C. T. ASHMAN.
FRICITION DEVICE FOR DOORS, &C.
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Inventor,
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by his attorneys
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Witnesses-
William Miller
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To all whom it may concern:

Be it known that I, CHARLES T. ASHMAN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Friction Devices for Doors, &c., of which the following is a specification.

The object of this invention is to provide a friction device which can be applied to doors, either as a separate device independent of the hinges or to take the place of the hinges, so that the door can be held in the position to which it is adjusted without the use of other fastenings or stops.

The invention is particularly adapted for use on doors of vessels and railway cars, where the motion of the vessel or vehicle causes the door to swing, and it may be used on doors of buildings as well, where it is desired to hold them full open or partly closed.

In the accompanying drawings:—Figure 1, is a sectional plan view through a door and jamb, and illustrating my invention; Fig. 2, is a side view of the fastening, the door and jamb being omitted; Fig. 3, is a sectional view on the line 3—3, Fig. 1; Fig. 4, is a sectional plan view on the line 4—4, Fig. 3; Fig. 5, is a detached perspective view of the arms; Fig. 6, is a detached perspective view of the washer; Fig. 7, is a detached perspective view of the bolt; Fig. 8, is a detached perspective view of the sleeve; Fig. 9, is a view showing my invention designed as a hinge; and Figs. 10 and 11, are views illustrating modifications of the invention.

A is the door jamb in the present instance.

B is the door hinged at b to the door jamb, the hinge shown being of the ordinary type.

D is the friction device, and, as illustrated in Figs. 1 and 2, this friction device has a central hub with projecting arms, one arm being connected to the door and the other arm being connected to the door jamb. These arms may be made in any form desired. In the present instance there is a single arm C which is pivoted to a bracket c secured to the door jamb A, and a pair of arms E pivoted to a bracket c secured to the door.

F is a bolt having an enlarged head f provided with a pin f which enters an opening in one of the arms E, so that the bolt will move with the arm, and f' is a washer made as shown in Fig. 6, having a flattened portion adapted to the flat side of the bolt F. A wing nut f" is adapted to the threaded portion of the bolt, so that the parts can be adjusted to any position desired.

Between the arm C and the arms E are friction disks d of fiber, brass or other suitable material. When the arms are made of brass I preferably secure on each side of the central arm C disks d' of iron or steel.

G is a sleeve, clearly shown in Fig. 8, having projections g which enter notches e' in the arms E, as shown in Fig. 5, so that the sleeve will turn with the arms. The sleeve is loosely mounted between the arms E, so as to allow the nut f' to be adjusted to any position desired to increase or diminish the friction.

In Fig. 3, I have shown my invention as applied to a hinge, the arm E' being connected to the plate E' and the arm C' being connected to the plate C', and the arm E' is notched to engage the plate E', so that the parts can be adjusted.

In Fig. 10, I have shown a modification of the friction mechanism. In this case the arm E' is in the form of a socket to receive the friction disk d' and the arm C' is also in the form of a socket to receive the friction disk d", the two disks being held to their parts by pins or other suitable devices. The bolt F' is connected to the washer F' in the present instance by a plate f' which enters a perforation in the washer and a groove in the bolt, so as to prevent the bolt and washer turning independently; the same wing nut is used as in the main figures.

In Fig. 11 is shown a modification in which the arms are provided with friction surfaces which contact during a part only of the pivotal movement. The object of this construction is to allow the door to swing freely to the open or closed position, and when it is desired to hold it open, it is moved back to its full extent; whereas, the friction surfaces come into action and hold the door rigidly. In the present instance this arrangement consists of a central arm C' having friction disk sockets formed by annular flanges d' d" which are of varying heights and project on opposite faces thereof. Each of the side arms C' also has an annular flange d' of varying height which forms a socket for one of the friction disks.
The flanges of adjacent arms are so arranged that they will engage each other during a part only of the pivotal movement of the arms and will remain out of contact during the remainder of such movement.

By disposing the flanges in different positions relative to their respective arms, these may be used to retard the free movement of a door at any angle desired. For example, the flanges may be so placed as to engage each other when the door is nearly full open or closed, the wing nut $F$ being adjusted on the bolt $F$ to vary the frictional pressure between the several parts. By "backing off" this wing nut the arms are left free to move into any position.

It will be seen that I construct a device applicable either as a hinge or as a separate friction device independent of the hinge.

The hinge can be used upon new work and the friction device can be used on old work without disturbing the ordinary hinge of the door. The device can be adjusted so that any amount of friction can be applied as desired, or can be so adjusted as to entirely dispense with the friction.

In Figs. 1 and 2, I have shown the pivots $n$ and $m$ for the arms C and E in the form of bolts provided with wing nuts $n'$ and $m'$, respectively, so that, if it is desired, friction can be applied at those pivot points as well as the main pivot point of the device.

While I have described my invention as including three arms, two attached to the door-jamb and one attached to the door, it is obvious that I may employ but two arms, one connected to the door-jamb and one connected to the door, as is shown for example in the hinge construction of Fig. 10.

I claim:

1. The combination in a friction device of a plurality of arms pivotally connected together and having inclined friction surfaces; with friction disks interposed between the arms in position to exert friction thereon during a portion of their possible movement, the inclined friction surfaces of the arms being placed to come into engagement only after said arms have turned through a predetermined angle.

2. The combination in a friction device of two arms pivotally secured together and each having a flange of varying depth; with a friction disk interposed between the arms, said flanges being placed to engage each other during a part only of the pivotal movement of the arms, and remain out of contact during the remainder of said movement.

3. The combination in a friction device of two arms, each having a friction-producing flange of varying depth; a third arm having a flange of varying depth on each face and pivotally interposed between said other arms; and friction disks respectively mounted between the third arm and each of the other two arms, the flanges of the third arm being placed to contact with the flanges of the other arms during a portion of the movement of the arms.

4. A friction device comprising a plurality of arms pivotally joined together; friction disks interposed between said arms; with means independent of the disks and actuated by the arms for exerting friction between the same during a portion only of their possible movement.

5. A friction device for a door comprising a plurality of arms pivotally joined together; brackets pivoted to the arms and adapted to be secured to the door and to the supporting structure of the door respectively; friction disks interposed between said arms; and means independent of the disks and actuated by the arms for exerting friction between said arms during a portion only of their possible movement.

6. The combination in a friction device of a plurality of arms of which certain have notches; a bolt pivotally connecting the arms; a sleeve surrounding the bolt and having projections engaging the notches in said arms, the unnotched arm being free to move on said sleeve; and means for securing the arms together.

7. The combination in a friction device of a plurality of arms; a bolt pivotally connecting the arms; a washer on said bolt; a member slidably keyed to said bolt and having a portion engaging said washer to prevent it from moving independently thereof; and a nut on said bolt engaging said member.

8. The combination in a friction device of plates adapted to be secured respectively to a door and to the jamb thereof; each of said plates having a fixed arm extending therefrom; a third arm notched for the reception of and slideable on one of said plates; means for pivotally connecting the arms; and friction means interposed between said arms.

9. A friction device comprising a plurality of arms pivotally joined together; friction means interposed between said arms; with means independent of said friction means and actuated by the arms for exerting friction between the same during a portion only of their possible movement.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

Witnesses:

WALTER CHISH,
WM. A. BARR.

CHARLES T. ASHMAN.