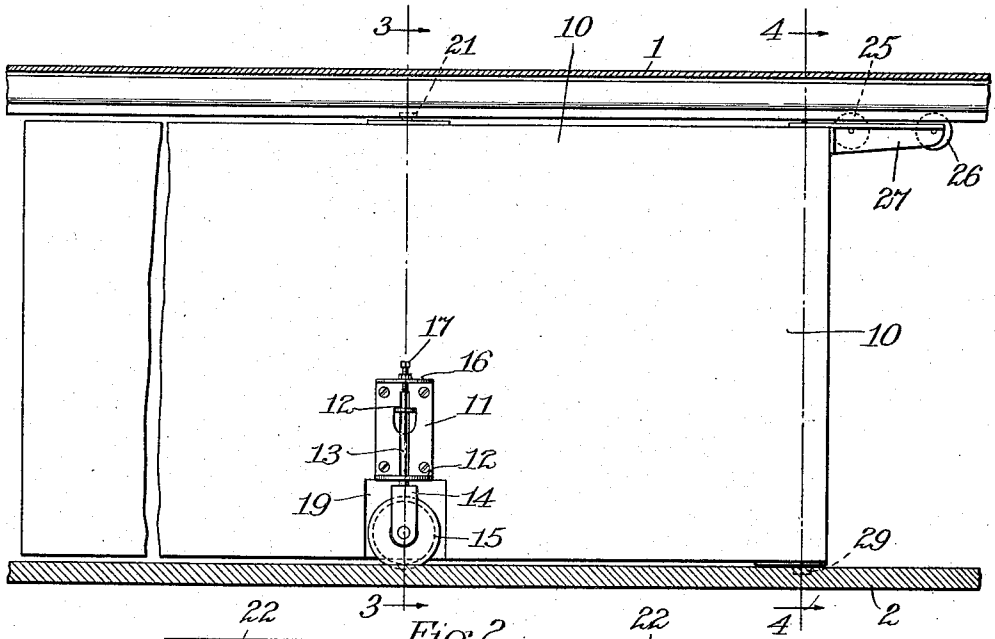


Fig. 2.

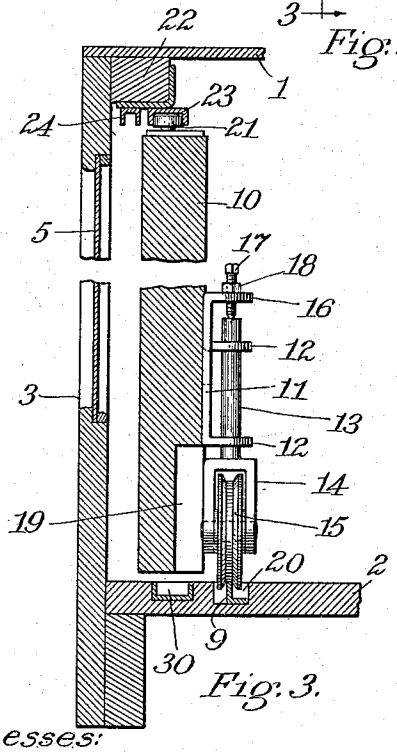


Fig. 3.

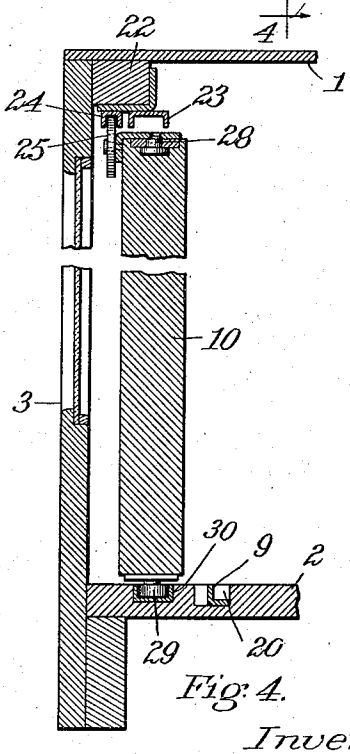


Fig. 4.

