United States Patent

[11] **3,563,586**

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[54] **FLOOR BAR LOCK: FAIL SAFE**
4 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **292/144,** 292/184
[51] **Int. Cl.** **E05c 17/48,** E05c 17/58
[50] **Field of Search** ..... 292/144, (F), 184, 201, 183, 185, 186, 187, 188, 189; 70/277, 281, 141

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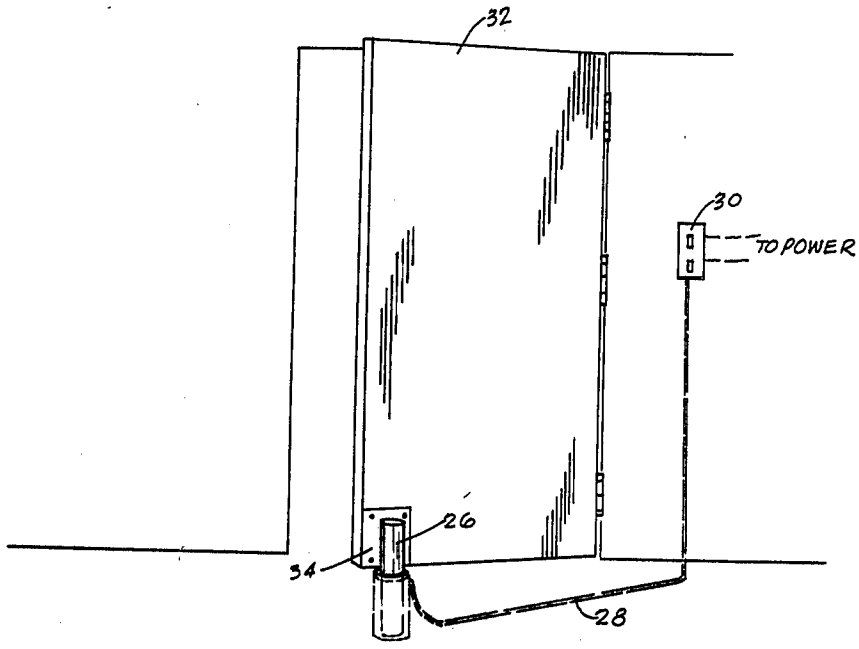
ABSTRACT: A vertical member is disposed in a floor mounted vertical hollow cylinder adjacent a door. Means are provided to move the member upwardly from the cylinder to block movement of the door or to move the member downwardly into the cylinder whereby the top of the member and the top of the cylinder are flush with the floor and the door can be opened and closed freely.



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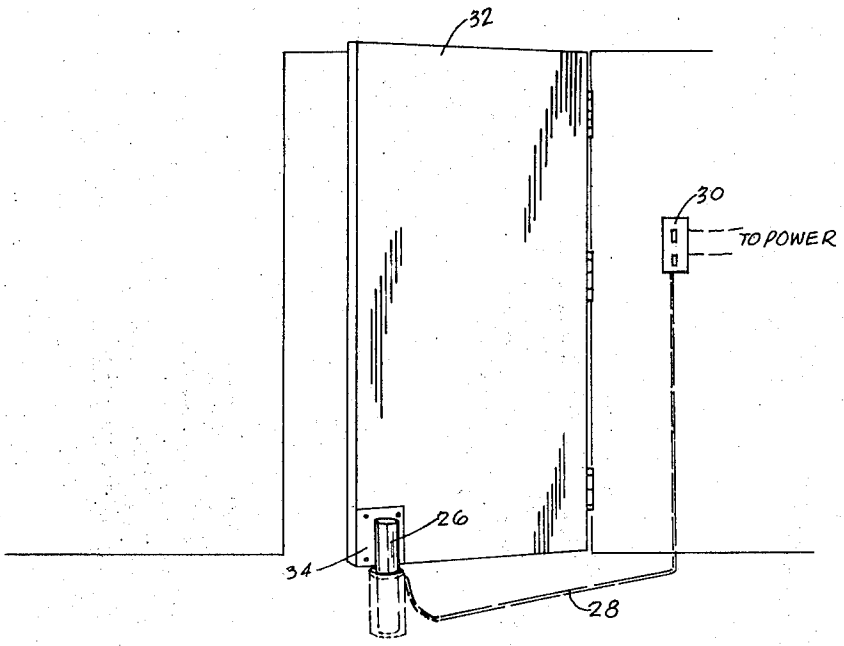

FIG. 1.

