F. ESA.

SHUTTER OPENING AND CLOSING MECHANISM.

APPLICATION FILED JULY 8, 1919.

1,323,848.

Patented Dec. 2, 1919.

2 SHEETS—SHEET 1.

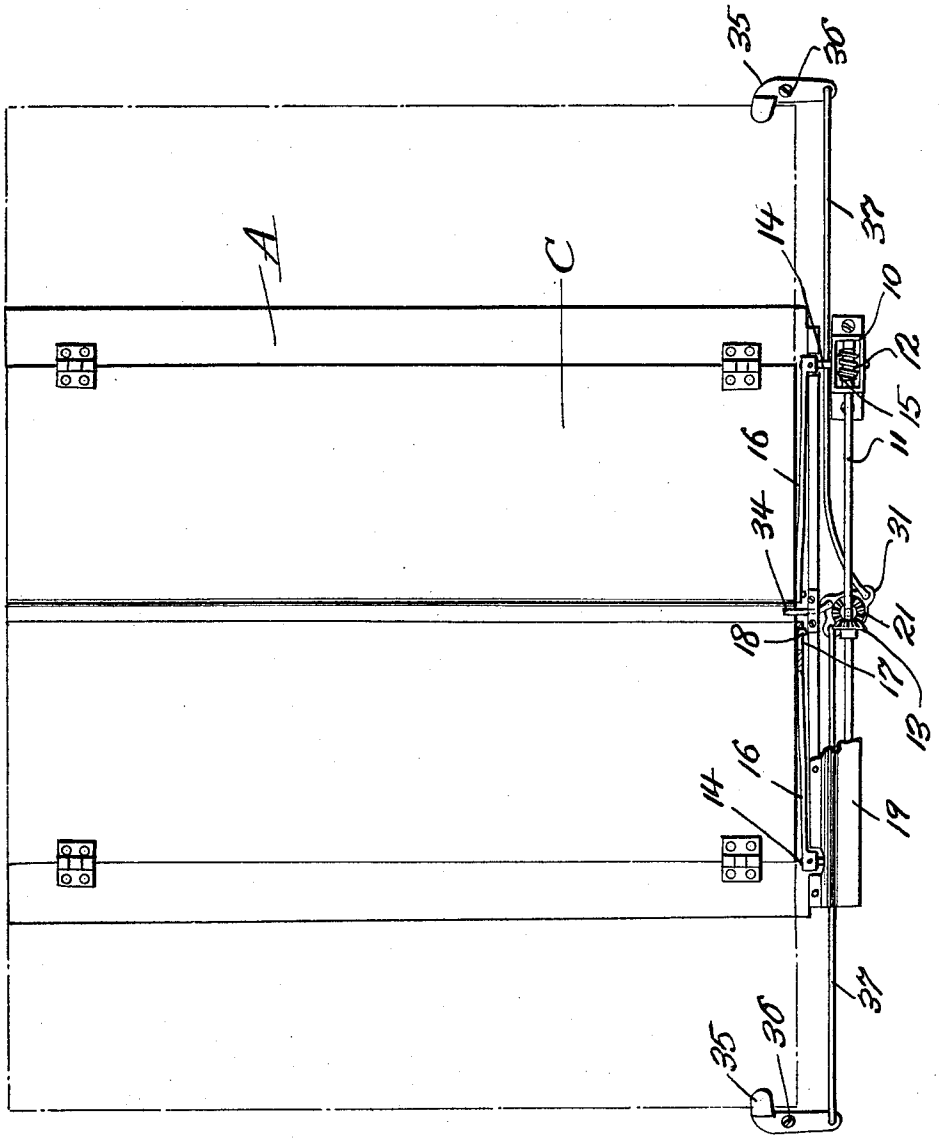


Fig. 1.

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Fig. 2.

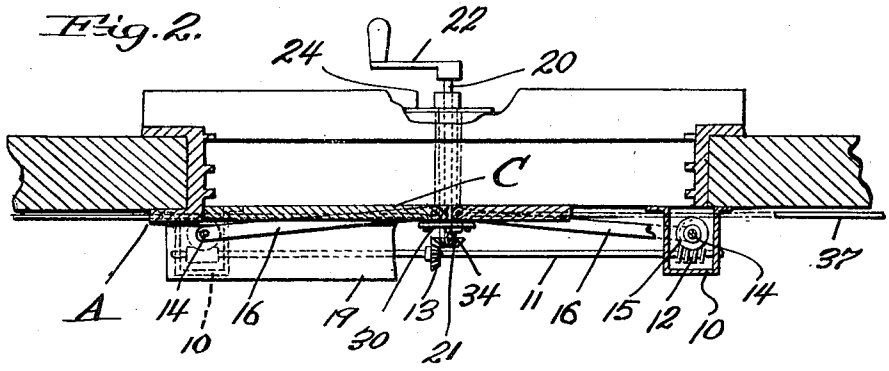


Fig. 3.