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UNITED STATES PATENT OFFICE.

OSCAR L. SMITH, OF GRAND RAPIDS, MICHIGAN.

SHOW-CASE DOOR.

1,161,900. Specification of Letters Patent. Patented Nov. 30, 1915.

Application filed April 26, 1911. Serial No. 623,337.

To all whom it may concern:

Be it known that I, OSCAR L. SMITH, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented an Improvement in Show-Case Doors, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

The invention to be hereinafter described relates to display cases used in stores and like places for the display of goods, and more particularly it relates to the door or doors with which such cases are provided.

Display cases, for the purposes stated, are usually formed of glass in whole or in part, and a rack adapted to support goods is movable to and from a position within the case, so that when at the front of the case the goods may be readily inspected and when at its position within the case the goods may be protected from dust, dirt, or handling by unauthorized persons. To effectually secure the results sought, the case must be provided with some kind of a closure or door, which, when closed, will properly protect the goods and when open will permit ready and convenient inspection of the goods. Floor space is usually limited, and the passage ways between cases narrow; therefore, swinging doors of usual type are unsuitable, and moreover such doors are liable to injury when swung to open position. Sliding doors are best suited to this purpose, but in the adaptation thereof to a glass case, difficulty is found in providing suitable sliding connections between the door and the case. With these facts in mind, the aims and purposes of the present invention are to provide a show case with a sliding door which, when in closed position, shall occupy the space between the top and bottom of the case at the front thereof and when in open position may extend along the side of the case, all as will best be made clear from the following description and accompanying drawings of one form of the invention suited to the intended purposes.

In the drawing: Figure 1 is a plan view, with parts broken away, of a show case embodying the form of the present invention, the top of the case being removed to better illustrate the parts beneath; Fig. 2 is a view looking in the direction of the arrow, Fig. 1, showing the relation of parts when the door is in open position, a portion of the door being broken away; Fig. 3 is a section on the line 3—3, Fig. 2; and Fig. 4 is a section on the line 4—4, Fig. 2.

The show case proper may be of any suitable design or shape desired and comprises the top 1, bottom 2, sides 3, and back 4. The top, sides and back of the case are preferably formed of glass or a framework having glass panels 5 secured in place by any suitable means.

Movable to and from a position within the show case is a rack 6 having supporting portions of desired form and shape, as the arms 7, adapted to support goods to be displayed. In the form of the device shown, the track may be supported by a suitable carriage or truck beneath the bottom 2 of the case, such carriage or truck not being herein shown or described as its details are not of the present invention. A slot 8 in the bottom of the case permits the rack to be moved to and from its position within the case, though, obviously, other means may be employed.

In the form of the invention shown two doors are employed, but obviously the number of such doors may be varied as circumstances dictate, but since they are or may be of the same general character a description of one and its operative and supporting connections with the case will be sufficient.

Mounted on or secured to the bottom 2 of the show case is a track 9 preferably formed as an angle iron, see Figs. 3 and 4, said track extending not only along the front of the case but having a side portion extending toward the back of the case and substantially parallel to the side of the case. It will be noted that the portion of the track 9 at the front of the case is not parallel to the front edge but extends inward gradually as it approaches the median line of the case, the purpose of which will hereinafter appear.

The door which may be of usual frame work carrying the usual glass panel 10 has secured thereto a caster or other rolling support, which, as the door is slid to and from closed position travels upon the track 9, said caster or other rolling support constituting one of the door sustaining elements. In the form of invention shown, the door 10 is provided with a bracket 11 having guiding lugs 12, 12, for the stem 13 of the caster carry-

ing yoke 14 in which is rotatably mounted the caster 15. At the upper portion of the bracket 11 is a lug 16, through which extends the adjustable bearing screw 17, the end whereof finds a seat in the upper portion of the caster stem 13, as shown. A set nut 18 may be employed to secure the bearing screw 17 in adjusted position.

