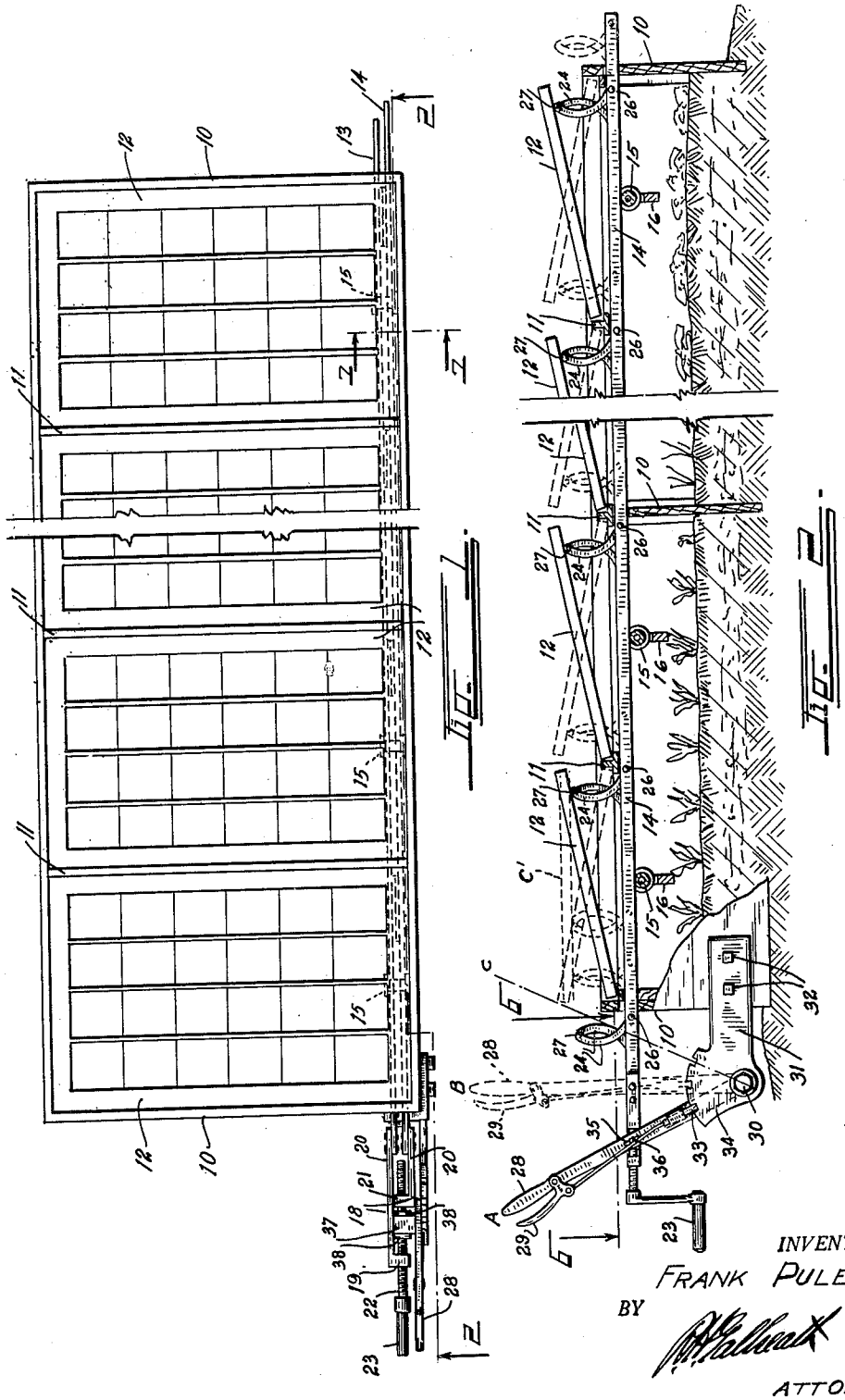
Feb. 7, 1950 F. PULEO 2,496,892

HOT BED SASH OPERATOR

Filed Dec. 11, 1945 2 Sheets-Sheet 1

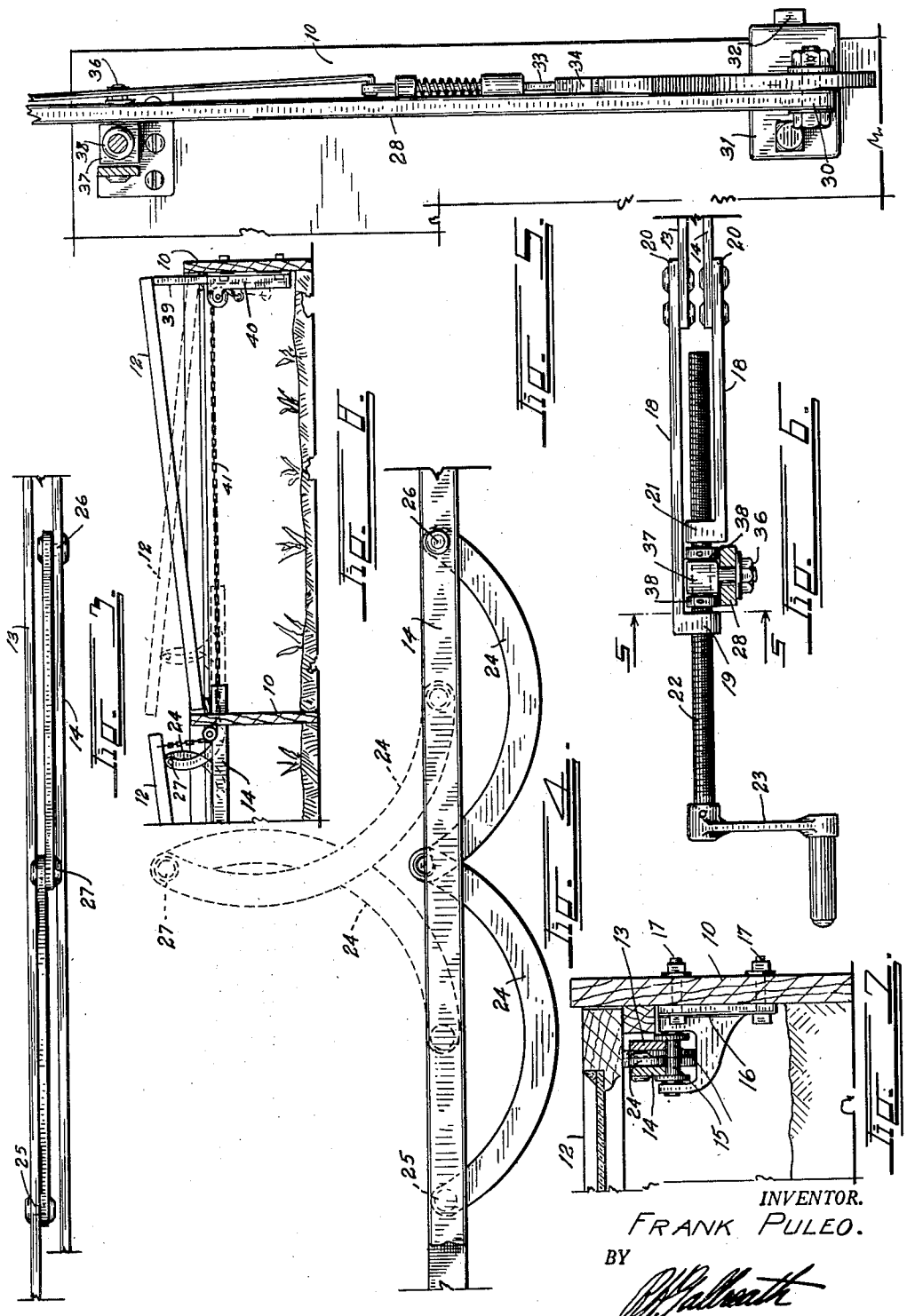


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HOTBED SASH OPERATOR

Frank Puleo, Denver, Colo.

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6 Claims. (Cl. 268—22)

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This invention relates to a hot bed sash operating device for lifting and tilting hot bed sash.

Gardeners' hot beds consist of relatively long boxes containing the proper bedding material for starting and forcing the growth of plants. The boxes are covered by a plurality of sashes. It is desirable during periods of sunshine to block the sash open so as to allow air to circulate about the plants and it is, of course, desirable to open the sides of the sash away from the direction of the wind to prevent chilling wind from blowing into the beds. For instance, should a west wind be blowing, the east side of the sash should be tilted upwardly, and should an east or north wind be blowing, the west or south sides, respectively, of the sash should be tilted upwardly. Since the beds are often exceedingly long and in some cases have hundreds of sash, the lifting and blocking of each individual sash in the proper direction is a time-consuming operation, and it is exceedingly difficult to accommodate the various changes in wind directions.