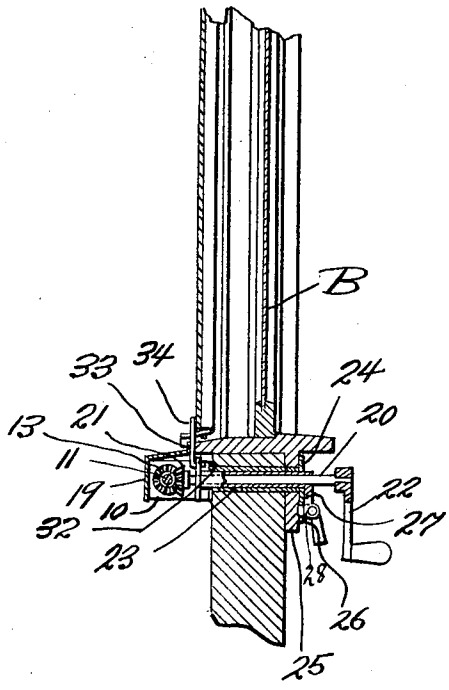


Fig. 4.

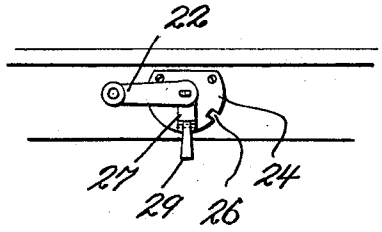
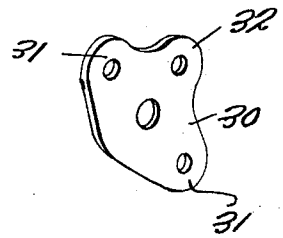


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRIEDRICH ESA, OF FAIRFIELD, MONTANA.

SHUTTER OPENING AND CLOSING MECHANISM.

1,323,848. Specification of Letters Patent. Patented Dec. 2, 1919.

Application filed July 8, 1919. Serial No. 309,322.

To all whom it may concern:

Be it known that I, FRIEDRICH ESA, a citizen of the United States, residing at Fairfield, in the county of Teton and State of Montana, have invented certain new and useful Improvements in Shutter Opening and Closing Mechanism, of which the following is a specification.

The invention relates to a blind or shutter opening and closing mechanism, and more particularly to the class of combined shutter locks and opening and closing mechanism therefor.

The primary object of the invention is the provision of mechanism of this character wherein the swinging window shutters or blinds can be conveniently and readily operated from within an inclosure for the opening and closing thereof without necessitating the raising of the sashes of the window as is usual, the blinds or shutters when in closed position or in open position being locked to avoid the accidental swinging thereof.

Another object of the invention is the provision of mechanism of this character wherein the same can be mounted relative to the swinging blinds of a window for the successful operation thereof to both lock the blinds and when released to open or close the same automatically, thereby eliminating the manual labor required in swinging the blinds to open or closed position, the mounting of the mechanism being of novel form so as to avoid any necessity of changing or altering the window construction or the blinds or shutters therefor.

Another object of the invention is the provision of mechanism of this character, wherein the construction thereof is novel in form so as to assure the easy and convenient opening or closing of the blinds and the locking thereof in either position, without necessitating the opening of the sashes or the manual handling of the blinds in the ordinary well known manner.

A still further object of the invention is the provision of mechanism of this character, which is comparatively simple in construction, very reliable and efficient in operation, readily and easily applied to a window construction, strong, durable, and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereunto appended.

In the accompanying drawings:

Figure 1 is an elevation of window shutters or blinds, showing the mechanism constructed in accordance with the invention applied, the covering plate for the mechanism being shown broken away, while the blinds or shutters are shown closed by full lines and dotted lines in open position.

Fig. 2 is a horizontal transverse sectional view through the window frame and blinds showing certain portions of the mechanism broken away to disclose details.

Fig. 3 is a fragmentary vertical transverse sectional view through the window.

Fig. 4 is an elevation showing in detail the operating crank and the lock of the mechanism for opening and closing the window blinds.

Fig. 5 is a detail perspective view of the eccentric member for controlling the locking mechanism for the blinds.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail A designates generally a portion of a window frame or casement, which is of ordinary well known construction equipped with sliding sashes as usual, a portion of the lower sliding sash B being shown in Fig. 3, while C designates the swinging outer blinds or shutters, which are hinged to the window frame or casement for the opening or closing movement of said blinds or shutters.

