(No Model.)

F. B. MALLORY.

SHUTTER WORKER.

No. 343,716. Patented June 15, 1886.

Fig1.

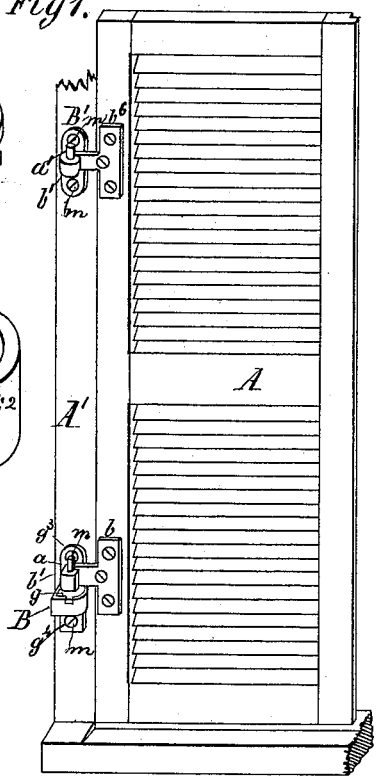


Fig6.

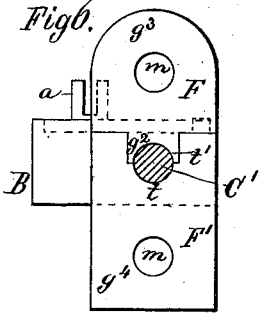


Fig7.

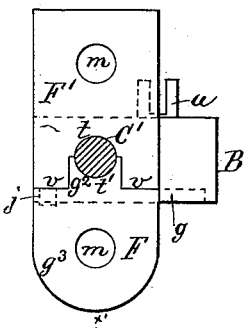


Fig4.

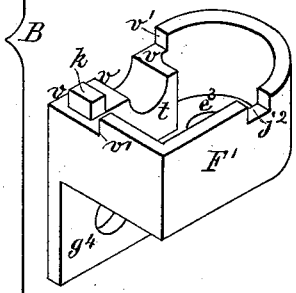


Fig8.

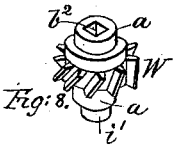


Fig2.

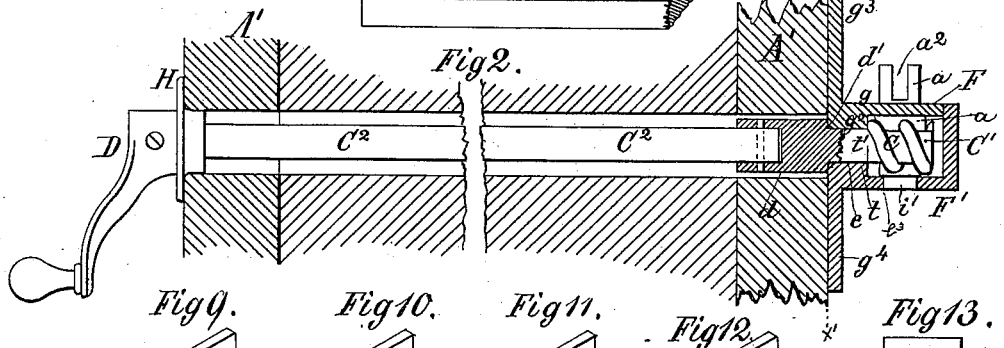


Fig9.

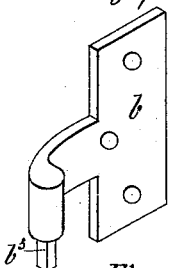


Fig10.

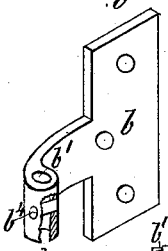


Fig11.

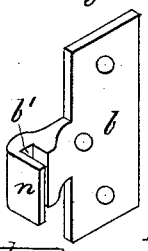


Fig12.

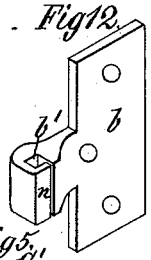


Fig13.

