Sept. 1, 1931. L. C. NORTON 1,821,571

DOOR ARM

Filed April 11, 1930

Fig. 1

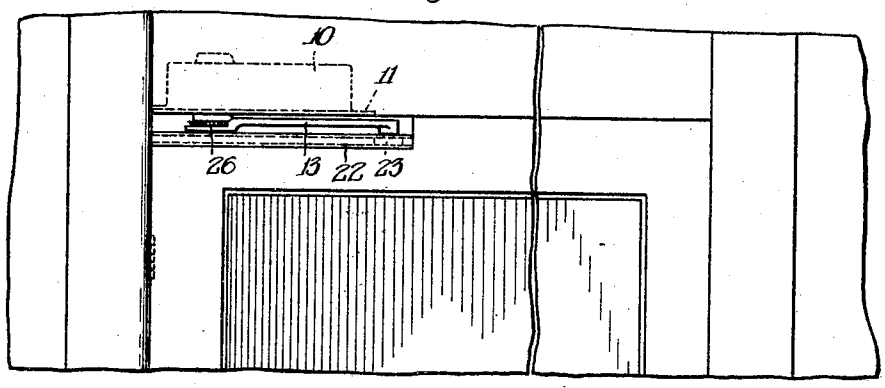


Fig. 2.

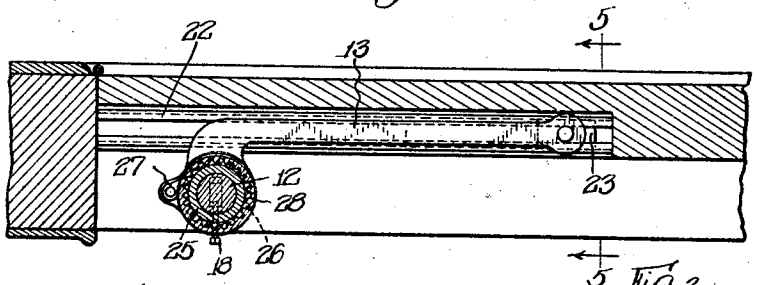


Fig. 3.

Fig. 4

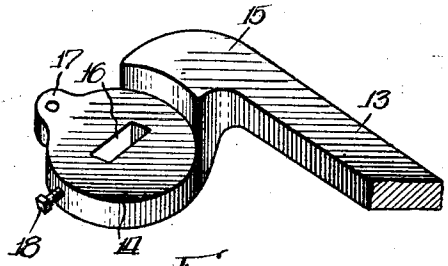


Fig. 5

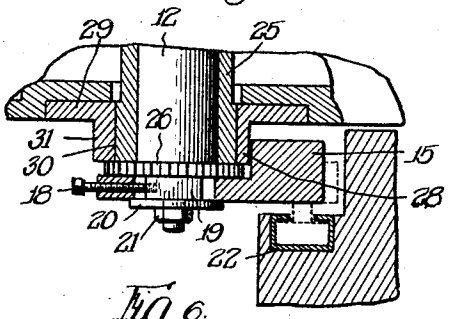


Fig. 6.

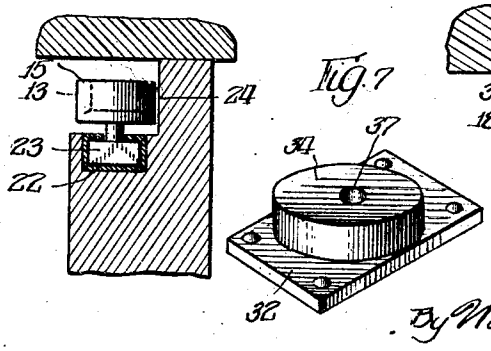
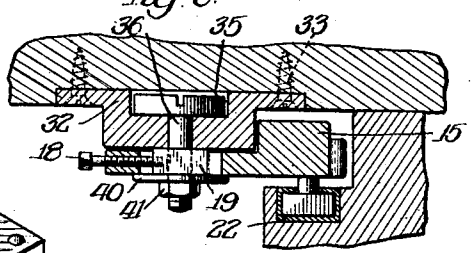


Fig. 7



Inventor:
Lewis C. Norton,
By Wilkinson, Huxley, Byron & Knight
Attys.

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UNITED STATES PATENT OFFICE

LEWIS C. NORTON, OF PASADENA, CALIFORNIA, ASSIGNOR TO NORTON-LASIER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

DOOR ARM

Application filed April 11, 1930. Serial No. 443,295.

