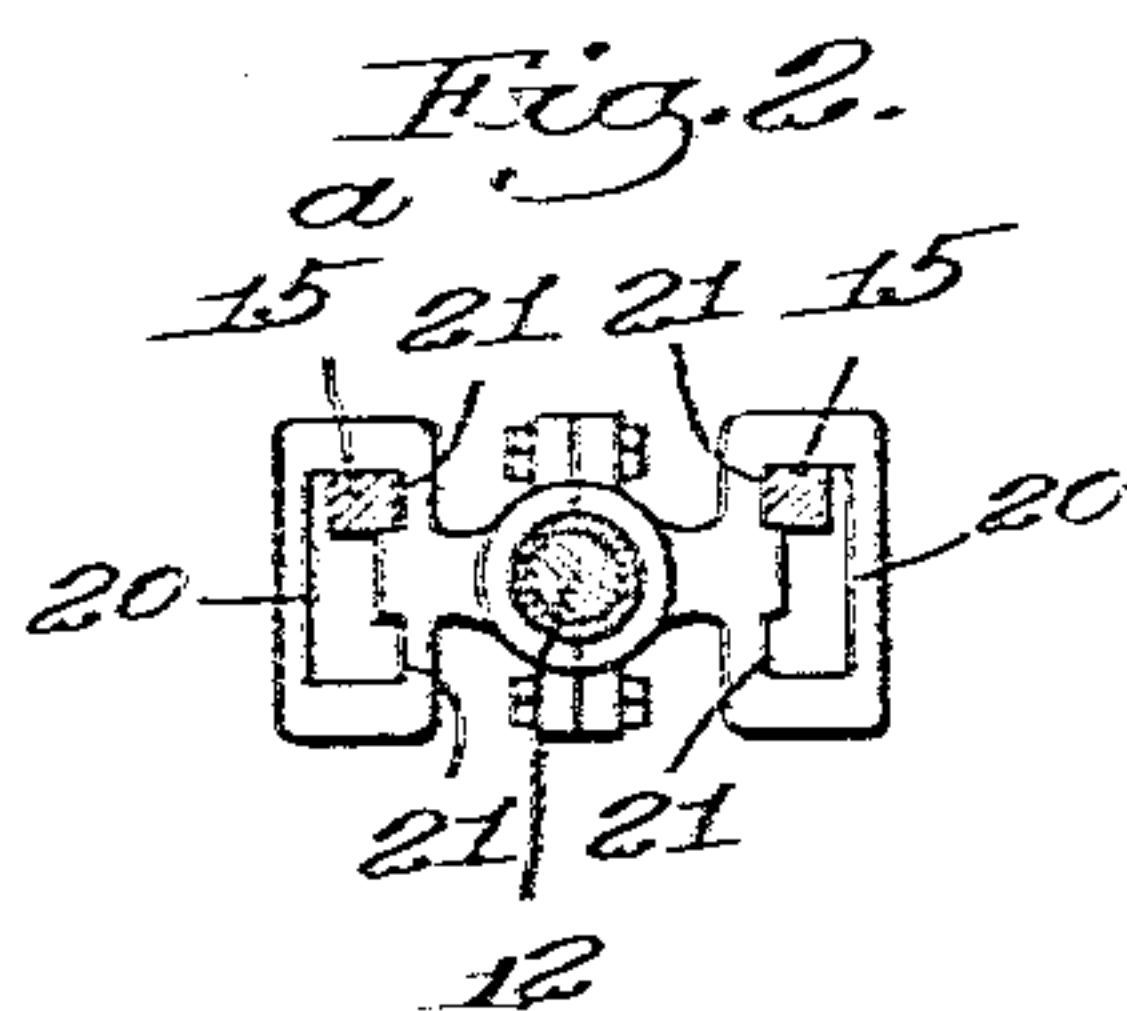
