

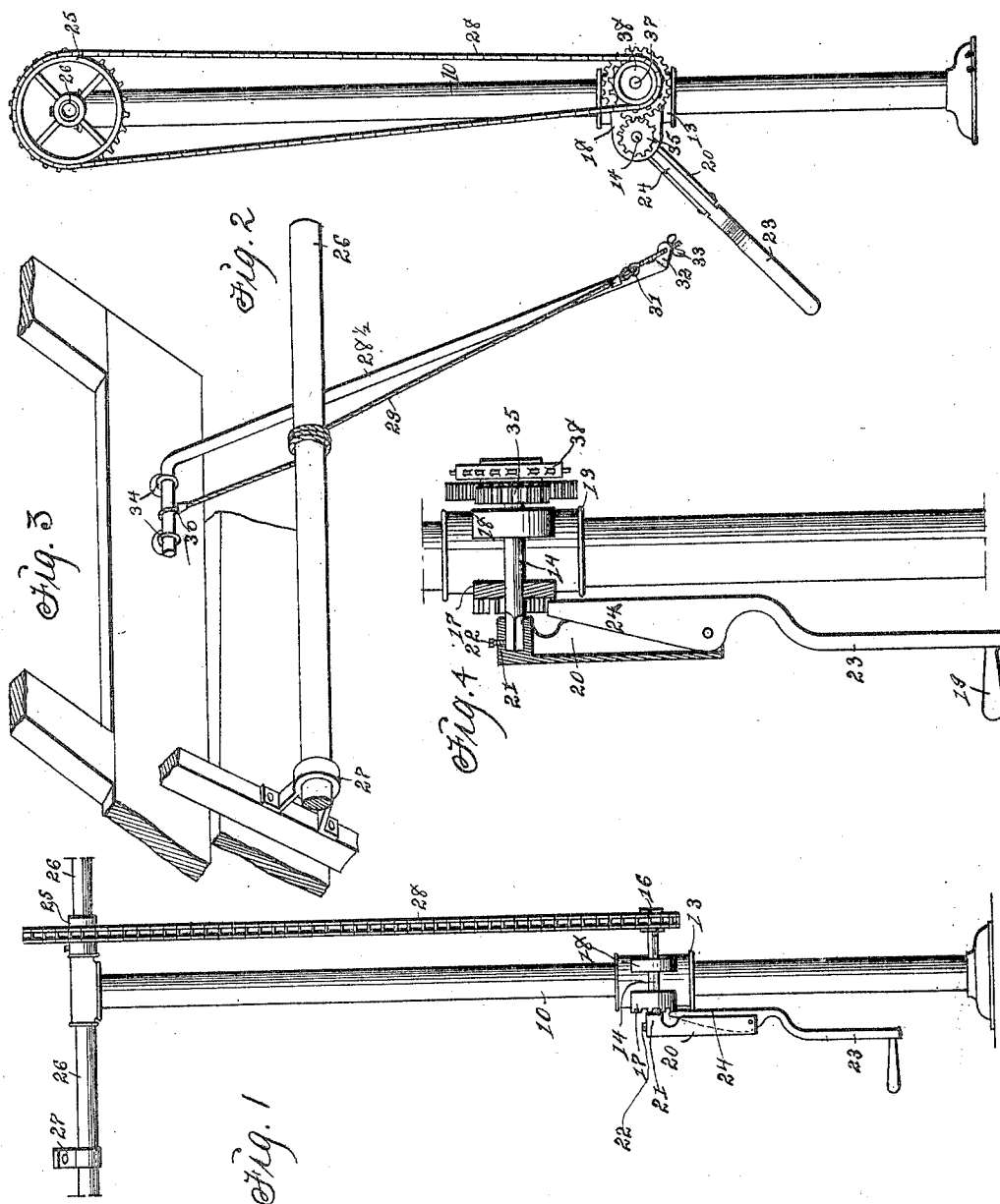
No. 811,506.

PATENTED JAN. 30, 1906.

W. O. JOHNSTON & P. J. FOLEY.
SASH LIFTING APPARATUS FOR GREENHOUSES.

APPLICATION FILED SEPT. 9, 1904.

2 SHEETS—SHEET 1.



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WILLIAM O. JOHNSTON AND PHILIP J. FOLEY, OF CHICAGO, ILLINOIS.

SASH-LIFTING APPARATUS FOR GREENHOUSES.

No. 811,506.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed September 9, 1904. Serial No. 223,933.

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, of which the following is a specification.

Our object is to provide improved means for raising and lowering sashes in greenhouses.

Our invention consists in the construction, arrangement, and combination of elements and subcombinations, as hereinafter set forth, pointed out in our claim, and illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a fixed post, a rotating shaft, and operating mechanism combined with the shaft and the post. Fig. 2 is a view taken at a point of view at right angles to Fig. 1. Fig. 3 is a perspective view that shows a bar and cord connected with the rotatable shaft, as required in practical use to raise and lower a sash connected with the top of the bar that serves as a sash-lifter. Fig. 4 is a detail view that shows gearing adapted to be manually operated by a crank-handle and also locked by the same handle. Fig. 5 shows an improved form of the handle for operating the gearing. Fig. 6 is an edge view of the handle shown in Fig. 5. Fig. 7 is an end view of the handle and shows the rigid part of the handle.

