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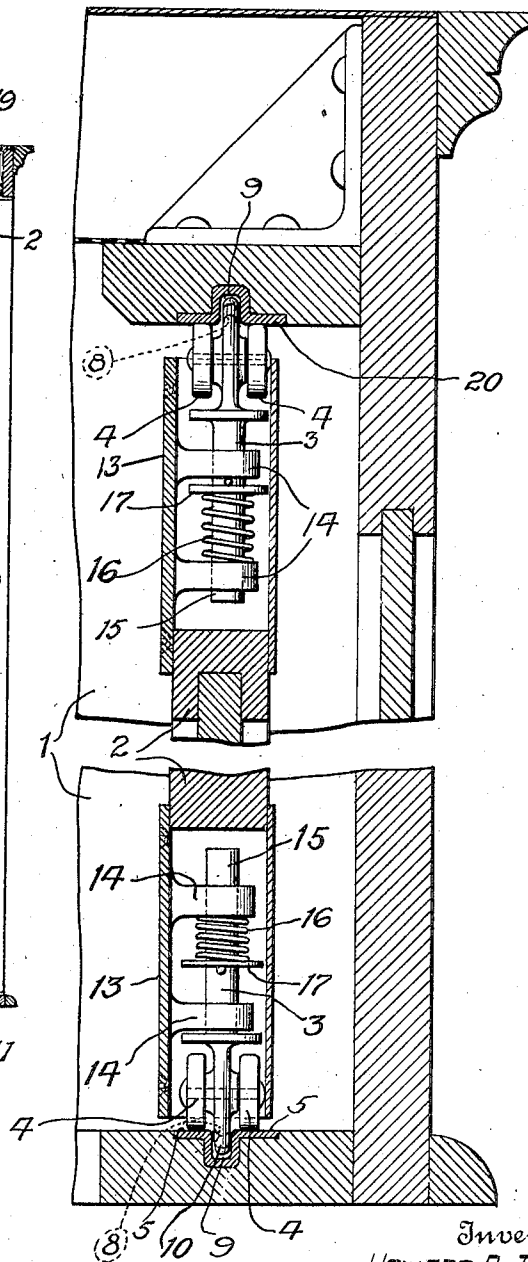
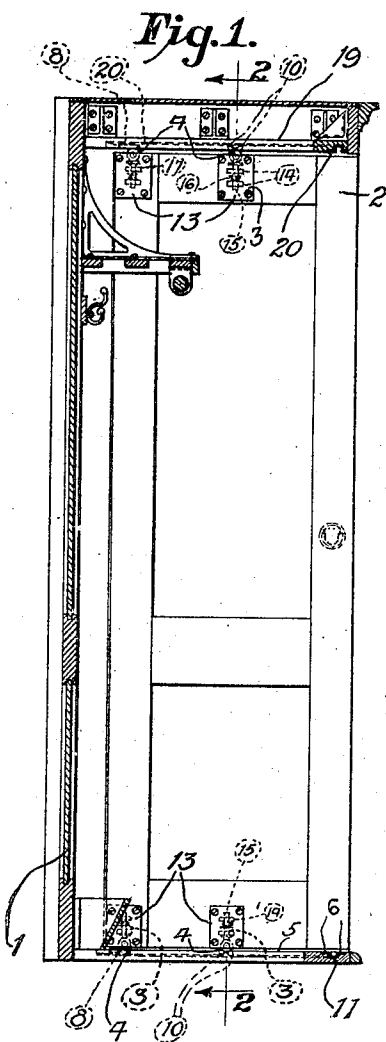
Mar. 20, 1923.

H. A. JOHNSON ET AL.
DISAPPEARING DOOR.
FILED MAY 6, 1921.

1,448,845.

2 SHEETS—SHEET 1.

Fig. 2.



Inventors
HOWARD A. JOHNSON
Charles Mailey
By their Attorneys
Sheffield & Betts

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2 SHEETS—SHEET 2.

Fig. 3.

