J. C. Harkness,

Door Spring.

No. 21,754. Patented Oct. 12, 1858.

Fig. 2

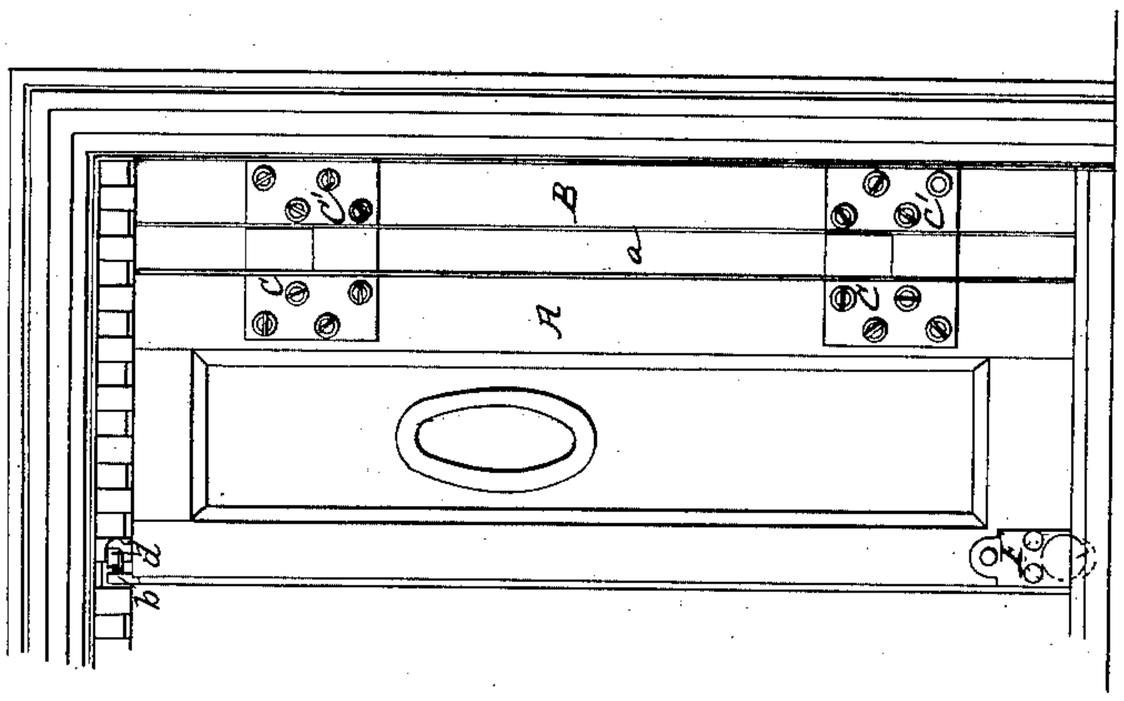


Fig. 4

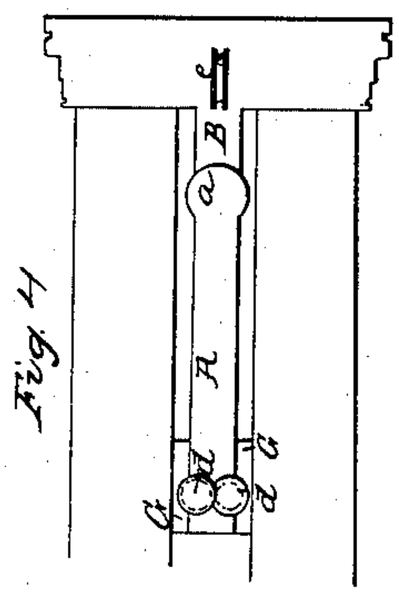


Fig. 5

