H. BLITZ.

ANTIFRICTION BEARING FOR DISPLAY CABINET DOORS.

APPLICATION FILED MAY 13, 1912.

1,128,653. Patented Feb. 16, 1915.

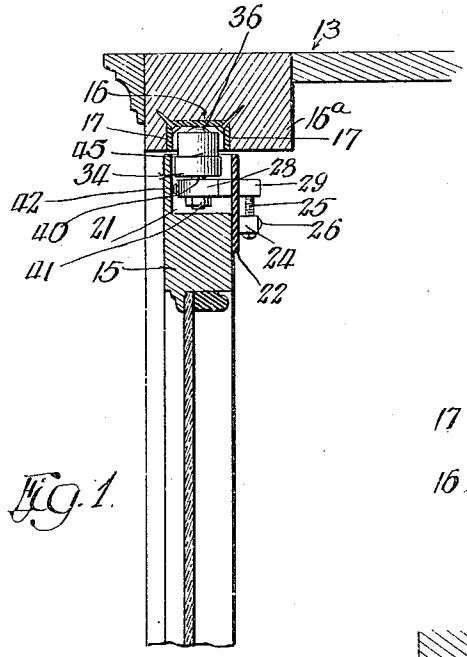


Fig. 1.

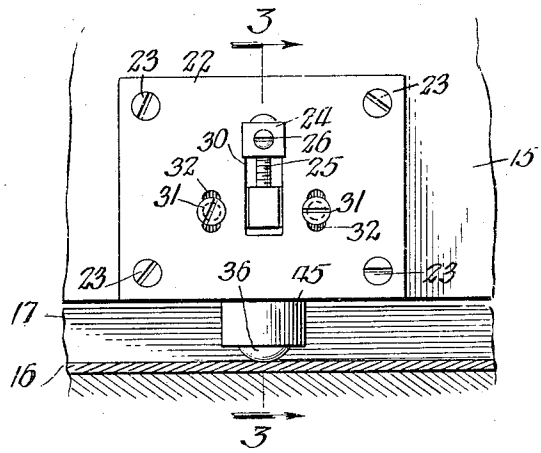


Fig. 2.

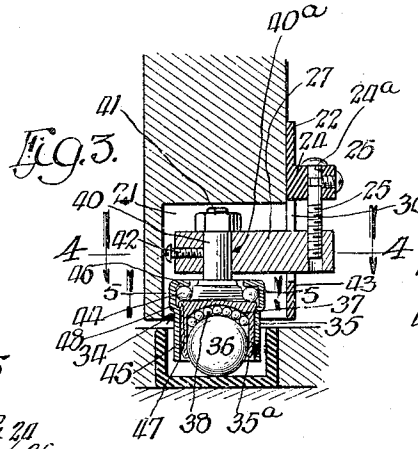


Fig. 3.

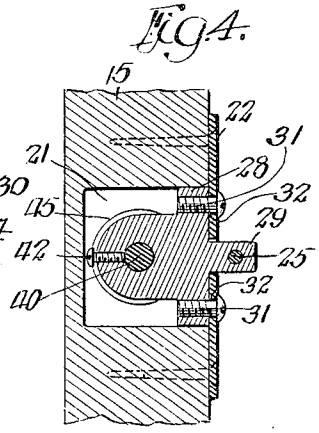
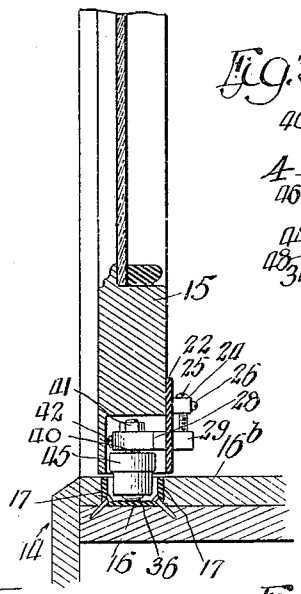


Fig. 4.



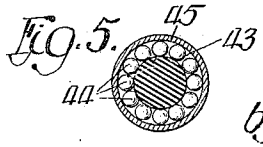


Fig. 5.

Witnesses:
F. N. Alfredo
H. R. Williams

Inventor
Herman Blitz
by Brown & Mehlhope Attys

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HERMAN BLITZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO BLITZ BROS., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ANTIFRICTION-BEARING FOR DISPLAY-CABINET DOORS.

1,128,653. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed May 13, 1912. Serial No. 696,837.

