J. W. EGAN.

HOPPER BOTTOM CATCH.

APPLICATION FILED FEB. 23, 1907

900,672. Patented Oct. 6, 1908.

3 SHEETS—SHEET 1.

Fig. 1.

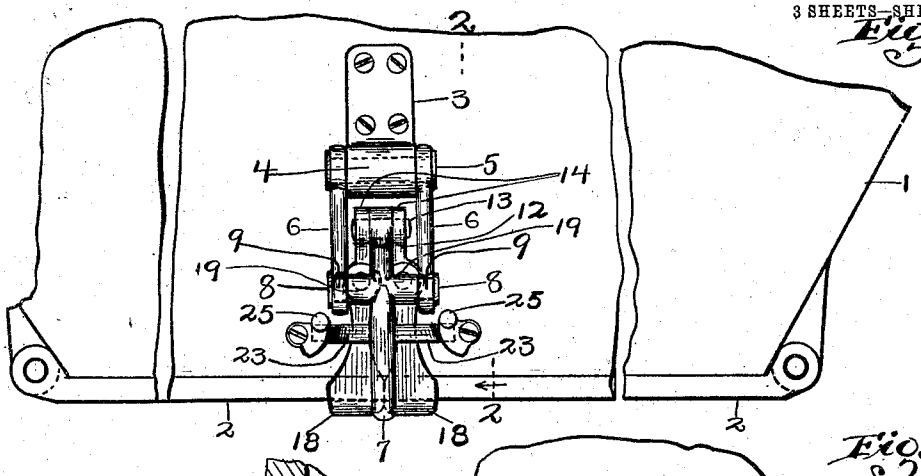


Fig. 2.

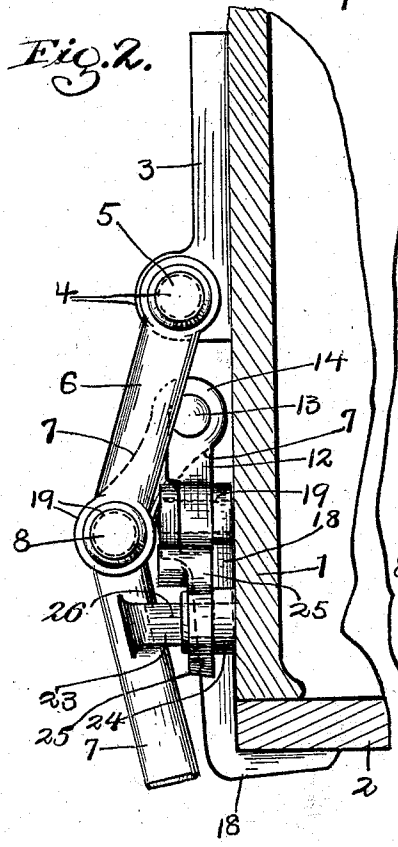
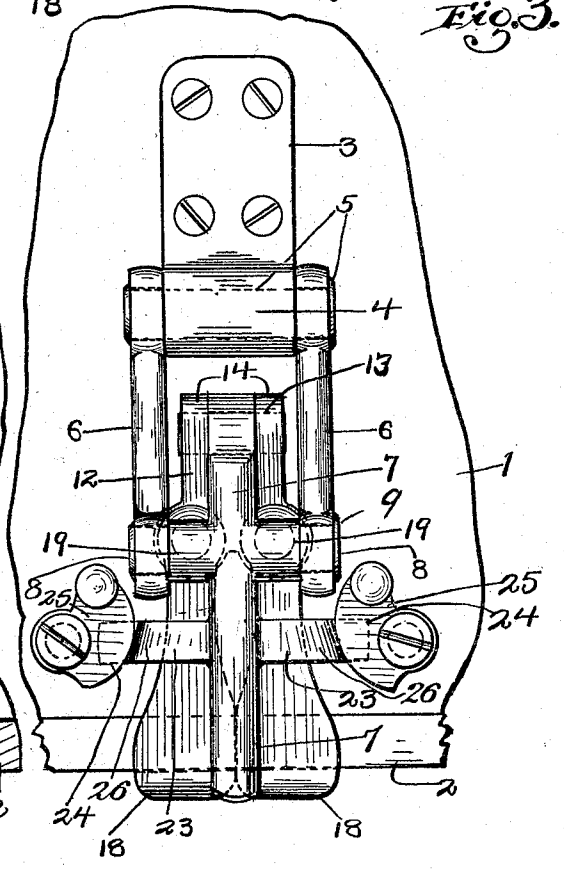


Fig. 3.