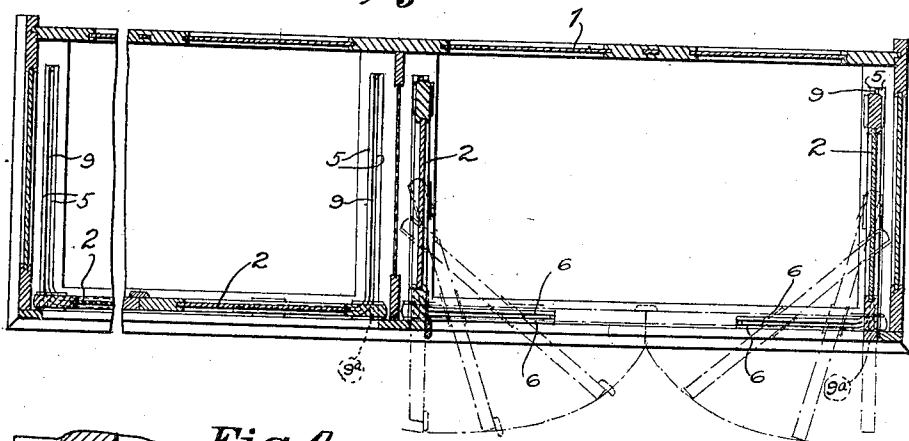


Fig. 4.

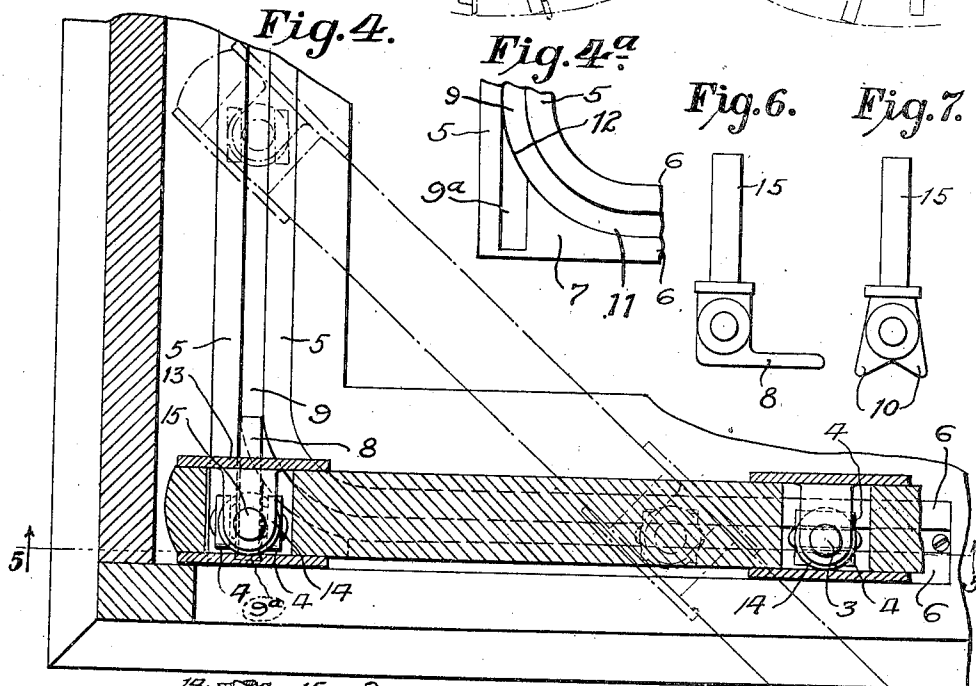


Fig. 4^a.

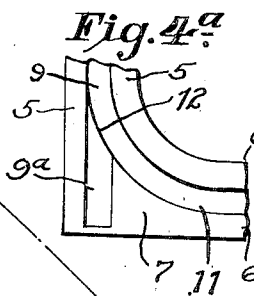


Fig. 6.

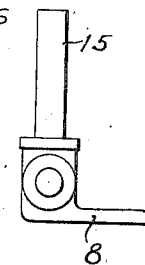


Fig. 7.

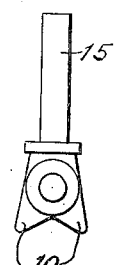
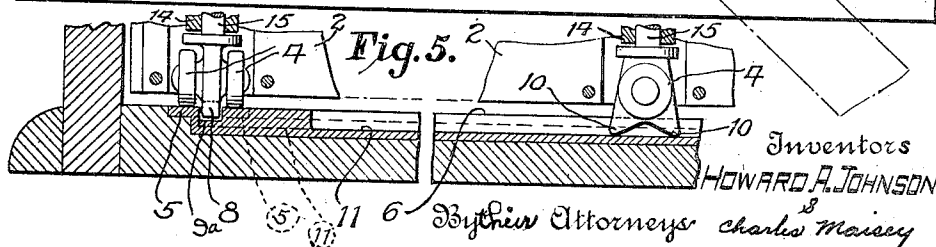


Fig. 5.



