

Feb. 6, 1951

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2,540,384

VENETIAN BLIND OPERATING MECHANISM

Filed April 19, 1947

FIG. 1

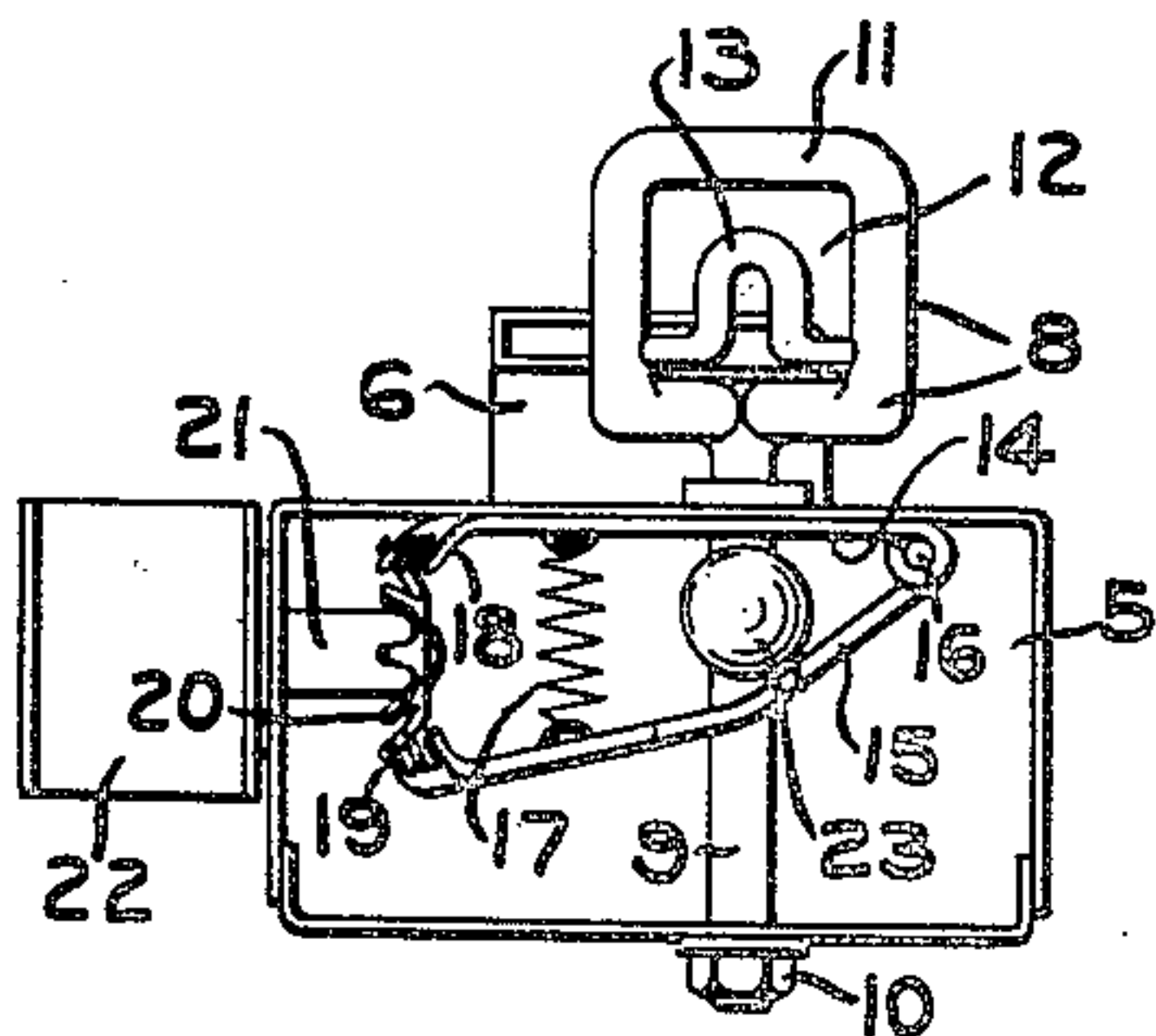
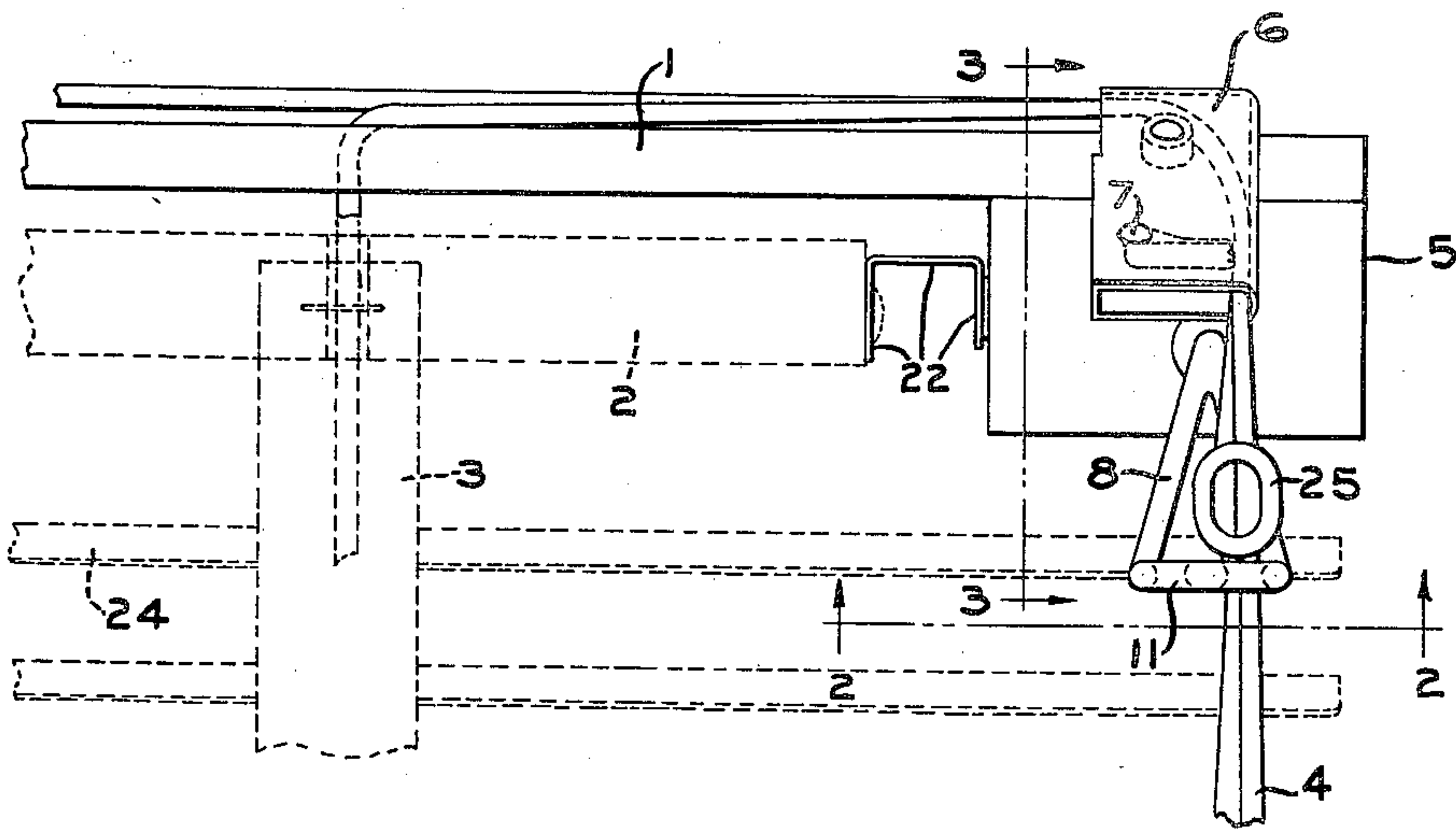


