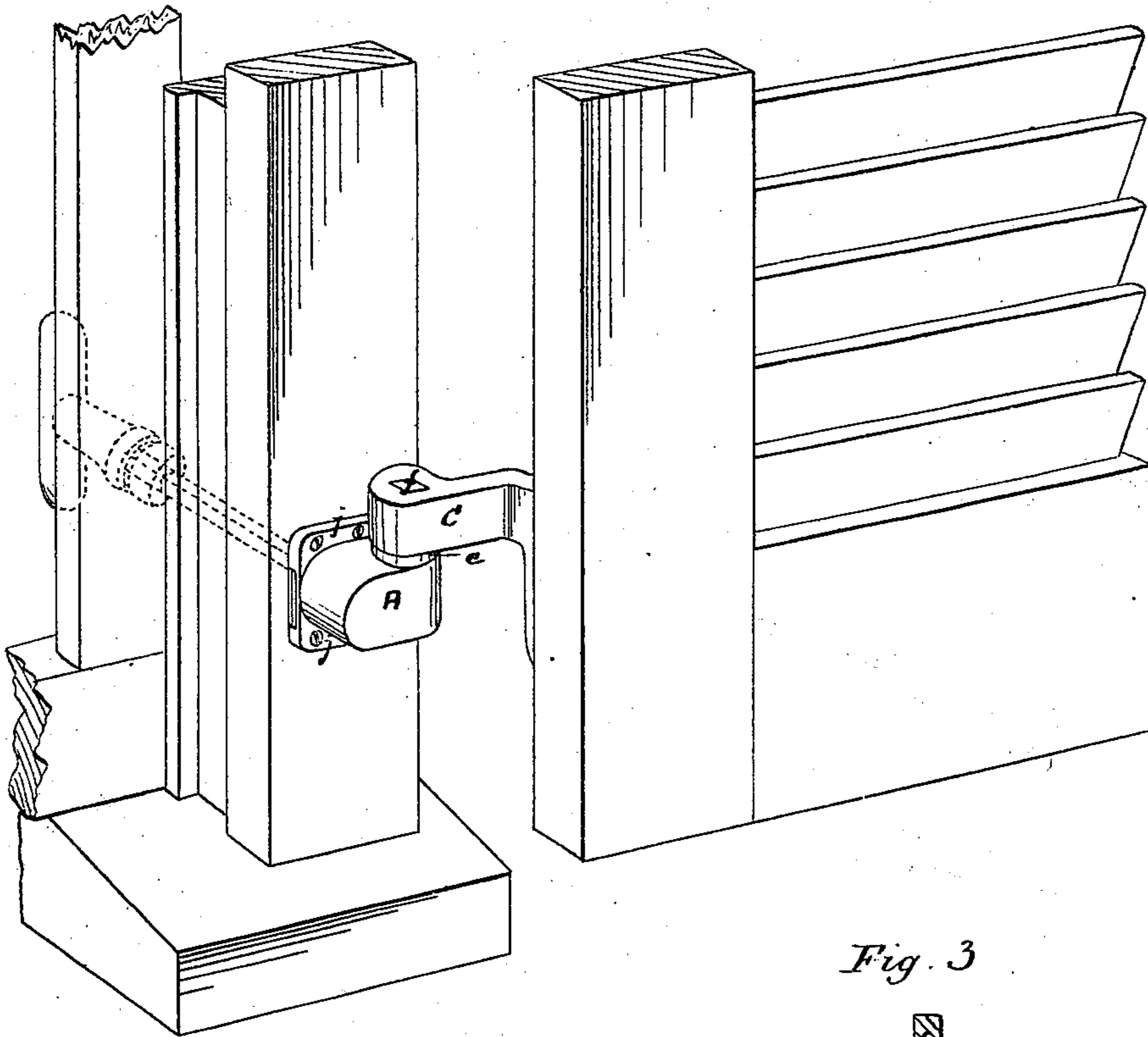


**D. KELLEHER.**  
**Shutter-Workers.**

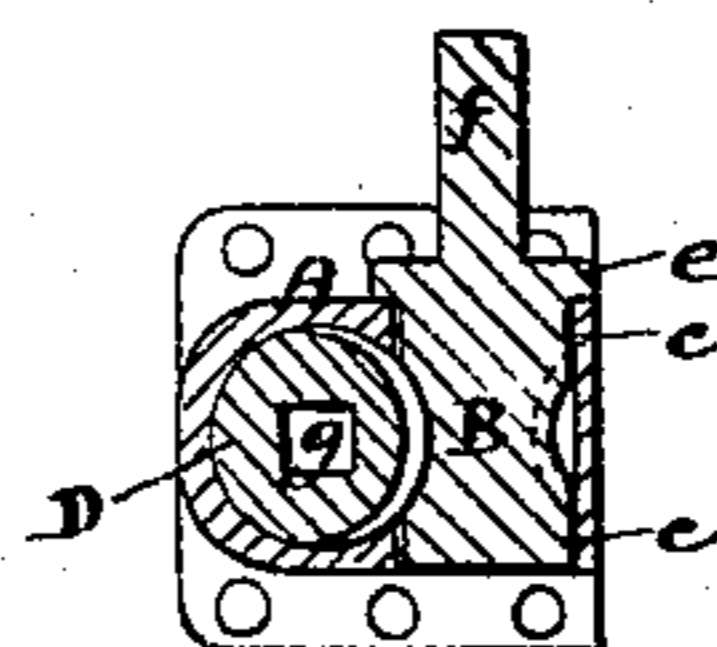