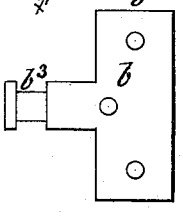


Fig3.

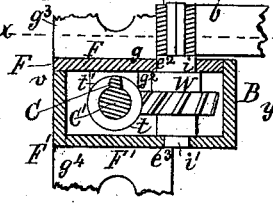
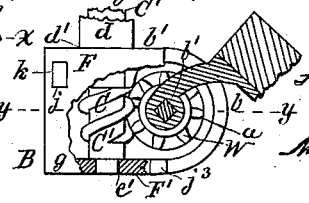


Fig5.



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Robt. L. Fenwick

Inventor:
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by his attys
Mason Fenwick & Lawrence

UNITED STATES PATENT OFFICE.

FRANK B. MALLORY, OF ORANGE, NEW JERSEY.

SHUTTER-WORKER.

SPECIFICATION forming part of Letters Patent No. 343,716, dated June 15, 1886.

Application filed April 7, 1886. Serial No. 198,122. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. MALLORY, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Shutter-Workers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of shutter or blind workers wherein is employed a hinge-leaf adapted to couple with a pintle of a toothed segment or worm-wheel which is turned by a worm or screw in such a manner as to effect the opening or closing of the shutter or blind accordingly as the screw is turned in one or the other direction, by means of a worm-shaft on the inside of a building.

My invention consists in certain novel constructions and combinations of parts in a shutter or blind worker of the kind above referred to, as will be hereinafter described, and pointed out in the claims, whereby I improve the operation as well as simplify and cheapen the manufacture of the same.

In the accompanying drawings, Figure 1 is a perspective view of a window-frame and one shutter, showing my invention. Fig. 2 is a vertical section showing the stationary hinge box-bracket, the parts supported by it, the operating-shaft, and the wall of a building. Fig. 3 is a vertical section in the line *y y* of Fig. 5, the worm-wheel and hinge-pintle being shown in elevation. Fig. 4 is a perspective view of the two parts which form the hinge box-bracket for inclosing the worm and worm-wheel, they appearing as separated from each other. Fig. 5 is a horizontal section in the line *x x* of Fig. 3, the top of the box-bracket being represented as partly broken away for the purpose of exposing to view the worm and worm-wheel. In this view the worm-shaft is shown supported at its outer end by the box-bracket. Fig. 6 is a vertical section in the line *x' x'* of Fig. 2; and Fig. 7 is a similar section showing a modification of the invention. Fig. 8 is a perspective view of the worm-wheel and its hinge-pintle slightly modified. Figs. 9, 10, 11, 12, and 13 are detail views showing different ways in which the movable or hinged leaf may be constructed for use with the turning-pintle.

In Fig. 1 of the drawings I have shown a shutter, A, hung in position by means of hinged leaves *b b*⁶, attached to it, a hinge box-bracket, B, and an ordinary pintle-bracket, B', which are permanently fastened to the frame A', and support pintles *a a'*, the improved shutter-working mechanism being also shown applied to the frame and hinge box-bracket, and so arranged as to have the upper rectangular slotted or socketed end of the pintle *a* coupled rigidly with the hinged leaf *b* of the shutter A.

The operating-stem C² of the worm-shaft C', carrying the worm C, as shown in Fig. 2, fits the bearing *e*, formed in the box-bracket B, and on the portion which is outside the hinge box-bracket a collar, *d*, is provided, thereby forming a coupling as well as a stop-shoulder at *d'*. The worm-shaft C' and its collar *d* may be cast integral with each other, or the collar may be riveted upon the shaft. The shaft and worm are held against lengthwise movement in the bearing *e* by the shoulder *d'* and a shoulder formed by the worm C, which is of larger diameter than the shaft. If desired, the shoulder *d* may be dispened with, and the worm C may be provided with a second journal, and a bearing, *e'*, may be formed in the front wall of the hinge box-bracket B, as illustrated in Fig. 5. The inner end, C², of the worm-shaft C', is journaled in a flanged bearing, H, which is attached to the inner side of the frame A', and adjacent to this bearing is secured or may be applied a handle or crank, D, for turning the shaft and worm, to open or close the shutter.

