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CAR DOOR FASTENER

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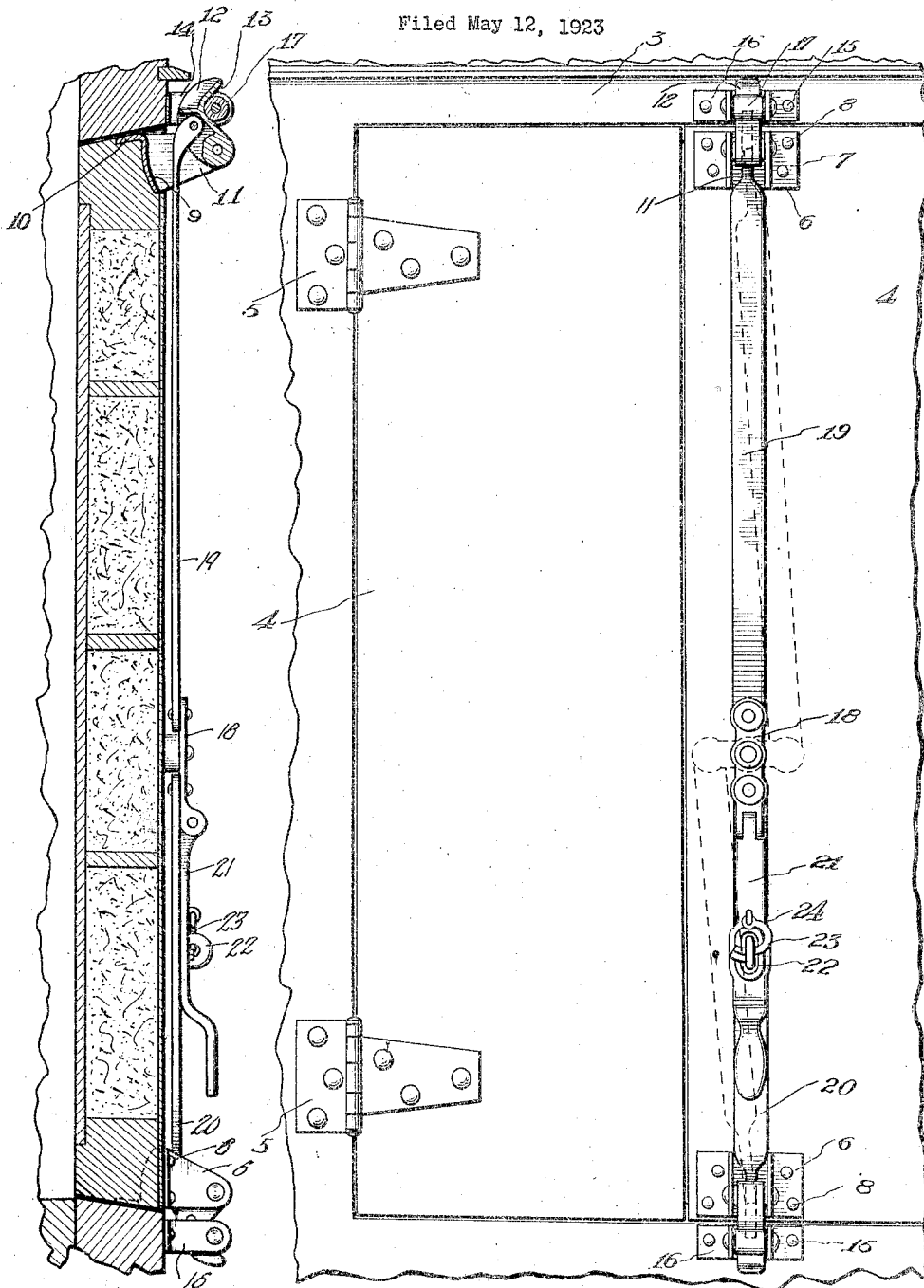


Fig. 2

Fig. 1

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CAR-DOOR FASTENER.