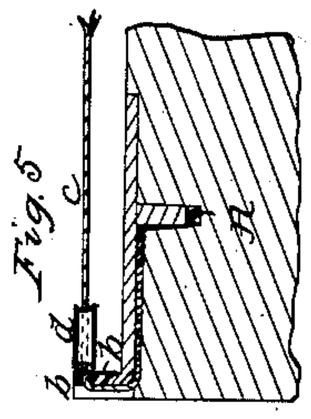


Fig. 1

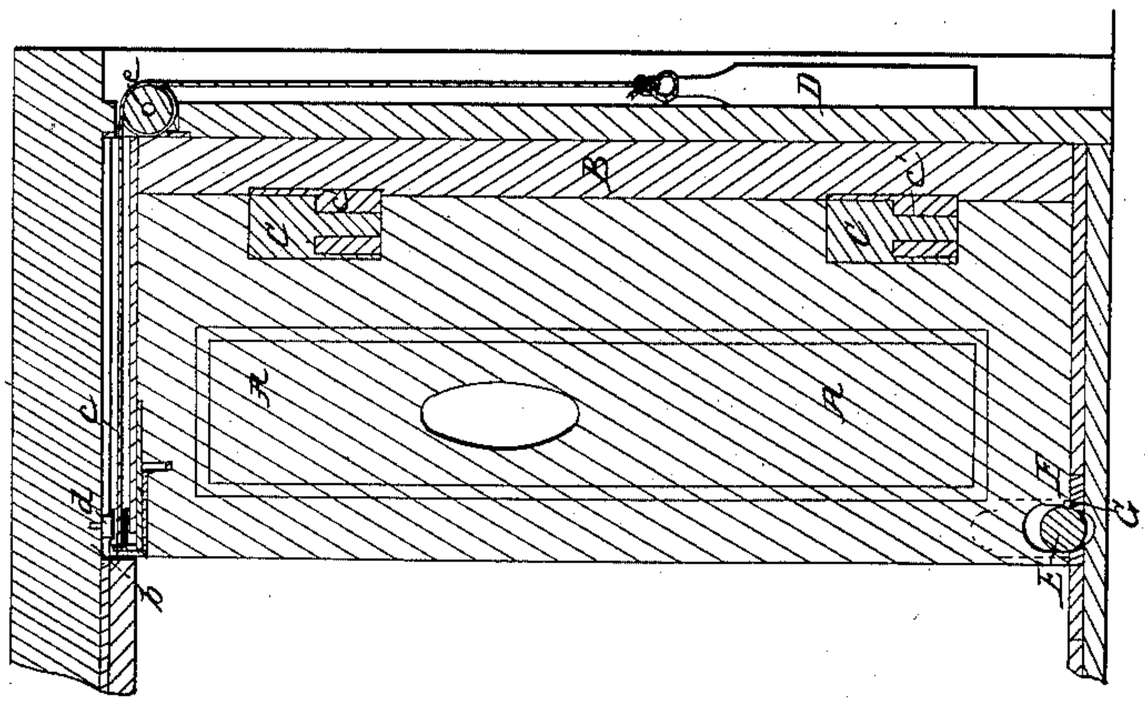
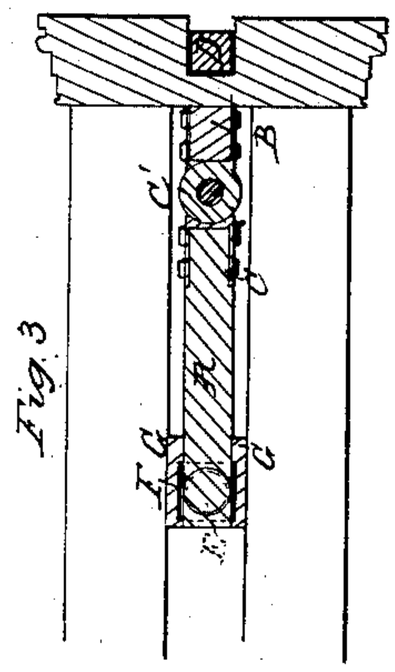


Fig. 3



UNITED STATES PATENT OFFICE.