The hinged leaf *b*, which is employed in connection with the stationary hinge box-bracket B, is adapted, by the construction of its eye portion *b'*, to fit around the rectangular or other similarly-shaped end of the pintle *a*.

Instead of the pintle *a* being made rectangular at its upper end, it may be either slotted, as in Fig. 2, or socketed, as in Fig. 8, and instead of the hinged leaf *b* being formed with a square eye, *b'*, as in Figs. 1, 3, 5, 10, and 11, it may be made with a square portion, *b*⁵, Fig. 9, adapted to fit the socket *b*², Fig. 8, in the pintle *a*, or with a flat shouldered neck, *b*³, as

in Fig. 13, adapted to fit the slot in pintle *a*, (shown in Fig. 2,) or with a round eye and a cross-pin, b^4, as in Fig. 10, adapted to fit the slot and the outside of the pintle. (Shown in Fig. 2.)

The hinge box-bracket B, for supporting the pintle *a*, worm-wheel W, and worm C, is of peculiar construction, and simple and cheap, and exactly adapted to receive and hold in place the said pintle, worm-wheel, and worm, as shown in Fig. 3. This hinge box-bracket consists of two main parts, F F′, of which, as shown in Figs. 1, 3, 4, 5, and 6, the part F constitutes a cover or top to the box portion F′, and as a whole the said box-bracket comprises a top plate, *g*, formed with a projecting journal-bearing, g^2, having a bearing-seat, *t*′, and provided with a circular perforation, e^2, which serves as an opening through which the pintle *a* may be inserted in position within the hinge box-bracket, as shown in Fig. 3, and when so inserted find bearings, as e^2 e^3, for its journals *i* *i*′ in said perforation and in the bottom plate of the said box-bracket. The top plate, *g*, is also provided with a shouldered portion, j^3, an interlocking tongue, *j*′, of either tapering, rectangular, or other suitable form, and with one or more elongated apertures, as *j*, the tongue *j*′ being adapted to fit into a corresponding notch or mortise, j^2, while the aperture *j* serves to receive a riveting dowel or projection, *k*, (provided on the part F, as shown,) when the parts F F′ are brought into juxtaposition, as in Figs. 1, 2, 3, and 5, and secured together by riveting, as signified at *k*′.

Instead of an elongated opening or openings, as *j*, round holes and corresponding dowels, as *k*, may be employed, and instead of dowels or projections *k*, machine-screws for fastening the cover portion F may be employed. The top plate, *g*, is also provided with a back plate, g^3, having one or more holes *m*, through which may be passed screws or other devices for securing it in place.

If desired, the upper portion of the back plate, g^3, of the part F may be omitted, and the shutter-worker secured in position by a fastening device passed through a back plate, g^4, of part F′.

The box part F′ is formed of five sides, mostly closed, and with a depression, *v*, forming shoulders *v*′ *v*′, and with a half-journal bearing-seat, *t*, Fig. 4, corresponding with the seat *t*′ of part F, the said half-bearing seat *t* being on the upper edge of the back wall or inner side of the box and adapted, with the half-bearing seat *t*′, to receive with exactness the journal-bearing g^2 when the parts F F′ are secured in juxtaposition, as in Figs. 1, 2, 3, and 6, and thus afford a complete journal-bearing seat for the journal portion of the shaft C′ of the worm C, when said worm and the worm-wheel and the pintle are in working position, as shown. In the lower or bottom plate of the part F′ a circular perforation, as e^3, is provided, which serves as a journal-bearing seat for the journal *i*′ of the worm-wheel W, and on the back or inner side of the part F′ is formed one or more holes corresponding to those *m* in part F, for the passage of screws when the shutter-worker is fastened to the frame A′. By thus constructing the box-bracket B of two parts, as F F′, my shutter-worker may be readily adjusted into working position by first lifting the part F away from part F′ and putting the shouldered portion C′ of the shaft of the worm C in the half-bearing *t*, so that its shoulder *d*′, formed by collar *d*, comes on the outside of the box, and this having been done the worm-wheel W, attached to a pintle, *a*, having either a square, slotted, or socketed upper end, is then set with its journal *i*′ into the journal-bearing e^3, formed on the lower side of the part F′, as shown in Fig. 3, and this done the cover portion F is next brought down against the part F′, the journal-bearing g^2 of the part F entering the depression *v* of part F′, the dowel or projection *k* entering the opening *j* of the part F, and the tongue *j*′ fitting the mortise j^2 of part F′, and at the same time the opening e^2 permitting the part F to pass down around the journal *i* of the worm-wheel W, while affording it a proper journal-support. When the parts are thus adjusted, they are made to maintain their fixed places by riveting, as signified at *k* in Fig. 5, or by screwing the parts F F′ together.