The numeral 10 designates a fixed post for supporting the gearing. It is tubular and has a tubular T-head 11, that serves as a bearing for a rotatable shaft. To the lower portion of the post, as shown in Fig. 2, is fixed a sleeve 13, provided with integral bearings adapted to support a rotatable driver-shaft 14, that has thereon a fixed sprocket-wheel 16 on one end and a handle at its other end. The sleeve 13 has parallel bearings 17 and 18 extending at right angles, and the outer bearing 17 is provided at its circumference with teeth that extend outward.

In Figs. 1, 2, and 4 a handle is shown composed of a part 20, that has a socket 21 at its end adapted to engage the angular end of the shaft 14, as required, for imparting rotary motion to said shaft. It is detachably fastened to the shaft by means of a set-screw 22. The other part of the handle is a bar 23, pivotally connected with the part 20, and its upper end 24 serves as a pawl to engage the teeth on the bearing 17, as required, to lock the shaft 14 in its bearings 17 and 18.

In Figs. 5, 6, and 7 a preferred form of handle is shown extended in length, and the bar that engages the teeth of the bearing 17 is pivoted to the central portion of the handle, and a coil-spring *a* on the handhold *b*, extending at right angles from the handle, normally retains the upper end of said pivoted bar in engagement with the teeth on the bearing 17, as required, to retain the shaft 14 stationary. A bifurcated or duplex eccentric *c*, pivoted to the handhold *b*, has an extension *d*, that by means of the coil-spring *a* is retained at an angle to the handhold *b*, so that by clasping the parts *b* and *d* together in the hand the spring *a* will be compressed and the upper end of the pivoted bar will be disengaged from the teeth of the bearing 17, so the handle can be operated to rotate the shaft 14 to actuate the gearing, as required, to raise and lower sashes.

A sprocket-wheel 25 is fixed on the shaft 26 at the top of the post 10 and in hangers 27, fixed to the rafters, and the two sprocket-wheels are connected by a chain 28, placed thereon to transmit power and motion from the shaft 14 to the shaft 26, and thereby operate the sash-lifting mechanism.

A sash-lifter 28½ in the form of a straight bar complete in one piece and bent at right angles at its top is adapted to serve as a bow and has a wire cable 29, that is coiled on the shaft 26, fixed to its ends by means of a loop 30 at its top and a screw-eye 31 at its bottom, that extends through a screw-seat in the angle 32 at the lower end of the bar. A nut 33 on the end of the screw-eye serves as a means of securing the screw-eye to the rod and also as a means of regulating the tension of the chain. Screw-eyes 34, fixed in a sash, as shown in Fig. 3, allow the horizontal top portion of the bar or sash-lifter 28 to serve as a means for detachably connecting it with a sash that is to be raised to different heights at different times, as required, to regulate the temperature in a building.

In the practical use of our invention the pivoted part 23 of the handle must be adjusted to release the extension 24 from the teeth on the bearing 17 in order to turn the handle, as required, to rotate the shaft 14, that will actuate the sprocket-wheels 16 and 25 by means of the chain 28, as required, to rotate the shaft 26 any fractional part of a revolution that may be desired, and the motion of the shaft 26 will move the cable 29, as required to raise and lower the bar or bow 28½ any degree of elevation for lifting and lowering

a sash connected therewith any space that may be desired and as required for purposes of ventilation.

Fig. 2 shows a modification of the gearing by which the power is increased and the speed of the motion of the rotating shaft 26 diminished.

The shaft 14 is provided with a pinion 35 on its end to engage a gear-wheel on a shaft 37, mounted in parallel position with the shaft 14, as required, to actuate the sprocket-wheel 38 on the shaft 37, and thereby the chain that connects it with the sprocket-wheel on the shaft 26.

Having thus described the purpose of our invention, its construction, application, and operation, its practical utility will be readily understood by persons familiar with the art to which it pertains, and what we claim as new, and desire to secure by Letters Patent, is—

An improved sash-lifting apparatus for greenhouses, &c., comprising a fixed post, a sleeve having integral shaft-bearers and one of the bearers provided with teeth on its outer

end surface, a shaft in said bearers having a fixed sprocket-wheel at one end, a handle connected with the end of the shaft, a bar pivotally connected with the central part of the handle and its top adapted to engage said teeth on the end of the bearer, a handhold fixed to the end of the handle to project at right angles thereto, an eccentric pivoted to the handhold and provided with an extension to overlie the handhold, a coil-spring on the handhold, a rotatable shaft mounted on top of the post and in bearers fixed to rafters and provided with a sprocket-wheel, a chain on the two sprocket-wheels to connect the two shafts and a cable coiled on the upper shaft and connected with the ends of a bar having a right-angled extension at its top extended into fastenings fixed to sashes, arranged and combined as set forth for the purposes stated.

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