The operating mechanism of the blinds or shutters C comprises a pair of spaced housings 10 which are located at the outer side of the window frame or casement A immediately below the sills thereof and adjacent to the vertical stiles of the frame. Journaled transversely in the housings 10 is a worm screw shaft 11 which is formed with a worm screw 12 near each end thereof, the worm screw being located within the housing 10 and this shaft is also fitted with a beveled pinion 13 which is fixed upon the

shaft intermediate the ends thereof and preferably near the center of the window frame or casement. Journaled normally in the housing 10 at right angles to the shaft 11 are stub worm gear shafts 14 each carrying a worm gear 15 meshing with the worm screw 12, while at the upper ends of the shaft 14 are swinging levers or arms 16 each being formed near its free end with an elongated slot 17 for loosely receiving therein a connecting pin or member 18 carried in the lower edge of the shutter or blind C companion to the lever or arm 16 so that on rotation of the shaft 11 through the medium of the worm screw 12 and worm gear 15 swinging motion will be imparted to the levers or arms 16 for the opening or closing of the blinds or shutters C as will be clearly apparent.

Secured to the outer edge of the sill of the window frame or casement A and overhanging the shaft 11 and the housing 10 is a shield or guard 19 to protect the parts contained within the housing 10 and the gearing from rain or snow, the shield or guard 19 being extended throughout the length of the window sill and is preferably made from sheet metal.

Journaled at right angles to the worm screw shaft 11, preferably centrally with respect to the window frame or casement A and at a point beneath its sill is an operating shaft 20 on the outer end of which is fixed a beveled pinion 21 meshing with the pinion 13, while detachably fitted on the inner end of said operating shaft 20 is a hand crank 22 for the manual rotation of said shaft. The hand crank 22 is located at the inner side of the window frame or casement A within the inclosure so that the operating mechanism can be actuated from within the inclosure for the automatic opening and closing of the blinds or shutters C without necessitating the opening or raising of the lower sash B as is customary.

The locking mechanism combined with the operating mechanism for the blinds or shutters C comprises a tubular shaft 23 which is fitted over and receives the shaft 20 and extends to opposite sides of the window frame or casement A, the inner end of said shaft 23 being extended through a keeper plate 24 fixed in any suitable manner to the facing board 25 depending from and beneath the sill of the window frame or casement A and this plate in its circular edge is formed with spaced notches 26, while formed on or mounted upon said inner end of the shaft 23 is an arm 27 having pivoted therein a dog or detent latch 28 which is adapted for alternate engagement in either of the notches 26 in the keeper plate 24, the latch 28 being formed with a weighted handle 29 which serves to positively move the latch 28 into engagement with said notches 26 to hold the shaft 23 in locked adjusted position.

On the outer end of the shaft 23 is fixed an eccentric plate 30 formed with opposed ears 31 and an intermediate laterally extending ear 32 at substantially right angles to the ears 31. Loosely connected or pivoted to the ear 32 and working upwardly through a retaining strap 33 secured to the outer ledge of the sill of the window frame or casement A is a latch pin 34 which is adapted to project into the path of movement of one of the blinds or shutters C on operating the shaft 23 so that when the blinds or shutters are swung to closed position the pin 34 will serve to lock the same in such position.

Pivotally mounted on opposite sides of the window frame or casement A at the outer side of the inclosure supporting the same are blind catches 35, the pivot 36 for each of the same being disposed medially of the catch 35 and loosely connected to the lower end of the latter is a throw rod 37, these rods 37 being loosely connected to the ears 31 so that on movement of the eccentric plate 30 the catch 35 will be thrown to engaging position for locking the blinds or shutters C in open position or said catches 35 will be released from engagement with the blinds or shutters to permit the same to be moved to closed position. On turning the arm 27 carrying the latch 28 which is previously released from the keeper plate 24 the shaft 23 will be positively rotated so as to actuate the eccentric plate 30 thereby lowering the latch pin 34 which is normally in the position shown in Fig. 3 of the drawings to fasten the blinds or shutters C closed and simultaneously therewith the catches 35 are swung on the pivot 36 in a position to engage the blinds or shutters C when swung to open position as shown by dotted lines in Fig. 1 of the drawings the blinds or shutters C being swung to open position on operating the hand crank 22 controlling the operating mechanism. After the blinds have been fully opened the arm 27 is shifted back to normal position as shown in Fig. 4 of the drawings so that the catches 35 will engage the blinds or shutters C when open and thereby lock the same against accidental closing movement.

