

Sept. 27, 1932.

G. W. ISLEY

1,879,274

DOOR HOLDER

Filed June 1, 1931

2 Sheets-Sheet 1

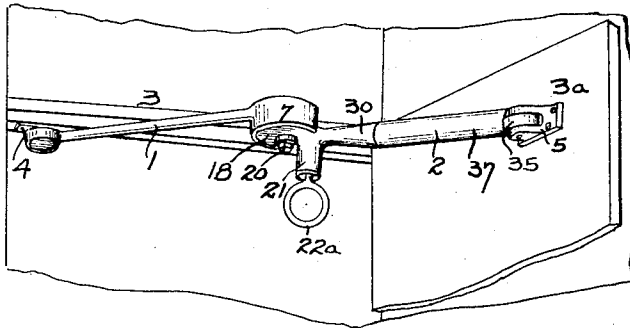


FIG. 1

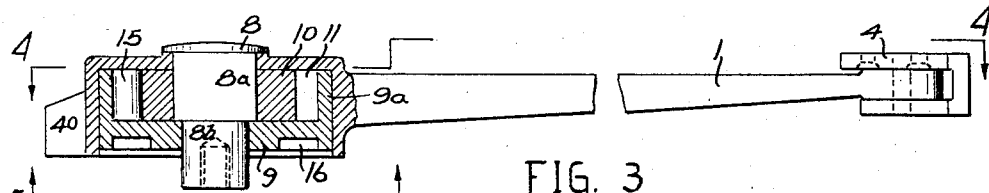


FIG. 3

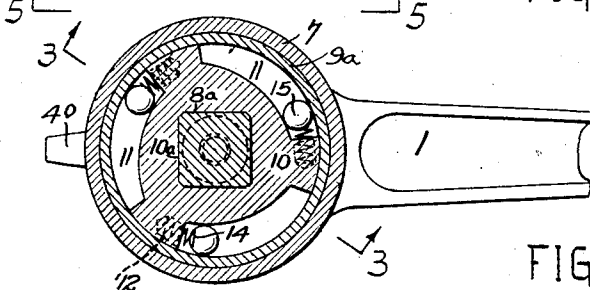


FIG. 4

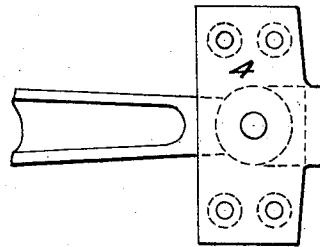
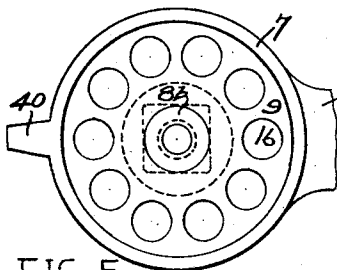


FIG. 5

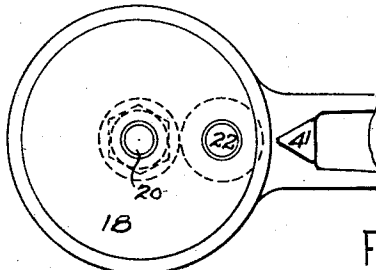


FIG. 6

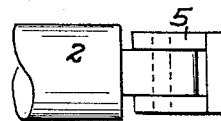
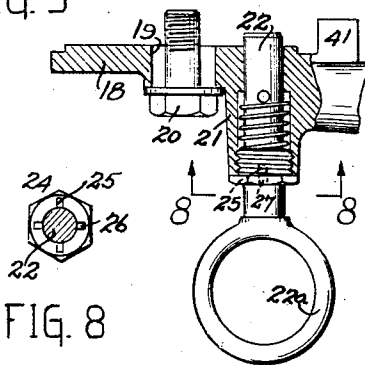


FIG. 8

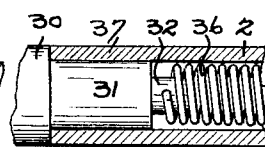
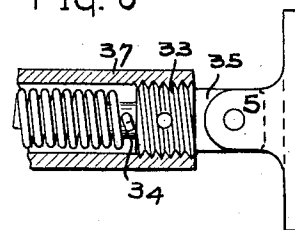


FIG. 7



INVENTOR

Gilbert W. Isley

BY

Grant B. Bawin

ATTORNEY

Sept. 27, 1932.