The principal object of this invention is to provide an exceedingly simple mechanism whereby all of the sash throughout the length of a hot bed can be tilted and supported simultaneously in any desired direction, and which will require less time in its operation of the sash of an entire bed than was formerly required for a single sash.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a plan view of a typical hot bed, with the center portion thereof broken away, illustrating the improved sash operator applied thereto;

Fig. 2 is a longitudinal section of the bed, taken on the line 2—2, Fig. 1;

Fig. 3 is an enlarged, detail top view illustrating the type of sash lifting links as employed in this invention;

Fig. 4 is a side view of the links of Fig. 3;

Fig. 5 is an enlarged, detail section, taken on the line 5—5, Fig. 6;

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Fig. 6 is a horizontal, detail section, taken on the line 6—6, Fig. 2;

Fig. 7 is a similarly enlarged detail section, taken on the line 7—7, Fig. 1; and

Fig. 8 is a longitudinal section through an end sash of a hot bed, illustrating an alternate form of operator.

In the drawing, a typical hot bed frame is indicated at 10, divided by means of partitions or cross bars 11 into a plurality of sash frames. A conventional hot bed sash 12 containing a plurality of glass panes rests in each sash frame. The sash 12 are not attached to the sash frames but are simply retained in place by gravity.

In applying the invention to the hot bed 10, two draw bars 13 and 14 are extended throughout the entire length of the frame 10 across one end of the sash 12, as shown in Fig. 1. The draw bars 13 and 14 rest upon rollers 15 supported in suitable roller brackets 16 (see Fig. 7) which are secured to the side board of the bed 10 by means of suitable bolts 17.

The bars 13 and 14 project from both extremities of the bed and at one extremity the bar 13 is secured to an L-shaped link 18 terminating in a right-hand threaded nut 19. A similar link 20 is secured to the draw bar 14 and terminates in a left-hand threaded nut 21. A threaded lifting screw 22 extends through the nuts 19 and 21, it having a right-hand thread on one-half of its length and a left-hand thread on the other half thereof. The screw 22 terminates in a hand crank 23, or in any other suitable device by means of which it can be rotated.

It can be readily seen that if the crank 23 is rotated, the bars 13 and 14 will be moved in opposite directions due to the opposite threads on the screw 22. This opposite movement of the bars is employed to actuate pairs of arcuate lifting links 24 which are shown in detail in Figs. 3 and 4. One of the links 24 of each pair is hingedly mounted on the bar 13 by means of a pivot member 25. The other link 24 of each pair is similarly mounted on the bar 14 by means of a similar pivot member 26. The free extremities of the two links are hinged together by means of a hinge pin 27.

It can be readily seen that when the bar 13 is moved to the left and the bar 14 is moved to the right, the extremities of the links 24 will be spread, as shown in solid line in Fig. 4, so as to lower the hinge pins 27. If the bar 13, however, is moved to the right and the bar 14 is moved to the left, the pivot members 25 and

26 will approach each other so as to elevate the hinge pin 27, as shown in broken line in Fig. 4. This raising and lowering of the hinge pin 27 is employed for lifting the sash 12, as shown in Fig. 2.

In order to lift either side of each sash, as well as the entire end thereof, means must be provided for moving the pairs of links 24 beneath either side of each sash. This is accomplished by means of a hand lever 28 provided with a latch grip 29. The hand lever is rotatably mounted at 30 on a suitable bracket 31 attached to a corner of the bed 10 by means of suitable bolts 32 or in any other desired manner.

The latch grip 29 operates a latch 33 in a notched sector 34 on the bracket 31 so as to enable the lever 28 to be locked in three predetermined positions, indicated at A, B, and C, Fig. 2. The lever 28 is slotted, as shown at 35, to receive a stud bolt 36 which projects from a thrust bearing 37 surrounding the screw 22, the screw being rotatable in the bearing 37. The bearing 37 is prevented from moving longitudinally of the screw 22 by means of thrust collars 38 thereon or in any other desired manner.

