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DOOR SPINDLE KEY LOCK
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2,501,505

FIG. 1

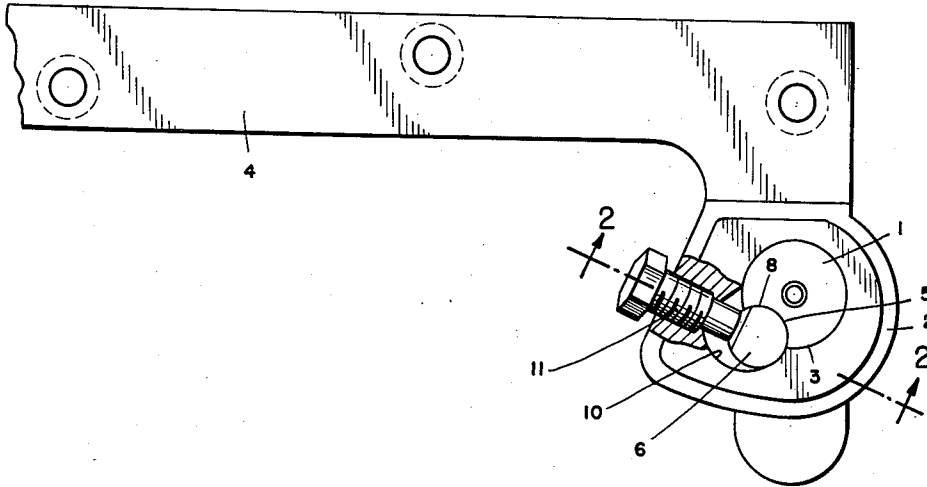


FIG. 2

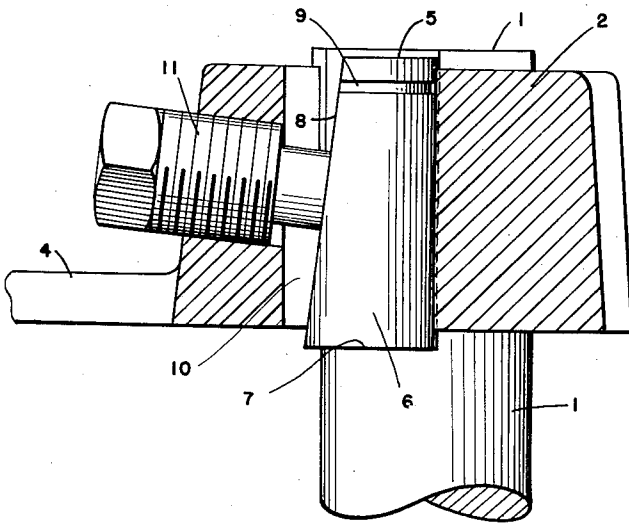
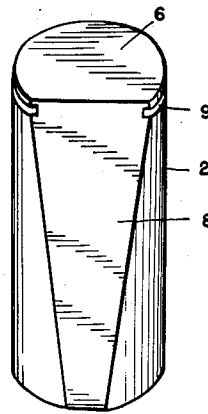


FIG. 3



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DOOR SPINDLE KEY LOCK

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3 Claims. (Cl. 287—52.02)

1

This invention relates to means for mounting a door upon the spindle of a door checking and closing device, especially in situations where the operating mechanism is located in a recess in the floor and where the main spindle of that mechanism carries the weight of the door.

The main object of this invention is to provide a simplified and improved form of key connection between the spindle and the hinge arm member on the door, which provides for a degree of vertical adjustment of the door upon the spindle and at the same time locks this member to the spindle so as to prevent either relative rotation or relative vertical shifting of the member with respect to the spindle.

A specific embodiment of this invention is shown in the accompanying drawings in which:

Figure 1 is a top view, partly broken away, of the joint between the spindle and hinge arm member.

Fig. 2 is an elevation of the same with parts in section on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of the key.

A general arrangement of door check mechanism to which this invention is particularly applicable is shown in applicant's Patent No. 1,832,699 of November 17, 1931.

In the form shown in the drawings, the spindle 1 is the upper end portion of a crank shaft that is journaled in a casing (not shown) and connects the door with its closing and checking mechanism which is embedded in the floor as described in said patent.

In the present invention the spindle is connected to the door by means of a hinge plate comprising a hub 2 having a bore 3 fitting the spindle 1 and having arm 4 that is mortised into the bottom of the door. A cylindrically curved keyway 5 is cut into one side of the spindle adjacent its upper end, its transverse elements being of like circular curvature and its longitudinal elements being straight and parallel to the axis of the spindle, so that this keyway can be formed by a drill moving parallel to the axis of the spindle. This keyway 5 forms a seat for a cylindrical key 6 and terminates in a shoulder 7 at its lower end that forms a ledge for the key to rest upon.

