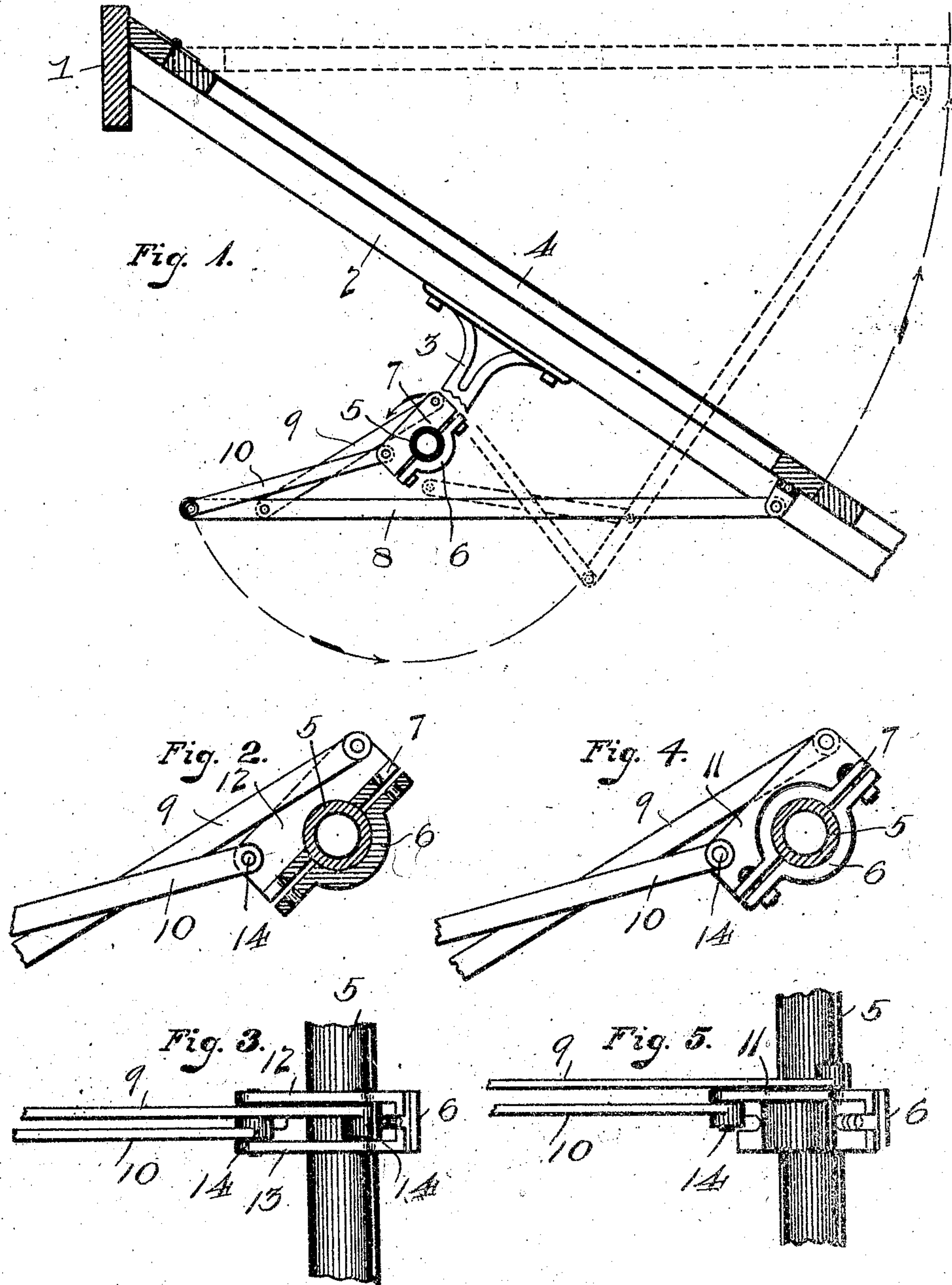


No. 815,914.

PATENTED MAR. 20, 1906.

N. R. EVANS.
WINDOW LIFTER.

APPLICATION FILED MAR. 17, 1905.



WITNESSES:
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WINDOW-LIFTER.

No. 815,914.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NEWTON R. EVANS, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Window-Lifters; 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 window, skylight, transom, &c., lifters. Its object is to provide a device for raising or lowering windows, ventilators, and similar structures which shall apply the power in the same directions but from different fulcrums and shall be composed of parts readily assembled and dismembered and so simple in construction that any part and particularly the fulcrum block or rib may be made at a small cost, and therefore easily replaced in case of breakage.

