(No Model.)

J. N. WORTHINGTON.

SHUTTER WORKER.

No. 321,268. Patented June 30, 1885.

Fig. 1

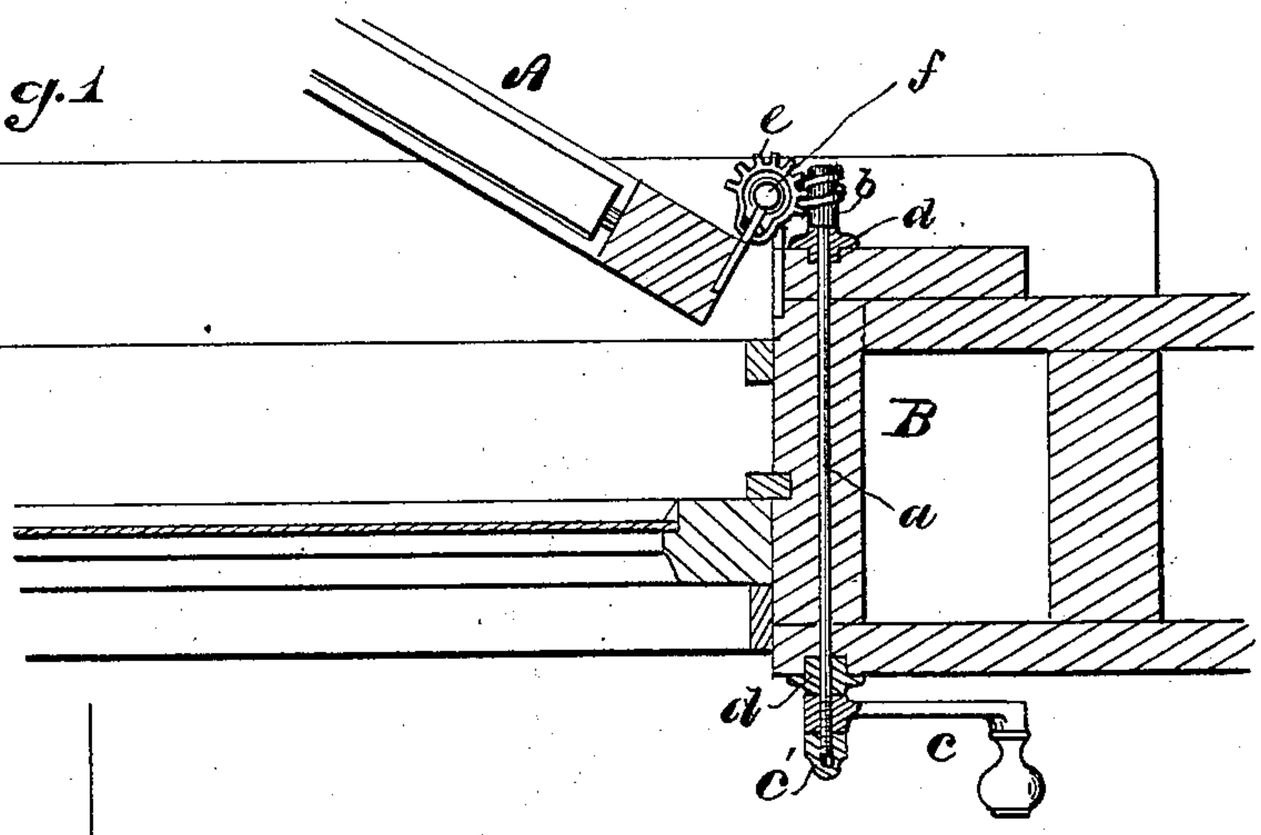
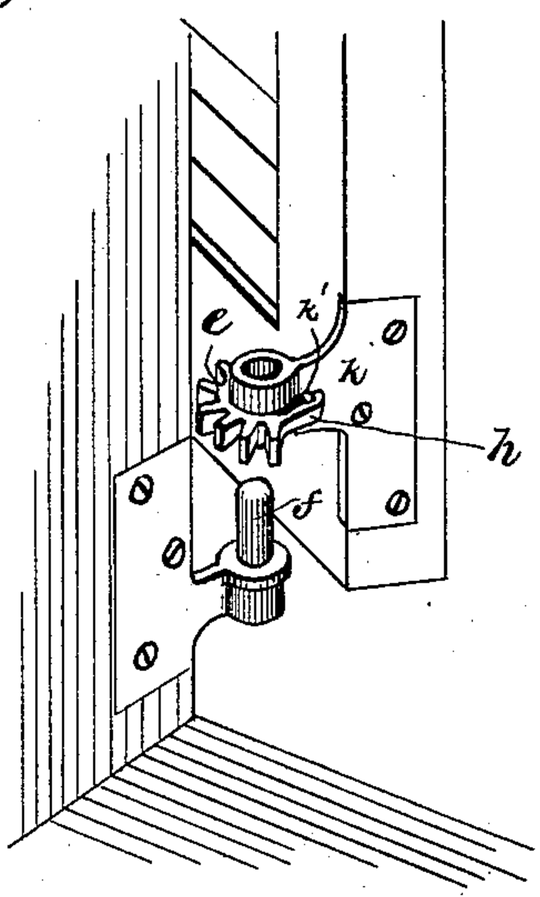


