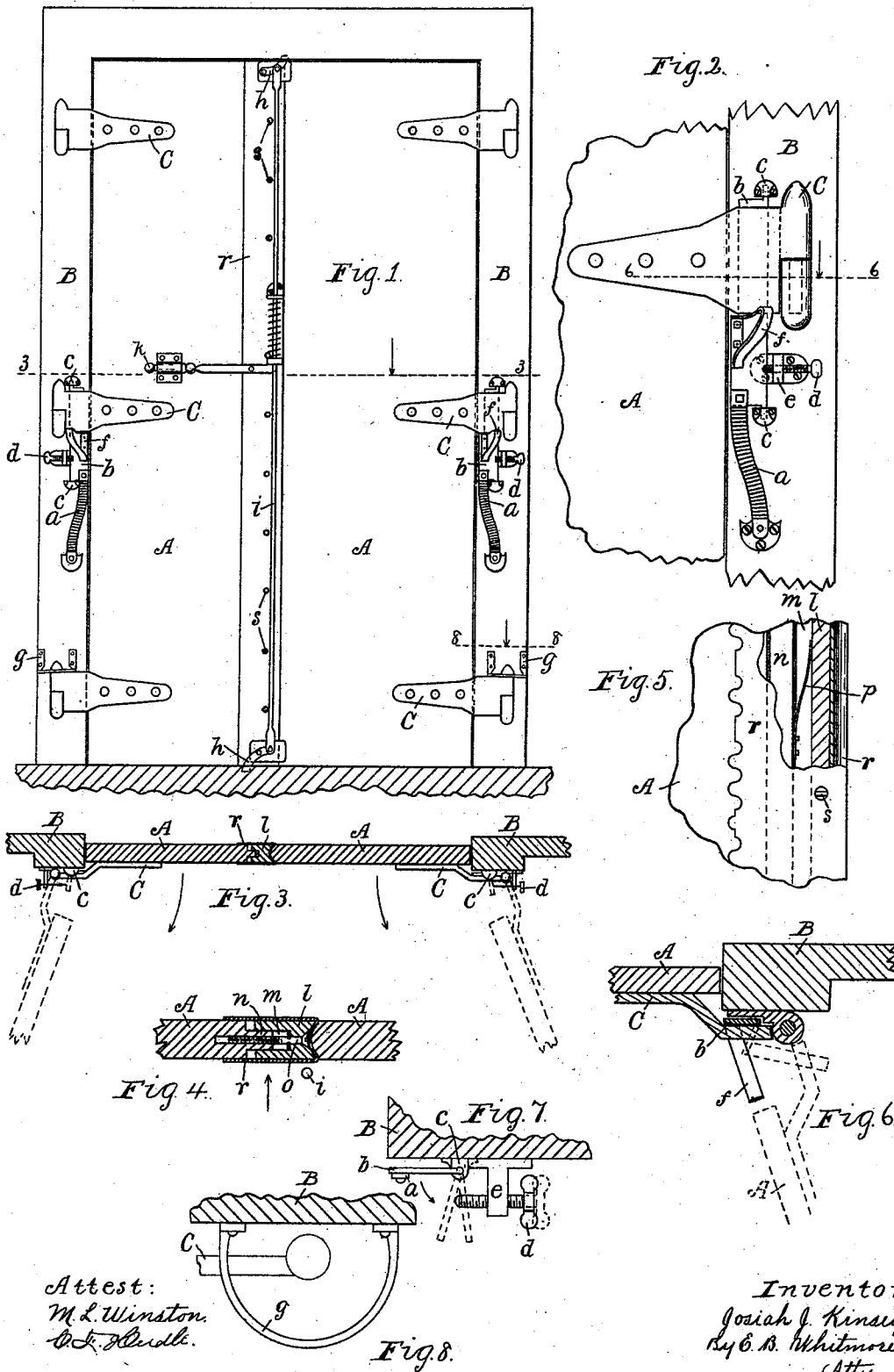


(No Model.)

