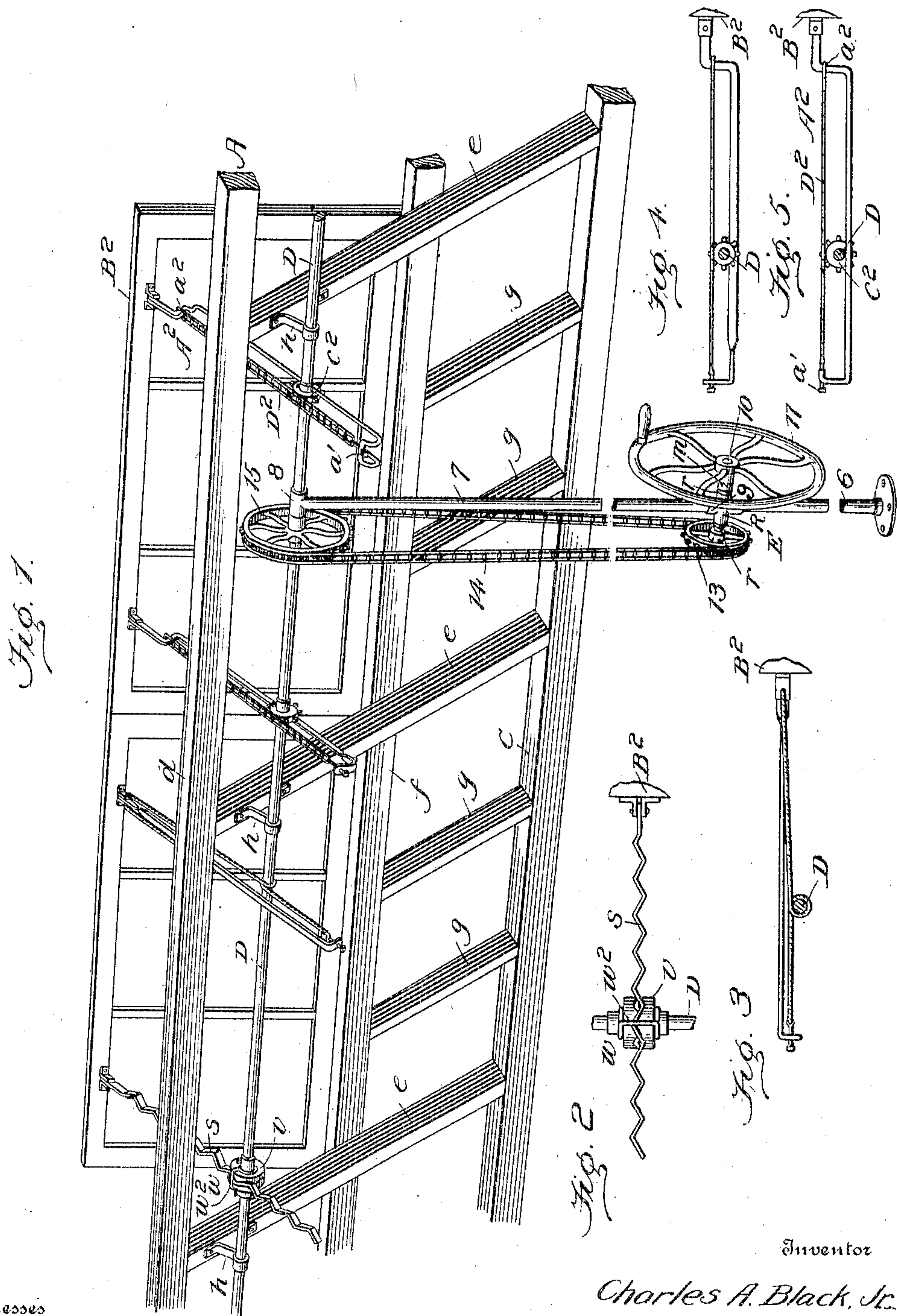


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C. A. BLACK, JR.
VENTILATOR LIFTER.
APPLICATION FILED AUG. 11, 1904.



Witnesses

Edwin L. Bradford
R. H. Van Meter,

Inventor

Charles A. Black, Jr.

By

Ralph Wormelle

Attorney

UNITED STATES PATENT OFFICE.

CHARLES A. BLACK, JR., OF HIGHTSTOWN, NEW JERSEY.

VENTILATOR-LIFTER.

SPECIFICATION forming part of Letters Patent No. 780,151, dated January 17, 1905.

Application filed August 11, 1904. Serial No. 220,371.

To all whom it may concern:

Be it known that I, CHARLES A. BLACK, Jr., a citizen of the United States, residing at Hightstown, in the county of Mercer and State of New Jersey, have invented new and useful Improvements in Ventilator-Lifters, of which the following is a specification.