JOHN C. HARKNESS, OF WASHINGTON, DISTRICT OF COLUMBIA.

SELF-CLOSING DOOR.

Specification of Letters Patent No. 21,754, dated October 12, 1858.

To all whom it may concern:

Be it known that I, JOHN C. HARKNESS, of the city of Washington, in the District of Columbia, have invented a new and useful Improvement in Bulkhead-Doors; and I do hereby declare the following to be a full and exact description thereof, reference being had to the drawings annexed to and making part of this specification.

The nature of my invention consists in so arranging the doors known as bulkhead doors, or those which are used as the inner doors of vestibules &c., in such a manner that they may be easily opened by pushing or pulling on either side; shall be self-shutting, and when shut shall be self secured against any ordinary draft of wind.

In the accompanying drawings—Figure 1, is a vertical section through a door and its frame, in a plane parallel with its face. Fig. 2, is an elevation of the door, Fig. 3, is a horizontal transverse section, and Figs. 4 and 5 show parts in detail.

A is the door, having its hinge edge rounded into a segment of a cylinder—say three fourths—as seen at *a*, Fig. 4; the edge of that portion of the frame marked B being grooved to receive it. Portions of this cylinder are cut away to receive the hinges C, C′; the half of the hinge marked C, being attached to the door, and that marked C′, to the frame B, as seen in Figs. 1, 2, 3. This arrangement allows the door to be swung in either direction so as to be at right angles with the wall in which it is set, and makes a close and elegant finish.

On the upper corner of the vibrating edge of the door is placed a stud *b* Figs. 1, 2, 5, projecting up into the molding or architrave which is cut away for the purpose. To this stud is secured (in the manner shown in Fig. 5) a cord *c*, which passes between two horizontal grooved sheaves *d*, *d*, Figs. 1, 2, 4, having their edges nearly in contact, and which are placed in the top of the frame, a short distance above the top of the door, and near its vibrating edge; thence the cord passes along horizontally under the frame, and above the door, to another grooved sheave *e*, placed vertically in the side frame, over which the cord passes and descends vertically to a weight D, playing in a channel, or hollow in a box jamb, on the side of the frame farthest from the door.

In the bottom of one of the stiles of the door, and near its vibrating edge, is a chamber to receive a ball E; the chamber being deep enough to contain the ball entirely within it; under this chamber, and set in flush with the bottom edge of the door, is placed a bridle F, having a round hole through it; which hole is a little less in diameter than the ball, is placed immediately under the chamber, and acts as a socket for the ball; allowing it to project some distance below the bottom of the door, but preventing it from passing entirely out of the chamber.

Under the door and in the carpet sill, is a metal plate G, having a cavity corresponding with and under the hole in the bridle F and deep enough to receive all that portion of the ball which projects from the bottom edge of the door. This cavity has its edges chamfered so as to form a segmental socket for the ball, and present an annular surface to it in order to keep it from being cut by the edges of the cavity. A small aperture should be made from the bottom of the cavity through the floor to prevent the accumulation of dust. When the door is opened in either direction, the cord renders around one of the sheaves *d*, over the sheave *e*, and lifts the weight D. At the same time, the ball E, is pressed against the sides of the socket in the plate G, rides up into the chamber in the bottom of the door, rolls over the surface of the plate G, and falls out of the chamber after passing said plate; remaining out until the door is let go, and is closed by the weight D. The ball then strikes the edge of the plate G, rides up as before into the chamber, and when over the socket in the plate G, falls into it; preventing the door from vibrating past a shut position and from being opened by the wind.

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

The ball E, projecting through the socket in the bridle F, and falling into a socket in the plate G, in the sill—in combination with the weight, cord and pulleys, the whole arranged and operating substantially in the manner and for the purpose hereinbefore described and set forth.

JOHN C. HARKNESS.

Witnesses:

J. G. CLAYTON,

GUY C. HUMPHRIES.