(No Model.)

# G. W. BINGHAM.

## SHUTTER WORKER.

No. 424,261. Patented Mar. 25, 1890.

FIG. 1.

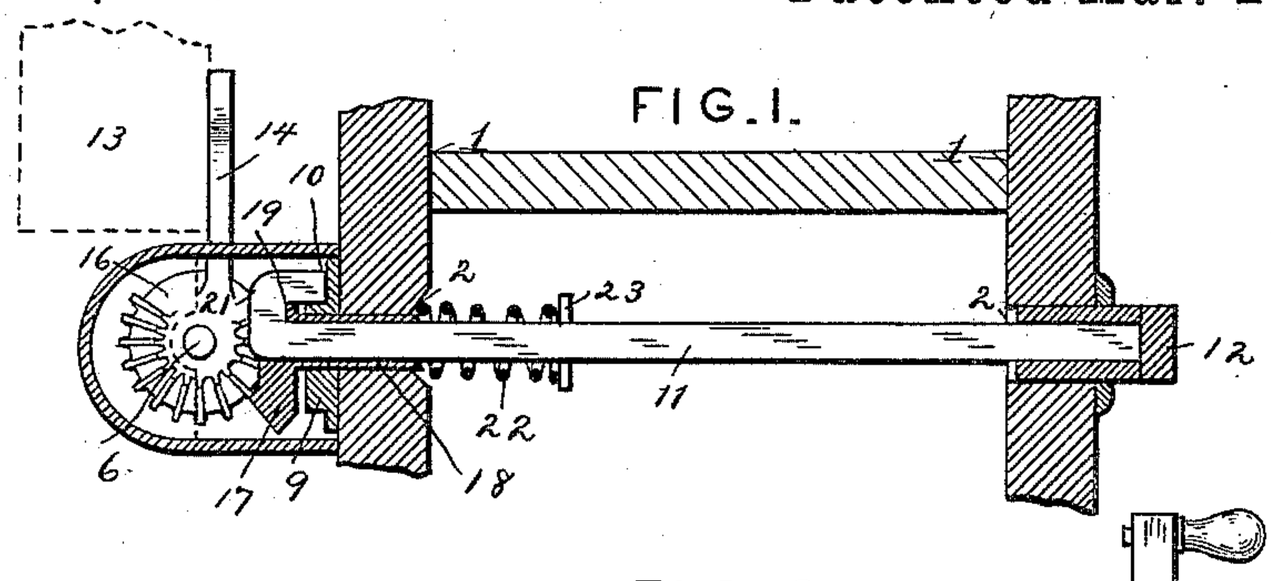



FIG. 2.

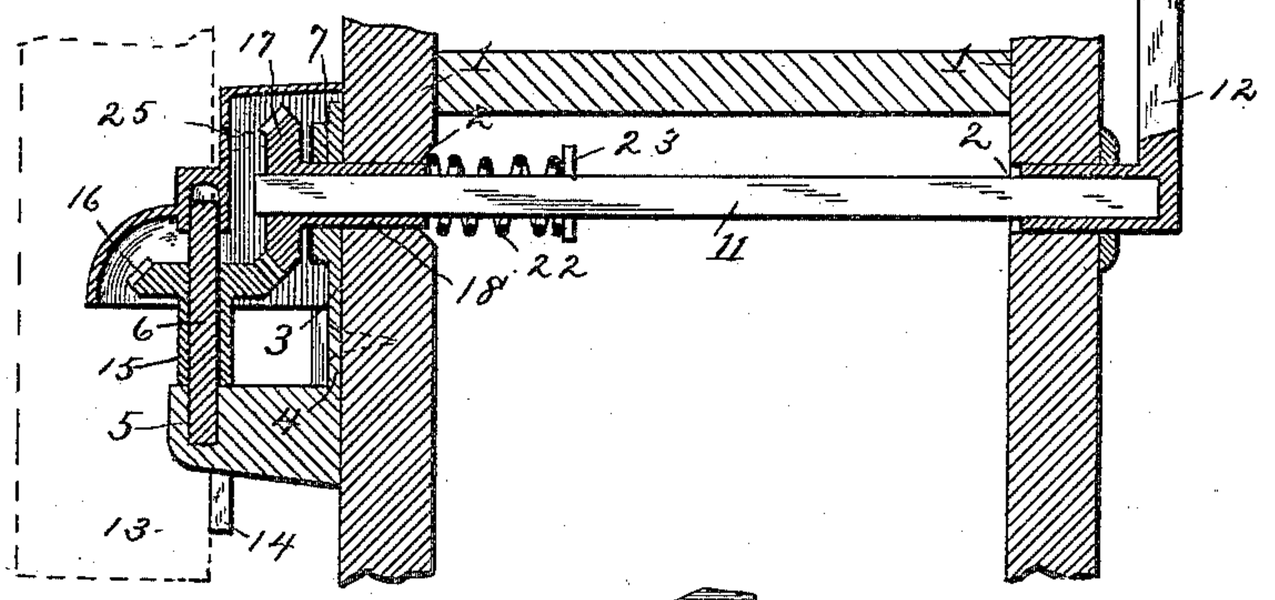



FIG. 3.