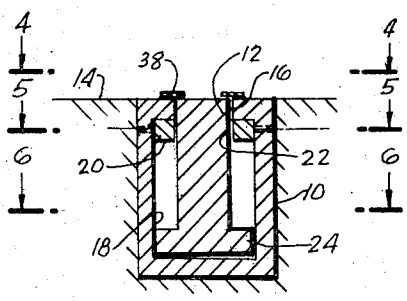

FIG. 2.

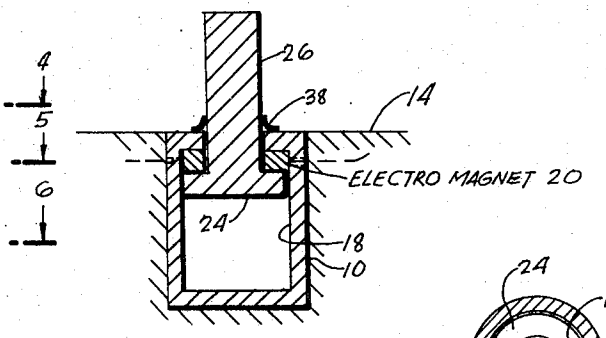

FIG. 3.

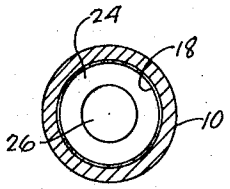

FIG. 6.

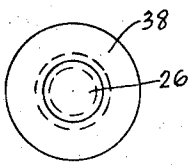

FIG. 4.

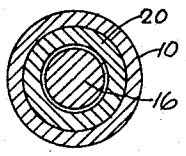

FIG. 5.

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FLOOR BAR LOCK: FAIL SAFE

SUMMARY OF THE INVENTION

A vertical hollow cylinder having a chamber with a first diameter and one opening of a smaller diameter in one end is mounted in a floor with the one end on top and the opening essentially flush with the floor. A member is provided with a flat horizontal circular magnetic disc with a diameter slightly smaller than that of the chamber and a vertical shaft extending upward from the center of the disc and having a diameter slightly smaller than that of the opening is disposed in the chamber with the shaft extending through the opening and the disc below the opening.

An electric switch is connected between a source of electric power and an electromagnet in the chamber. The electromagnet has a bore through which the shaft extends. When the switch is closed, the electromagnet is energized and the member is pulled upward with the shaft extending out of the floor. When the switch is open, the electromagnet is deenergized, and the member falls by gravity until the top end of the shaft attains floor level or below. The actuating mechanism need not be an electromagnet. Other mechanisms such as a mechanical linkage or manual controlled or electric motor controlled hydraulic pressure units can also be used.

The member is disposed adjacent a door to prevent it from being opened more than a few inches when the shaft is extended. The door can be opened and closed freely when the member is withdrawn.

My invention has the following advantages over existing locks and chain systems:

1. A door may be safely opened a distance of several inches to receive packages, telegrams, etc., and to sign for same.

2. A person in premises has full view of person at door or person seeking admittance. This is a distinct advantage over "peephole" in truly determining caller's identity.

3. A person in premises is not dependent upon flimsy chain lock, which is often secured by screws into old or rotting woodwork. This type of lock gives a false sense of security. Those intent on entering premises for any illegal purpose can easily do so when chain lock is in place. This can often be accomplished by very little pressure on the door with a minimum of noise.

