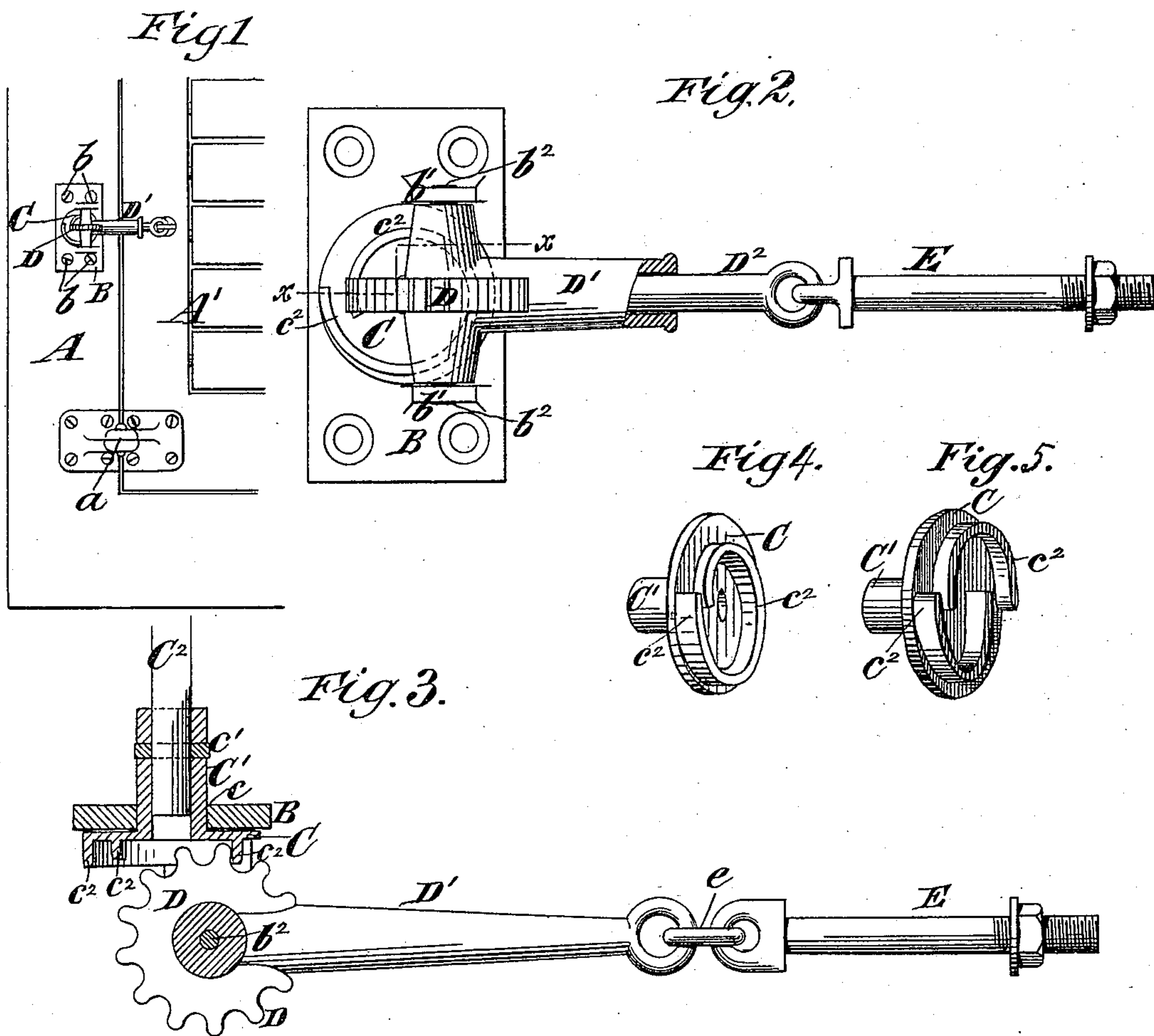


(No Model.)

A. H. DODD.  
SHUTTER WORKER.

No. 441,471.

Patented Nov. 25, 1890.



Witnesses:  
Joseph W. Roe,  
O. Sundgren

Inventor:  
Alvin H. Dodd.  
By his Attys  
Brown & Griswold



# UNITED STATES PATENT OFFICE.

ALVIN H. DODD, OF ALLENTOWN, PENNSYLVANIA.

## SHUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 441,471, dated November 25, 1890.

Application filed December 20, 1889. Serial No. 334,391. (No model.)

*To all whom it may concern:*

Be it known that I, ALVIN H. DODD, of Allentown, in the county of Lehigh and State of Pennsylvania, have invented a new and useful Improvement in Shutter-Workers, of which the following is a specification.

The invention will be hereinafter described, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is an elevation of a portion of a window-casing and a blind to which are applied a shutter-worker embodying my invention. Fig. 2 is an elevation of the worker upon a larger scale. Fig. 3 is a horizontal section upon the plane of the dotted line  $x x$ , Fig. 2, of the shutter-worker, showing a slight modification in the means of attaching the sector member to the blind. Fig. 4 is a perspective view of the volute cam shown in the above-mentioned figures. Fig. 5 is a perspective view of a modification of the cam-wheel.