To all whom it may concern:

Be it known that I, HERMAN BLITZ, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Antifriction-Bearings for Display-Cabinet Doors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in antifriction bearing devices more particularly adapted for use with display cabinets and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

In the drawings: Figure 1 is a view representing a vertical section through a sliding door of a cabinet in a plane containing the axes of the top and bottom bearing devices. Fig. 2 is a view representing on an enlarged scale one of the bearing devices in rear elevation. The view is shown on an enlarged scale. Fig. 3 is a view representing a vertical section through the parts shown in Fig. 2 in a plane indicated by the line 3—3 thereon. Fig. 4 is a view representing a horizontal section through the parts shown in Fig. 3 in a plane indicated by the line 4—4 thereon. Fig. 5 is a view representing a transverse section through the bearing device in a plane indicated by the line 5—5 of Fig. 3.

Referring now to that embodiment of my invention illustrated in the accompanying drawings, 13 indicates the top wall of a cabinet and 14 indicates the bottom wall thereof. The cabinet is of that type having an open front which is adapted to be closed by a sliding door 15. Said door 15 is mounted to slide on top and bottom bearing rails 16, 16, and is provided at the top and bottom, preferably adjacent one vertical margin and at the median line of the door with devices for sliding engagement with said bearing rails so that said door may be moved along said rails from a closed to an open position and vice versa. It is to these rails and particularly to the devices which engage said rails and permit the sliding movement of the door, that my invention is addressed.

The bearing rails 16 consist of channel bars, the top and bottom rail being each preferably made of one piece. Said channels are turned so that their flanges 17 will embrace the bearing devices carried at the top and bottom margins of the door 15. Said rails 16 are secured in suitable recesses made in the top and bottom marginal strips 16^a, 16^b, forming the front of the main frame of the cabinet, the edges of the flanges of said rails being made flush with the faces of said strips to provide a smooth finish. As shown said channels are secured in place by screws extending through apertures in the lateral edges of the channels in a diagonal direction.

Each of the antifriction devices are attached to the top and bottom marginal frames of the door and are alike so that a description of one will suffice for all. At the place where the antifriction device is to be applied, the marginal part of the door frame has a recess 21, which is open at the rear but closed at the front.

22 indicates a plate secured to the door frame with one edge flush with the bottom margin or top margin, as the case may be, of the door frame and with its other edges extended beyond the recess 21. As shown, this plate is secured to the door frame by means of screws 23. The plate 22 is provided at its outer face, that is to say, its face toward the interior of the cabinet, with a projecting lug 24 containing a vertical aperture 24^a adapted to receive a vertically extending bolt or screw 25. Said bolt 25 at a point near its head, is provided with an annular groove in which engages the reduced end of a set screw 26 which is threaded horizontally into the lug 24. Said set screw thus holds the bolt 25 against longitudinal movement in the aperture 24^a.

27 indicates a horizontally extending block which carries the antifriction bearing device on the door. Said block has a base 28 adapted for engagement against the inner face of the plate 22 and a projecting lug or rib 29 which extends through a vertical slot 30 in the plate 22 into a position in line with the bolt 25. The said lug 29 has a vertically extending threaded aperture into which is screwed the bolt 25.

31, 31 indicate screws located at each side of the rib 29, said screws extending through elongated slots 32 in the plate 22 and being

threaded into the base 28 of the block 27. By this arrangement, the block 27 may be adjusted, the bolt 25 making it possible to raise and lower the block 27 (after loosening the screws 31) and the slots 32 making it possible to adjust the block in an angular direction, that is to say, to raise or lower one or the other edge of said block.

34 indicates as a whole an antifriction device adapted for bearing engagement within the channel 16. Said device includes an inner shell or casing 35 open at the end next to said channel and adapted for containing a ball 36 which projects through said opening and has rolling engagement with the horizontal part of the channel-bar 16. Said shell has within it and opposite its open end a rigid bearing wall 37 curved in the surface of a sphere substantially concentric with the ball 36.

38 indicates small antifriction balls interposed between the large bearing ball 36 and said spheric bearing surface of the shell. The edges 35[a] of the shell about the ball 36 are turned slightly inward to retain the ball and prevent it from dropping from the shell.

40 indicates an upright stem made rigid with the said inner shell 35 and having its central axis extending radially to the spherical bearing surface 37. Said stem extends through a vertical aperture 40[a] formed in the supporting block 27. The end of said stem beyond the said supporting block is threaded to receive a nut 41 which retains the stem in said aperture in the supporting block and prevents the shell carrying the ball from being withdrawn from said supporting block. Movement of the shell toward the block 27 is prevented by a horizontally extending set screw 42 which is threaded through the end of the supporting block and engages against the stem 40.