Inventors
HOWARD A. JOHNSON

By their Attorneys Charles Maisey
Sheffield & Betts

UNITED STATES PATENT OFFICE.

HOWARD A. JOHNSON AND CHARLES MAISEY, OF NORFOLK, VIRGINIA.

DISAPPEARING DOOR.

Application filed May 6, 1921. Serial No. 467,491.

To all whom it may concern:

Be it known that we, HOWARD A. JOHNSON and CHARLES MAISEY, citizens of the United States, and residents of Norfolk, Virginia, have invented certain new and useful Improvements in Disappearing Doors, of which the following is a disclosure.

Our invention relates to doors mounted to slide and at the same time adapted to be turned through an angle in moving from closed to open position and the reverse.

The principal object of our invention is to provide a door mechanism of the type mentioned which shall be simple in construction and economical in manufacture.

A second object of our invention is to provide a door arrangement capable of turning through a full 90 degree angle and which shall be readily installed.

The novel features of our invention are pointed out with particularity in the appended claims. The invention itself, however, with further objects and advantages, will best be understood from the following description taken in connection with the appended drawings in which—

Fig. 1 is a vertical section through a closet equipped with a door mechanism according to our invention, the door being shown open.

Fig. 2 is a detail section on the line 2—2 of Fig. 1, parts being broken away.

Fig. 3 is a horizontal section illustrating two adjacent closets, both equipped with door mechanism similar to that shown in Fig. 1, and illustrating the path of the doors in opening and closing.

Fig. 4 is a detail section on a large scale of a portion of Fig. 3.

Fig. 4^a is a detail illustrating a portion of the track arrangement as used in the arrangement of Figs. 1 to 4, inclusive.

Fig. 5 is a detail view in vertical section taken on the line 5—5 of Fig. 4.

Figs. 6 and 7 are detail views of forms of casters and guide members used in the apparatus illustrated in Figs. 1 to 5, inclusive.

In the drawing, 1 indicates the rear wall of the closet designed to hold clothing or for other purposes, and 2 is a door adapted to be moved into a position parallel to the wall 1, but illustrated in Fig. 1 as at right angles to said wall. Door 2, according to our invention, is mounted on casters 3, 3,

which preferably have each a pair of wheels 4, 4, wheels 4 running on suitable tracks as hereinafter described. In the form of apparatus illustrated in Figs. 1 to 5, we prefer that one of the casters 3 be fixed to the door at the bottom on the vertical central line of the door and that the other be fixed to the door at or near the lower corner which is at the rear of the closet when the door is fully open. The wheels of the caster 3 at the lower corner of the door run on a track extending at right angles to the rear wall 1 of the closet and having spaced parallel track members 5, 5, preferably set flush with the surface of the floor of the closet on which the wheels of the caster run. The wheels of the caster 3 on the central line of the door run on a track at right angles to the track members 5, 5, the latter track comprising track members 6, 6, the two tracks being connected by a frog member 7 illustrated in detail in Fig. 4^a. The caster cooperating with track members 5, 5 is provided with a guide shoe 8 which travels in a groove 9 between members 5, 5. The caster cooperating with track members 6, 6 is provided with guide prongs 10, 10 on each side of its vertical axis which project into the groove 11 between the members 6, 6. The groove 11 is deeper than required for the shoe 8 and the extension 9^a of the groove 9 in the frog member 7 is only deep enough to accommodate the shoe 8. The prongs 10 project downwardly to a level below that of the groove 9^a, and the groove 11 is of corresponding depth, there being a shoulder 12 in the frog member 7 at the point that the groove 11 turns away from the groove 9. Assuming the door to be in the position illustrated in Fig. 1, both the bottom casters are resting on the track members 5, 5. When the door is pulled forward to close the same, the guide prongs 10, 10 of the central caster upon striking the shoulder 12 are turned so that the wheels of this caster turn through an angle of 90 degrees on to the track members 6, 6. The guide shoe 8 being at a level above the shoulder 12 is not affected thereby and this shoe is of sufficient horizontal length in the rear of the caster that the front end of the shoe is guided into the extension groove 9^a of groove 9 in frog member 7. When the doors are being moved from closed to open position, the casters run in the reverse manner, there

being no tendency for the wheels to take the wrong direction, however, when the door is being opened.

