R. B. CAVERLY & A. B. BELL.

DROP DOOR HINGE.

APPLICATION FILED NOV. 28, 1914.

1,176,734. Patented Mar. 28, 1916.

Fig. 1,

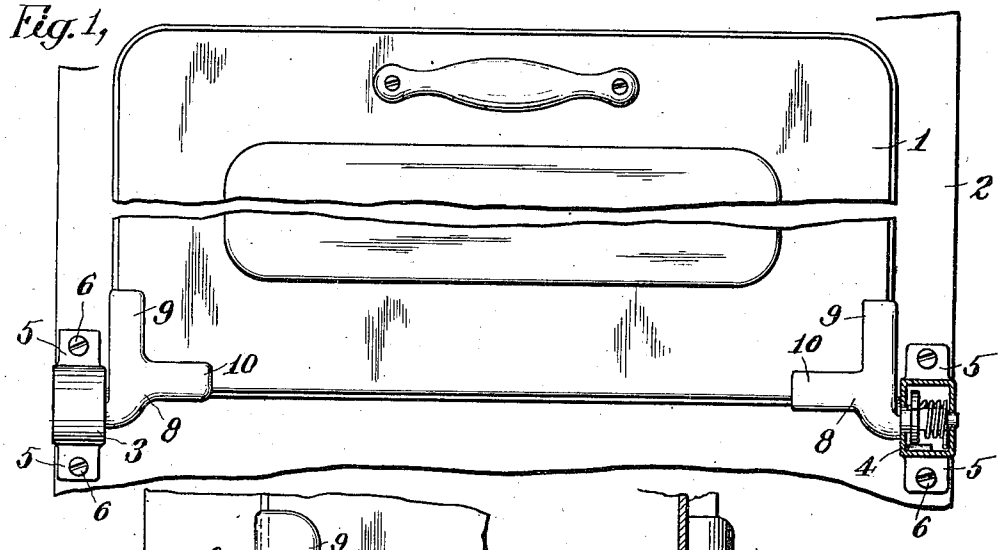


Fig. 2,

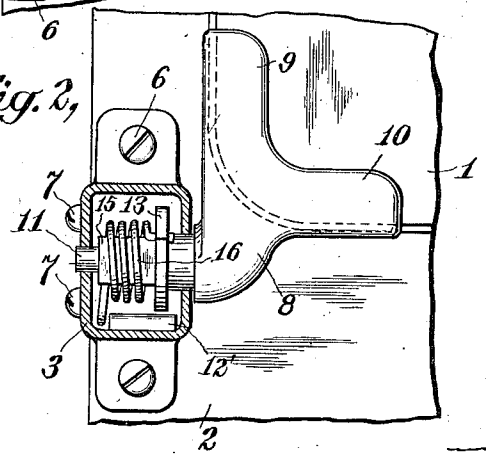


Fig. 4,

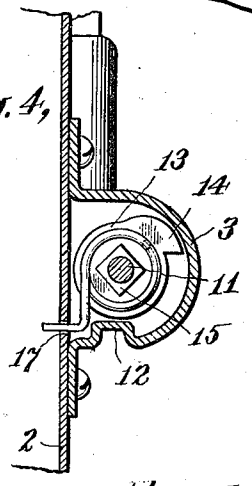


Fig. 3,

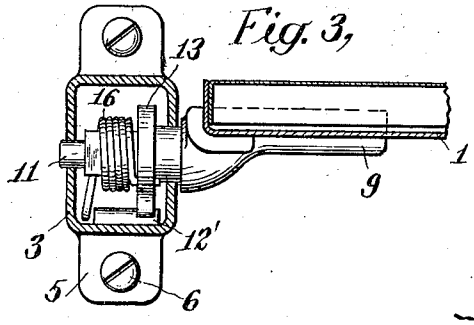
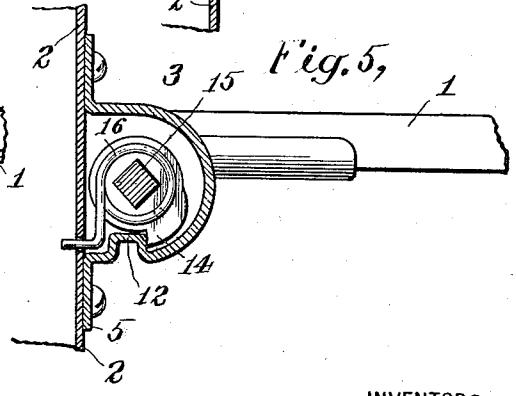


Fig. 5,



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UNITED STATES PATENT OFFICE.

ROBERT B. CAVERLY AND ALFRED B. BELL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO HALE AND KILBURN COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE.

DROP-DOOR HINGE.

1,176,734. Specification of Letters Patent. Patented Mar. 28, 1916.

Application filed November 28, 1914. Serial No. 874,382.

To all whom it may concern:

Be it known that we, ROBERT B. CAVERLY and ALFRED B. BELL, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Drop-Door Hinges, of which the following is a specification.

Our invention relates to drop door hinges and particularly to covered hinge constructions applied to the bottom edge of drop doors, such as those used in gas range construction, which are adapted to swing downwardly and outwardly to open position. Such hinge constructions have previously been chiefly constructed of cast iron, with an unsightly weak projecting lug on the door pivot and on the hinge cover, to act as a stop for the door.