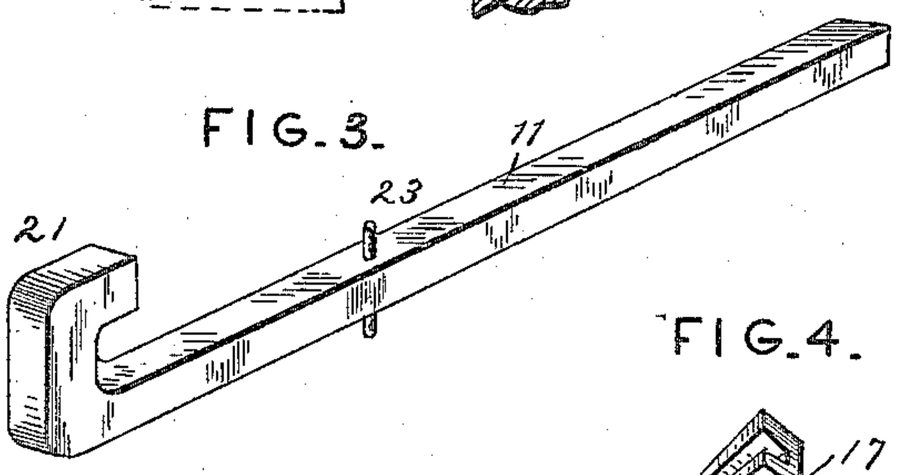



FIG. 4.

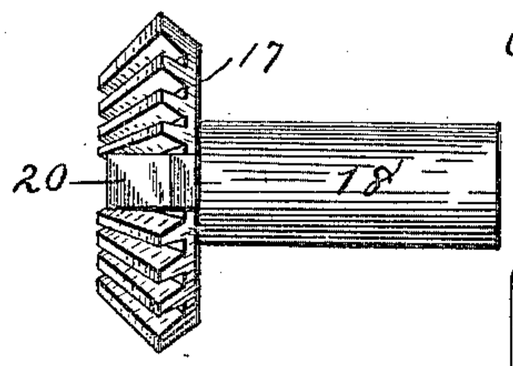



FIG. 5.

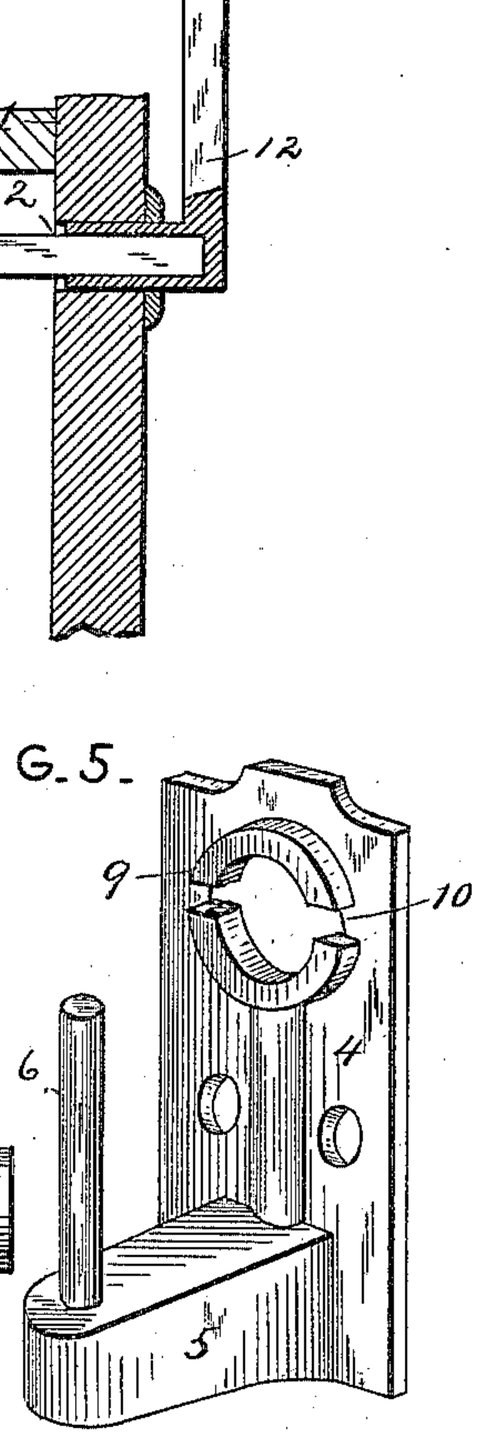



FIG. 6.