No. 148,303.

Patented March 10, 1874.

*Fig. 1.*



*Fig. 3*



*Fig. 2*

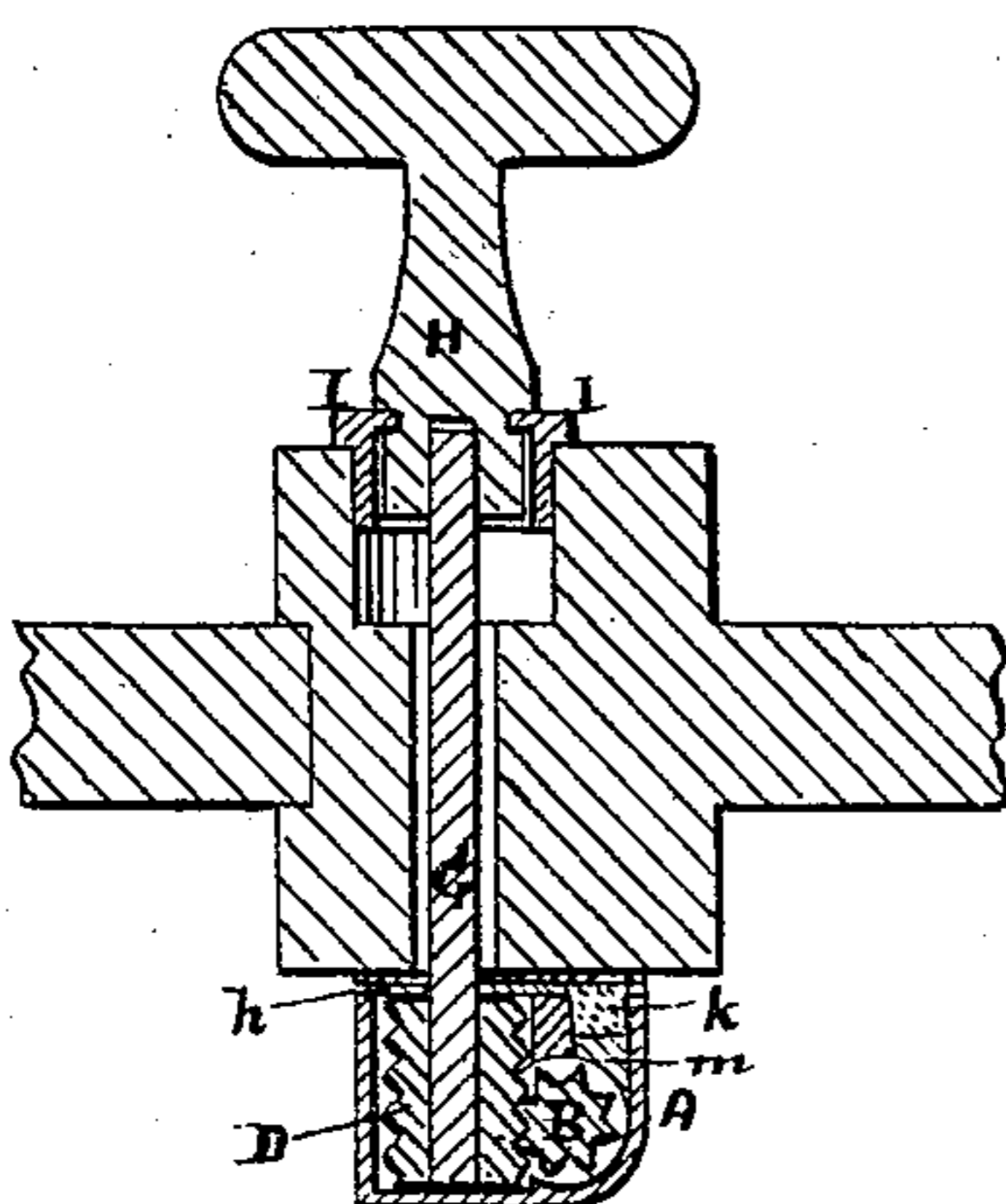


Fig. 4.