G. W. ISLEY

1,879,274

DOOR HOLDER

Filed June 1, 1931

2 Sheets-Sheet 2

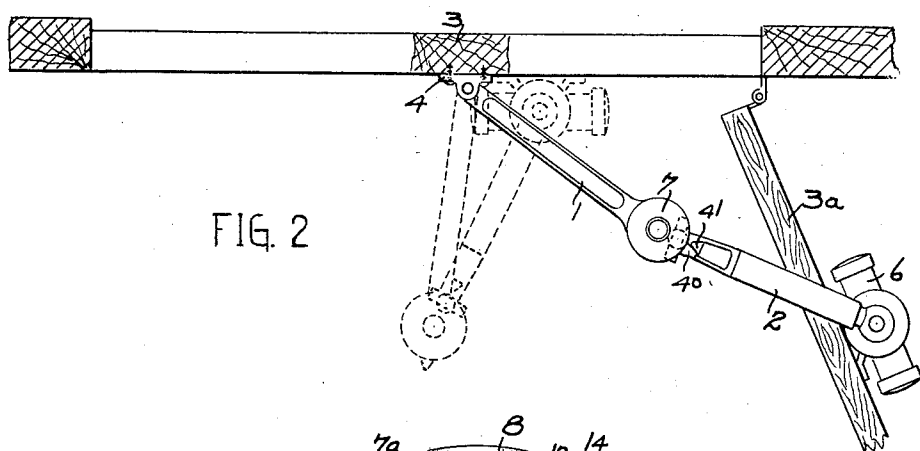


FIG. 2

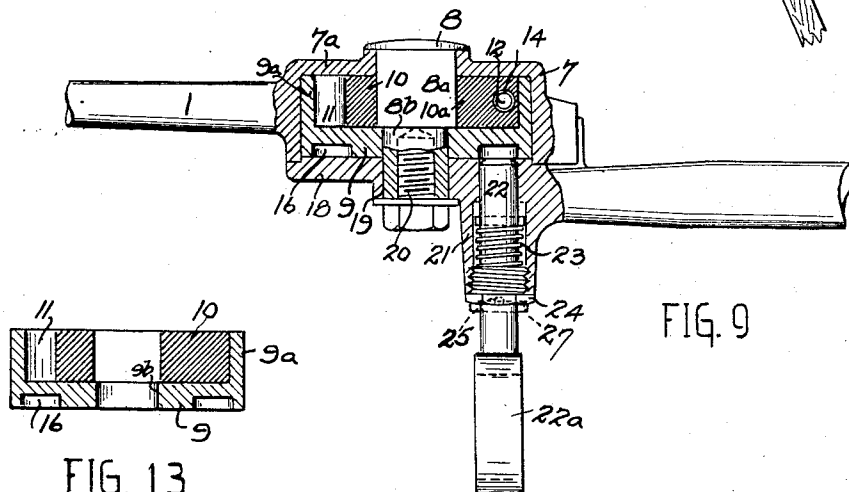


FIG. 9

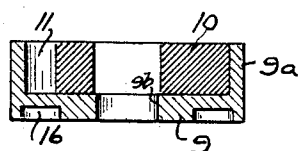


FIG. 13

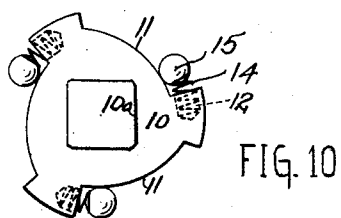


FIG. 10

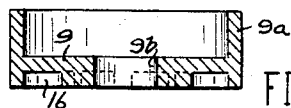


FIG. 11

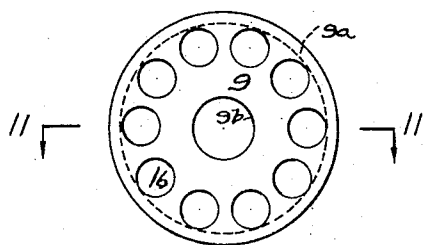


FIG. 12

INVENTOR.

