

UNITED STATES PATENT OFFICE.

WILLIAM FRANCIS DAVIS, OF LAKE CHARLES, LOUISIANA.

CUSHION DEVICE FOR DOORS.

SPECIFICATION forming part of Letters Patent No. 647,379, dated April 10, 1900.

Application filed August 26, 1899. Serial No. 728,587. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FRANCIS DAVIS, of Lake Charles, in the parish of Calcasieu and State of Louisiana, have invented a new and Improved Cushion Device for Doors, of which the following is a full, clear, and exact description.

One object of my invention is to provide a pneumatic cushion for the doors of ice-boxes or other structures, frames, or casings and to provide a means whereby the cushion will be automatically inflated through the act of opening the door, the air-supply being cut off from the cushion while the door is closed.

Another object of the invention is to provide means whereby surplus air will automatically escape from the cushion should it be overcharged and also to provide a means whereby the cushion may be inflated by a pump, if desired.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a door-frame and a rear elevation of an open door connected with the frame, the said frame being provided with the improved cushion and parts of the door and frame being broken away. Fig. 2 is an inner face view of the door-frame and its attachments, the door being open. Fig. 3 is a horizontal section taken practically on the line 3 3 of Fig. 2 with the door open and Fig. 4 is a horizontal section on the line 4 4 of Fig. 2 with the door closed.

The frame A may be of any desired construction and is provided with top and bottom and side jambs, against which the door B is to close. The door may be provided with any approved form of latch 11, arranged for engagement with a keeper 12, carried by the frame, and the door B, which is usually hollow, is provided with a valve 13 in its inner surface and with an outlet 14 at the top, which when the door is closed registers with an outlet 15 in the upper portion of the frame A. Under this construction an escape for air is provided through the door and frame, enabling the door to be readily closed without the ordinary tendency to again open.

A continuous groove 16 is made in the outer face of the jamb 10, and an endless flexible or rubber tube 17 is secured in the said groove in any desired manner. The door B when it is closed is adapted to exert pressure and have a firm bearing upon the said cushion-tube 17. In the event the tube should be overcharged with air the surplus air may automatically escape through a branch tube 18, connected with the upper portion of the cushion-tube 17, which branch tube extends through and beyond the inner face of the upper jamb 10, as shown in Figs. 2 and 3, and is carried above the top of the frame A, being provided at its upper end with a relief-valve 19 of any suitable construction.

Air is automatically supplied to the cushion-tube 17, preferably by the following means, which consists in a branch tube 20, extending through the upper jamb 10 from its inner face to a connection with the upper portion of the endless or cushion tube 17, and this branch tube 20 is connected by a suitable fitting 21 with an inlet 22, which extends along the inner face of one of the side jambs 10, the said inlet-tube terminating at its lower end in a suction-valve 23.

A compressing device is employed in connection with the inlet-tube 22, which compressing device consists of a bar or a block 24, having a longitudinal groove 25 in its inner face arranged to receive a portion of the inlet-tube 22, and the said block or bar 24 is connected with the side jamb along which the pipe 22 is carried by means of a hinge or hinges 26. An arm 27 is horizontally projected from the upper portion of the compressing device, which arm extends across the opening defined by the jambs 10, as shown in Figs. 2 and 4. This arm 27 is provided with a head 28, a portion of which head when the door is opened being adapted to extend forwardly through and beyond the opening defined by the jambs 10, and at the forward end of said head 28 a friction-roller 29 is located, adapted to be engaged by the door B when said door is closed, and the outward movement of the arm 27 is limited by a stop 30 in the form of a lug produced in the outer end of the head 28 of the arm and adapted for engagement with the inner surface of a side jamb 10, as shown in Fig. 3. When the door B is closed, the arm 27 is forced inward and the compressing device is made to bear with

considerable force on the receiving-tube 22, closing said tube, as shown in Fig. 4, and when the door is opened the expansion of the compressed tube 22 will force the arm 27 outward, and as the tube 22 is relieved from pressing engagement with the compressing device air is drawn into the tube 22 through the suction-valve 23 and is supplied in suitable quantities to the endless cushion-tube 17. If desired, air may be supplied to the cushion-tube 17 through the medium of a branch pipe 31, having its outer end fitted to receive an air-pump.