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To all whom it may concern:

Be it known that I, WILLIAM R. GILLIES, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Car-Door Fasteners, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to a door fastener, and more particularly to a fastener for doors of refrigerator cars.

The present invention is particularly adapted to be installed upon the doors of refrigerator cars now in use, because the operating levers or handles of conventional car door fasteners, together with their cooperating links, may be utilized in applying my invention to such doors.

My invention contemplates providing a car door with a pair of cams in the form of hooks which are mounted at or adjacent to the upper and lower margins of the door for movement around axes parallel with the plane of the door, said hooks being adapted, when the door is to be fastened, to be swung beyond the upper and lower margins of the door to cooperate with suitable frame-carried members and thereby to force the door tightly into the frame and there hold it. When the door is to be unfastened, the said cam-hooks are withdrawn from said frame-carried members and caused to lie within, or substantially within, the upper and lower margins of the door, the cam-hooks pressing against the door frame during such movement and serving to start the opening of the door. The fact that the lower cam-hook, when retracted, lies above, or at any rate not substantially below, the lower margin of the door is a feature of considerable practical importance, because cars of the character to which my invention is applied are usually loaded at platforms which are on a substantial level with the floors of the cars and hence but slightly below the lower margins of the car doors.

In the accompanying drawings illustrating my invention:

Figure 1 is an elevational view illustrating

my invention applied to a car door; and

Figure 2 is a view partly in section and partly in elevation, looking at the fastening devices in a line parallel to the plane of the closed doors.

Similar characters of reference refer to similar parts in both of the figures.

In the drawing, reference numeral 3 illustrates a car provided with a door-opening adapted to be closed by doors 4—4, each of which is mounted by means of the usual, or any suitable, hinges indicated at 5—5. The doors herein illustrated are of a type commonly employed in connection with refrigerator cars and hence need not be described in detail.

Carried by one of the doors 4, being the door which is adapted to hold the other in closed position, is a pair of brackets 6—6, each of which is preferably formed in one piece from malleable iron. One of these brackets is located adjacent the upper edge and free vertical edge of the door, and the other bracket is located adjacent the lower edge and free vertical edge of the door. Aside from the fact that they are reversely arranged, the two brackets 6 are identical. Each of these brackets comprises the base portion 7, which is secured to the door by suitable attachment means illustrated at 8, the central portion of the said base 7 being bulged toward the door, as is most clearly illustrated at 9 in Fig. 2, the door being cut away to accommodate the said bulge 9. If desired, the bracket 6 may comprise the portion 10 which extends partially across and has its upper surface flush with the upper edge of the door, as shown in Fig. 2.

Each of the door-carried brackets 6 also comprises a pair of spaced parallel ears 11, which pivotally support a cam-hook 12 which is adapted to be swung around an axis parallel to the plane of the door by means of operating mechanism presently to be described. It will be noticed that each of the cam-hooks 12 comprises a concave cam surface 13 and a convex cam surface 14.

Secured to the door frame by attachment devices 15, and being so located that they lie adjacent the door-carried brackets 6 when

the doors are inclosed position, are brackets 16, each of which is preferably formed in one piece of malleable iron, and is provided with a pair of outwardly projecting spaced parallel ears, between which is pivotally mounted a roller 17. Each of the brackets 16 and its roller 17 constitutes a keeper which cooperates with the adjacent cam-hook 12 to force the doors 4 tightly closed and there hold them and to start the opening of the door by which the cam-hooks are carried.