From the construction thus far described, it will be noted that the caster 15 constitutes the main supporting means for the door 10, and that by proper manipulation of the adjusting screw 17 the height of the door bottom from the bottom of the case can be readily changed. Since the track 9 alters its direction where the side and front portions of the track are connected, the caster must be susceptive of movement about the axis of the caster stem 13, and as one means for permitting such movement, and at the same time employ a caster of sufficient size to permit ease of door movement, the said door is recessed at 19, so that the caster yoke and caster may not be obstructed in such movement.

The track 9 is preferably secured in a groove 20 so that it offers no projection above the surface of the bottom 2 of the case, the top of the track being flush with the surface of the said bottom, as shown, Figs. 3 and 4.

To direct the upper edge or top of the door 10 in its opening and closing movements, there is provided a guide, of any desired character, which in the form of invention shown comprises a roller 21 secured to the top portion of the door in the vertical plane passing transversely of the door through the axis of the caster stem 13, Figs. 2 and 3. Thus while the axis of the roller 21 and the caster stem 13 are in the same vertical plane passing transversely of the door 10, the axes of said roller and stem are not necessarily in the same vertical line, see Fig. 3.

Secured to a bead 22 beneath the top of the case is a guide or way 23, which, in the form of the invention shown, comprises an inverted U strip adapted to receive the roller 21. The guide 23 extends along the front of the case at the top and is parallel to the front edge of the case, and has its side portion turned into parallelism with the side 3 of the case, see Figs. 1 and 2.

From the construction described, it will be noted that as the door 10 moves from its closed position, indicated by full lines at the left of Fig. 1, to its open position indicated at the right, Fig. 1, the caster 15 moves along the track 9 at the bottom of the case and constitutes the main support of the door, while the roller 21 moves in the guide or way 23, and since the axes of the roller 21 and the caster stem 13 are not in vertical alinement, it follows that the track 9 and guide or way 23 are non-parallel at the front portion of the case where the door has both a sliding and turning movement as it is opened or closed; and that said track 9 and guide or way 23 assume parallel relation at the side of the case where the door has only a straight sliding movement.

In some form of show cases, the door construction thus far described may be sufficient, but it is preferred, as shown by the drawing herewith, that the caster 15 be located at a point nearer one end of the door than the other and additional guiding means be provided for the door. In the illustrated form of the invention, the caster 15 and roller 21 are disposed nearer that end of the door which is adjacent the side of the case when the door is closed; thus the door has a tendency to tilt downward at its other or free end. To counteract this tendency, and provide guiding means for the end of the door adjacent the side of the case, a track 24 is secured to the bead 22 parallel to the side of the case and in this runs one or more rolls 25, 26 of a shoe 27, Figs. 1 and 2, pivotally connected to the upper portion of the door as at 28, the construction being such that the rolls 25 and 26 guide the shoe in a direction toward and from the back of the case as the door is opened and closed, the pivotal connection of the shoe permitting it to accommodate its angular relation with the door, as the latter is turned. It will be noted also that any lifting tendency at the rear of the door will be transmitted as pressure by the pivoted shoe and rolls upon the track 24. Thus the shoe 27 pivotally connected at a convenient upper portion of the door and projecting as an arm or bracket therefrom forms an extended bearing for the upper rear portion of the door and during the opening and closing movements relieves the strain on the case or cabinet that would otherwise occur. At its lower portion, the door 10 may have a guiding pin or roll 29, Figs. 2 and 4, adapted to travel in the straight guide or way 30 formed preferably as a groove in the bottom of the case parallel to the side of said case and track 24.

From the construction described it will be seen that the weight of the door is mainly sustained by the caster 15, and is guided by the roller 21, the shoe 27 and roller 29 as the door is moved to open and closed position and vice versa. As the door is opened, the free end thereof swings outward and the door as a whole moves bodily toward the side of the case until parallel therewith, whereupon it may be moved bodily backward, as indicated by Fig. 1, so that when finally in position the entire door or a large portion thereof is well within the case, leaving little if any end portion projecting beyond the front of the case.

Obviously, one or two doors may be em-

ployed for each case, and some of the details of the construction be varied within the true scope of the invention as defined by the claims. For the purposes of identification, the edge of the door which is next to the side wall of the case when the door is in closed and open position may be termed the "rear edge" and the edge which passes over the front of the case during opening or closing movement may be known as the "front edge" said terms being for identification and not limitation.