Gilbert W. Isley

BY

Samuel S. Baldwin

ATTORNEY.

UNITED STATES PATENT OFFICE

GILBERT WILLIAM ISLEY, OF CLEVELAND, OHIO

DOOR HOLDER

Application filed June 1, 1931. Serial No. 541,168.

This invention relates to improvements in door holders, and aims to provide a holder for pivotally mounted doors which may be employed either in combination with or independently of a door closer.

Most door holders now commonly employed are so constructed that they will only hold a door against movement when the latter has been moved to one predetermined position, which is generally substantially ninety degrees to its closed position, and is inoperative at all other positions of the door, or at best operative at perhaps one or two other predetermined positions. It is an object of this invention to provide a door holder by which a door may be held against pivotal movement in one direction, that is generally against closing, when the door is opened to any desired and unpredetermined angle relative to its closed position; and wherein the holding means may be easily and quickly released to permit the door to be returned to its closed position.

Another object of the invention is to provide a door holder wherein, by reversing one portion of the mechanism, it may be employed for a door which swings in the opposite direction.

A further object of the invention is to provide a door holder with a specially constructed resilient arm by which the shock is cushioned if the door is violently swung to its fully open position.

With these and other objects and advantages in view which will become apparent as the specification proceeds, the invention is hereinafter more fully described with the aid of the accompanying drawings, in which a preferred construction is shown:

In the drawings:

Figure 1 illustrates a side view of the invention connected to a door and door frame, and with the former in open position.

Figure 2 is a plan view showing the invention employed in conjunction with a conventional door closer and connected to a door and door frame.

Figure 3 is an enlarged side view of one of the arms partly in section.

Figure 4 is a view on the line 4—4 of Figure 3, showing the arm partly in section.

Figure 5 is a partial view of the same arm on the line 5—5 of Figure 3.

Figure 6 is a view of the inner side of the other arm.

Figure 7 is an enlarged end view of the other arm partly in section.

Figure 8 is a section on the line 8—8 of Figure 7.

Figure 9 is an enlarged sectional view showing the adjacent extremities of both arms and the parts therein contained.

Figure 10 is an enlarged view of the cam, springs and rollers.

Figure 11 is an enlarged section of the flanged disc.

Figure 12 shows one face of the latter, and

Figure 13 is an enlarged section showing the cam mounted in the flanged disc.

Referring to the drawings, 1 and 2 designate two arms which are pivotally connected to one another at their adjacent extremities in a manner hereinafter described. The opposite end of the arm 1 is intended to be mounted on a door frame 3, and is usually pivotally attached to a bracket 4 which is secured to the said frame. The outer extremity of the arm 2 is either pivotally connected to a bracket 5 mounted on a door 3a, as shown in Figure 1, or is suitably arranged on a conventional door closer 6 secured to the said door 3a as shown in Figure 2.

Integral with one extremity of the arm 1 is an annular housing 7 having a closed side 7a and open on its opposite side. Projecting substantially centrally through the closed side 7a of the housing and fixed therein is an element 8 having a portion 8a which is multi-sided in cross section extending a short distance from the wall 7a, while its outer extremity 8b is circular in section.

Rotatable on the circular element portion 8b is a disc 9 which is freely rotatable in the bore of the housing 7, and projecting from its inner side and integral therewith is an annular flange 9a. Within the flange 9a between the housing wall 7a and the adjacent side of the disc 9 is a cam 10 having a multi-sided central aperture 10a therethrough

which corresponds to the cross section of the element portion 8a and fits thereon so that the cam is held against rotation independently of the arm 1.

