

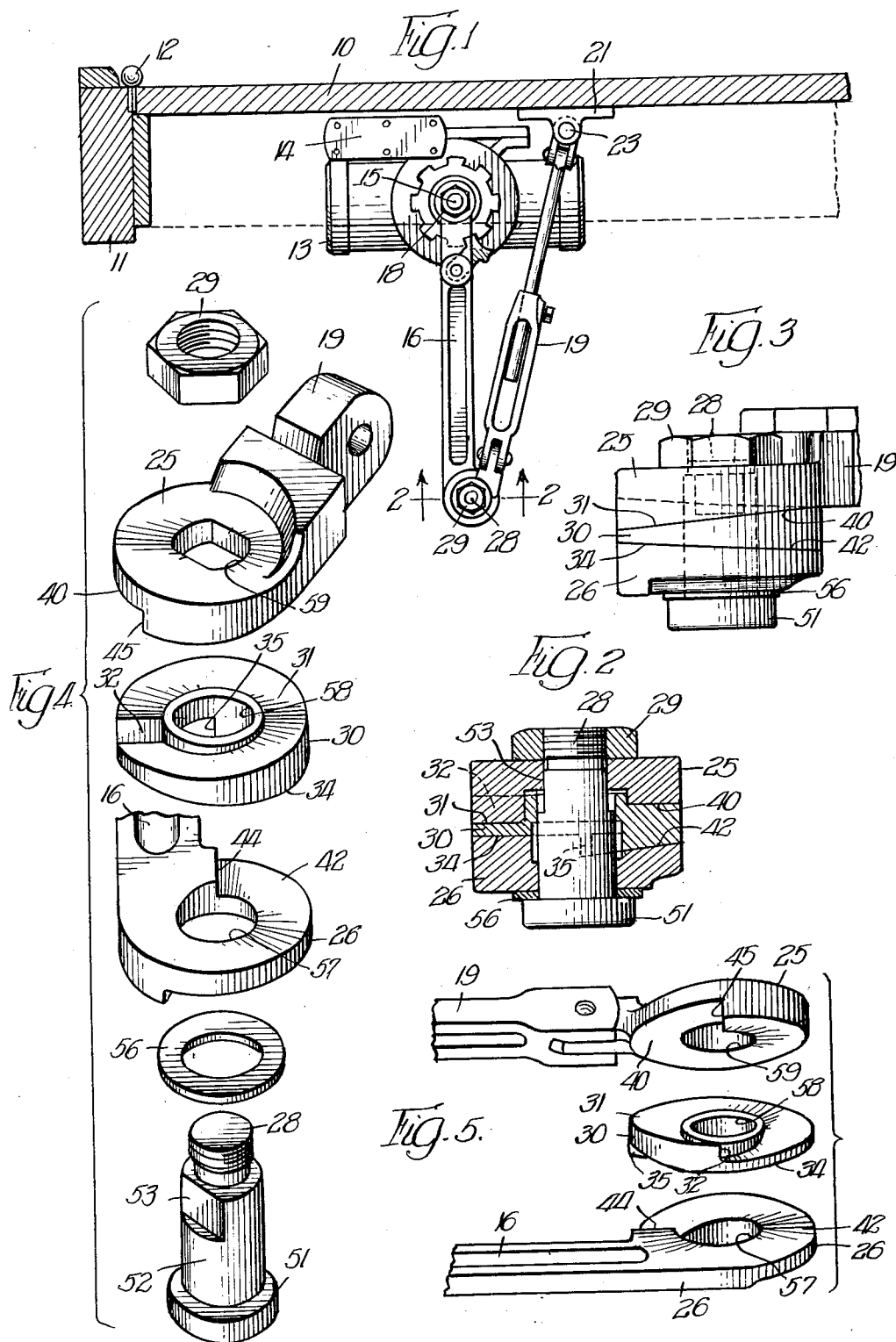
Sept. 4, 1962

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3,051,982

UNIVERSAL RIGHT AND LEFT HAND HOLD OPEN ARM

Filed Nov. 4, 1959



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**UNIVERSAL RIGHT AND LEFT HAND
HOLD OPEN ARM**

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Filed Nov. 4, 1959, Ser. No. 850,948
5 Claims. (Cl. 16-49)

This invention relates as indicated to door holders, and more particularly, to a universal door holder usable on closures which are hinged either at the right, or left hand side.