I shall now briefly describe a type of operating mechanism which may be employed in connection with the cam-hooks hereinbefore described. This operating mechanism need not necessarily differ in any substantial respect from similar mechanisms now commonly in use in connection with refrigerator car doors. The operating mechanism shown in the drawings comprises a bar 18 which is pivoted to the door and is adapted to be swung relative thereto in a plane parallel to the plane of the door. Pivoted to and extending upwardly from one end of the bar 18 is a link 19, and pivoted to the bar 18 near the other end thereof, and projecting downwardly therefrom, is a corresponding link 20. Also carried by the last-mentioned end of the bar 18 is an operating handle 21 provided with an opening 22 adapted to receive a loop or staple 23 carried by the handle. If desired, the handle 21 may comprise a hook or keeper 24, which is adapted to engage through the loop or staple 23 when the handle is in the position shown in the drawings. It will, of course, be understood that the handle 21 may be utilized to move the pivoted bar 18 and its associated links 19 and 20 from their full line positions to their dotted line positions (Fig. 1). It will be noted that the links 19 and 20 are respectively pivoted to the upper and lower cam-hooks 12.

In the drawings the doors are illustrated in closed position with the several elements of the door fastener in their locking positions. When the doors are to be opened, the lever 21 is operated to swing the bar 18 and the links 19 and 20 to the dotted line positions illustrated in Fig. 1. Such movement of the links 19 and 20 swings the cam-hooks 12 around their respective axes, disengaging the cam surfaces 13 of the cam-hooks from the rollers 17 and causing the cam surfaces 14 of the cam-hooks to engage the rear portions of the brackets 16 to start the opening of the door by which the cam-hooks are carried. It will be noted that the cam-hooks may be retracted to positions where they lie within the upper and lower margins of the door. When the doors are to be fastened, the handle 21 is operated to cause the cam-hooks to engage behind the rollers 17, the cam surfaces 13 of the cam-

hooks cooperating with the rollers to force the doors tightly closed and there hold them.

Having thus illustrated and described a preferred embodiment of my invention, I do not limit myself to the specific construction and arrangement of parts herein shown and described, but wish to claim all equivalent constructions falling within the terms or spirit of the appended claims.

What I claim is new, and desire to secure by Letters Patent of the United States, is:

1. The combination with a car having a door hinged to swing around a vertical axis, cam hooks pivotally mounted upon the door at its upper and lower edges and adapted to move relatively to the door around axes parallel with the plane of the door, car carried keepers disposed above and below the door opening, and exterior of the car surface, said keepers comprising portions behind which said cam hooks may engage, and means for swinging said cam hooks outwardly to engage behind said keeper portions when the door is to be fastened and for retracting said cam hooks when the door is to be unfastened.

2. The combination with a car having a door hinged to swing around a vertical axis, cam hooks pivotally mounted upon the door at its upper and lower edges and adapted to move relatively to the door around axes parallel with the plane of the door, car carried keepers disposed above and below the door opening, and exterior of the car surface, said keepers comprising portions behind which said cam hooks may engage, and means for swinging said cam hooks outwardly to engage behind said keeper portions when the door is to be fastened and for retracting said cam hooks when the door is to be unfastened, said means comprising a member pivoted centrally to the door and provided with an actuating handle, link members directly connecting the ends of said centrally pivoted member with the cam hooks, whereby upon actuation of the handle the said link members are moved in opposite directions to control said cam hooks.

3. In combination with a door, a bracket mounted at one edge of the door, a cam hook pivotally mounted in said bracket for swinging movement around an axis parallel with the plane of the door, a second bracket mounted adjacent the door opening, a roller carried by said second bracket, and means carried by the door for moving said cam hooks outwardly to engage behind said roller to force the door tightly closed and there hold it.

4. In combination with a car, a door, bracket members carried by said car and projecting externally thereof, said bracket members being located at opposite sides of said door; cam hooks carried by the door

and adapted to engage behind said bracket members; actuating means for said car hocks, comprising link members and a centrally pivoted bar, and adapted to move said bar, whereby the link members are moved in opposite directions to actuate the cam hooks.

In witness whereof, I hereunto subscribe my name this 5th day of May, 1923.

WILLIAM R. GILLIES.

Witnesses:

J. DAVID DICKINSON,
EMILE J. BOURGEOIS.