FIG. 2

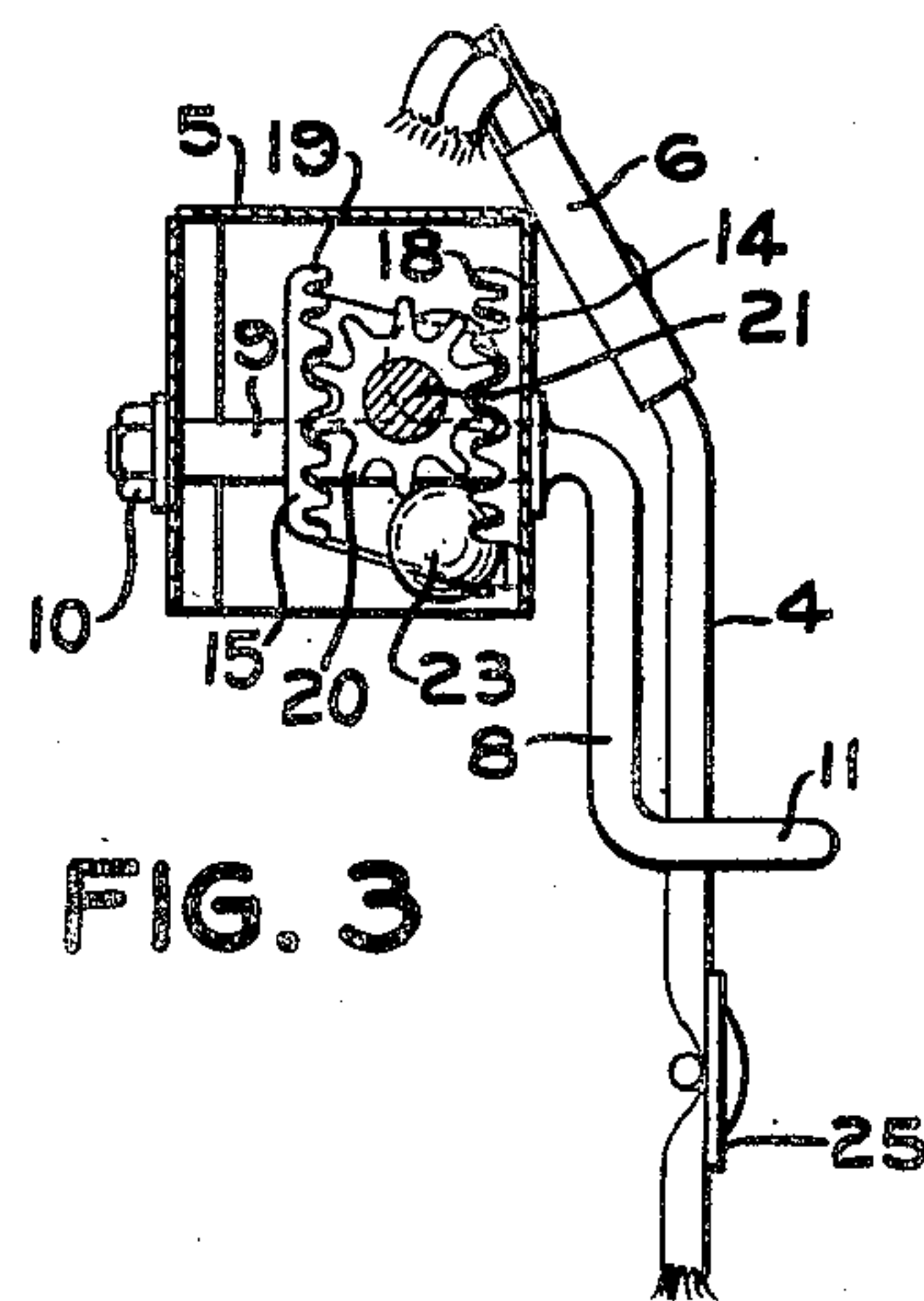


FIG. 3

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## UNITED STATES PATENT OFFICE