In Fig. 7 the identical construction of the parts F F′, forming the hinge box-bracket, is adopted as in the other figures, except that the upper portion, F, is placed at the bottom and the lower portion, F′, at the top, and the pintle *a* has its journal end *i*′ fitted in an opening, similar to the opening e^3 formed in the portion F′, and its journal *i* fitted in an opening similar to the opening e^2, formed in the portion F′. This change brings the pintle *a* on the opposite side to that shown in Fig. 6, and locates the opening e^3 in part F, while opening e^2 is located in part F′.

I contemplate leaving out metal, so as to lighten the hinge box-bracket at such points as may be practicable and still retain the necessary bearings and connections between the several parts, and therefore do not confine myself to a completely closed hinge box-bracket.

In Figs. 11 and 12 I have shown the hinge-leaf *b* as cast of malleable iron and with an outwardly-turned lip, *n*, which lip can be turned inward after the hinge-leaf has been cast, and by this means the hinge-leaf with its eye portion and the holes for the screws may be easily cast without a core.

It will be understood from the foregoing description of my shutter or blind worker that the construction of the hinge-leaf *b* and pintle *a* tends to simplify and cheapen the manufacture thereof, while great advantage and convenience are secured from the hinge box-bracket being constructed of the two horizontally-divided parts F F′ in the special manner shown, as this construction admits of the insertion in place of the worm, worm-shaft, and the shoulder or stop-collar, whether cast in-

tegral with or separate from one another; and as the worm-wheel pintle, provided with either a square, slotted, or socketed upper end can be readily placed in its proper bearing and firmly held in position by simply uniting the parts F F′, and also as the necessary journal-bearings can be readily formed in the casting operation, much labor in fitting and putting together of the parts, as well as expense in the manufacture of shutter-workers of this class, is avoided.

I am aware that it is not new in a shutter or blind worker to employ, in connection with the leaves of a shutter-hinge, a solid turning pintle for operating the shutter, and therefore do not claim, broadly, as my invention such a shutter-worker.

I also am aware that a hinge box-bracket for a worm and a worm-wheel and the shaft and pintle for said parts is not broadly new, and therefore I do not claim such a hinge box-bracket, broadly; neither do I claim, broadly, the combination of a hinge box-bracket and a worm and worm-wheel applied within the same.

My invention is for the novel manner in which I have constructed the hinge box-bracket and combined therewith the worm, worm-shaft, and the worm-wheel and its pintle.

What I claim as my invention is—

1. The combination, with the worm C, worm-wheel W, pintle *a*, and hinge-leaf *b*, of the hinge box-bracket formed of two horizontally-separable parts, F and F′, which are constructed with journal-bearings for the worm-wheel W and the pintle *a*, and also have journal-bearing half-seats, as *t t′*, which, when the parts F and F′ are brought together, form a complete journal-bearing for the worm-shaft and worm-wheel, substantially as and for the purpose described.

2. The hinge box-bracket of a shutter or blind worker, formed of two horizontally-divided parts, F F′, the respective parts being provided with a half-journal-bearing seat, and the part F′ formed with a depression, *v*, projection *k*, mortise j^2, and the part F with an opening, *j*, tongue *j′*, and a shoulder, j^3, and the two parts united by riveting, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK B. MALLORY.

Witnesses:
GEO. P. KINGSLEY,
JAMES J. FARRELL.