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3 SHEETS—SHEET 2.

Fig. 4.

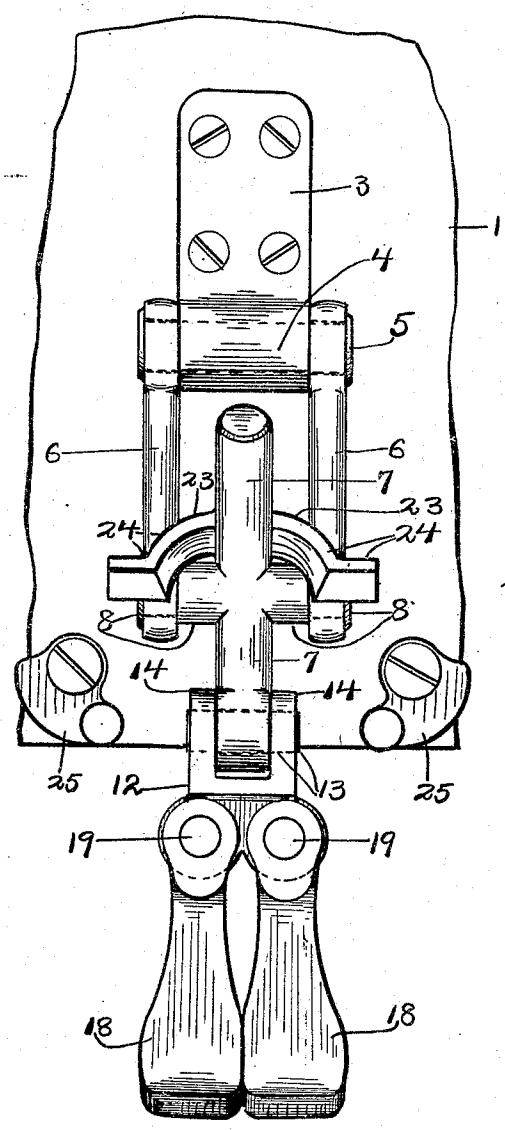
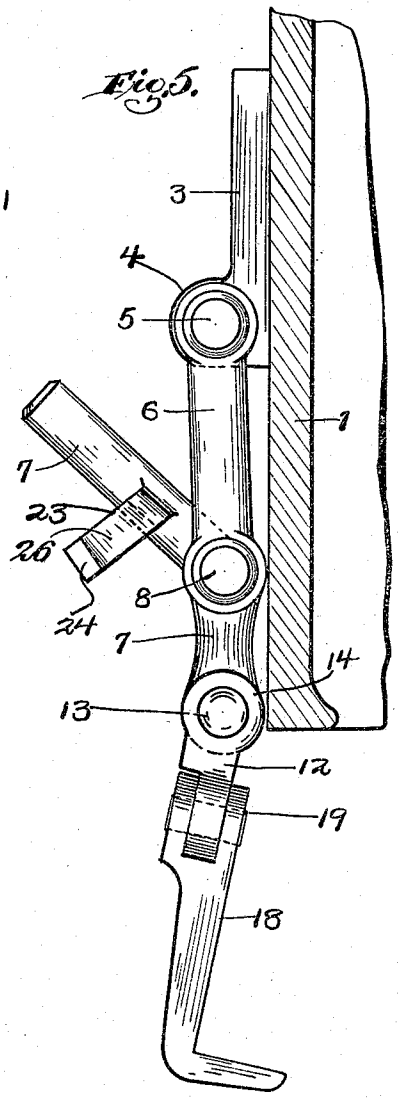


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

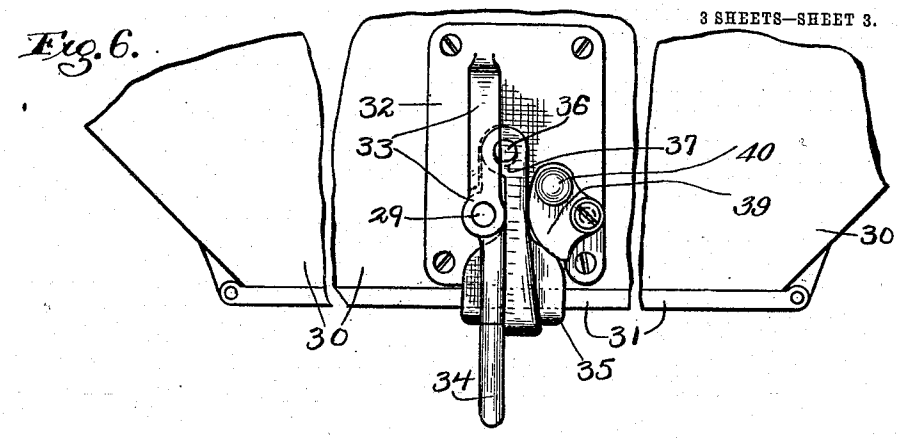


Fig. 7.