Formed in the periphery of the cam 10 and extending the full width of the latter are a plurality of recesses 11 which are preferably spaced equidistant from one another. The bases of the recesses are eccentric relative to the axis of the element 8 on which the cam is mounted, so that the two ends of each recess, which are substantially radially disposed, are of unequal length. In the longer end walls of the recesses 11 cavities 12 are formed, and each of the latter receives one extremity of a helical spring 14. In each recess between the base of the latter and the inner side of the flange 9a a roller 15 is arranged with its axis substantially parallel with the axis of the element 8. The diameter of these rollers is greater than the distance between the shallower ends of the recesses and the inner side of the flange 9a and less than the distance between the deeper ends of the said recesses and the inner side of the said flange. The helical springs 14 bear against the rollers 15 and tend to force them towards the shallower ends of their recesses. Thus the flanged disc 9, the cam 10, rollers 15 and springs 14 form a friction clutch by which independent rotation of the cam and disc is permitted in one direction but not in the other.

In the outer face of the disc 9 a plurality of depressions 16 are formed which are concentrically arranged around the central aperture 9b through which the element portion 8b passes.

The second arm 2 at one extremity is provided with a plate 18 to form a closure for the open end of the housing 7, and centrally through the plate is an aperture 19 to receive the outer extremity of the element 8 which has an axially disposed tapped hole therein to receive a screw 20 by which the said plate 18 is rotatably held against the open side of the housing 7.

Integral with the plate 18 is an outwardly projecting tubular guide 21 in which a locking member 22 is axially slidable, and within the said guide is a spring 23 which tends to move the said member 22 so that its inner extremity projects beyond the inner face of the plate 18. In the outer face of an annular nut 24 by which the spring 23 is retained within the member 22 two transverse grooves 25 and 26 are formed, preferably substantially at right angles to one another. The groove 25 is made deeper than the groove 26. Projecting radially on both sides from the member 22 is a pin 27 which is adapted to engage either of the grooves 25 or 26. At the lower extremity of the member 22 a suitable handhold, such as the ring 22a is provided. When the pin 27 rests in the groove 25 the inner extremity of the member 22 projects beyond

the inner face of the plate 18 and engages one of the depressions 16, and when the pin 27 rests in the groove 26 the inner extremity of the said member does not project sufficiently far inward to engage any of the said depressions.

The arm 2 consists of a plurality of parts including an end member 30 of which the plate 18 forms an integral part. The end member 30 has a shank 31 thereon and from the outer extremity of the latter a projection 32 of reduced diameter extends. A second end member 33 is provided which is threaded externally intermediately of its length, terminates at one extremity in a projection 34, similar to the projection 32, and at its other extremity in a lip 35 which is pivotally secured to the bracket 5. Between the projections 32 and 34 and having its ends attached thereto is a coil spring 36. 37 denotes a tubular casing extending between the members 30 and 33, which is axially slidable on the shank 31 and is provided at one extremity with an internal thread to engage the threaded intermediate portion of the member 33. 40 and 41 denote lugs formed on the housing 7 and end member 30 respectively which are adapted to engage one another and thus limit the pivotal movement of the arms 1 and 2 relative to one another.

From the foregoing it will be readily seen that within the housing 7 a clutch member is provided which consists of the cam 10, rotatable with and within the said housing which is a portion of the arm 1, and the flanged disc 9 which is adapted to be connected to the arm 2 so as to turn with it, and the springs 14 and rollers 15. The said rollers and springs permit rotation of the flange 9a around the cam 10 in the direction which tends to move the said rollers towards the deeper ends of their recesses 11, but as soon as the flange is turned the least extent in the opposite direction around the cam the rollers 15 bind between their recess bases and the inner side of the flange 9a, thereby preventing rotation in that direction of the flange 9a around the cam 10. While this clutch mechanism only operates when the arms 1 and 2 are turned relatively in one direction, and is intended to prevent a door from closing, all that is necessary to render the clutch mechanism operative when the arms are turned relatively in the opposite direction is to remove the cam 10, springs 14 and rollers 15 and reinsert them in the flange disc 9 after having turned the cam over. In this manner the device, without the utilization of right and left hand parts, may be employed for doors swinging in either direction.