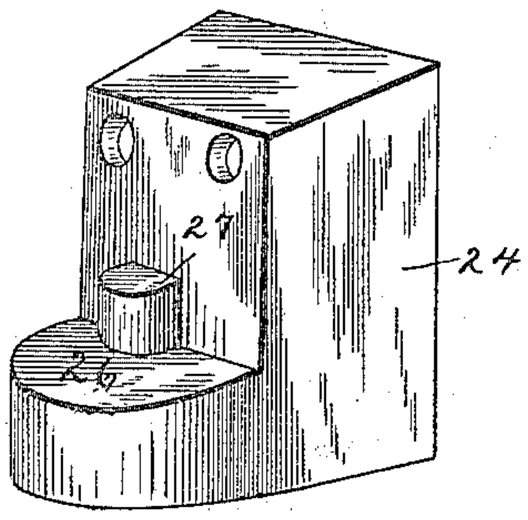
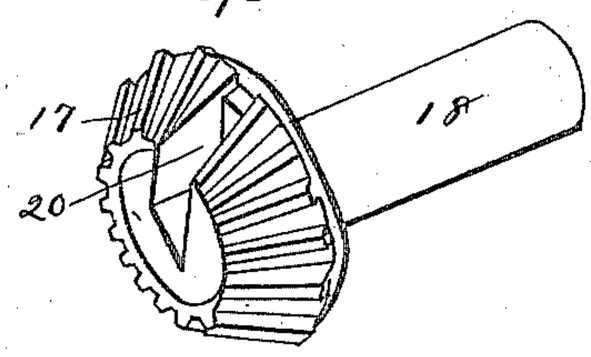



FIG. 7.

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# UNITED STATES PATENT OFFICE.

GEORGE W. BINGHAM, OF ORANGE, MASSACHUSETTS.

## SHUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 424,261, dated March 25, 1890.

Application filed January 21, 1890. Serial No. 337,609. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. BINGHAM, a citizen of the United States, residing at Orange, in the county of Franklin and State of Massachusetts, have invented a new and useful Shutter-Worker, of which the following is a specification.

This invention has relation to shutter-workers of that class in which the supporting-pintle of the shutter has mounted thereon the opposite hinge-leaf of the shutter, which leaf is provided with a bevel-pinion operated by a similar pinion mounted on the end of an operating-rod passed through the window-casing.

The objects of my invention are to provide an easy and convenient means for locking the shutter against opening in either an open or closed position; furthermore, to provide tension between the two meshing pinions, whereby the shutter may be maintained at any point intermediate its open or locked position against accidental closing.

With these general objects in view the invention consists in loosely mounting the operating-pinion upon the rod, passing the latter through a securing-plate having an annular notched flange, the operating-rod terminating in a locking end seated in a recess formed in the pinion and adapted to take into the notch of the annular flange, and a coiled spring encircling the rod and forcing the same inward, so that its locking end will be sprung into the locking-notches of the flange and have its forward end bear against the rear end of the pinion to project the latter into close mesh with the pinion of the hinge.

Referring to the drawings, Figure 1 is a transverse section of a window-frame provided with a shutter-worker constructed in accordance with my invention, and showing the shutter open. Fig. 2 is a vertical section of the frame, the operating-rod being shown in side elevation and the shutter shown closed. Fig. 3 is a detail in perspective of the rod. Fig. 4 is a side view of the operating-pinion. Fig. 5 is a perspective view of the securing-plate. Fig. 6 is a perspective of the housing. Fig. 7 is a detail perspective view of the operating-pinion.

Like numerals of reference indicate like parts in all the figures of the drawings.

The window-casing 1 is provided with openings 2 at each side of the same, although I have herein shown but one side of the casing, and consequently but one opening, and over the opening upon the outside of the casing is secured by screws 3 a metal plate 4, which at its lower end is provided with a bracket 5, having a vertical spindle 6. The upper portion of the plate is provided with a circular opening 7, which opening registers with the opening 2 of the case and is encircled by an annular flange 9, provided with locking-notches 10 at diametrically-opposite transverse points. Through the opening 2 of the casing and that in the securing-plate is passed a square operating-rod 11, which at its inner end is provided with a removable crank 12 for operating the rod, which crank has its socket end mounted within the opening 2, and, being cylindrical, acts as a bearing.

