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W. O. JOHNSTON & P. J. FOLEY.

SASH LIFTING APPARATUS FOR GREENHOUSES.

APPLICATION FILED AUG. 22, 1902.

NO MODEL.

Fig. 1.

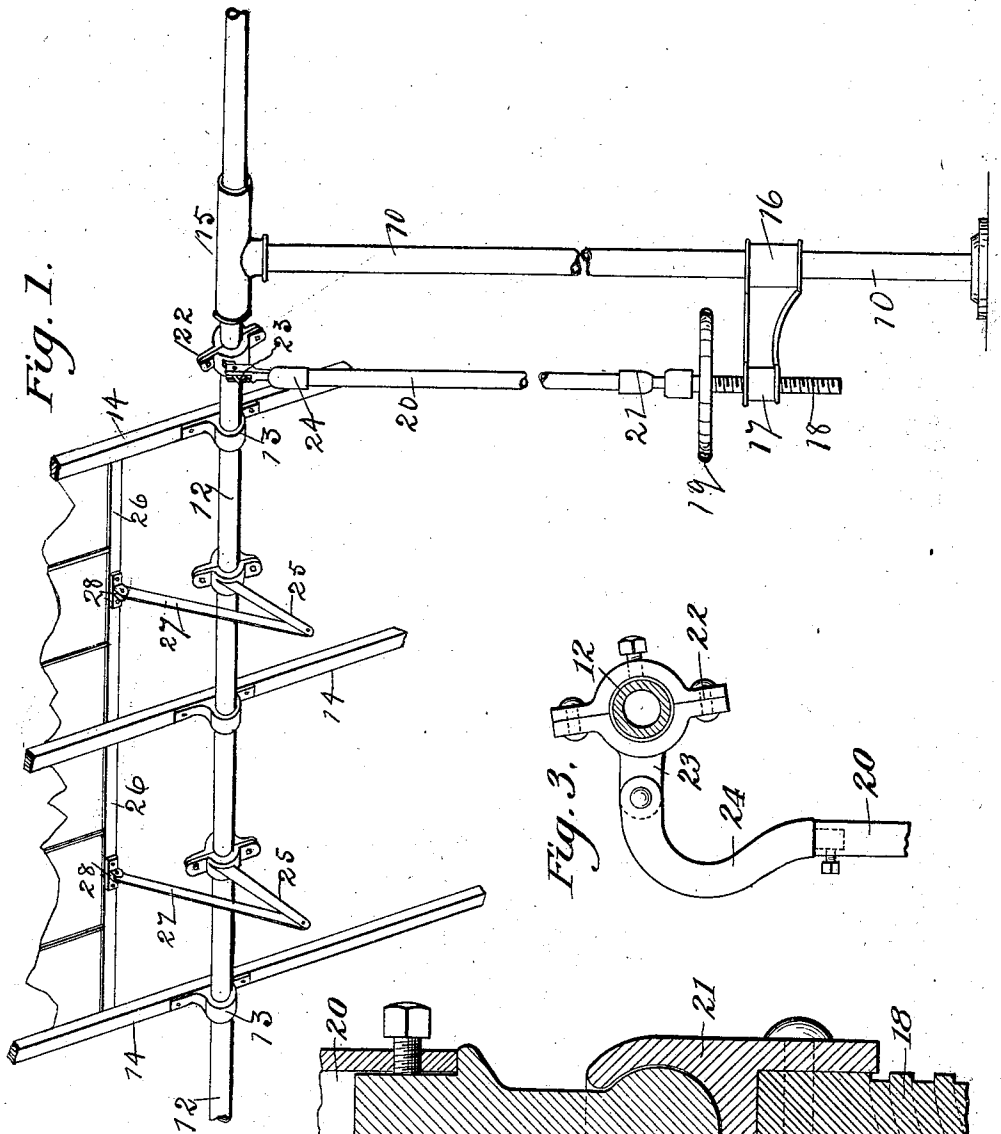
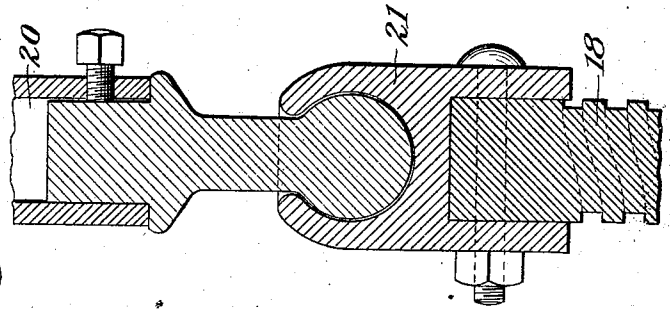


Fig. 3.

Fig. 2.



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UNITED STATES PATENT OFFICE.

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SASH-LIFTING APPARATUS FOR GREENHOUSES.

SPECIFICATION forming part of Letters Patent No. 724,879, dated April 7, 1903.

Application filed August 22, 1902. Serial No. 120,700. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM O. JOHNSTON and PHILIP J. FOLEY, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Sash-Lifting Apparatus for Greenhouses, &c., of which the following is a specification.

Our object is to facilitate raising and lowering sashes in the roofs of greenhouses as required for purposes of ventilation.