What is claimed is:

1. The combination with a cabinet having an open front and provided with walls at the top and bottom thereof, of a door closing said opening, coöperating guides and projections in the cabinet and on the door permitting said door to swing and during its swinging movement to move laterally and inwardly into the cabinet and an arm pivoted to the door engaging the top of the cabinet in rear of the door to support said end of the door and prevent its tilting.

2. The combination with a cabinet having an open front and comprising bottom and top walls and a door fitting said opening, of means for mounting the latter in the cabinet comprising guides fixed to the top and bottom walls of the cabinet and projections attached to the door and coöperating with the guides in all positions of the door and a bearing arm hinged to the door and extending into the cabinet and having its inner end coöperating with the guide on said top wall.

3. The combination with a cabinet having an open front and comprising bottom and top walls and a door fitting said opening, of means for mounting the door in the cabinet comprising guides fixed to the top and bottom walls of the cabinet and projections attached to the door and coöperating with the guides, said guides and projections being so disposed that during the opening movement of the door it is caused to slide laterally and recede into the cabinet, an arm attached to the door having an end traveling in one of the guides and forming a bearing spaced from the door.

4. In a display device, the combination of a case or cabinet, a horizontally movable door for said case or cabinet, a rolling support in pivotal relation with the lower portion of the door between the front and rear edges of the door, a guide at the lower part of the case having straight portions at the sides and front and a connecting curved portion on which said rolling support moves, a guide at the top of the case, and a shoe supported by and pivotally connected to the upper portion of the door at the rear thereof and bearing under said guide at the top of the case.

5. In a display device, the combination of a case or cabinet, a sliding door movable horizontally to and from closed position, a guide at the top and bottom of the case or cabinet extending along the front and sides thereof, each having a curved part connecting the front and side portions, a rolling support connected to the door nearer the rear than the front edge and traveling on the guide at the bottom of the case or cabinet, a projection at the top of the door to engage the guide at the top of the case or cabinet, and an arm pivotally connected to the rear portion of the door at the upper part thereof and engaging beneath the top of the case or cabinet to prevent tilting of the door in a vertical plane.

6. In a display device, the combination of a case, an upright door movable horizontally to and from closed position, guides at the top and bottom of the case for guiding the door in its opening and closing movements, one of said guides being parallel to the front of the case and the other of said guides extending inwardly from the side of the case as it approaches the median line of the case at the front thereof, a unitary rolling support between the front and rear edges of the door engaging said inwardly inclined guide for supporting the weight of the door, and a projection from the door engaging the other of said guides, said guides at the side of the case being parallel.

7. In a display device, the combination of a case, a horizontally sliding door therefor, a track on the bottom of the case extending along the front and directed toward the interior of the case as it approaches the median line of the case, a roller secured to the door between its front and rear edges and running on said track, said roller supporting the entire weight of the door, means for adjusting said roller with respect to the door, and sliding connections between the rear edge of the door and the case to prevent tilting movement of the door in a vertical plane.

8. In a display device, the combination of a show case, a track having a straight portion extending along the front of the case and a straight portion extending along the side of the case, a door, a rolling support connected to said door and traveling on said track as the door is opened and closed, a straight guide or way secured to the case and extending toward the rear thereof, and a shoe pivotally connected to the door and coöperating with said guide or way as the door is opened and closed.

9. In a display device, the combination of a show case, a track having a straight portion extending along the front of the case and a straight portion extending along the side of the case, a door, a rolling support connected to said door and traveling on said track as the door is opened and closed, a guiding roll connected to the door in the same transverse plane as the axis of the

rolling support, a guide on the case engaged by said guiding roll, a straight guide or way secured to the case and extending toward the rear thereof, and a shoe pivotally connected to the door and coöperating with said guide or way as the door is opened and closed.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

OSCAR L. SMITH.

Witnesses:
AMELIA M. ROSS,
MAY A. HURLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."