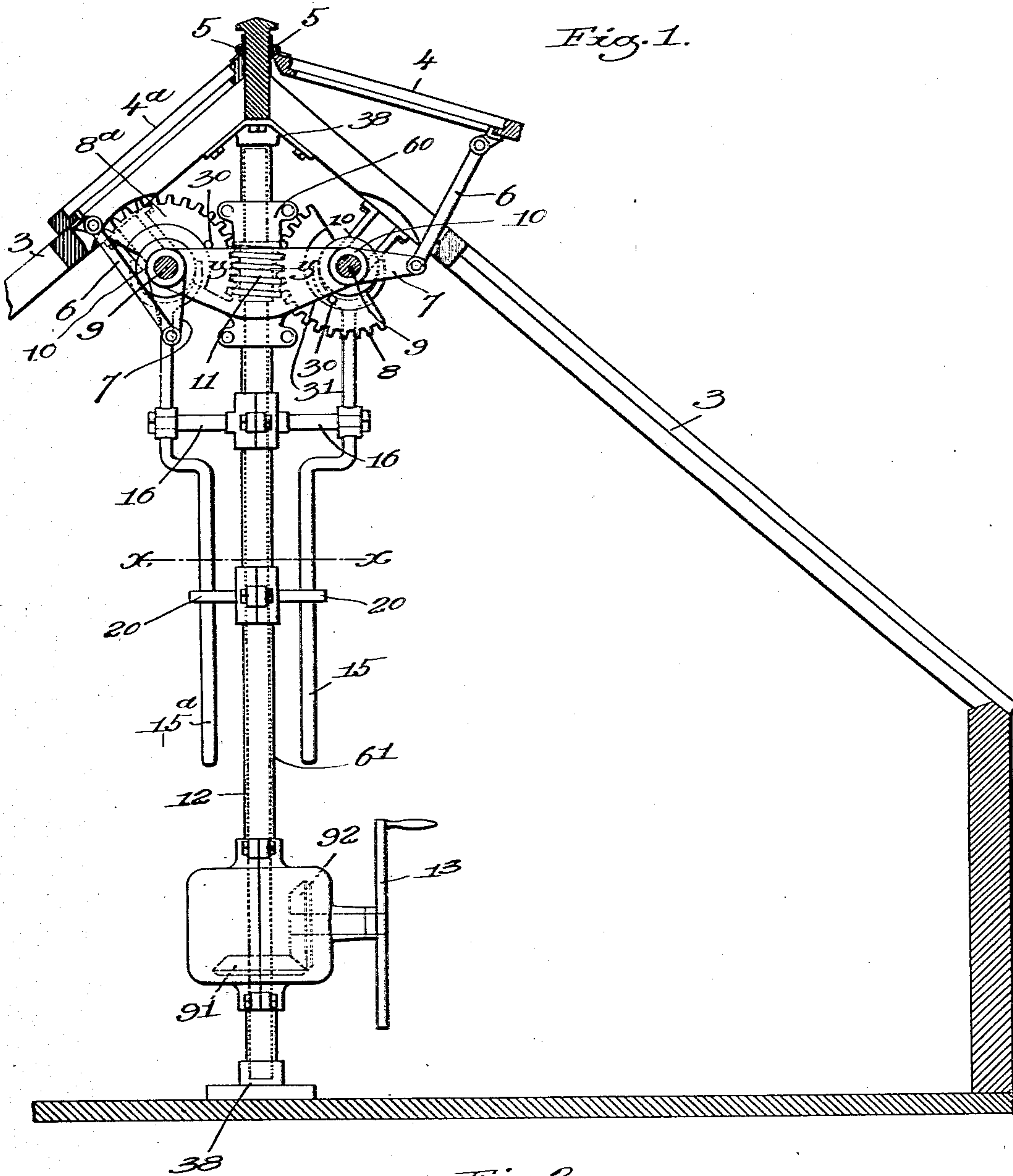