The casters 3, 3, preferably comprise a supporting plate 13 designed to lie parallel with one face of the door and to be attached thereto by screws or other suitable means. On one side, the plate 13 has fixed thereto a pair of guide lugs 14, 14, which are apertured to receive the stem 15, at the lower end of which the wheels are mounted. Casters 3, 3, preferably comprise a spring 16 surrounding the stem 15 and compressed between the upper one of the lugs 14 and a washer 17, the springs 16 thus supporting the weight of the door and serving to equalize any inequalities in the track. By arranging the tracks so that the guiding grooves coincide as far as possible in the portion of the lengths at right angles to the rear wall 1, we can set the axes of the casters 3, 3, in the same vertical plane and can thus insert the casters into the recesses cut into the door. The entire caster mechanism can thus be contained within the original outline of the door, thus utilizing the space in the closet to best advantage. Evidently the track portion 5, 5 may extend toward the rear of the closet as far as desired, so that no portion of the door need project at the front when the door is open.

Preferably, we provide the caster mechanism with corresponding tracks 19 and 20 at the top of door 2 similar to that at the bottom. However, the casters 3, 3 at the top of the door, being free from the weight of the door, their springs are relatively free from distortion and can be readily compressed to permit the doors being installed in or removed from their tracks.

The door mechanism illustrated in Figs. 1 to 5, inclusive, may be operated with ease by a single motion of the hand.

While we have disclosed the preferred embodiment of our invention, we do not wish to be limited to details of our disclosure herein except as such details may be essential to the novelty of the appended claims. In particular, we wish it understood that wherever we have mentioned a closet that we intend to include a garage or other enclosure, our invention being peculiarly well suited to large doors and to situations where the door when open must not project beyond the position of the door when closed. We find also that wheels are not essential on the upper edge of the doors according to our invention.

Having thus described our invention, we claim:

1. The combination of a door, wheeled casters bearing the weight of said door, means for holding said door vertical, connected tracks for said casters set at an angle, a branch track forming a continua-

tion of one of said tracks, means forming fixed guide grooves adjacent said tracks, a projection on one of said casters co-operating with the said grooves for turning said door, and means for directing a second caster onto said branch track in a turning movement of the door.

2. The combination of a door, wheeled casters bearing the weight of said door, means for holding said door vertical, connected tracks for said casters set at an angle, a branch track forming a continuation of one of said tracks, means forming fixed guide grooves adjacent said tracks, the groove adjacent said branch track being relatively shallow, projections on said casters co-operating with said grooves for turning said door, and means whereby the projection on one of said casters is guided into said shallow groove and the projection on the other of said casters is guided into the groove associated with one of said first-mentioned tracks in turning the door when the door is moving in a given direction.

3. The combination of a door, wheeled casters bearing the weight of said door, means for holding said door vertical, connected tracks for said casters set at an angle, a branch track forming a continuation of one of said tracks, means forming guide grooves adjacent said tracks and branch, and projections on said casters co-operating with said grooves for turning said door, said projections comprising two spaced prongs on opposite sides of the vertical axis of one of said casters and a shoe on the other of said casters.

4. The combination with a door of wheeled casters bearing the weight of said door, tracks for said casters set at an angle and connected by a curve, a branch track connected with and forming an extension of one of said tracks, means for holding said door vertical, means forming fixed guide grooves adjacent all said tracks, said tracks and grooves coinciding for a portion of their lengths and then branching, the groove of one of said branches being relatively shallow, and projections on said casters co-operating with said grooves for turning said door, said projections comprising a trailing shoe on one caster adapted to run in said shallow groove and two prongs on the other caster projecting to a greater depth than said shallow groove and being arranged on opposite sides of the vertical axis of the caster on which they are mounted.

5. A door mechanism for disappearing doors comprising a door mounted on a pair of wheeled casters fixed to its lower edge, guide means for said casters whereby the casters turn the door thru an angle in moving from open to closed position, guide means at the top of the door whereby the

door is maintained vertical during its opening and closing movements, said casters being placed one on the vertical centre line of the door and the other on the lower corner which lies nearer the rear of the enclosure with which the door is used when the door is open, said guide means including means forming straight grooves running in directions forming an angle, a frog having
10 a curved groove connecting said straight grooves and having a straight groove portion forming an extension of one of said straight grooves and of less depth than said

curved groove and said straight grooves at their points of connection with said curved 15 groove, whereby a shoulder is formed at the point where said curved groove turns off from said extension, and guides on said casters cooperating with said grooves, the one of said guides on said central caster 20 being adapted to run around said curved groove and the other of said guides being adapted to overrun said shoulder and to pass into said extension.

HOWARD A. JOHNSON.
CHARLES MAISEY.