

W. G. CRAWFORD.
SHUTTER WORKER.
APPLICATION FILED FEB. 19, 1910.

984,196.

Patented Feb. 14, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

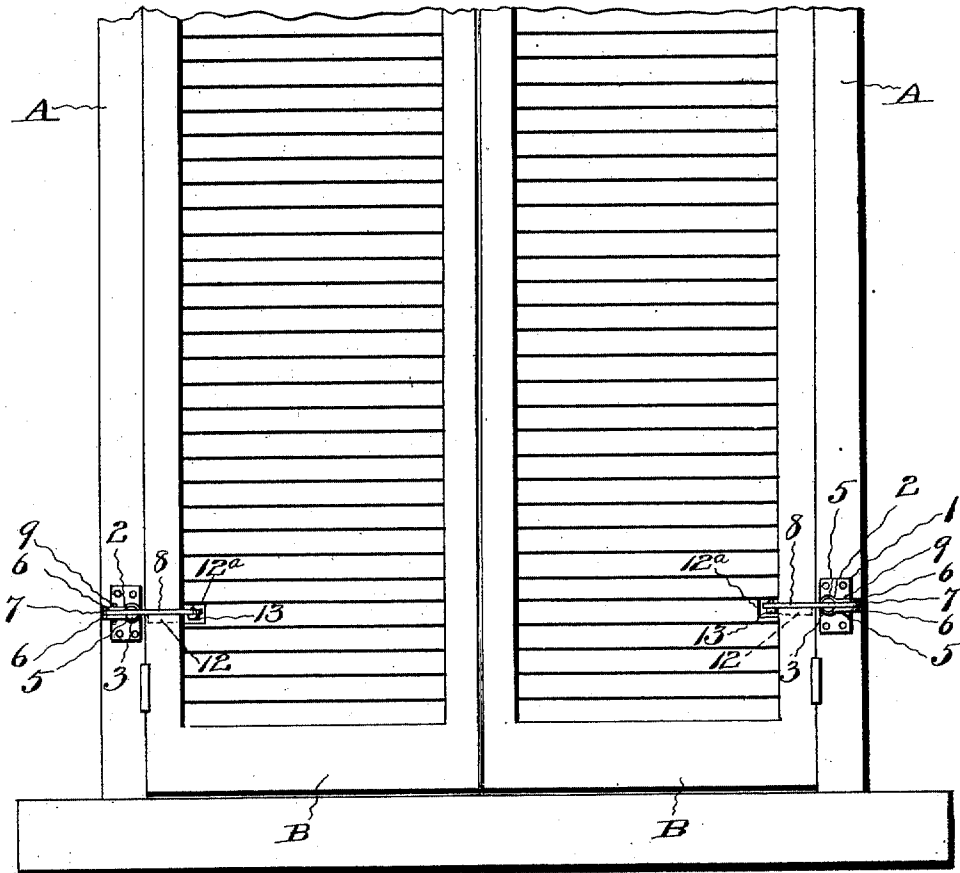
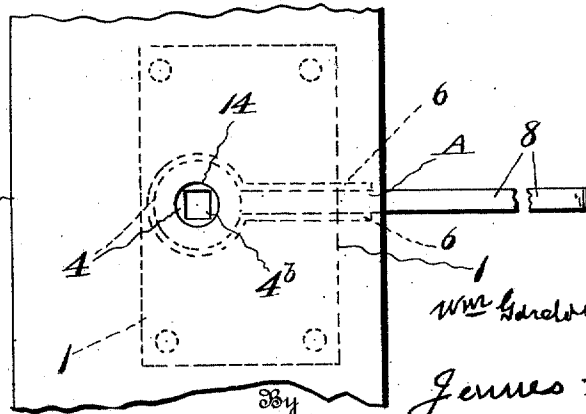


Fig. 2



Witnesses
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2 SHEETS-SHEET 2.

Fig. 3.

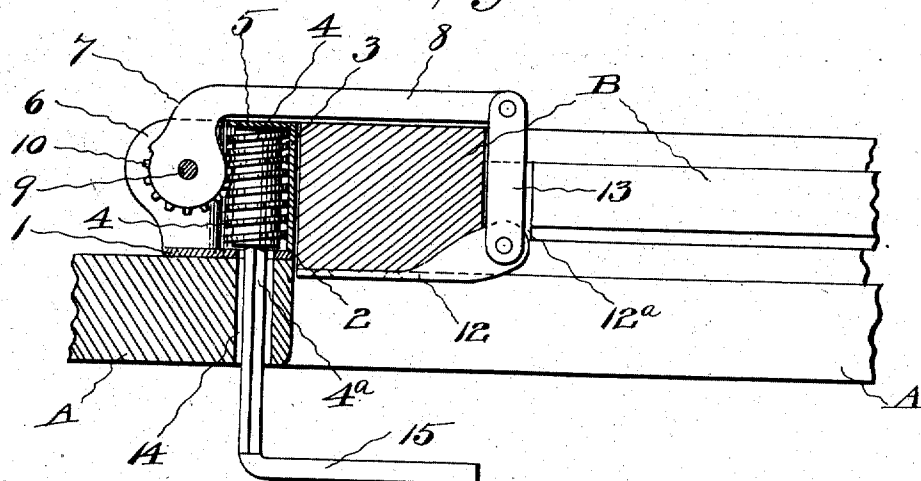


Fig. 4.