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VENTILATOR FOR GREENHOUSES.
APPLICATION FILED FEB. 1, 1909.

919,673.

Patented Apr. 27, 1909.
2 SHEETS—SHEET 1.



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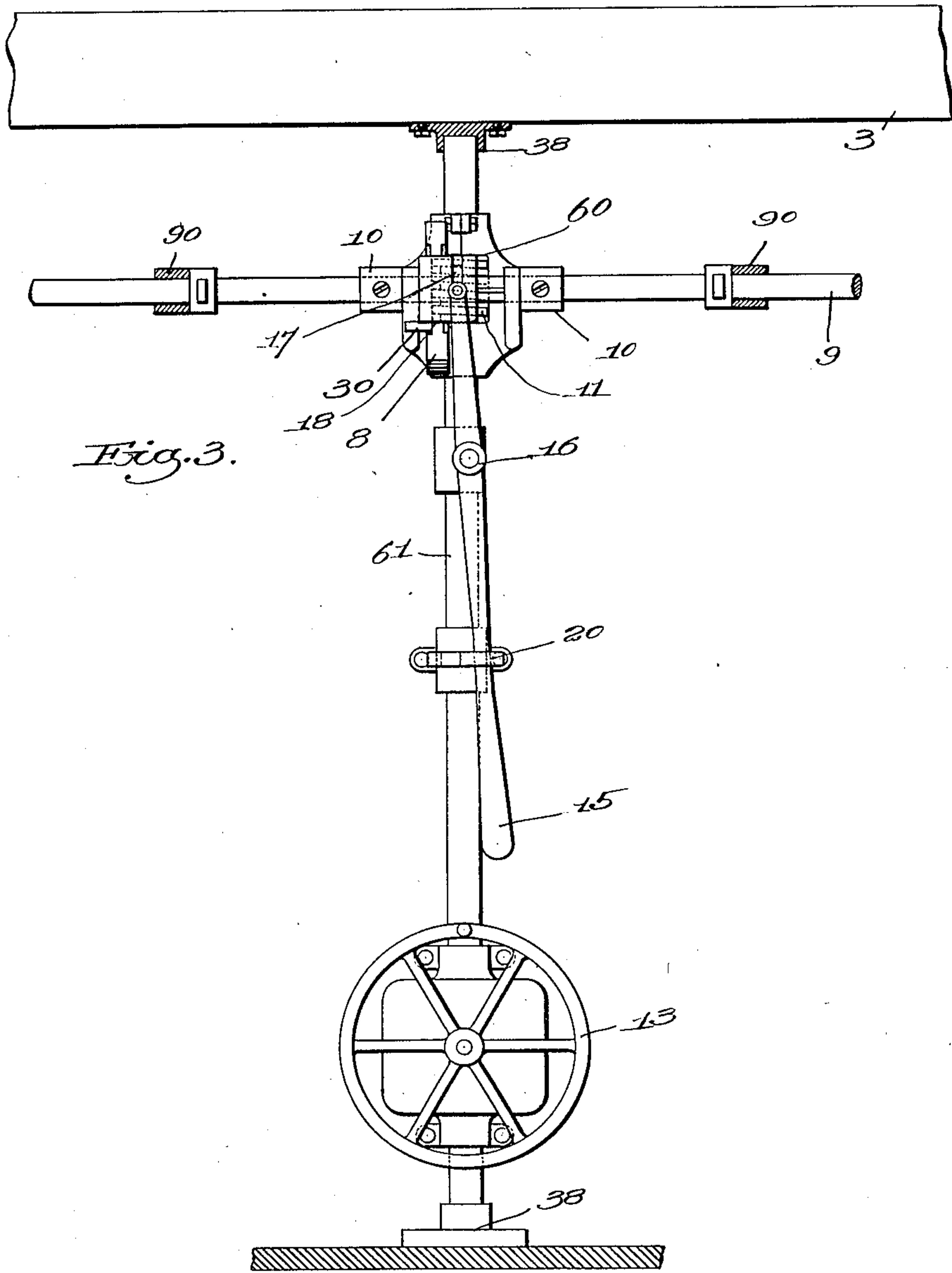


Fig. 3.

