W. L. BUETTLER & J. C. ZWEIDINGER.

SHUTTER-WORKER.

No. 191,105. Patented May 22, 1877.

Fig. 1.

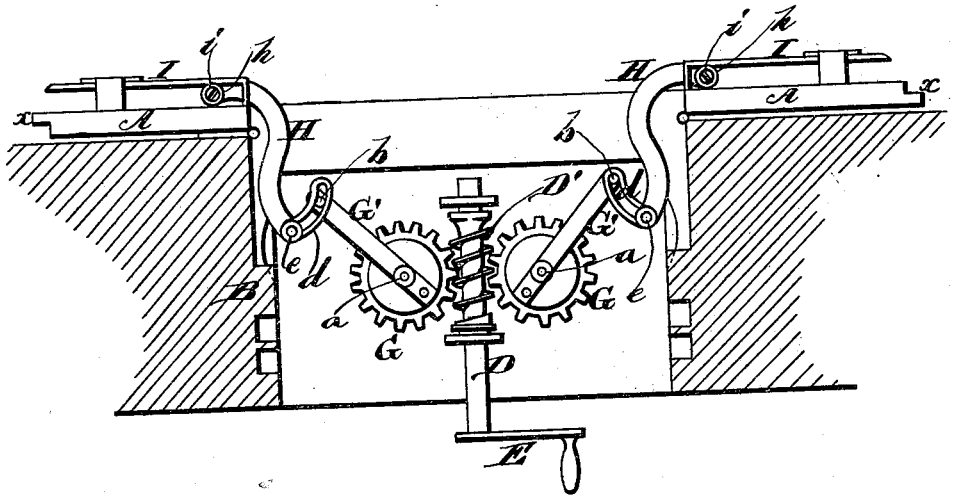

Fig. 2.

WITNESSES

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IMPROVEMENT IN SHUTTER-WORKERS.

Specification forming part of Letters Patent No. **191,105**, dated May 22, 1877; application filed April 28, 1877.

To all whom it may concern:

Be it known that we, WILLIAM L. BUETTLER and JOHN C. ZWEIDINGER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and valuable Improvement in Devices for Operating Window-Shutters; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a sectional plan view of our device for operating window-shutters, and Fig. 2 is a perspective detail of a part of the same.

The nature of our invention consists in the novel construction, combination, and arrangement of a peculiar mechanism for operating window-shutters from the inside of the house without the necessity of raising the windows, as will be hereinafter more fully set forth, and definitely pointed out by the claims.

In the annexed drawing, which fully illustrates our invention, A A represent the window-shutters, hinged in any ordinary manner to the window-frame B.

Under, or in, the sill of the frame B is formed a chamber, in the center of which is placed a shaft, D, in suitable bearings, and one end of this shaft passes through a hole in the sill inside of the room far enough to receive a crank, E, by means of which it is operated.

The shaft D is provided with a worm, D′, formed on or attached to it, and this worm meshes with two cog-wheels or worm-wheels, G G, mounted, one on each side of the shaft, upon studs *a a*, as shown. On the upper side of each wheel G is secured an arm, G′, having upon its outer end an upwardly-projecting pin, *b*, which enters a slot in a curved arm, *d*, projecting from a sleeve, *d′*, placed upon an upright shaft, *e*.

This shaft and the upper end of the sleeve *d′* project upward above the sill of the window-frame, and to this upwardly-projecting portion of the sleeve is attached a horizontal S-shaped arm, H, having upon its outer end an upwardly-projecting stud, *i*, with friction-roller *h* placed upon it. This stud and roller works in a horizontal frame, I, attached to the inside of the window-shutter A at or near the bottom.

The shutters being open, as represented in Fig. 1, by rotating the shaft and worm D D′, the worm-wheels G G are rotated on their centers *a*, and the arms G′ G′, moving with said wheels, cause the pins *b* to move from the outer ends inward in the slotted arms *d*, turning the sleeves *d′* upon the shafts *e*. This movement of the sleeves, however, does not commence until the pins *b* reach the inner ends of the slots in the curved arms *d*, and then the sleeves *d′* turn upon their shafts, carrying the arms H with them, and these arms, by means of the friction-rollers *h* and frames I, cause the shutters A to turn upon their hinges.

As the movement continues the pins *b* again move outward in the slotted arms *d* and complete the closing of the shutters. When thus closed the shutters are also locked and cannot be opened from the outside, while they are easily operated from the inside without opening the window.

In the construction of window-shutters there are usually rabbets or shoulders *x x* formed at their outer edges to overlap each other when the shutters are closed. This construction renders it impossible to open and close the two shutters simultaneously, or, rather, to commence the opening and complete the closing of the two at one time, one must be a little in advance of the other. To accomplish this result with our invention, we arrange the two arms G′ G′ at slightly different angles from the shaft D, so that the pin *b* of one arm will commence its operation before the other in opening the shutters, and the pin of the other arm complete its operation before that of the first arm.

In opening the shutters the operation is reversed from that described for closing.

What we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the worm D′, worm-wheels G G, and arms G′ G′, set at different angles with the axes of the worm for operat-

ing window-shutters, whereby one shutter will be opened or closed before the other, substantially as herein set forth.

2. The combination, with the shutters A A, of the worm D, worm-wheels G, with arms G′, having pins *b*, sleeves *d*′, with slotted arms *d*, and S-shaped arms H, having friction-rollers *h*, and the frames I, all constructed substantially as and for the purpose described.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

WILLIAM L. BUETTLER.
JOHN C. ZWEIDINGER.

Witnesses:
C. SHALER,
WILLIAM F. ROOT.