J. J. KINSEY.
DOOR CONTROLLING DEVICE.

No. 523,431.

Patented July 24, 1894.



Attest:
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UNITED STATES PATENT OFFICE.

JOSIAH J. KINSEY, OF ROCHESTER, NEW YORK.

DOOR-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 523,431, dated July 24, 1894.

Application filed April 23, 1894. Serial No. 508,689. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH J. KINSEY, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Door-Controlling Devices, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention relates to doors adapted to be thrown open by self-acting devices, the invention being adapted more particularly to be used in fire houses to release horses suddenly when an alarm is sounded. Usually in this case the horses are loose in box stalls, the doors thereof, when an alarm is sent in, being unbolted by the action of the electric current and left to the control of the opening devices. The door is usually made double or in two equal main parts opening at the middle and swinging away from each other, and my invention relates to the construction, operation and control of said doors.

The invention is hereinafter fully described and more particularly pointed out in the claims.

Referring to the drawings Figure 1 is a front elevation of a door with my improvements attached in place. Fig. 2 is a view of parts acting upon the door. Fig. 3 is a horizontal cross section on the dotted line 3 3 in Fig. 1, viewed as indicated by arrow. Fig. 4 is a similar cross section of parts at the meeting edges of the door. Fig. 5 is a side elevation of a part at the meeting edges of the door, partly vertically sectioned to show an expanding spring. Fig. 6 is a cross section through a part of one hinge and associated parts taken on the dotted line 6 6 in Fig. 2, parts being shown in two positions by full and dotted lines. Fig. 7 is a cross section of a part of the door casing drawn to show more fully the means for controlling the action of some of the parts. Fig. 8 shows more fully the form of a friction stop for the door. Figs. 2, 4, 5, 6, 7 and 8 are drawn to scales larger than Figs. 1 and 3.

Referring to the parts shown, A is the door held to the casing B by hinges C. The parts of the hinges secured to the door are offset as clearly shown in Fig. 6, on account of which when the doors are thrown open they swing back leaving a clear unobstructed opening

through the casing, as appears in Fig. 3, so that when the confined horse hastens out he will not encounter any part of the door.

The two parts of the door are thrown open by means of torsional springs *a a* held rigidly at their lower ends to the casing. These springs are secured to and act directly upon vertical fan levers *b* held to turn in bearings *c* rigid with the door frame. The fan levers, which are usually associated with the middle hinges of the doors, pass between the two parts of the hinges, as shown in Fig. 6, and are caused to bear with considerable force upon the outer parts of the hinges by means of the action of the springs. Now when the doors are free or unbolted the springs turn the fan levers in their bearings and, pressing against the contiguous parts of the hinges, throw the doors wide open, as indicated.

The springs are made with sufficient strength to throw the doors back to positions parallel with those occupied by them when closed. But so great a motion is frequently not necessary, and sometimes objectionable and to regulate the distance through which the doors are thrown back I employ stops *d*, Fig. 7, to limit the motion of the fan levers. These stops consist of threaded shafts held horizontally in bearings *e* rigid with the door casing in position to be encountered at their ends by the outwardly moving fan levers. By turning these threaded stops in their bearings one way or the other the motions of the fan levers may be arrested at will; and the instant the latter encounter the stops they temporarily cease acting upon the doors which latter continue to move onward from inertia only.

It will be understood that the earlier the fan levers are stopped in any given case the less will be the distance through which the doors will be thrown outward.

To control the doors more completely I employ yielding friction brakes or arresters *f g*, one below and the other above a hinge. The brake *f* is made rigid with the fan lever in position to bear against the lower edge of the hinge. When in moving outward the fan lever is stopped as above described the hinge continues to ride outward upon the brake and so is brought to a stop on account of the friction between the parts. The brake curves

upward at its outer end so that the friction or resistance felt by the hinge increases as the latter moves away from the fan lever. This brake is made of yielding material as, for instance, spring brass so as to bend slightly downward under the pressure of the hinge.