The invention relates to holding devices of the friction type and has reference more particularly to devices of the character employed for holding doors, hinged windows and like closure means in open position.

The holding device of the present invention is adapted to be connected between the door and the lintel therefore and it embodies parts adapted for frictional binding upon relative movement therebetween, such as is caused when the door is moved in opening, and although many other advantages of the present invention are realized irrespective of the location of the friction holding means, certain additional advantages are realized when the friction holding means is located with the pivot mounted on the lintel.

An object of the present invention is to provide a holding means for doors, hinged windows and the like which will be capable of adjustment whereby the open position at which the door or window is held may be selectively determined by means of a simple and readily manipulated adjusting device.

Another object of the present invention is to provide a type of door connecting arm which will be substantially concealed from view, the arm transmitting the opening and closing movement of the door to a suitable closing and checking device and in addition embodies the holding means described.

A still further object of the invention is to provide a single link connection between the door and the door lintel which link is adapted to have a sliding connection with the door and a pivoted attachment to the door lintel. The friction faces are so located that they take advantage of the relative movement between the pivot parts carried by the door lintel, which results in a very efficient and effective action throughout the entire range of opening movement of the door.

A yet further object is to provide a holding device of the character described, which will be strong and endurable and embodies certain principles of operation and structural characteristics designed to eliminate objections heretofore encountered in devices of this kind.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

In the drawings, which illustrate an embodiment of the device and wherein like reference characters are used to designate like parts—

Figure 1 is a fragmentary side view showing a checking and closing device connected to a door by an arm comprising the present invention.

Figure 2 is a sectional view showing the connection between the door and the arm.

Figure 3 is a sectional view showing connection between the arm and the closing and checking mechanism.

Figure 4 is a perspective view of the connecting arm.

Figure 5 is a view taken along line 5—5 of Figure 2.

Figure 6 is a sectional view of a modified form of connecting means for the arm.

Figure 7 is a perspective view of the pivot bracket.

Referring to the drawings Figures 1 to 3 particularly, it will be noted that the present invention is associated with a door checking and closing device comprising a casing 10, having a base 11. The fluid checking and closing mechanism is contained within the casing 10 and is of any suitable construction so as to give the desired controlled movement to the shaft 12, whereby through the connecting arm 13 the controlled closing movements are imparted to the door. As the checking and closing mechanism constitutes no part of the present invention, it will not be further described.

The arm 13 is provided with a circular head portion 14 having an abutment 15 forming the curved portion of the arm. The head 14 is provided with a slot 16 and a lug 17. A screw 18 is threaded into one side of the head and terminates within the slot portion. This structure adapts the arm to be secured to the shaft 12 by means of the flat sided portion 19 of the shaft fitting within the slot 16 and the assembly being secured in place by

the washer 20 and nut 21. The connection between the door and the arm comprises a channeled member 22 U-shaped in cross section which is adapted to have slidably fitted therein a sliding block 23. The member 22 is securely fastened to the door in any suitable manner, the top portion of the door being cut away as at 24 to accommodate the arm 13. It is of course understood that the sliding block and the arm 13 are suitably connected so that opening and closing movements of the door will be imparted to the arm.

Mounted on the shaft 12 is a sleeve 25 which is provided with a ratchet collar 26 at the bottom thereof. Mounted on the arm 13 is a ratchet pawl 27 adapted to lock with a tooth of the ratchet collar so that the sleeve 25 is caused to rotate upon movement of the arm 13. The rachet allows adjustment of the sleeve with relation to the arm. Located on the sleeve 25 is a collar or annular 28, stationarily held by means of a flange 29 upon the base plate 11. The collar 28 is provided with an inner surface 30, cylindrical in shape and disposed concentrically with respect to the shaft 12 and with an outer surface 31 disposed eccentric to the shaft 12. The eccentricity of the outer surface is shown clearly in Figure 2.