A further object is to dispense with the use of gear-wheels and to utilize a bar having a screw at one end for moving the bar longitudinally, as required, to actuate a rock-shaft therewith and sashes connected with the rock-shaft and locking the sashes in closed positions, so no person on the roof can open them to gain admission through the roof.

Our invention consists in the arrangement and combination of parts, as hereinafter set forth, pointed out in our claims, and illustrated in the accompanying drawings, which show our apparatus in position and connected with two parallel sashes, as required, to simultaneously adjust a plurality of sashes by simply operating a screw located within reach of a person on the floor of a greenhouse.

Figure 1 is a perspective view that shows the positions of the different parts relative to each other. Fig. 2 is an enlarged sectional view that shows the preferred way of pivotally connecting the screw and a tubular bar for lifting and lowering sashes. Fig. 3 is an enlarged detail view that shows the preferred way of connecting the top of a vertically-adjustable bar with an arm extending from a rock-shaft.

The numeral 10 designates a fixed post, preferably tubular, that may vary in diameter and height, as required, to suit the building in which it is located.

A rock-shaft 12 is mounted in hangers or bearings 13, fixed to rafters 14 of a roof and rotatably connected with the top of the post 10 by means of a T or elbow shaped bearing 15, fixed to the post as shown or in any suitable way.

A bracket 16 is slidably mounted on and fixed to the lower portion of the post by means of set-screws and provided with a screw-seat 17 at its end. A screw 18 is fitted in the screw-seat and provided with a hand-wheel 19 at its top portion for manually operating the screw. A straight bar 20 is connected with the top of the screw by means of a joint 21, that allows the screw 18 to rotate, as required, to raise and lower the post 20, and with the rock-shaft 12 at its top by means of an adjustable clamp 22, composed of two parts, and an arm 23, that projects outward from the outside member of the clamp, and a bifurcated top end or hinge-iron 24, fixed to the top of the bar and pivotally connected with the arm by means of a pin or bolt extended through coinciding apertures, as shown, or in any suitable way for producing vertical motions of the screw and straight bar, as required, to actuate the rock-shaft.

It is obvious the clamp 22 can be readily adjusted on the rock-shaft 12, as required, to extend the arm 23 at various angles and the rock-shaft thereby rocked in its bearings by means of the screw 18 and the bar 20, that connects the screw and the arm. It is also obvious that the sashes are raised and lowered by the vertical motion of the bar 20, and such motion is imparted to the bar by means of the screw 18 at its lower end in the screw-seat 17, and that when the sashes are closed they will be securely locked by means of the screw, because the bar cannot be moved vertically by any lifting force applied to the sashes for actuating the rock-shaft, as may occur when the shaft to which the sashes are connected can be rotated by force applied to the shaft.

One or more arms 25 are adjustably and detachably clamped fast to the rock-shaft, as shown, or in any suitable way, so they will be in proper position to be connected with the frames 26 of adjustable roof sections or sashes by means of bars 27, pivotally connected with the ends of the arms and hinge-irons 28, fixed to the sashes.

Having thus described the purpose of our invention and the construction and function of each element and subcombination, its practical operation and utility will be readily understood by persons who have climbed

ladders and in various ways heretofore spent time and labor in raising and lowering sashes in greenhouses, and

What we claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for adjusting a roof section or sash in a roof, a fixed post, a bracket having a screw-seat at its end fixed to the post, a screw fitted in the screw-seat, a rock-shaft connected with the top of the post and provided with an arm, a bar pivotally connected with the top of the screw, and a hinge-iron pivotally connected with the top of the bar and with said arm, to operate in the manner set forth for the purposes stated.

2. In an apparatus for adjusting a roof section or sash in a roof, a fixed post, a bracket having a screw-seat at its end fixed to the post, a screw fitted in the screw-seat, a rock-shaft connected with the top of the post and provided with an arm, a bar pivotally connected with the top of the screw, and a hinge-iron pivotally connected with the top of said bar and with said arm and means for adjusting the arm on the rock-shaft, arranged and combined to operate in the manner set forth for the purposes stated.

3. In an apparatus for adjusting sashes in a roof, a fixed post, a bracket fixed to the post and a screw-seat in the end of the bracket, a screw fitted in the screw-seat and provided with a hand-wheel near its top, a straight bar pivotally connected with the top of the screw, a rock-shaft connected with the top of the post, an adjustable arm on the rock-shaft means for fixing and adjusting the arm on the rock-shaft and a hinge-iron for detachably and pivotally connecting the top of the straight bar with said arm, arranged and combined to operate in the manner set forth for the purposes stated.

4. An apparatus for raising and lowering roof sections or sashes on a roof comprising a fixed post, a rock-shaft extended at right angles in a bearing fixed to the top of the post, a bracket having a screw-seat at its end fixed to the lower portion of the post, a screw fitted in the screw-seat, an arm on the rock-shaft, a bar pivotally connected with said arm and said screw, a hinge-iron pivotally connected with the top of said bar and said arm, a plurality of arms fixed to the rock-shaft and bars pivotally connected with their ends and with adjustable roof sections or sashes, all arranged and combined to operate in the manner set forth for the purposes stated.

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