2,540,384

## VENETIAN BLIND OPERATING MECHANISM

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Application April 19, 1947, Serial No. 742,524

3 Claims. (Cl. 160—168)

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The present invention pertains to Venetian blinds and more particularly to the operating mechanism whereby such blinds can be raised and lowered and the slats thereof can be turned about their horizontal axes. Among the objects of this invention are the provision of a single operating mechanism for causing all of the movements of a Venetian blind, that is, the raising and lowering of the slats and the turning thereof about their horizontal axes; the provision of an operating mechanism for a Venetian blind in which the various movements of the blind may be effectuated by movements of a single cord; the provision of operating mechanism for a Venetian blind which will not only cause necessary movements thereof but will also secure the parts against movement when such is not desired; and such further objects, advantages, and capabilities as will hereafter appear and as are inherent in the construction disclosed herein. My invention further resides in the combination, construction, and arrangement of parts illustrated in the accompanying drawings and, while I have shown therein what is now regarded as the preferred embodiment of this invention, I desire the same to be understood as illustrative only and not to be interpreted in a limiting sense.

In the drawings annexed hereto and forming a part hereof,

Fig. 1 is a front elevation of a Venetian blind mechanism, attached to the blind which is shown in broken lines;

Fig. 2 is a bottom view of the operating mechanism taken in the direction of the arrows 2—2, Fig. 1; and

Fig. 3 represents a transverse section taken substantially along the plane indicated by the line 3—3, Fig. 1.

Reference will now be made in greater detail to the annexed drawings for a more complete description of this invention. In these drawings, the header bar is indicated at 1, the slat-supporting bar at 2, and the blind slat-supporting tapes at 3. The cord or cords for raising, lowering, and turning the slats is or are shown at 4. The housing 5 is secured to the header bar 1 by means of screws, not shown, which extend into the bar 1, going through the top part of the housing 5. Secured in a diagonal direction, across an upper edge of the housing 5, is a cord housing 6 through which the cord 4 passes. In this housing is provided an ordinary pivoted arm for holding the cord in adjusted position. This is indicated by dotted lines, and the pivot about which this arm turns is shown at 7.

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In the upper part of the housing 6 is or may be a pulley about which the cord 4 passes and from which it extends to the usual means above the slat openings so that the cord or cords may pass downwardly through the openings in the slats in the customary manner. A frame 8 is located outside of the housing 5 and has a shaft 9 at its upper end which extends through the housing and, at its outer end, is provided with suitable means 10 which prevents it from being inadvertently removed from the housing. Secured to the second end of the shaft 9 is an inverted V-shaped member constituting part of the frame 8 and, at the lower ends of the arms of the V-shaped member is a horizontally projecting frame 11, across the interior 12 of which extends a U-shaped member 13 with its laterally extending arms secured to the sides of the frame 11, the function of which will be explained presently.

Two gear sector members 14 and 15 are pivotally connected at 16 and are biased toward each other by a spring 17 secured to the inner faces thereof. The separated ends of these members 14 and 15 have gear teeth formed thereon, as shown at 18 and 19. These sector gears 18 and 19 mesh with the teeth of a gear 20 secured to the inner end of a shaft 21. It is clear that when both gears 18 and 19 mesh with the gear 20 it will be impossible for this to turn in either direction. The shaft 21 extends out through the wall of the housing 5 and has a channel-shaped slat-actuating member 22 secured rigidly to the outer end thereof. It will therefore be clear that when the sector 14 is rotated about the shaft 9, the gear 20 will be rotated, and this will cause rotation of the shaft 21 and actuating member 22.