Our invention comprises a self-contained hinge and stop construction in which the hinge cover or casing, preferably formed of sheet-metal with flanges secured to the front of the range or frame member, rotatably supports the pivot pin of the hinge, an inwardly directed stop or lug in the casing, preferably at the bottom, serving as a stop to coact with a member on the pivot pin having a projection, which engages the stop member in the casing when the door is in open position. A spring is arranged within the casing to resist opening movement of the door, this spring preferably being so tensioned as to return the door to closed position when it has been opened a few inches only, and to permit the door to open all the way when the top thereof has been moved more than the predetermined amount away from the front of the range.

The object of our invention accordingly is to provide devices of the character referred to, having the advantageous features of construction and function hereinafter more fully described.

In order that a clearer understanding of our invention may be had, attention is hereby directed to the accompanying drawing forming part of this specification and illustrating certain embodiments of our invention.

In the drawings, Figure 1 represents a partial front elevation of a drop door pivoted to a supporting frame, Fig. 2 represents on an enlarged scale one corner of the door and the hinge construction coacting therewith, Fig. 3 is a similar view, the door being shown in open position, Fig. 4 is a transverse section corresponding to Fig. 2 and Fig. 5 is a transverse section corresponding to Fig. 3.

The door 1 is pivoted adjacent its lower edge to the frame member 2, which may be the front sheet of a gas range. Hinge covers or casings 3 and 4 are secured to the frame member adjacent the lower corners of the door, the hinge casings, in our preferred construction, being formed from sheet-metal and having flanges 5, 5 suitably secured, as by bolts or screws 6, to the frame member 2. Each hinge casing also preferably has a side flange secured to the adjacent side of the range, as by screws 7. The two pivot members 8 are each formed, preferably with vertical and horizontal flanges 9 and 10 secured to the side and bottom edges or the door 1. Each pivot member is provided with a pivot pin 11 integral therewith having cylindrical portions rotatably mounted in the side walls of the hinge casings as shown. Each hinge casing is provided with an inwardly directed stop lug within the interior of the casing, preferably at the bottom. This lug may be integral with the casing as shown at 12 in Figs. 4 and 5, by forming or bending the metal of the casing inwardly at this point, or it may comprise a separate piece 12′ secured within the lower part of the casing, as shown in Figs. 2 and 3. The pivot pin 11 is provided with a member 13 rotatable therewith and having a projection 14 adapted to contact the lug 12 when the door is in open lowered position to hold the same. Preferably, member 13 is formed as a washer or piece of sheet-metal having a square hole therethrough mounted upon the squared portion 15 of the pivot pin within the casing 3.

The spring is mounted within the casing to resist the opening movement of the door. Preferably, this spring takes the form of a spiral spring 16 coiled about the pivot pin and having one end inserted in a hole 17 in the frame 2 and the other end inserted in a hole in member 13. The device is assembled by placing the spring and the member 13 in the hinge casing, one end of the spring being inserted in member 13. The pivot pin 11 is then inserted in the cover through a drilled

hole in the side of the hinge casing 3, the other end of the spring then being inserted in the hole 17 of the oven front or frame 2, under a desired amount of tension. The cover or casing 3 is then bolted or screwed fast to the frame member 2, the flanges 9 and 10 of each pivot member being secured to the door 1. The spring is preferably of sufficient strength to close the door when the latter has been opened only two or three inches at the top, the weight of the door being sufficient, however, to overcome the force of the spring and permit the door to fully open, when the door has been opened more than the predetermined amount at the top. When the door is dropped to fully open position, the projections 14 on members 13 make contact with the stop lugs on the casing, and no strain is set up in the oven front 2, in the preferred construction, since the lugs 12 are located at the bottom of the hinge covers and accordingly all strain due to the weight of the door is taken by the lower flanges 5 of the hinge covers. This is of importance when the hinges are used in connection with a sheet metal construction, such as the oven front shown.

The hinge construction described does away with the necessity of providing intricate pockets in the range front, and is easily removable by unscrewing the casings 3 from the range front.

The construction described is cheap, self-contained, easily cleaned, is adaptable to various forms of construction employing drop doors, and does away with the necessity of providing projections on the doors for the outer surfaces of the hinge covers to act as stops.

Having described our invention, what we claim as new therein and desire to secure by Letters Patent of the United States is:

1. The combination of a door adapted to swing downwardly to open, a frame, a flanged casing secured to the frame, having an inwardly extending stop therein, formed upwardly from the bottom thereof, a pivot member having a pin rotatably mounted in said casing and an arm secured to the door adjacent the bottom edge thereof, a member secured to said pin within said casing, having a projection adapted to contact said stop in the casing when the door is in lowered position, and a spring coiled about said pin within said casing, having one end secured to said member and the other end secured to said frame to resist opening movement of said door, substantially as set forth.

2. The combination of a door adapted to swing downwardly to open, a frame, a flanged casing secured to the frame, having an upwardly and inwardly extending stop therein, at the lower side thereof, a pivot member having a pin rotatably mounted in the side walls of said casing, and an arm secured to the door adjacent the bottom edge thereof, a member having an angular opening therethrough mounted on a corresponding angular portion of said pin, within said casing, and having a projection adapted to contact said stop in the casing when the door is in lowered position, and a spring coiled about said pin within the casing, having one end secured to said member and its other end secured to said frame, substantially as set forth.

This specification signed and witnessed this 27th day of November, 1914.

ROBERT B. CAVERLY.
ALFRED B. BELL.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."