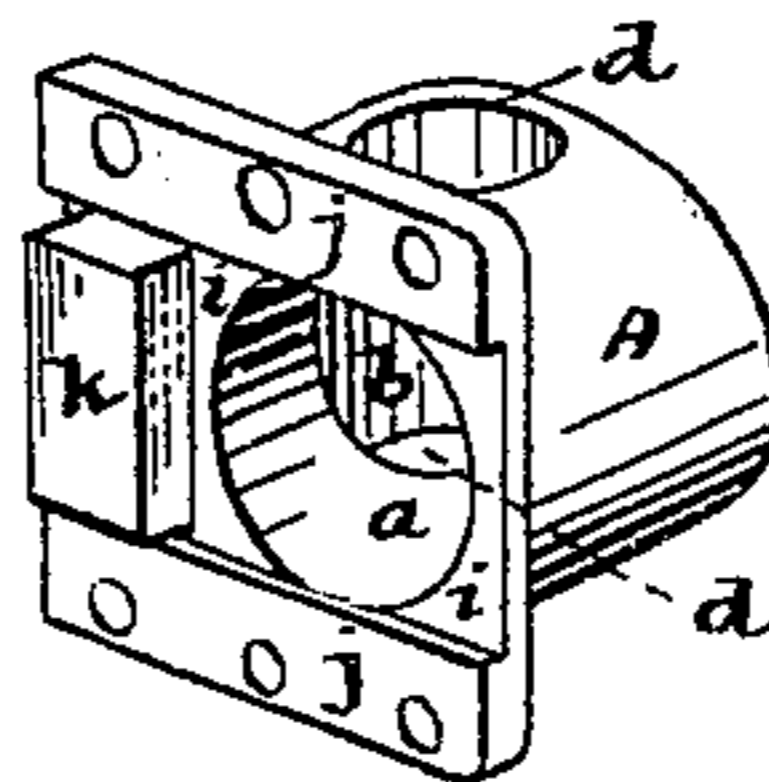
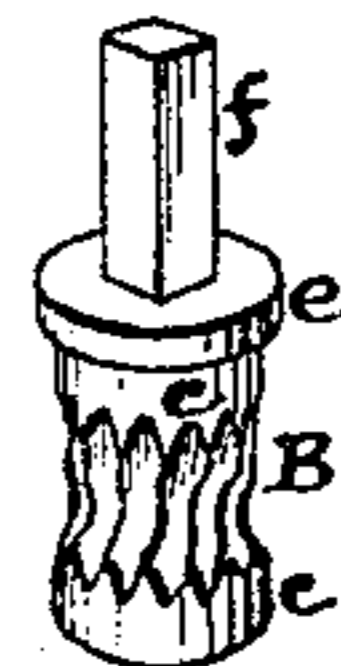


Fig 5.



*Witnesses*

Evella Dick  
W. E. Chaffee

Inventor

Samuel Kelleher by  
att'y H. W. Shaw

# UNITED STATES PATENT OFFICE.

DANIEL KELLEHER, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR OF  
ONE-HALF HIS RIGHT TO ELIHU BUNKER, OF SAME PLACE.

## IMPROVEMENT IN SHUTTER-WORKERS.

Specification forming part of Letters Patent No. **148,303**, dated March 10, 1874; application filed  
February 23, 1871.

### CASE B.

*To all whom it may concern:*

Be it known that I, DANIEL KELLEHER, of New Bedford, Massachusetts, have invented certain new and useful Improvements in Shutter-Workers, of which the following is a specification:

My invention relates to that class of shutter-workers in which a worm and a wheel, gearing with and actuated by said worm, are the principal means for operating the shutter. It has been my object to simplify, as far as possible, the structure of the device, and to fit it for use with any shutter, whether on the right side or on the left of the window. My invention consists principally in the construction of the gear, and its combination with the supporting-box, in such manner that said gear may at will be inserted in its place from either side of the box and find its bearings therein. By thus making the gear reversible, and providing it with reversible bearings, I adapt the device for use with any shutter, whether a right or left. I also form in the worm a prismatic aperture extending axially through it. Through this aperture passes loosely the spindle by which the worm is turned. This spindle bears at its outer end against the box, and at its other end is held loosely in a socket in a winch or handle. One advantage of thus combining the worm and spindle is that while under the arrangement above specified the spindle is held securely between the end of the box and the winch, it may be quite as readily adapted for use with an ordinary knob by upsetting or roughing its end which projects beyond the worm; thus, without any trouble, the spindle may be fitted for either use.