Fig. 2



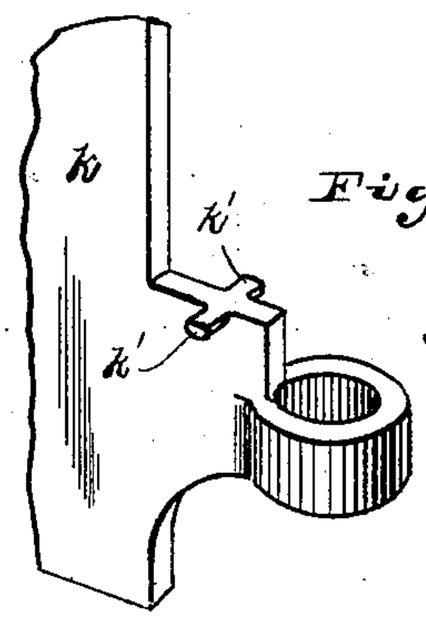


Fig. 3

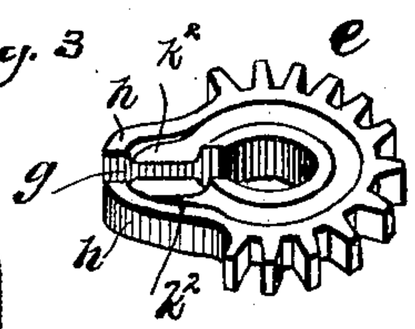
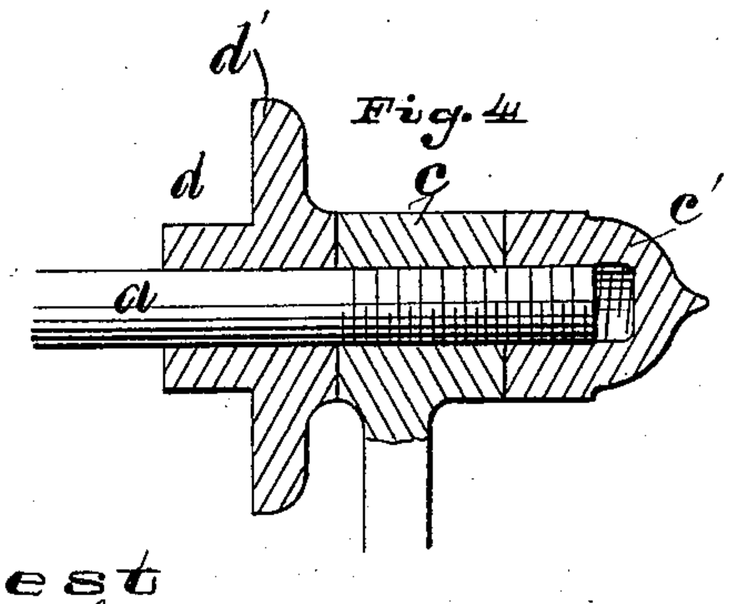


Fig. 4



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JOHN N. WORTHINGTON, OF SPRINGFIELD, OHIO.

SHUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 321,268, dated June 30, 1885.

Application filed May 11, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. WORTHINGTON a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain Improvements in Shutter-Workers, of which the following is a specification.

My invention relates to shutter-workers designed to open and close the outer shutters without leaving the room or opening the window; and it particularly relates to that class of shutter-workers in which a worm-gear is employed, adapted to be operated from the inside of the room by means of a suitable crank.

The object of my invention is to simplify the construction of this class of workers, and to provide a simple and inexpensive device which can be applied to shutters already in use with a very slight change therein.

The invention consists in the constructions and combinations of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a plan view of my improved shutter-worker with a portion of a window and casing shown in section. Figs. 2, 3, and 4 are detailed views of some of the parts, referred to hereinafter.

A represents the shutter, and B the frame or casing.

a is the shaft, which extends through the casing and carries at one end the worm *b* and at the other end the crank *c*. The shaft *a* is provided at either end with bearings *d*, which are let into the casing B, and provided with annular flanges *d'*, adapted to rest against said casing. The crank *c* is preferably screwed onto the inner end of the shaft and held thereon by a lock-nut, *c'*, which forms a cap for the end of the shaft. (See Fig. 4.)

The worm *b* bears against the outer bearing, *d*, and the crank *c* bears against the inner bearing, so that the shaft is held against longitudinal movement through the casing. This may be nicely regulated and the shaft adapted to casings of different thicknesses by screwing the crank *c* onto the shaft to the proper point and securing it by the lock-nut *c'*, the inner end of the shaft being cut off when too long.

The worm *b* engages with the gear-wheel *e*, which is connected to the shutter. The gear-wheel *e* is bored out and adapted to fit over the spindle *f*, on the stationary part of the ordinary shutter-hinge. The gear is provided with a slot, *g*, therein, on each side of which is a projecting lug *h*. (See Fig. 3.) The slot *g* is adapted to fit over the flange of that part of the hinge which is secured to the shutter, the lugs *h h* projecting on each side thereof. The gear-wheel is thus attached to the shutter and adapted to turn therewith.

It will be seen that by this construction the gear may be applied to the ordinary shutter-hinge now in common use with little or no change therein. I prefer, however, to furnish an extra half-hinge, *k*, for that pair of hinges to which the worker is applied. On this hinge *k* I cast small lugs or projections, *k' k'*, adapted to engage in depressions k^2 k^2 on the gear *e* when said gear is in place on said hinge. In placing the gear on the hinge *k* the lugs *h h* on the said gear are inserted at an angle between the projections *k'* and the circular portion of the hinge, with the flange or web portion of the hinge in the slot *g* until the depressions k^2 are opposite the projections *k'*. The gear *e* is then turned to a horizontal position, resting on the circular portion of the hinge. When the half-hinge *k* and the gear *e* are slipped onto the spindle *f*, as indicated in Fig. 2, the whole will be held firmly together.

The operation of the device is obvious. By turning the crank the shutter may be readily opened to any desired extent, and will be held in any desired position.

The device, it will be seen, is very simple and inexpensive, and very practical in its results.

Having thus described my invention, I claim—

1. The combination, with a shutter-hinge, of the gear having a slot with lugs each side thereof, adapted to engage either side of said hinge, a worm engaging in said gear, a shaft extending through the window-casing, and a crank on the end of said shaft, substantially as specified.

2. The combination, with the shutter-hinge

having the projections *k'* thereon, of the gear provided with projecting lugs adapted to extend on each side of said hinge, and having depressions into which the projections are adapted to engage, the worm, and shaft, and the crank on the end of said shaft, substantially as set forth.

In testimony whereof I have hereunto set my hand this 6th day of May, A. D. 1885.

JOHN N. WORTHINGTON.

Witnesses:
PAUL A. STALEY,
CHASE STEWART.