When the crank handle 22 is turned it operates the shaft 20 which through the medium of the gears 13 and 21, together with the worm screw 12 and the companion worm gear 14 will effect the opening and closing movement of the blinds or shutters C as will be clearly apparent. It is unnecessary to raise the lower sash B for the purpose of either opening the blinds or shutters C or for closing the same.

From the foregoing it is thought that the construction and manner of operation of the mechanism will be clearly understood and therefore a more extended explanation has been omitted.

It is to be further understood that changes, variations and modifications may be made in the invention, such as come properly within the scope of the appended claims, without departing from the spirit of the invention or sacrificing any of its advantages.

What is claimed is:

1. The combination with swinging blinds or shutters for a window structure, of mechanism for opening and closing the said blinds or shutters and including a main operating shaft located beneath the window structure and operable at the inner sides thereof, means for locking the blinds in open or closed position, an eccentric plate for controlling the locking means and surrounding the operating shaft, a sleeve upon said shaft and carrying the eccentric plate, a stationary keeper plate about said sleeve and having notches, an arm on the sleeve for turning the same and a latch detent or dog carried by the arm to engage either of said notches to lock the sleeve in adjusted position.

2. The combination with swinging blinds or shutters for a window structure, of mechanism for opening and closing the said blinds or shutters and including a main operating shaft located beneath the window structure and operable at the inner sides thereof, means for locking the blinds in open or closed position, an eccentric plate for controlling the locking means and surrounding the operating shaft, a sleeve upon said shaft and carrying the eccentric plate, a stationary keeper plate about said sleeve and having notches, an arm on the sleeve for turning the same, and a latch detent or dog carried by the arm to engage either of said notches to lock the sleeve in adjusted position, the locking means including a latch pin and catches, the latch pin being located medially of the window structure and the catches located at opposite sides thereof outside the same.

3. The combination with swinging blinds or shutters for a window structure, of mechanism for opening and closing the said blinds or shutters and including a main operating shaft located beneath the window structure and operable at the inner sides thereof, means for locking the blinds in open or closed position, an eccentric plate for controlling the locking means and surrounding the operating shaft, a sleeve upon said shaft and carrying the eccentric plate, a stationary keeper plate about said sleeve and having notches, an arm on the sleeve for turning the same, and a latch detent or dog carried by the arm to engage either of said notches to lock the sleeve in adjusted position, the locking means including a latch pin and catches, the latch pin being located medially of the window structure and the catches located at opposite sides thereof outside the same, and a shield for said mechanism.

4. The combination with swinging blinds or shutters for a window structure, of mechanism for opening and closing the said blinds or shutters and including a main operating shaft located beneath the window structure and operable at the inner sides thereof, means for locking the blinds in open or closed position, an eccentric plate for controlling the locking means and surrounding the operating shaft, a sleeve upon said shaft and carrying the eccentric plate, a stationary keeper plate about said sleeve and having notches, an arm on the sleeve for turning the same, and a latch detent or dog carried by the arm to engage either of said notches to lock the sleeve in adjusted position, the locking means including a latch pin and catches, the latch pin being located medially of the window structure and the notches located at opposite sides thereof outside the same, a shield for said mechanism, and manually operable means for actuating the operating shaft.

5. The combination with swinging blinds or shutters for a window structure, of mechanism for opening and closing the said blinds or shutters and including a main operating shaft located beneath the window structure and operable at the inner sides thereof, means for locking the blinds in open or closed position, an eccentric plate for controlling the locking means and surrounding the operating shaft, a sleeve upon said shaft and carrying the eccentric plate, a stationary keeper plate about said sleeve and having notches, an arm on the sleeve for turning the same, and a latch detent or dog carried by the arm to engage either of said notches to lock the sleeve in adjusted position, the locking means including a latch pin and catches, the latch pin being located medially of the window structure and the catches located at opposite sides thereof outside the same, a shield for said mechanism, manually operable means for actuating the operating shaft, and a guide for the latch pin.

6. The combination with swinging blinds or shutters for a window structure, of mechanism for opening and closing the said blinds or shutters and including a main operating shaft located beneath the window structure and operable at the inner sides thereof, means for locking the blinds in open or closed position, an eccentric plate for con-

trolling the locking means and surrounding the operating shaft, a sleeve upon said shaft and carrying the eccentric plate, a stationary keeper plate about said sleeve and having notches, an arm on the sleeve for turning the same, and a latch detent or dog carried by the arm to engage either of said notches to lock the sleeve in adjusted position, the locking means including a latch pin and catches, the latch pin being located medially of the window structure and the catches located at opposite sides thereof outside the same, a shield for said mechanism, manually operable means for actuating the operating shaft, a guide for the latch pin, and a weighted handle on the latch dog or pawl.

In testimony whereof I affix my signature hereto.

FRIEDRICH ESA.