When the arm 13 has been secured to the shaft 12 as described, the abutment 15 will be located adjacent the collar 28. Normally, however, the abutment does not have engagement against the collar as the eccentricity of the collar is such that free movement of the arm as regards the collar is allowed to take place during initial movement of the arm. When the door is open to a point approaching 90° from its closed position, the abutment will be rotated substantially 90°, whereupon a binding action between the collar 28 and the abutment 15 will result due to the eccentricity of the collar as described. This binding action is sufficient to hold the parts in position and thus the door open. It has been stated that normally the collar 28 would not be engaged by abutment 15 and this is true with the parts in position as shown in Figure 3 when the door is closed. The screw 18 allows considerable adjustment of the arm relative to the flat sided portion 19 and thus to the shaft 12. This accordingly spaces the abutment 15 in relation to the collar 28. It is therefore seen that by adjustment of the screw 18 the door holding mechanism can be employed to hold the door open at a point beyond its 90° open position or at any point in advance thereof as at a 45° position.

In the modified form of holding mechanism shown in Figure 6, the same arrangement of abutment and eccentric collar is employed, but the pivot point need not constitute the main shaft of a door closing and checking device. In fact the present invention contemplates a holding device adapted for association to a door independent of a checking device or in combination with one as desired.

A stationary pivot bracket 32 is provided for attachment to the sill by suitable screws 33, the bracket comprising a depending collar portion 34, having a chamber 35 in its upper side for accommodating the pivot pin 36. The opening 37 in the collar 34 through which the pin is inserted is made eccentric to the outside surface of the collar, so that the pivot pin 36 will be eccentrically located. The arm 13 is secured to the pivot pin in much the same manner as described in the preferred embodiment shown in Figure 3, the flat sided member 19 being located in the slot 16 of the arm and the assembly being held in place by the washer 40 and nut 41.

With the arm thus secured in place it will be seen that any movement of the door will cause like movement of the arm, thus resulting in rotation of the arm around the pivot pin 36. By proper adjustment of the screw 18 the abutment 15 can be accordingly spaced in relation to the collar portion 34. As the collar 34 has been defined as eccentric in relation to the opening 37 and pivot 36, the abutment will have a binding action against the collar at that point in its rotation depending on the adjustment given to screw 18. It is therefore seen that a door equipped with this form of holding device can be held in open position at any point desired.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown, which is merely by way of illustration and not limitation, as various and other forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a door stop, a collar fixed to the door casing, a pivot member located within said collar and disposed eccentric thereto, an arm connected to move with the door and secured to said pivot member, said arm and collar having cooperating friction faces adapted for friction binding to hold the door against movement upon movement of the door to a predetermined open position.

2. A holding device comprising in combination a pivot member, a collar located on said pivot member, said collar having an outside surface eccentric thereto, an arm adjustably secured to said pivot member, means for regulating said adjustable securement, and an abutment on said arm adapted to have frictional engagement with said outside surface upon rotation of said arm.

3. A holding device comprising in combination a collar having a bearing surface on its inside and a friction surface on its outside, a shaft adapted to have movement relative to said collar, said shaft being in bearing contact with the inside surface of the collar, and

an arm having a portion for friction engagement with the outside surface of said collar, said inner and outer surfaces being eccentrically disposed, and means adjstably securing said arm to said shaft to vary the point of frictional engagement by the arm on the outside surface of the collar.

4. In combination with a door and door lintel, a pivot member fixed to said door lintel, said member having a friction surface eccentric to the axis of the pivot, an arm adjustably secured to said pivot member and having its opposite end slidably attached to the door, an abutment integral with said arm adapted for frictional binding with said friction surface upon movement of the arm, the adjustment of the arm allowing regulation of the frictional engagement of the surfaces.

5. In a door stop, in combination with a door checking and closing device including a casing, a pivot member depending therefrom and provided with a collar, said collar having an outside surface eccentric to the pivot, an arm adjustably secured to the pivot member in relation to said collar, and an abutment on said arm adapted to have frictional engagement with said outside surface upon rotation of said arm, the adjustment of the arm allowing regulation of the frictional engagement of the surfaces.

6. In combination with a door and door lintel, a door checking and closing device including a casing secured to said lintel, a pivot member depending from said casing, a sleeve rotatably mounted on said pivot member and provided with a ratchet collar, a collar located on said sleeve and fixedly secured to the casing, an arm adjustably secured to said pivot member, said arm having an abutment adapted to have frictional engagement with the outside eccentric surface of the collar upon rotation of the arm, said arm having a pivoted pawl secured thereto for engaging the ratchet collar, the adjustment of the arm allowing regulation of the frictional engagement of the surfaces.

Signed at Pasadena, California, this 1st day of April, 1930.

LEWIS C. NORTON.