The brake *g* is secured to the door casing in position to bear down upon the upper edge of the hinge, is made of yielding material as spring steel, for example, and is not exactly horizontal but inclined slightly, as shown in Fig. 1, so that as the door swings outward the brake presses successively harder upon the hinge. These two brakes acting in the manner described serve to arrest the motion of the door easily and without shock or jar, and also hold it with reasonable firmness in place against the action of moderate pressures, as for instance that exerted by puffs of wind, and the like.

The doors are closed by hand against the action of the friction brakes and the torsion springs; and they may be held at the middle by any convenient bolts or fasteners *h h*. The fasteners shown are connected by a rod *i* in such a manner that a downward movement of the rod releases both bolts. This rod may be actuated by gravity or by a spring as shown, and controlled by an armature *k* connected with some source of electricity in a manner that is common.

I prefer to provide one of the doors with an adjustable edge strip *l*, Figs. 3, 4 and 5, formed with a longitudinal groove *m* fitting over a corresponding tongue *n* on the main part of the door, as shown. This strip meets the other door as shown and its meeting edge is made concave and the adjacent edge of the other door is made convex so as to close tightly and leave no crack between them. The strip *l* is made horizontally adjustable upon the contiguous part of the door by means of horizontal screws *o* passing through it and threaded into the main part of the door.

Springs *p*, Figs. 4 and 5, in the groove, secured to the tongue and bearing against the strip, tend to push the latter away from the contiguous part of the door and make a tight joint between the two meeting edges of the doors; while by means of the screws the action of the springs may be controlled and the width of the door thus increased or diminished at will. For instance if the doors shrink and leave a wide crack between them the screws may be correspondingly set out and allow the springs to push the strip outward and close the crack. On the other hand if the edges of the doors bind too tightly from any cause the screws may be tightened up to draw the strip nearer to the main part of the door.

I cover the strip with a sheet *r* of metal, as galvanized iron for instance, as shown, partly for the purpose of protecting the thin or sharp edges of the strip at the sides of the concavity. This sheet of metal is secured to the strip by screws or fasteners *s* and extended far enough back to lap over the adjacent portion of the contiguous part of the door and cover the joint between said main part and the strip. The sheet metal is free to move upon the main part of the door as the screws *o* are turned, and its free edges may be plain as shown in Fig. 1 or scalloped or otherwise ornamented, as shown in Fig. 5.

What I claim as my invention is—

1. A door and its casing provided with hinges, in combination with a fan lever held to turn in bearings in position to bear against the hinge, and an actuating spring held by the casing and secured to the fan lever and adapted to turn the latter to open the door, substantially as shown.

2. In combination with a door and its casing, hinges for the door, a rotary fan lever bearing against the hinge, an actuating spring secured to the casing and the fan lever and adapted to turn the latter whereby the door is opened, and an adjustable stop to control the action of the fan lever, substantially as shown and described.

3. A door and its casing with hinges to join them, in combination with a rotary fan lever bearing against the hinge, an actuating spring for the fan lever secured to the casing and serving to throw the door open, and a friction brake *f* carried by the fan lever, substantially as shown and described.

4. In combination with a door and casing and hinges for the door, means for automatically throwing the door open and a friction brake secured to the casing in position to bear upon the hinge, substantially as shown and described.

5. A door casing, a door formed in two main parts meeting at the middle and adapted to swing away from each other, and hinges for said main parts of the door, in combination with means for throwing the parts of the door open, one of said main parts of the door being formed with a longitudinal adjustable strip at its meeting edges adapted to be moved toward or from the contiguous part of the door to alter the width of the latter, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand, this 20th day of April, 1894, in the presence of two subscribing witnesses.

JOSIAH J. KINSEY.

Witnesses:

ENOS B. WHITMORE,
M. L. WINSTON.