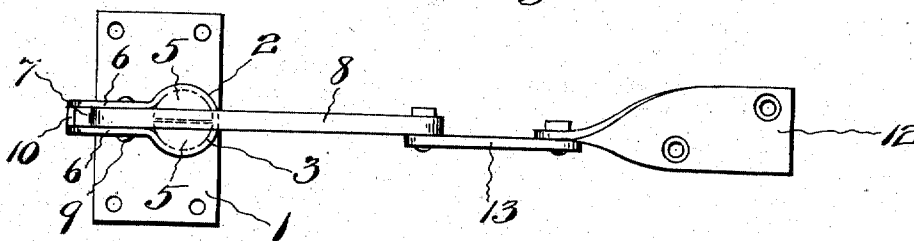
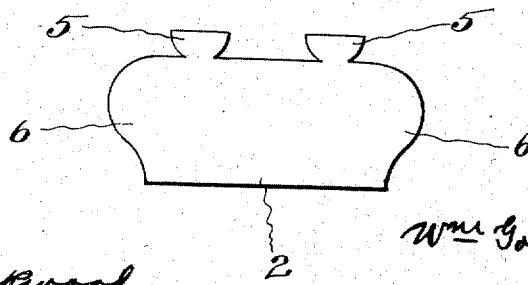


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE

WILLIAM GORDON CRAWFORD, OF NEW YORK, N. Y., ASSIGNOR TO NATIONAL SPECIALTY COMPANY, OF WASHINGTON, DISTRICT OF COLUMBIA, A CORPORATION OF NEW JERSEY.

SHUTTER-WORKER.

984,196.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed February 19, 1910. Serial No. 544,954.

To all whom it may concern:

Be it known that I, WILLIAM GORDON CRAWFORD, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Shutter-Workers, of which the following is a specification.

My invention relates to devices for working shutters from the interior of the room, and has for one of its objects the provision of a device adapted to be attached to the window-frame and shutters in present use, consisting of an arm revolubly mounted and operated by a worm-gear operated from the interior of the room, said arm being connected with a bracket secured to the shutter by means of a link.

Another object of my invention consists in constructing the gear-casing of a single piece of sheet metal having a barrel portion in which the worm-shaft of the operating gear is rotatably mounted, and the two ends of the barrel portion extended laterally and spaced apart to receive the gear-wheel on the end of the operating-arm, the end of the barrel portion being closed by means of integral semi-circular pieces bent to fit the outer end of the barrel portion.

My invention will be described in detail hereinafter and illustrated in the accompanying drawings, in which—

Figure 1 is a view of the exterior of a window-casing and shutters, showing my improved worker in position; Fig. 2, a fragmental sectional view of the inner side of a window-casing with my worker in position; Fig. 3, a top plan view of a worker detached from the casing and shutter; Fig. 4, an end view; Fig. 5, a cross-section of the casing and gears.

In the drawings similar reference characters indicate corresponding parts throughout all of the views.

A indicates a window-frame and B the shutter hinged thereto.

My improved shutter-worker consists of a base-plate 1 secured to the frame A, a gear-casing 2 secured to said plate and consisting of a single piece of sheet-metal made from the blank, having its middle portion shaped into a cylindrical barrel portion 3, to contain the worm-shaft 4, the outer surface of the shaft bearing on the inner surface of the barrel portion 2, while the outer

end of the barrel portion is closed by means of semi-circular disks 5, forming part of the blank. The ends of the plate are extended on parallel planes 6 that are spaced apart to receive the enlarged end 7 of arm 8, pivotally secured between the extended portions 6 by means of pin 9, said enlarged portion having its edge formed with a segmental worm-gear 10, that meshes with worm-shaft 11.

12 indicates a bracket secured to the inner side of shutter B, and 13 a link connecting the other end of arm 8 and bracket 12, said link extending through the blind, which must be provided with a slot 12^a to receive it.

The frame A is provided with an opening 14 for the insertion of key 15 for operating the device, said key being formed with a rectangular shank 4^a in worm-shaft 4.

The operation of my invention will be readily understood from the above description and an inspection of the drawings, it being understood that any lost motion between the arm 8 and shutter B will be fully compensated by the link 13. It will furthermore be understood that the construction of my worker by which it is connected to the shutter on the inner side rail, as clearly shown in the drawings, and between the hinges insures efficient working at all times and does away with the binding incident to workers attached to either end of the shutter, caused by the uneven strain on the hinges.

Having thus described my invention, what I claim is—

1. A casing for a worm-shaft and gear made of a single piece of sheet-metal secured to a suitable base, said piece of sheet-metal shaped to form a cylindrical barrel to receive the worm-shaft, and laterally-extending parallel wings spaced apart to receive the worm-gear, and the end of the cylindrical barrel closed by semi-circular disks integral with the piece forming the barrel portion, substantially as shown and described.

2. A shutter-worker comprising in combination with a window-frame, a shutter hinged therein, a casing secured in said frame and consisting of a single piece of sheet-metal shaped to form a cylindrical barrel portion, said laterally-extending parallel wings spaced apart, a worm-shaft

mounted in said barrel portion, an arm
pivotally mounted between said spaced
wings, a worm gear on said arm and mesh-
ing with the said worm-shaft, and means to
5 connect said arm with the shutter inter-
mediate of the hinges thereon, substantially
as shown and described.

In witness whereof, I have hereunto set
my hand in presence of two subscribing wit-
nesses.

WILLIAM GORDON CRAWFORD.

Witnesses:

JAMES K. POLK,
JAMES W. HEAD.