The shutter 13 is provided with the hinged leaf 14 at its lower inner edge, the leaf being projected beyond the edge of the shutter and terminating in a vertically-bored stud 15, which at its upper end merges into or is provided with a small pinion 16, the stud and pinion being centrally perforated or bored and mounted on the spindle 6.

The outer end of the rod 11 is provided outside of the securing-plate with a pinion 17, provided at its rear face with an annular boss 18, the pinion and boss having a square opening 19 and mounted loosely on the rod. The front face of the pinion is provided with a transverse recess 20, which extends radially to its periphery and through the same from the square opening and is of the same size as the diametrically-opposite locking-notches formed in the annular flange 9. The extreme end of the locking-rod, after having been passed through the pinion, is bent over in U-form, as at 21, the bent portion lying in the radial recess 20, formed in the face of the pinion, the extremity of the rod being designed to enter the locking-notches 10 of the flange 9 or to be forced therefrom. A coiled spring 22 is mounted on the operating-rod 11, the rear end of the spring resting against a stop-pin 23

and the forward end of the same against the rear end of the boss 18 of the pinion 17, so that said pinion, being loosely mounted on the rod, is always forced snugly into contact with the hinge-pinion 16. The tendency of the spring is of course to force the operating-rod 11 in the opposite direction, so that the U-shaped locking end of the same is drawn inwardly, so that when the rod is revolved, so as to bring the U-shaped locking end into registry with either one of the notches 9, said spring tends to project the locking end into said notch and retain the same against removal except by a forward reciprocation of the rod against the tension of the spring. When not in either of the notches, the end of the rod rests upon the annular flange.

The operation of my invention is as follows: Taking the parts in the position shown in Fig. 1, the shutter being open, to close the same force the rod 11 outward until the U-shaped locking end is disengaged from the locking-notch 10. The rod is now revolved through the medium of its crank until it arrives opposite the diametrically-opposite notch, when the spring serves to project the end of the rod into the same, and the shutter is locked in a closed position. The operation of opening the shutter is the same as just described, as will be understood. It is apparent that the rotation of the rod may be stopped at any point intermediate the notches and that the tension of the spring is such as to serve to retain the shutter in any of its positions under ordinary circumstances without any locking-notches. The spring also serves the function of taking up all wear of the pinions upon each other, and thus avoiding any rattling of the parts during their operation or as caused by the wind.

A square hollow housing 24 is by screws 25 secured to the outer surface of the casing above the pinions, so as to receive and cover the same. The lower end of the housing is provided with a semicircular hollow dome or flange 26, which takes over the hinged pinion and is provided at its center with a socket or bearing 27 for the reception of the upper end of the spindle, thereby serving to greatly strengthen the same. In this manner the working parts of the worker are all preserved against the elements and against rust, &c.

Having thus described my invention, what I claim is—

1. In a shutter-worker, the combination, with a securing-plate having a bracket and a spindle and a hinged leaf provided with a pinion mounted on the spindle, of an operating-rod passing through the casing and securing-plate, a pinion loosely mounted on the rod and meshing with the pinion of the hinge, and a coiled spring encircling the rod and having its forward end bearing against the rear face of the loose pinion and its rear end against a stop on the rod, whereby the two pinions are maintained in close contact, substantially as specified.

2. In a shutter-worker, the combination, with the casing having transverse openings, a securing-plate having an opening registering therewith, and at its lower end a bracket having a spindle, of a hinged leaf provided with a pinion mounted on the spindle, a reciprocating operating-rod mounted in the openings of the casing and plate, a pinion mounted on the front end of the rod and meshing with the pinion, and a spring encircling the rod and serving to retract the same, the front end of the rod terminating in a U-shaped locking end and adapted to be retracted by the spring into either one of a series of locking-notches formed in the plate, substantially as specified.

3. In a shutter-worker, the combination, with the casing having transverse bearing-openings, a securing-plate mounted in the same and having an aligning opening, and a surrounding flange provided with diametrically-opposite lateral locking-notches and at its lower end with a bracket having a spindle, of a hinge-leaf secured to the shutter and having a pinion pivotally mounted on the spindle, an operating-rod mounted in the bearing-openings, a pinion loosely mounted on the forward end of the rod and meshing with the pinion of the hinge-leaf and provided with a diametrical recess extended through the periphery of the pinion, the end of the rod being curved to form a U-shaped locking end and adapted to ride upon the flange of the securing-plate and take into either one of the locking-notches, and a retracting coiled spring encircling the rod and having its front end bearing against the rear face of the movable pinion and its opposite end against a stop-pin mounted on the rod, said spring serving to force the pinion in one direction and the rod in an opposite direction, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GEORGE W. BINGHAM.

Witnesses:
E. G. SIGGERS,
J. H. SIGGERS.