4. Persons utilizing this floor bar system need no longer dread that knock, or bell late at night. When the floor bar is in place no one can enter premises without breaking door down, or with occupant's permission. When bar is in place any outside pressure would result in a spring effect to the detriment of those seeking entry unlawfully. The actuating mechanism can only be reached by the occupant of premises.

5. There are no unsightly bars or locks. When floor bar is retracted it is flush with, or slightly below the floor level, and could be made quite inconspicuous. Actuating mechanism would be in wall, and covered much as an electric switch.

6. This installation in new dwellings, office buildings, motels, apartment houses, etc. is a distinct selling or renting inducement. System is also easily installed in existing buildings. Statistics indicate a sharp rise in crimes of violence, larceny, and burglary. Too often we read of females being attacked, ravished and murdered while in their homes or apartments. The installation and use of the floor bar assists in reversing this trend. BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of my invention in use;

FIG. 2 is a cross-sectional view of my invention in withdrawn position;

FIG. 3 is a cross-sectional view of my invention in extended position;

FIG. 4 is a view taken along line 4–4 in FIG. 2;

FIG. 5 is a view taken along line 5–5 in FIG. 2; and

FIG. 6 is a view taken along line 6–6 in FIG. 2. DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to FIGS. 1—6, a hollow vertical cylinder 10 sealed except for an opening 12 of a first diameter is mounted vertically in a floor 14 having an opening 16 aligned with opening 12. Cylinder 10 has a chamber 18 having a second and larger diameter. A toroid shaped electromagnet 20 is disposed in the cylinder at the top of the chamber with an axial bore 22 aligned with opening 12. Openings 12 and 16 and the bore 22 have the same diameter. Opening 16 can be surrounded by a protective ring or gasket 38.

A metal member has a bottom horizontal circular disc 24 of diameter slightly smaller than that of the chamber and disposed therein, with a vertical shaft 26 of diameter slightly smaller than that of opening 12 extending upward from the center of the disc into opening 16 through opening 12 and bore 22. The disc 24 is magnetic.

The electromagnet is connected via cable 28 and wall mounted on-off switch 30 to a source of electrical power. When the switch is closed, the magnet is energized and magnetically attracts disc 24 into contact therewith (FIG. 3) whereby the shaft extends outward from the floor. When the switch is open, the magnet is deenergized, and disc 24 and shaft fall by gravity until the disc is in contact with the bottom of the chamber (FIG. 2).

A door 32 is disposed adjacent the floor opening for purposes previously described. The door can have a protective plate 34 for preventing damage to the door when the shaft is extended.

The actuating mechanism, instead of being an electromagnet, can be a mechanical linkage, or utilize hydraulic pressure developed either by manual control or through use of an electric motor.

While I have described my invention with particular reference to the drawings, such is not to be considered as limiting its actual scope.

We claim:

1. In combination with a door having a floor underneath, said floor having an opening adjacent the door:

a hollow cylinder disposed vertically within the floor, said cylinder having one end with an opening aligned with the floor opening and also having a chamber;

a member having a vertical shaft aligned with said aligned openings and being magnetically responsive, said member being disposed in said chamber, said member having a withdrawn position in the absence of a magnetic field at which said shaft does not extend out of the floor and the door can be opened or closed freely, said member having an extended position in the presence of a magnetic field at which said shaft extends out of the floor and prevents the door from being opened more than a few inches;

first means in said chamber for producing a magnetic field when electrically energized; and

second means having a first position at which the first means is energized and said member is extended and a second position at which the first means is deenergized and the member is withdrawn.

2. The combination as set forth in claim 1 wherein said member has a magnetic horizontal circular flat disc of diameter slightly smaller than that of the chamber at the bottom of the shaft.

3. The combination as set forth in claim 2 wherein said first means is an electromagnet in the shape of a toroid.

4. The combination as set forth in claim 3 wherein said toroid is disposed in the upper end of the chamber with its central bore aligned with both openings and of like diameter, said shaft extending through the bore.