Similar letters of reference designate corresponding parts in all the figures.

A designates a portion of the window-casing, and A' designates the blind.

In Fig. 1 I have represented one of the ordinary hinges  $a$ , whereby the blind is hung, and above that lower hinge I have shown a shutter-worker embodying my invention. The construction of this worker will be more readily understood from the remaining figures, all of which are upon a larger scale than Fig. 1.

The worker consists of a bracket or leaf B, which is attached to the window-casing by screws  $b$ , as represented in Fig. 1, and in which is journaled a volute worm-wheel C. This worm-wheel C has a central hub C', as shown in Fig. 3, which projects inward through a hole or bearing  $c$  in the leaf or bracket B, and this hub receives the spindle or rod C<sup>2</sup>, which extends to the inside of the building, and through which the volute worm-wheel C is turned. This rod or spindle C<sup>2</sup> is commonly square, so that an operating-handle may be readily applied to its inner end, and it is fastened to the hub C' of the worm-wheel C by a cross-pin  $c'$  or other suitable means. The leaf or bracket B has bearers  $b'$ , which are above and below the worm-wheel C, and between and in these bearers is pivoted the other member of the worker. This latter

member, which is attached to the blind, comprises a sector D, which forms nearly a complete circle of gear-teeth, and an arm D', extending from this sector and in the same plane therewith.

$b^2$  designates the pivot-pin, upon which the member D D' is mounted, which pivot-pin extends upon both sides of the sector and engages the bearers  $b'$ . The spiral or volute rib  $c^2$  of the worm-wheel C engages the teeth of the sector D.

In the example of my invention shown in Figs. 1 to 4, inclusive,  $c^2$  extends, as best shown in Figs. 2 and 4, a complete turn upon the worm-wheel C, and preferably has its ends slightly lapping one on another. Consequently as the wheel C is rotated one end of its spiral rib  $c^2$  always comes into engagement with the teeth of the sector D before its other end leaves the teeth of the sector. The combination of this volute worm-wheel with the sector is advantageous for this purpose, because it has fully as good a hold upon the sector D as has a cylindric worm and may be made at less expense. The volute wheel C will be cast with its hub downward in the sand, and therefore there will be no parting fin left upon the volute rib  $c^2$  as there is on the cylindric worm, and which requires to be trimmed off before the worm will work smoothly in the sector with which it engages. Moreover, in workers which employ a cylindric worm it is necessary to provide thrust-bearings for the worm in both directions, while in a shutter-worker employing a volute worm-wheel C no special thrust-bearing is necessary.

When the volute worm C is used for operating the sector member, said member has its arm D' connected to the sector and extending therefrom in a direction at right angles to the axis of said sector, and the worker may still be used either for a right or left hand blind, while if a cylindric worm is used and the worker is to be constructed to permit of its attachment to either a right or left hand blind the arm D' must be offset vertically above or below the sector D, so that it may swing over or under the worm-socket.

As shown in Figs. 1, 2, and 3, the shutter-worker is independent of the hinges  $a$  on which the blind is hung, and usually the piv-



otal center  $b^2$  of the shutter-worker will not be directly in vertical alignment with the hinge-pins. The arm  $D'$  cannot therefore be pivoted directly to the head of the bolt E which is to be inserted through the blind-stile, but must be connected so as to be free to move laterally relatively to such bolt-head.

In Fig. 2 I provide the arm  $D'$  with a telescopic extension  $D^2$ , which permits of the extension or contraction of said arm lengthwise as the shutter-worker is operated to swing the blind, and in Fig. 3 the arm  $D'$ , although made in one piece, is connected with the head of the bolt E by a link  $e$ , which forms a loose connection between said arm  $D'$  and the bolt E and avoids any binding of the shutter-worker as it is operated.

The volute cam-wheel shown in Fig. 5 differs from that shown in Fig. 3 and the other figures only in that it has two volute ribs  $c^2$ . These two ribs are both alike, each running a little more than half-way round the circle and the outer end of each overlapping the inner end of the other, so that in the rotation of the cam-wheel each rib will enter into engagement with the toothed sector before the

other leaves it. It will be readily understood that the operation of this cam-wheel is substantially the same as that shown in Fig. 3 and first described.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with a leaf or bracket for attachment to a window-casing and a gear journaled therein, of a sector pivoted to said leaf or bracket and with which said gear engages, an arm extending from the sector, a fastening device permanently secured to the shutter, and an intermediate movable part having a loose connection with the fastening device and with the arm, the fastening device and the intermediate movable part forming a connection between the arm and the shutter, having a free self-adjustment in a direction to and from the face of the building and parallel with the face of the building, for the purposes substantially as set forth.

ALVIN H. DODD.

Witnesses:

FREDK. HAYNES,  
GEORGE BARRY.