When the device is used in connection with an ice-box, a guard 32, preferably made of metal, is hinged to the sill or lower jamb, the said guard being adapted to drop downward to an engagement with the bottom member of the frame, crossing and protecting the bottom member of the endless cushion-tube 17. When a guard 32 is thus employed, ice or other bulky articles may be removed through the door-opening without danger of injuring the cushion-tube, and when the door is to be closed the guard is carried upward to a vertical position within the door-opening, being then entirely out of the path of the door.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A pneumatic cushion for doors, an air-supply tube connected with said cushion, and a hinged compressing device for said air-supply tube adapted to be engaged by the door when the latter is closed to place the said device in compressing engagement with the air-supply tube, the said device being relieved from compression engagement with the air-supply tube when the door is opened, whereby the said cushion is inflated, as specified.

2. A pneumatic cushion for doors, comprising an endless tube adapted to be compressed when the door is closed, a branch tube connected therewith and provided with a relief-valve, an air-inlet tube connected with said endless tube and provided with a suction-valve, and a regulator for the air-inlet tube, the said regulator being placed in compressing engagement with said air-inlet tube when the door is closed, substantially as set forth.

3. A frame, an endless pneumatic tube located within the frame, a closing device adapted for engagement with the said tube, an air-supply device connected with the said cushion, a regulator for the air-supply device, said regulator being placed in compressing engagement with the air-supply device when the closing device engages with the cushion, and the regulator being relieved from compressing engagement with the air-supply device when said closing device is carried to the open position, as described.

4. The combination, with a frame, a pneumatic cushion located within the frame, and a door for the frame, adapted to engage with the said cushion when closed, of a relief-

valve connected with the cushion, an air-supply likewise connected with the cushion, a compressing device for the air-supply tube, and an operating-arm for the compressing device, controlled by the movement of the said door in opening and closing, as set forth.

5. The combination with a frame, a pneumatic cushion located within the frame, and a door for the frame, adapted to engage with the said cushion when closed, of an air-supply tube connected with the cushion, a compressing device for the air-supply tube comprising a bar or block hinged to the frame and having a longitudinal groove arranged to receive a portion of the air-supply tube, an arm connected with said bar or block and adapted to extend across the opening of the frame, the said arm being provided with a head having a friction-roller adapted to be engaged by the door when the latter is closed, and a stop for limiting the outward movement of the arm, substantially as described.

6. The combination with a frame, an endless pneumatic tube secured in said frame, and a closing device carried by the frame and arranged for engagement with the pneumatic tube, of mechanism for inflating said cushion, and a guard for protecting the lower member of the endless tube when the closing device is opened, substantially as described.

7. The combination with a structure provided with a door, of a pneumatic cushion adapted to be compressed when the door is closed, an air-supply tube connected with the said cushion, a compressing device for the air-supply tube, and an operating-arm for the compressing device controlled by the movement of the door, substantially as described.

8. A pneumatic cushion for doors comprising an endless tube adapted to be compressed when the door is closed, a branch tube connected therewith and provided with a relief-valve, a tube connected with said cushion and adapted to receive an air-pump, and means for automatically supplying air to said cushion, the said means comprising an air-inlet tube provided with a suction-valve, and a compressing device for said air-inlet tube and actuated by the movement of the door in opening and closing, substantially as described.

9. The combination with a door-frame and a door for the same, of a cushion comprising an endless tube secured to the outer face of the jamb and against which the door when closed is adapted to bear, an air-supply tube connected with the cushion and extending along the inner face of one of the jambs and terminating in a suction-valve, and a regulating device for the said air-supply, substantially as described.

WILLIAM FRANCIS DAVIS.

Witnesses:

JNO. E. NIX,
THAD MAYO.