The construction of the arm 2 is such that if the door 3a is violently opened to such an extent that the arm stops 40 and 41 strike one another the resiliency of the spring 36 permits the tubular casing 37 and member 33 to

move outwardly from the member 31 thereby absorbing a part of the shock the door would otherwise be called upon to withstand.

While in the foregoing the preferred construction of the invention has been described and shown, it is understood that it is susceptible to such alterations and modifications as fall within the scope of the appended claims.

What I claim is:

1. A door holder comprising two arms one adapted to be secured to a door and the other to a door frame, a housing at one extremity of one of said arms to which the other arm is pivotally connected, a cam in said housing rotatable with said housing, a flanged disc rotatable in said housing, said cam being mounted within said flanged disc, means for causing said disc to turn with said other arm, when desired, and means adapted to engage said cam and flanged disc and prevent rotation of the latter in one direction around the former.

2. A door holding means comprising two arms one adapted to be pivotally mounted on a door frame and the other on a door, a housing formed at one extremity of one arm, a plate on the outer extremity of the other arm, said plate being rotatable on said housing, a flanged disc rotatable in said housing, a locking member slidable through said plate and adapted to engage said flanged disc, a cam in said flanged disc fixed relative to said housing, and means cooperating with said cam and flanged disc for preventing independent rotation of said flanged disc about said cam in one direction.

3. A door holder comprising two arms one adapted to be pivotally mounted on a door frame and the other on a door, a housing formed at one extremity of one arm, an element extending inward from said housing, a cam fixed thereon, a disc rotatable about said element, an annular flange on said disc rotatable about said cam, said other arm being rotatably connected to said housing, a locking member adapted to hold said disc relative to said other arm, and means cooperating with said cam and flange for preventing rotation of the latter in one direction about the former, said cam being so formed that when it and said cooperating means are removed, turned over, and re-inserted said cooperating means hold said flange against rotation about the cam in the opposite direction.

4. A door holder comprising two arms one adapted to be pivotally mounted on a door frame and the other on a door, a clutch at the outer extremity of one arm, a cam in said clutch, a disc in said clutch, means adapted to turn said disc when said other arm is turned, and means cooperating with said clutch and disc for preventing rotation of the latter about the former in one direction, said cam being so formed that when it is re-

moved, turned over and re-inserted rotation of said disc around it in the opposite direction is prevented by said cooperating means.

5. A door holder comprising two arms one adapted to be pivotally secured to a door frame and the other to a door, a housing in which one arm terminates, a plate on the outer extremity of the other arm, a locking member slidable through said plate, a disc rotatable in said housing having a plurality of depressions formed in its outer face any one of which may receive one extremity of said locking member, an annular flange projecting inwardly from said disc, a cam held relative to said housing within said flange, said cam having peripheral recesses formed therein, one extremity of the base of each recess being nearer to the inner side of the annular flange than the other, and a spring pressed roller mounted in each recess between its base and said flange, said rollers being of greater diameter than the distance between said flange and the shallower ends of said recesses.

6. A door holder comprising two arms one adapted to be secured to a door and the other to a door frame, a pivoted connection between the outer extremities of said arms, a clutch mechanism in said connection, one portion of the clutch being rotatable with one arm, another clutch portion being rotatable relative to said first named portion, means limiting the rotation of the other clutch portion to one direction only relative to the first named clutch portion, and means carried by the other arm for engaging the other clutch portion so that they must both turn together so that when said means is in engaging position angular movement of the two arms relative to one another in one direction is prevented at all angular positions of the arms to one another.

7. In a device of the character described, the combination of two arms, one adapted to be secured to a door and the other to a door frame, an element extending through one arm and held against rotation relative thereto, the other arm being rotatable around said element, a disc rotatable on said element, means permitting said disc to turn about said element in one direction and preventing it from turning in the opposite direction, and means by which said disc and said other arm may be coupled so that rotation of said arms relative to one another is only permitted in one direction irrespective to the angularity of the two arms to one another.

GILBERT WILLIAM ISLEY.