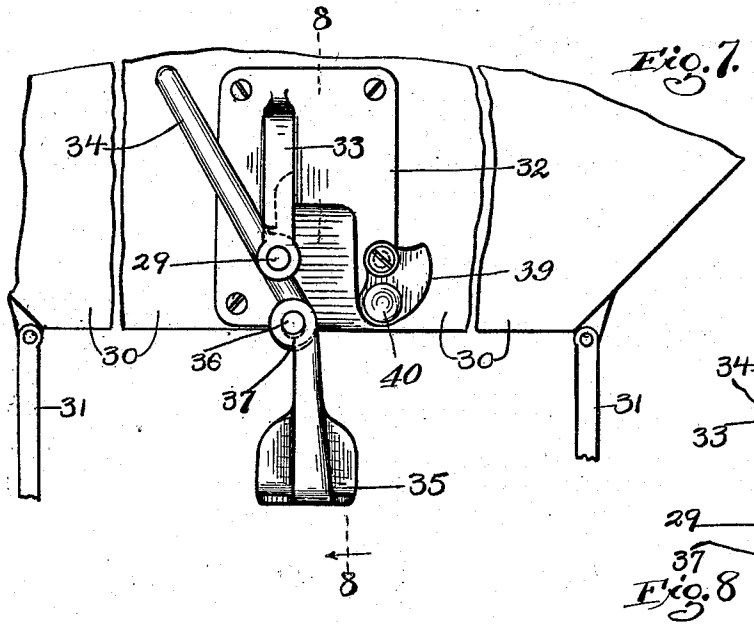
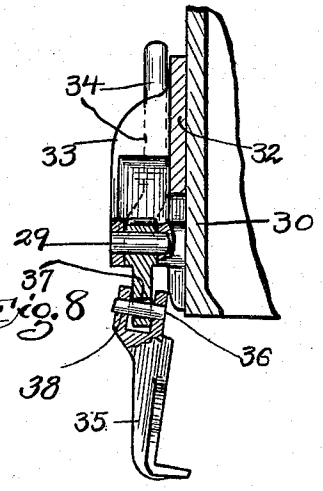


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN W. EGAN, OF CLEVELAND, OHIO.

HOPPER-BOTTOM CATCH.

No. 900,672. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed February 23, 1907. Serial No. 358,905.

To all whom it may concern:

Be it known that I, JOHN W. EGAN, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hopper-Bottom Catches; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to locking devices for doors, lids, hinged bottoms of hoppers and the like.

The object of this invention is to provide a device of this character which will serve as an auxiliary locking device especially adapted for use where it is necessary to exert a degree of pressure in order to bring the doors which are to be secured into their closed position.

A further object of my invention is to provide means for sustaining and reinforcing the free sides of the bottom doors of a hopper so that the doors will be equally supported at all sides thereby preventing them from being sprung by the weight of the load inside the hopper.

My invention further consists in the features of construction and combination of parts as described in the specification, pointed out in the claims and illustrated in the accompanying drawings.

In the accompanying drawings the locking device is shown applied to a hopper provided with double doors at the bottom, as the invention is particularly adapted for use with a receptacle having such an arrangement of doors.

Figure 1 shows, in elevation, a portion of a hopper provided with bottom doors arranged to swing down and a device embodying my invention mounted on the side thereof. Fig. 2 is a section on line 2—2, Fig. 1 on an enlarged scale. Fig. 3 is a similar view to Fig. 1 on same scale as Fig. 2. Fig. 4 is a view in elevation of the device when unfastened. Fig. 5 is a side view of same with hopper in section. Fig. 6 is a view similar to Fig. 1 showing a modified form of my device. Fig. 7 is a similar view of the device unfastened. Fig. 8 is a side view of same.