Balls 23 are secured to opposite sides of shaft 9 and, when this shaft is rotated by swinging the frame 8 laterally, one of the balls is moved toward the hinge 16 causing the sector 15 to be swung away from the sector 14, thus releasing the gear teeth 19 from the gear 20. Further rotation of shaft 9 causes sector 14 to turn about the axis of that shaft, and this causes rotation of the gear 20 and the channel-shaped supporting member 22. Since this is secured to the end of the slat-supporting bar 2, this will be caused to rotate with the result that the slats 24 will be turned about their longitudinal axes. When the frame 8 is allowed to remain in a position inclined to the right or left, the sectors 14 and 15 will engage the gear 20 and prevent the shaft 21 and supporting member 22 from turning, thus holding the slats vertical or nearly vertical. If



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it is desired to turn the slats into a horizontal position, the cord 4 is swung laterally to swing the frame 8 into a vertical position, and this causes the slats to be turned into a horizontal position.

A metal knob or slider 25 has the cord 4 adjustably mounted thereon. When the cord 4 is in either end of the space 12, within the frame 11, that is, when it is between one of the arms of the U-shaped member and the adjacent arm of the frame 11, above the frame, it is impossible to manipulate the blind in the usual manner for raising the same. In order to pull the metal knob 25 through the frame 11, to raise the blind, it is necessary to get the cord in a wider part of the space 12 so that the knob can be pulled through in the larger part of the space between the U-shaped member and the frame 11.

It is of course understood that the specific description of structure set forth above may be departed from without departing from the spirit of this invention as disclosed in this specification and as defined in the appended claims.

Having now described my invention, I claim:

1. In a Venetian blind having a header bar; a housing mounted on the header bar, a shaft pivotally mounted in the housing, a gear sector inside of said housing through which the shaft passes, a second gear sector pivotally connected to the first sector so that its teeth may approach and recede from the teeth thereof, a gear mounted between said sectors with its teeth in position to mesh with the sector teeth, a shaft supporting said gear and passing through a wall of the housing, the last mentioned shaft having an attachment external of the housing for attachment to the blind to cause turning of the slats when the gear is turned, an actuator frame depending from the housing, said frame having a shaft integral with the first shaft extending into the housing, a cross member fixedly connected to the first mentioned shaft and located between the sectors to cause pivotal motion of one with relation to the other and both of them with relation to the housing, and a spring to draw one of the sectors toward the other.

2. In an actuator for a Venetian blind having slats, a slat-supporting bar, and a header bar; a

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housing for attachment to the header bar, cord guiding and holding means secured to the housing, an actuator frame having a shaft extending into the housing, said frame having an opening for reception of a slat-raising cord which may serve to swing the frame laterally, a cord passing through said frame and slats to serve in raising, lowering, and turning the slats, a pair of pivotally connected gear sectors within the housing through which said shaft passes, and a shaft extending into the housing and having adjacent its inner end a gear meshing with one of the sectors and adapted to mesh with the other sector to hold the second shaft against rotation, said second shaft having at its end outside of the housing a connector for supporting one end of the slat-supporting bar, said second shaft and connector cooperating with the sectors and gear in causing tilting of the supporting bar and slats.

3. Actuating means for Venetian blinds comprising cords for rapid raising and lowering of the blind slats, a header bar for supporting the blind, a housing mounted on the header bar to support the slats therefrom, the cords rising through the slats and going down through the housing, and mechanism comprising, in part, a gearing and a lever connected thereto, said mechanism being connected with the housing and turning the slats when the cords are pulled laterally, the aforesaid cords passing through said lever and causing turning of said gearing when swung laterally, and thereby causing tilting of the slats, independently of any movement of the slats in a vertical direction.

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#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
1,855,346	Forse	Apr. 26, 1932
2,181,412	Wood	Nov. 28, 1939
2,264,609	Ban	Dec. 2, 1941
2,410,549	Olson	Nov. 5, 1946