The present invention is related to the device shown in Lasier, Patent No. 1,826,553. In that patent the door holder includes opposed friction heads having cooperatively engaging cam surfaces. However, if the holder is used on a door pivoted at the opposite side, the holder must be inverted. This, of course, is undesirable, since the arms are reversed with respect to the top and bottom positions. Also, since the parts are not usually symmetrical their relocation by inversion is disadvantageous.

It is, therefore, an object of the present invention to provide a universal door holder. It is a further object of the invention to provide a door holder which may be used on right and left hand doors without inversion. It is a still further object of the invention to provide a door holder which is adjustable to hold a door at any selected open position. It is another object of the invention to provide a door holder which is simple in construction and efficient in operation and that may be readily applied to a door of either hand. Further objects and advantages of this invention will become evident as the description proceeds and from an examination of the accompanying drawing which illustrates one embodiment of the invention and in which similar numerals refer to similar parts throughout the several views.

In the drawing:

FIGURE 1 is a top plan view of the door holder of the invention mounted on a door check and closer in association with a door and door frame;

FIGURE 2 is an enlarged cross-sectional view taken substantially along line 2-2 of FIGURE 1;

FIGURE 3 is a view in elevation of the door holder device at the ends of the forearm and main arm;

FIGURE 4 is an exploded view of the door holder assembly; and

FIGURE 5 is an exploded view of the friction heads and cam member.

The door holder of the invention is employed with, and connected to, a door 10, and the door frame 11. When the door is opened turning on hinges 12, a relative movement is effected between the arms. In FIGURE 1 of the drawing, a door check closer 13 is attached in a suitable manner as by bracket 14 to the upper portion of the door. The operating spindle 15 extends above the top edge of the door. A main arm 16 is mounted on the operating spindle and secured thereto by a nut 18.

Pivotaly connected to the opposite end of the main arm 16 is a forearm 19. Forearm 19 is pivotaly secured at the other end to the door 10 by a bracket 21 and a pivot pin 23.

The pivotal connection between arms 16 and 19 embodies the door holder assembly of the invention to be more fully described hereinafter. It is to be understood that the holder may be located at various pivots in linkage between the door and door frame with special preference given to the pivot with the greatest relative movement between parts.

Referring now to the door holder, as best shown in

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FIGURES 2 through 5, the main arm 16 has a main arm friction head 26. Above the main arm friction head is a forearm friction head 25. Between the friction heads 25, 26 is a free floating cam member 30. The assembly is held together by bolt 28 and nut 29.

The cam member 30 has an upper spiral face 31 in the form of an inclined surface in a counterclockwise direction with a step 32 between the high and low portions. The opposite face 34 of the cam member 30 is a cam spiral in the form of an inclined surface in a clockwise direction with a step 35 between the high and low portions. It will be noted that the steps 32, 35 on the upper and lower faces of cam 30 are substantially opposite each other.

The forearm friction head 25 has a friction face 40. The main arm friction head 26 has a friction face 42. Friction faces 40, 42 are opposed to and face each other. Faces 40, 42 are provided with spiral surfaces complementary to the spiral faces of the cam member 30, so that they cooperatively engage the respective spiral faces of cam member 30. Thus, the forearm friction face 40 is in the form of a spiral in a counterclockwise direction with a step 45, and the main arm friction face 42 is in the form of a spiral in a clockwise direction with a step 44.

Bolt 28 has a head 51, a cylindrical shank 52 and a flat sided end portion 53. The head 51, since it is of a larger diameter than the shank 52, serves as a flange for supporting the assembly. Cylindrical shank 52 passes through a circular opening 57 in the main arm head 26, and opening 58 in cam member 30, so that the main arm freely pivots and cam 30 is free floating on bolt 28, that is, may freely rotate about bolt 28. However, the forearm head 25 has a flat sided opening 59 which non-rotatably receives bolt 28. The nut 29, which is screw threaded on the end of bolt 28, maintains the assembly together and by adjustment varies the distance the door may be opened before the friction faces and surfaces come into binding engagement. By loosening nut 29, there is provided greater freedom between parts, and the door may be opened a greater distance before the cam surfaces lock together to hold the door open. Contrariwise, if the nut 29 is tightened the door is held open at a lesser distance.

From the foregoing, it is believed that operation of the device is apparent. The door holder of the invention may be applied to a door in connection with a door check closer 13, or independently of a door check closer. The door holder may be applied to either a right or left hand door without turning the device over. For adjustment to right or left hand doors, the forearm is merely crossed to the appropriate side of the main arm.