The key 6 may be formed by cutting a piece of cylindrical rod stock to suitable length and removing a portion at one side to form a flat inclined wedge face 8. Adjacent the smaller or upper end of the key, there may be a notch 9 to facilitate removal of the key from its keyway by means of a suitable implement.

2

The hub 2 also has a keyway 10 in position to register with the keyway 5 to accommodate the key 6. The keyway 5 in the spindle accurately fits the cylindrical body of the key 6 but the keyway 10 in the hub is made somewhat larger in cross sectional area to permit the ready insertion and removal of the key 6 while the spindle is in position within the hub.

The key is placed in the ways in such position that the narrow end of its wedge-shaped body is at the top so that the flat surface 8 thereof slopes downward and outward from the axis of the spindle.

A set screw 11 is threaded into the hub 2 in such an inclined position that its axis is approximately tangent to the periphery of the spindle and normal to the inclined surface of the key 6.

In operation, after the door closing mechanism, represented by the spindle 1, is set in its fixed position in the floor, the arm 4 of the hinge member is mortised into the bottom of the door and then placed upon the upstanding end of the spindle 1. When the door is in its closed position, the keyways in the spindle and hub 2 will be in approximate registry with each other.

The key 6 is then dropped into the keyways with its large end at the bottom and resting on the shoulder 7 on the spindle. The door is then accurately adjusted in height and the set screw 11 is set up to bear tightly against the flat inclined wedge face of the key 6. The set screw, being substantially tangential to the periphery of the spindle, presses the key laterally against a shoulder portion of the wall of the keyway 10 that converges toward the axis of the spindle. Thus the set screw produces a rotary wedging effect that locks the spindle firmly against any possibility of rotation relative to the hub 2 and forces the key 6 into firm lateral clamping engagement with the channel walls of both keyways 5 and 10; also since the axis of the set screw is normal to the inclined flat face 8 of the key, the weight of the door supplements the thrust of the said screw in such manner as to lock the spindle 1 and hub 2 against both vertical and rotary relative shifting.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that numerous details of the structure shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. A door check spindle fastening, compris-

3

ing a vertical spindle having a cylindrical top portion with a cylindrical keyway in one side, which keyway has its transverse elements of circular curvature and its vertical elements straight and parallel with the axis of said spindle, a ledge formed at the lower end of said keyway, a door hinge arm having a hub bored to fit said spindle and having a keyway extending through said hub in one side of said bore and providing a shoulder opposed to the keyway in said spindle and inclined laterally toward said spindle, a key in said keyways, resting on said ledge and having a cylindrical body longitudinally beveled to form a vertically inclined face opposed to said shoulder, and a set screw threaded in said hub in position to bear on said inclined face in a direction normal thereto and between said shoulder and said spindle.

2. A door check spindle fastening, comprising a vertical spindle having a cylindrical portion, a door hinge arm having a hub bored to fit said cylindrical portion, a keyway of circular cross section in one side of said spindle portion, having a key supporting ledge at its lower end, a keyway in said hub registering with the keyway in said spindle, a key interposed in said keyways between said spindle and hub and resting on said ledge, said key having a cylindrical surface portion on one side fitting said keyway in said spindle and extending into the keyway in said hub and having a flat surface portion on its other side inclined upwardly and inwardly with respect to said spindle, said keyway in said hub having a side wall surface portion inclined toward the axis of said spindle, and a set screw

4

threaded in said hub in position to bear on said flat surface portion of the key in a direction normal thereto and between the spindle and said wall surface portion of the keyway.

3. A door check spindle fastening, comprising a vertical spindle having a cylindrical top portion, a door hinge arm having a hub bored to fit said spindle top portion, a keyway extending vertically in one side of said spindle at its upper end, said keyway having its surface made up of circularly curved transverse elements and straight vertical elements, and terminating at its lower end in a ledge to support a key, a keyway in said hub forming a shoulder laterally inclined toward said spindle, a key seated in said keyways so as to rest on said ledge and having a cylindrical body longitudinally beveled to form a vertically inclined face opposed to the keyway in said hub, and a set screw threaded in said hub and bearing on said inclined face in a direction substantially tangent to the periphery of said spindle top portion and substantially normal to said inclined key face.

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The following references are of record in the file of this patent:

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