At the top of the casing or shell 35 above the spherical bearing surface 37 is formed an annular groove 43 which forms a part of the ball race for a plurality of annularly arranged balls 44.

45 indicates an outer shell or casing surrounding the inner shell or casing 35 and adapted for rotation thereon in a plane at right angles to the stem 40. Said outer shell has at its upper end a flange 46 which is turned down and is adapted to form the other part of the ball race for confining the antifriction balls 44. The inner and outer shells are provided respectively with annularly extending shoulders 47, 48, which engage against each other and prevent longitudinal movement of one shell with reference to the other in a direction to separate the two parts of the ball race containing the balls 44.

The two casings and the balls 36 are so proportioned with reference to the space between the flanges 17, 17 of the channel 16 that sufficient room is left between the outer casing and the said flanges for the antifriction device as a whole to pass readily through said channel and clear the same. The balls 38 provide an antifriction bearing between the ball 36 and the inner shell, thus making possible the easy rolling of the bearing device as a whole on the channel rails, while the balls 44 interposed between the flange 46 of the outer shell and the ball race 43 on the inner shell provide an antifriction bearing between the two shells, so that when the outer casing strikes one or the other flange of the channel rail, it will readily rotate on the inner casing and thus prevent binding of the antifriction device as a whole within the channel.

By proper adjustment of the bolt or screw 25 in the supporting block 27, the several bearing devices at the top and bottom of each door may be readily adjusted so as to provide the proper bearing engagement between the antifriction devices on the door and the rails on the cabinet frame, and as before pointed out, the plate 22 itself which carries said block 27 may be angularly adjusted so as to present the stems 40 in a direction normal to the planes of the bottoms of the channel rails.

My improved antifriction devices thus provide not only bearing members for the door capable of the utmost freedom of movement, thereby insuring their ready passage along the rails, but also provide a freedom of adjustment which makes it possible to quickly and easily adjust each bearing device independently so as to take up for any warping or sagging of the cabinet frame members or of the door frames and thus present the bearing devices to the bearing rails in a manner best adapted to provide easy movement.

By the construction described, it will be apparent that the devices for adjusting the position of the supporting bar 27 are all operable from the outside of the plate 22, so that these adjustments may be made very quickly and without the removal of said plate 22.

I claim as my invention:

1. In combination with a frame-member, a fixed bearing rail including parts arranged at an angle to each other, and a door-member having sliding movement on said bearing-rail, the edge of said door-member being provided with a recess in the plane of said bearing-rail, said recess opening at one side through one face of said door-member, a plate covering the open side of said recess and secured to the face of said door-member, a supporting-bar in said recess having a base engaged against the inner surface of said plate, means operable from the outside of said plate for adjustably securing said sup-

porting-bar to said plate, and an antifriction bearing-device carried by said bar and adapted for rolling engagement with said bearing-rail, said antifriction device being rotatable about an axis at right angles to the plane of said bearing rail.

2. In combination with a frame member, a fixed bearing rail secured thereto, said bearing rail including parts arranged at an angle to each other, and a door member having sliding movement on said bearing rail, the edge of said door member being provided with a recess in the plane of said bearing rail, a plate overlapping said recess at its margin secured to the face of said door member, a supporting bar located in said recess, means operable from the outside of said plate for adjustably securing said supporting bar to said plate, and an antifriction bearing device carried by said bar and adapted for rolling engagement with said bearing rail, said antifriction device being adapted for rotative movement about an axis at right angles to the plane of said bearing rail.

3. In combination with a frame-member, a fixed bearing-rail having laterally spaced flanges secured thereto, and a door-member having sliding movement on said bearing-rail, the edge of said door-member being provided with a recess in the plane of said bearing-rail, a plate overlapping said recess at its margins secured to the face of said door-member, a supporting-bar located in said recess and adjustably secured to said plate, and an anti-friction device carried by said bar and adapted for rolling engagement with said bearing-rail, said anti-friction device comprising inner and outer casings, the one rotatable with respect to the other, the inner casing being provided with a recess containing a spherical bearing-surface opposed to said bearing-rail, a large ball carried within said casing and having bearing engagement with said rail, a plurality of anti-friction balls interposed between said large ball and said spherical bearing-surface, and a stem made rigid with said inner shell and with said supporting-bar.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 8th day of May A. D. 1912.

HERMAN BLITZ.

Witnesses:
GEORGE R. WILKINS,
KARL W. DOLL.

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