When the door is opened, relative movement between the heads 25, 26 rotates the cam member 30 until a frictional binding action occurs between the cam and friction heads. For instance, if relative rotation of the arms is in a clockwise direction, the step 45 on the forearm friction head 25 engages the step 32 on the upper face 31 of cam member 30 to rotate the cam member 30 therewith. By rotation of the arms in a counterclockwise direction, the step 44 on the main arm friction head engages the step 35 on the cam member, and rotates the latter in a clockwise direction. Rotation of the cam member in either direction a selected distance causes frictional binding between the parts.

The advantages of the door holder of the invention are numerous. For example, by rotating the cam member either direction, the frictional area contacted by the cam and the friction heads is the same, so it is unnecessary to invert the arms to achieve efficient binding action.

In the drawing and specification there has been set forth a preferred embodiment of the invention, and al-

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though specific terms are employed, these are used in a generic and descriptive sense only, and not for purposes of limitation. Changes in form and the proportion of parts, as well as the substitution of equivalents are contemplated, as circumstances may suggest or render expedient, without departing from the spirit or scope of this invention as further defined in the following claims.

I claim:

1. A universal door holder comprising, a pair of relatively movable oppositely facing friction heads, a first arm connected to one of said friction heads, a second arm connected to the other of said friction heads, a freely rotatable cam member between said friction heads, said cam member having on one side a spiral face and having on the other side an opposite spiral face, said friction heads having oppositely facing sides with spiral surfaces complementary to and cooperatively engaging said spiral faces of said cam member, and pivot means supporting said friction heads and cam member for frictional binding action between said friction heads and cam member when said first and second arms are moved relative to each other in opposite directions.

2. A universal door holder comprising, a pair of relatively movable oppositely facing friction heads, a first arm connected to one of said friction heads, a second arm connected to the other of said friction heads, a cam member between said friction heads, said cam member having on one side a spiral face in the form of a surface inclined in a clockwise direction and having on the other side a spiral face in the form of a surface inclined in a counterclockwise direction, said friction heads having on the oppositely facing sides spiral surfaces complementary to and cooperatively engaging said spiral faces of said cam member, pivot means connecting said friction heads and cam member in a frictionally engaging relationship for frictional binding action between said friction heads and cam member when said first and second arms are moved relative to each other in opposite directions, and means for varying the distance said first and second arms may be moved relative to one another before said friction heads and cam member frictionally engage.

3. A universal door holder comprising, a first arm member adapted to be connected to a door, a second arm member adapted to be connected to a door frame, a first friction head on said first arm, a second friction head on said second arm oppositely facing said first friction head, a free floating cam member between said first and second friction heads, said cam member having on one side a spiral face in the form of a surface inclined in one direction and having on the other side a spiral face in the form of a surface inclined in the other direction, said friction heads having on the oppositely facing sides spiral surfaces complementary to and cooperatively engaging said spiral faces of said cam member, and

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pivot means securing said friction heads and cam member in a frictionally engaging relationship for frictional binding action between said friction heads and cam member when said first and second arms are moved relative to each other in opposite directions.

4. A universal door holder comprising, a pair of relatively movable oppositely facing friction heads, a first arm connected to one of said friction heads, a second arm connected to the other of said friction heads, a free floating cam member between said friction heads, said cam member having on one side a spiral face in the form of a surface inclined in a clockwise direction to form high and low portions with a step therebetween and having on the other side a spiral face in the form of a surface inclined in a counterclockwise direction to form high and low portions with a step therebetween, said step portions being substantially opposite each other, said friction heads having on the oppositely facing sides spiral surfaces complementary to and engaging said spiral faces of said cam member, and means pivotally connecting said friction heads and cam member for frictional binding action between said friction heads and cam member when said first and second arms are moved relative to each other in opposite directions.

5. A universal door holder comprising, a first arm member adapted to be connected to a door, a second arm member adapted to be connected to a door frame, a first friction head on said first arm, a second friction head on said second arm oppositely facing said first friction head, a free floating cam member between said friction heads, said cam member having on one side a spiral face in the form of a surface inclined in a clockwise direction with a step therebetween and having on the other side a spiral face in the form of a surface inclined in a counterclockwise direction to form high and low portions with a step therebetween said friction heads having on the oppositely facing sides spiral surfaces complementary to and engaging said spiral faces of said cam member, means pivotally securing said friction heads and cam member together for frictional binding action between said friction heads and cam member when said first and second arms are moved relative to each other in opposite directions, and means for varying the distance said first and second arms may be moved relative to one another before said friction heads and cam member frictionally engage.

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