This invention has for its object to provide a new and improved device for opening and shutting the sash of greenhouses and other like structures, which is simple in construction, efficient in operation, and which will possess superior advantages in point of economy, durability, and general efficiency.

With these objects in view the invention consists of the details of construction and arrangement which will more fully appear hereinafter.

In the accompanying drawings, which form a part of this application, Figure 1 is a perspective view showing my invention in operative position. Fig. 2 is a detail view of my zigzag lifter-arm. Fig. 3 is another variety of a lifter-arm. Figs. 4 and 5 are modifications of Fig. 2.

Like numerals and letters of reference indicate corresponding parts in the several views.

Referring to the accompanying drawings, A represents the framework of a greenhouse or a similarly-constructed building, consisting of the usual uprights, which serve to support the plate C, which in turn supports the ridge-pole d by means of the rafters e .

A ventilator-plate f is provided, as shown, being fastened in the usual manner to the rafters e and being provided with the usual supports g .

A line-shaft D is provided, being situated near the ridge-pole d , being suspended therefrom by means of the brackets h , said brackets being provided at their ends with journals through which the said line-shaft D rotates.

E designates a standard composed of two sections 6 and 7 of tubing or pipe which rises perpendicular from the floor of the greenhouse, and the upper end thereof is provided with the journal 8, through which revolves the line-shaft D. The sections 6 and 7, comprising the said upright tubular standard E, are joined together by means of the T of four-

way tubular arm 9, the horizontal arms being provided with a reducer r , which serves as a journal to receive the shaft 10, which operates in same. One end of said shaft 10 has keyed thereto the hand-wheel 11 for turning purposes. The other end of shaft has keyed thereto the sprocket-wheel 13, which meshes with the sprocket-chain 14, said chain also meshing with the large sprocket-wheel 15, which is keyed to the line-shaft D and revolves the same when said sprocket-wheel is operated.

A clutch m is provided for locking the apparatus, and the same can be readily unlocked by throwing the same out of mesh.

The lifter-arm, as shown in Fig. 2, consists of a zigzag arm s , the upper end pivotally attached to the ventilator-sash and the lower end passes down through the drum v , which is composed of two parts, the contiguous faces thereof being serrated, and, as can be readily seen, when the said line-shaft is rotated the zigzag lifter-arm s is moved upward or downward, as the case may be.

A catch w is provided consisting of a wire w^2 , one end of which is fastened around the line-shaft D and passes over the side of the drum v , and the other end thereof is fastened around the line-shaft D and, as can be readily seen, serves to keep the zigzag lifter-arm in locked position.

A² designates another variety of lifter-arm and is shown in detail in Fig. 5, the upper end of which is pivotally connected to the free end of the ventilator-sash B². The said lifter-arm A² consists of two parallel members, the upper end of which converges, so as to be readily pivoted to the free end of the ventilator-sash B², and the lower end being curved back upon itself.

A sprocket-chain D² is provided, one end of which is connected to the lower end of the said lifter-arm and the other end connected to the point a^2 , which is situated at the upper end of the lifter-arm. A screw-bolt a' is provided for tightening the sprocket-chain when needed.

The parallel members of the lifter-arm pass on one side of the said line-shaft and are wide enough apart to allow the small sprocket-

wheel c^2 to operate therein and to mesh with the sprocket-chain D^2 , which is situated on the opposite side of the line-shaft D to that of the parallel members of the lifter-arm.

5 Figs. 3 and 4 are modifications of Fig. 5. In Fig. 4 there is only one member and while not so strong as lifter-arm which is shown in Fig. 5 has less weight, and thus is in some cases a great advantage. In Fig. 3 a wire
10 rope is substituted in place of the sprocket-chain, and said rope winds around the line-shaft D and dispenses with the use of the sprocket-wheel c^2 .

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

In a lifter for ventilators, the combination, of a sectional tubular standard, the sections thereof being joined together by means of a
20 T-shaped four-way, a reducer passing through the said way, a horizontal shaft rotating therein, a hand operating-wheel keyed to one end

of said shaft and sprocket-wheel at other end, said sprocket-wheel meshing with line-shaft, line-shaft journaled to sash-rafters, and means 25 for locking and unlocking the hand operating-wheel, a lifter-arm consisting of a zigzag member the upper end of which is pivoted to the ventilator-sash, a drum keyed to said line-shaft said drum consisting of two members 30 having their contiguous faces serrated, said zigzag arm passing down through the said drum, and being operated by same when the said drum is rotated, and a wire for locking the same in position, substantially as set forth 35 and described.

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

CHARLES A. BLACK, JR.

Witnesses:

WATSON S. RALPH,
WILLIS HANCOCK.