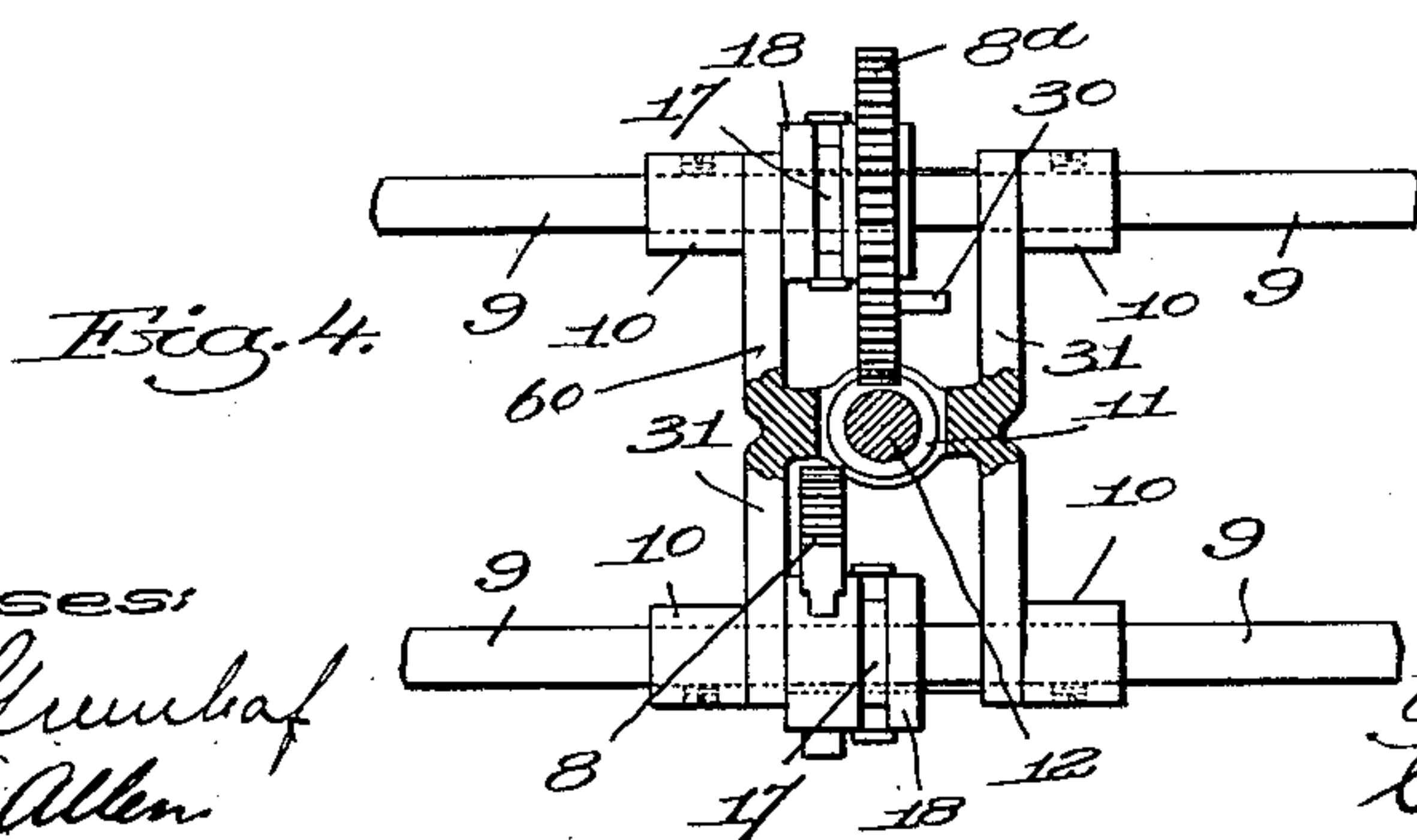


Fig. 4.