In the drawings, Figure 1 is a side elevation with the operation of the parts indicated. Fig. 2 is a detail side elevation. Fig. 3 is a plan or top view of the detail shown in Fig. 2. Fig. 4 is a detail of a modified construction, and Fig. 5 is a plan or top view of the detail construction of Fig. 4.

1 represents a wall, sill, door, beam, or gable. In this case the illustration may be, for example, supposed to represent the ventilator of a greenhouse, 2 representing the frame and 3 the usual bracket-support.

4 represents a hinged ventilator to be operated by my lifter.

5 is a pipe-shaft which may have an operating gear or lever at one or both ends. A cap-sleeve 6 bears upon the pipe-shaft and opposed to it is a block 7, which is removably secured in the example illustrated by bolts to the cap-sleeve 6. The block 7 is shown in two forms and may be variously modified within the essential principles of the invention, as herein set forth. In the form shown in Figs. 2 and 3 the block is U-shaped in cross-section, while in the form shown in Figs. 4 and 5 it is L-shaped.

8 is a connecting-arm pivoted to the ventilator and at the opposite end having pivoted to it at different points and on opposite sides the two links 9 and 10, which are also pivoted to different points of the block 7, it being of course understood that for the best

operation of the device the connecting-arm should be pivoted to the object to be lifted and to the two links at points on opposite sides of its center. I have shown the arms 9 and 10 as pivoted at opposite ends of the block 7; but it is within the principle of my invention to pivot these at different points, whether respectively at each end or not. In the form shown in Figs. 2 and 3 the arms 9 and 10 are pivoted between the ribs 12 and 13 of the block 7, while in the form shown in Figs. 4 and 5 the arms are pivoted to the rib 11 and on opposite sides thereof. When the power is applied through the pipe-shaft 5, it is communicated to the connecting-arm 8 through the links 9 and 10, so that a swinging and lifting movement is imparted. In the illustration of Fig. 1, for example, the link 9 is shown as the inner arm pivoted at the upper end of the rib of the block, while the link 10 is shown as pivoted to the lower end of the block 7 and the other end of the arm 8. As the block 7 turns on the shaft 5 the arm 9 pushes down on the arm 8, while the outer arm 10 pulls on the arm 8, so that the pivotal connection of the link 10 with the arm 8 moves farther away, while the pivotal connection of the link 9 with the arm 8 moves nearer to the pivotal point of the shaft 5. By this means I secured a peculiar twisting or what is an equivalent of an eccentric action, so that I have combined in this device a lifting and pulling effect, whereby the whole movement of the ventilator is made with the minimum application of power and with no possibility of a dead-center.

Having fully described my invention, I claim—

1. In a window or other lifter, the combination of a rotatable fulcrum or carrying block, a pair of links pivoted at different points to the block, and a connecting-arm to which the links are pivoted at one side of its center, the said arm being pivoted at a point on the other side of its center to the object to be lifted.

2. In a window or other lifter, the combination of an operating-shaft, a cap-sleeve, a fulcrum or carrying block having a projecting rib, a pair of links pivoted at different points on the rib and a connecting-arm to which the links are pivoted at different points.

3. In a window or other lifter, the combi-

nation of operating-arms and links and a separable attaching device comprising a ribbed power-block, a sleeve-cap, and an operating-shaft upon which they are journaled.

5 4. In a window or other lifter, the combination of operating means, a rotatable fulcrum or carrying block, and means comprising a connecting-arm and two shorter arms or links, the two shorter arms or links being
10 pivoted to a connecting-arm at one side of its center, the said arm being pivoted at a point on the other side of its center to the object to be lifted.

15 5. In a window or other lifter, the combination of operating means a carrying or rotatable fulcrum-block and means comprising a connecting-arm and two shorter links or arms, the shorter links being pivoted to opposite sides of the carrying or fulcrum block at
20 different points, and also pivoted to opposite sides of a connecting-arm at one side of its

center, the said arm being pivoted at a point on the other side of its center to the object to be lifted.

6. In a window or other lifter, the combination with a connecting-arm and a rotatable fulcrum or carrying block, of two links pivoted to the fulcrum-block and a connecting-arm, and operating upon the connecting-arm, one of the links exerting a pushing action
30 upon the arm while the other link exerts a pull upon the arm the said connecting-arm being pivoted to the object to be lifted and to the two links at points on opposite sides of its center.

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

NEWTON R. EVANS.

Witnesses:

EVERETT R. LEMON,
HERBERT R. MARLATT.