Again referring to the drawings 1 represents a hopper which is provided with a pair of hinged doors 2 which are arranged to swing down to let the contents of the hopper escape therefrom. On the side of the hopper in line with the meeting edges of the doors is secured a plate 3 which is provided with a bearing 4 at its lower end. In the bearing 4 is arranged a pin 5 so as to project at each end thereof and from the projecting ends of said pin 5 are hung links 6. A bell-crank lever 7 is pivotally supported between the lower ends of the links 6 by means of arms or trunnions 8 which extend from the sides of the bell crank lever 7 and enter bearings 9 formed in the ends of the links. A plate 12 is pivotally secured to the end of the shorter arm of the bell crank lever 7 by means of a pin 13 which passes therethrough and through a pair of ears 14 formed on the plate 12. From the lower end of the plate 12 are hung two hook-shaped members 18, by means of pins 19 which pass through the plate 12 at a right angle to the pin 13. A curved arm 23 is secured at each side of the longer arm of the bell crank lever and at the end of each arm 23 is formed a plate 24 which is so arranged that when the device is in its closed position the plates 24 will lie against the side of the hopper. Cam-shaped latches 25 are pivotally mounted on the side of the hopper in proximity to the arms 23 and are designed to be slipped over the plates 24 on said arms 23 so as to hold them against the side of the hopper and thereby prevent any movement of the lever 7. At the point where the latches 25 abut against the ends of the arms 23 when in their locking position, cam surfaces 26 are formed to hold the latches against accidental displacement.

As generally used one of my devices will be mounted at each side of the hopper and after the doors have been swung up to their closing position, by any suitable means provided therefor, the longer arm of the bell crank lever 7 is pressed down, which of course raises the shorter arm thereby bringing the hook-shaped members 18 in contact with the doors and the further downward movement of the longer arm of the lever will force the doors into position in case they are sprung or out of line and when the doors have been brought to their proper position the longer arm of the lever will lie close against the hook-shaped members and the plates 24 on the arms 23 will be against the side of the hopper and the cam-shaped latches 25 are then swung around over the plates 24 and lock them against the side of the hopper. The cam surfaces cause

the latches 25 to grip on the plates 24 thereby preventing accidental displacement.

In my modified form I show a somewhat simpler construction to that which I have already described, as in this form I use a single hook for holding both doors and the operating lever is supported so as to swing in a plane parallel with the side of the hopper. In Figs. 6, 7 and 8 the hopper is indicated by 30 and the hinged door by 31. On the side of the hopper is secured a plate 32 on which is arranged a rigid support 33. A lever 34 is fulcrumed at the lower end of the support 33 and from the shorter arm of the lever is hung a hook 35 by means of a pin 36 which passes through an opening 37 in the end of the lever and through an opening 38 in the shank of the hook. The opening 37 in the end of the lever is made somewhat larger than the pin 36 and the pin therefore has considerable play in said opening which permits the hook to move back out of the road of the doors as they swing down. When the device is in its closed position the lever and the shank of the hook will fold against each other. On the side of the plates is pivotally mounted a cam-shaped latch 39 so that when it is swung around to its operative position the edge of the plate will abut against the side of the shank of the hook and thereby prevent the hook from swinging down. The latches 28 are preferably provided with knobs 40.

What I claim is:—

1. In a device of the character indicated, the combination with a hopper and doors thereof, of a device for securing the doors in their closed position comprising a pair of links pivotally supported from the side of the hopper, a bell-crank lever fulcrumed between the lower ends of said links a plate hinged to the shorter arm of said lever, hooks pivotally secured to said plate and means for locking said lever against the side of the hopper.

2. In a device of the character indicated, the combination with a hopper and the doors thereof of a device for securing the doors in their closed position, said device comprising a plate, a pin journaled in said plate, links supported from said pin, a bell crank lever fulcrumed between said links, a plate hinged to one end of said lever, hooks pivotally supported from said plate, arms secured to said lever and means for locking said arms against the side of the hopper.

3. In a device of the character indicated, the combination with a hopper and the doors thereof of a device for securing the doors in their closed position comprising a plate, a pin journaled in said plate, links hung from said pin, a bell crank lever provided with arms arranged to extend into bearings formed in the lower ends of said links, a plate hinged at the end of said lever, hooks pivotally connected with said plate, curved arms secured on said lever, plates formed on the ends of said arms and arranged to abut against the side of the hopper when the device is in its closed position and cam-shaped latches for locking said plates against the side of the hopper.

In testimony whereof, I sign the foregoing specification, in the presence of two witnesses.

JOHN W. EGAN.

Witnesses:
VICTOR C. LYNCH,
N. L. MCDONNELL.