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UNITED STATES PATENT OFFICE.

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VENTILATOR FOR GREENHOUSES.

No. 919,673.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed February 1, 1909. Serial No. 475,323.

To all whom it may concern:

Be it known that I, GEORGE B. ANDERSON, a citizen of the United States, residing at Hyde Park, county of Norfolk, and State of Massachusetts, have invented an Improvement in Ventilators for Greenhouses, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to ventilators for greenhouses, and has for one of its objects to provide a novel mechanism by which the swinging sashes on each side of the greenhouse roof may be operated either simultaneously or independently from a single shaft, and for another of its objects to provide a novel construction whereby the sashes may be locked in their open or closed position.

One embodiment of my invention will first be described and then the novel features will be pointed out in the appended claims.

Referring to the drawings wherein I have illustrated said embodiment of my invention, Figure 1 is a vertical section through a greenhouse showing my improved ventilating device; Fig. 2 is a section on the line $x-x$, Fig. 1; Fig. 3 is a side view of the ventilating apparatus; Fig. 4 is a section on the line $y-y$, Fig. 1.

In the drawings 3 represents the roof of the greenhouse and 4, 4^a represent the swinging sashes with which greenhouses are usually equipped. These swinging sashes are commonly hinged to the peak of the roof, as at 5, and are adapted to swing upwardly away from the rafters for ventilation purposes, as shown at the right hand in Fig. 1, or are adapted to be swung down into contact with the rafters for closing the ventilating openings, as shown at the left hand in Fig. 1. Each sash is shown as having pivoted thereto a link 6 which is pivoted to an arm 7 that is fast on a shaft 9 that runs longitudinally of the roof and is journaled in suitable bearings 90. Each shaft has thereon a segmental worm gear (said gears being designated 8 and 8^a) which is adapted to mesh with and be driven by a worm 11 carried by a vertical shaft 12 that is operated from a handle 13 through suitable bevel gears 91, 92, and is journaled in suitable bearings 38. The turning of the handle 13 operates to turn the shaft 9 thereby to raise or lower the swinging

sash connected therewith. This construction is such as is commonly provided in greenhouses. Heretofore, however, it has been customary to provide an operating mechanism such as above described for each of the swinging sashes, so that one handle 13 and its corresponding vertical shaft 12 is used for raising or lowering the sash on one side of the ridge pole or peak of the roof, and another similar handle and vertical shaft is used for raising or lowering the sash on the other side of said peak.

One of the objects of my invention is to provide a novel construction whereby both of the sashes can be operated from the same vertical shaft and may be operated either simultaneously or separately as desired. I accomplish this end by placing the shaft 12 centrally between the two worm gears 8 and 8^a and arranging the worm 11 so that it is adapted to mesh with both of said worm gears. Where this construction is adopted the rotation of the shaft 12 will rotate both worm gears, and, therefore, the two sashes 4 and 4^a may be operated simultaneously. It is often necessary, however, to raise one sash without raising the other or to otherwise operate the sashes independently from each other. My invention contemplates a construction by which this may be done, and in the present embodiment I accomplish it by arranging the gears 8 and 8^a so that they may at will be disconnected from or connected to the worm 11. This end is secured by splining the worm gears 8 and 8^a to the shafts 9 so that said gears may be moved longitudinally of the shafts thereby to carry the teeth thereof into or out of mesh from the worm 11.