To enable those skilled in the art to understand and use my invention, I shall now proceed to describe the manner in which my invention is to be carried into effect by reference to the accompanying drawing, in which—

Figure 1 is a perspective view of the lower hinge of a shutter constructed in accordance with my invention. Fig. 2 is a horizontal section through the box that contains the worm and gear. Fig. 3 is a vertical section through the said box in a plane passing axially through

the gear. Fig. 4 is a perspective view of the box from the rear with the worm and gear removed. Fig. 5 is a perspective of the gear detached.

The box A is of cast metal, having formed in it a horizontal cylindrical chamber, *a*, for the worm, and a vertical cylindrical chamber, *b*, for the gear, the latter chamber extending entirely through the box, and being open at each end. The gear is shown at B. It is also of cast metal, with hubs or journals *c*, one at each end, of a diameter at least equal to that of the body of the gear, and designed to fit snugly in the openings *d d* of chamber *b*, in which openings they take their bearings. The gear has also on one end a collar or circular flange, *e*, which determines the extent to which the gear may be inserted in the box, and forms a bearing-surface which rests on top of the box. Beyond the flange is the pintle *f*, which receives the prismatic socket of the other part, C, of the hinge, which is fastened to the shutter. In lieu of the pintle a socket may be formed on the gear to receive a pintle on the other part of the hinge—a mere reversal of parts, which, of course, may be adopted without departure from my invention. The pintle or its equivalent, collar, and gear, are all cast in one piece.

It will be noticed that under the arrangement described the device is adapted for either a right or a left shutter. The shutter shown in the drawing is a right shutter, and the gear is accordingly adapted to it, as seen.

To fit the device for a left-hand shutter, all that is needed is to reverse the box, bringing on top the face that is now underneath, and then to insert the gear into the box through whichever opening *d* is uppermost. The gear will take its bearing in the box as before, and will at once be in readiness for the application of the other part of the hinge. The worm is represented at D. It is pierced axially from end to end with a prismatic hole, *g*, to receive the correspondingly-shaped spindle end, as shown in Fig. 2. It fits snugly in the chamber *a*, and is held thereon by a washer, *h*, interposed between its inner end and the contiguous face of the window-frame to which the box A is

fastened, and resting in an oblong recess, *i*, formed in the inner face of the box, between the two flanges *j*, through which flanges pass the screws that hold the box in place. The spindle *G* passes through the worm, and its outer end extends to the outer side of the box, as shown. The other end of the spindle is received in a socketed handle, *H*, held in place on the inside of the window-frame by a divided scutcheon, *I*, provided with flanges which take into a peripheral groove in the stem of the handle in the usual way. The spindle is thus held loosely between the outer face of the box at one end and the socketed handle at the other. This arrangement is very cheap, and requires no fitting of parts. It is, however, often desirable to fit the inner end of the spindle with a knob secured to the spindle as a door-knob is secured to its spindle; and it is principally to this end that I have devised the combination and arrangement of the spindle and worm, as shown in the drawing.

It will be noticed that, owing to extending the aperture *g* entirely through the worm, the spindle end may be projected entirely there-through, and then said projecting end may be at once roughened or upset, so as to hold firmly against the worm and prevent the withdrawal of the spindle therefrom, and then, after the box has been fitted to its place and the spindle passed through the window-frame, a knob can be fitted on the projecting inner end of the spindle in the usual way. I usually drill a single hole in the spindle near its inner end, so that it may be thus used with a knob, if desired.

I have found it desirable at times that an

elastic pressure should be exerted on the gear to prevent any possibility of rattling; and to this end I form in the box a chamber to receive a rubber spring-block, *k*, faced with metal *m*, which block is compressed by the fastening of the box to the window-frame, and is so caused to exert considerable pressure on the gear tending to hold it in place, and prevent its working back and forth against the worm.

This whole device is made for the most part, if not entirely, of cast metal, and is very inexpensive, simple, and durable.

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

1. In combination with the reversible box, formed with a gear-receiving chamber open at top and bottom, as described, the removable gear, provided with hubs or journals, one at each end, fitting and taking their bearings in the open ends of said chamber, and having a diameter at least equal to that of the body of the gear, substantially as and for the purposes shown and described.

2. In combination with the box and the worm-operating spindle, taking a bearing at its outer end against the outer unperforated end of said box, the worm supported in said box, and having formed in it a spindle-receiving aperture extended axially entirely through it from end to end, as and for the purposes shown and set forth.

In testimony whereof I have hereunto signed my name this 14th day of February, A. D. 1874.

DANIEL KELLEHER.

Witnesses:

ELIHU BUNKER,  
WILLIAM H. TABER.