In Figs. 3 and 4, the worm gear 8 is moved longitudinally so as to be disconnected from the worm 11 while the worm gear 8^a is still in mesh with the worm. Where the parts are in these positions, operation of the handle 13 will raise or lower the sash 4^a but will give no movement to the sash 4. On the other hand, when the gear 8 is in mesh with the worm 11, but the gear 8^a is thrown out of mesh therewith, then movement of the handle 13 will operate the sash 4. The gears 8 and 8^a may be shifted longitudinally in any suitable way. I have, however, shown for this purpose two levers 15 and 15^a which are pivoted to brackets or arms 16 and are forked at their upper ends to engage in grooves 17

formed in the hubs 18 of the gears. I have also shown these handles as extending through keepers 20 which are provided with notches 21 to lock the levers 15, 15^a in either
5 position desired.

My invention also contemplates a construction whereby when either gear is disconnected from the worm it may be locked and prevented from rotation. This lock is herein
10 shown as comprising a pin or projection 30 extending from the face of the gear which is adapted to engage an abutment 31. When the gears 8 and 8^a are shifted into a position to mesh with the worm 11, the stop pins or
15 projections 30 are withdrawn from the abutments so as to permit the gears to freely turn. When the gears 8 and 8^a are thrown out of mesh with the worm, the stop pins 30 carried thereby will be brought into position
20 to engage an abutment 31. The abutments 31 may be provided for in various ways. I have herein shown said abutments as formed by arms constituting part of a bracket 60 through which the shaft 12 passes, the arms
25 of said bracket having bearings 10 through which the shafts 9 pass.

It will be noted from Fig. 1 that when the sash is closed, the pin 30 stands in position to engage the top edge of an arm of the
30 bracket when the gear carrying the pin is disconnected from the worm 11. The construction is also such that if the sash is partially raised, as shown at the right Fig. 1, and the corresponding gear is disconnected from
35 the worm, the pin 30 carried by said gear will engage the underside of an arm of the bracket 60 and thus lock the sash open. It will be noted, however, that the locks are only operative when the gears are disconnected from
40 the worm 7. When the gears are in mesh with the worm the pins 30 are withdrawn from the abutments.

The bracket 60 is shown as secured to a sleeve 61 which surrounds the shaft 12 and
45 this sleeve 61 also constitutes the support to which the bearing 16 and keepers 20 are secured.

From the above it will be seen that my construction permits the sashes 4, 4^a to be
50 operated either simultaneously or separately as desired and also provides for locking the sashes either in their open or closed positions.

While I have illustrated herein one embodiment of my invention, I do not wish to
55 be limited to the construction shown, as va-

rious changes in the shape and configuration of the parts may be made without departing from the invention.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a ventilator for greenhouses, the combination with two swinging sashes, of a worm gear for operating each sash, a worm common to both gears, and an operating
65 shaft on which said worm is mounted.

2. In a ventilator for greenhouses, the combination with two swinging sashes, of a worm gear for operating each sash, a worm common to both gears, a vertically-arranged
70 shaft on which said worm is mounted, and means to disconnect either worm gear from said worm.

3. In a ventilator for greenhouses, the combination with two swinging sashes, of a
75 worm gear for operating each sash, a worm common to both gears, a vertically-arranged shaft on which said worm is mounted, and means to disconnect either worm gear from said worm and lock said gear from move-
80 ment.

4. In a ventilator for greenhouses, the combination with two swinging sashes, of a shaft extending longitudinally of each sash, a worm gear on each shaft and connected to
85 the corresponding sash, a vertically-arranged shaft, and a worm thereon adapted to mesh with and drive each of the worm gears, each worm gear being slidably mounted on its shaft to permit it to be disconnected from
90 the worm.

5. In a ventilator for greenhouses, the combination with two swinging sashes, of a shaft extending longitudinally of each sash, a worm gear on each shaft and connected to
95 the corresponding sash, a vertically-arranged shaft, a worm thereon adapted to mesh with and drive each of the worm gears, each worm gear being slidably mounted on its shaft to permit it to be disconnected from the worm,
100 and a lever for controlling the position of each worm gear on its shaft.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE B. ANDERSON.

Witnesses:

LOUIS C. SMITH,
THOMAS J. DRUMMOND.