It can be readily seen that when the lever 28 is moved forward and back, it will act through the thrust bearing 37 to move the screw 22 forward and back, causing both bars 13 and 14 to move simultaneously. When the lever is in the dotted line position A of Fig. 2, each pair of links 24 will be positioned beneath the far side of each sash 12, as shown in solid line in Fig. 2, so that when the crank 23 is rotated, the far side of each sash will be elevated. To elevate the near side of each sash, it is only necessary to rotate the crank 23 to lower the links 24 and then shift the lever 28 to the position B of Fig. 2. This places a pair of the links 24 beneath the near side of each sash so that, when the crank 23 is rotated, the near sides thereof will be elevated. To lift the entire end of each sash, the crank 23 is rotated to again lower the links 24 and the lever 28 is moved to the position C. This moves each pair of links sufficiently close to the center line of each sash so that, when the crank 23 is again rotated, the entire end of the sash will be elevated, as indicated in broken line at C', Fig. 2.

It can be readily seen that with the above structure each and every sash throughout the entire length of a hot bed can be inclined and opened on three sides, usually the east, west, and south sides. It is unnecessary to lift the opposite end of the sash as the sash are usually installed with this end toward the north, and it is not desirable to admit north winds to the bed.

It will be noted that, when the lever 28 is moved to the position A or C, one of the pairs of the links 24 will be on the extremity of the bed. Should occasion arise where it is not desired to have this projection, a device such as illustrated in Fig. 8 may be employed for lifting the end frames.

This device comprises a vertically slidable push bar 39 which is vertically movable in a fitting 40 mounted on the end board of the bed 10. A flexible member such as a link chain 41 extends over a suitable pulley 42 in the fitting 40, thence under a second pulley 42 in the next adjacent bed, thence upwardly to connection with the side of the adjacent sash 12. As illustrated in Fig. 8, the device is shown applied to the last sash of the bed. It could, however, be similarly applied to the first sash or any other desired sash in the bed. As illustrated, the near side of each

sash will be elevated directly by the links 24 when the lever 28 is in the position C, as shown in broken line in Fig. 8. When the lever is moved to the position A, however, the links will move from under the last sash to lift the far side of the next to the last sash. As the latter side elevates, it will draw upon the chain 41, causing it to pull the push bar upwardly to similarly elevate the far side of the last sash, as shown in solid line in Fig. 8.

In installations where a lever such as the lever 28 is not desirable, it may be replaced by any equivalent device such as a jack screw, etc. If desired, a motor could be employed to rotate the lifting screw and also to shift the positions of the pairs of links.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A device for tilting the sash of a hot bed having a plurality of adjacent unattached sash comprising: a pair of longitudinally movable draw bars extending in parallel relation throughout the length of said bed across one extremity of each sash; a pair of lifting links positioned on said bars beneath each sash, the links of each pair being hinged together at their one extremity and each link of each pair being pivotally secured to one of said bars at its other extremity so that said latter extremities can be caused to approach or separate from each other by relative movement of said bars to raise and lower the hinged-together extremities thereof to lift said sash; and means for imparting relative opposite movement to said bars; and a second means for simultaneously moving both bars in the same direction so as to move the hinged-together extremities from one side of each sash to the opposite side of the next adjacent sash so that the sash may be tilted in either desired direction.

2. A device for tilting the sash of a hot bed comprising: a pair of longitudinally movable draw bars extending in parallel relation throughout the length of said bed across one extremity of each sash; a pair of lifting links positioned on said bars beneath each sash, the links of each pair being hinged together at their one extremity and each link of each pair being pivotally secured to one of said bars at its other extremity so that said latter extremities can be caused to approach or separate from each other by relative movement of said bars to raise and lower the hinged-together extremities thereof to lift said sash; means for imparting relative movement to said bars; and means for moving both bars longitudinally in unison to position said pairs of links beneath desired points of said sash to tilt the latter in a plurality of directions.

3. A device for tilting the sash of a hot bed comprising: a pair of longitudinally movable draw bars extending in parallel relation throughout the length of said bed across one extremity of each sash; a lifting means for each sash carried by said bars and actuated in consequence of relative movement between said bars for contacting and lifting said sash; a threaded shaft having right and left-hand threads; a right-hand nut and a left-hand nut threaded on said shaft; means for connecting each of said nuts to one of said bars; means for rotating said shaft to im-

part relative movement to said bars; and means for moving said threaded shaft longitudinally to impart simultaneous movement to both bars so as to move said lifting means to any desired position relative to said sash for selectively tilting the latter.

4. A device for tilting the sash of a hot bed comprising: a pair of longitudinally movable draw bars extending in parallel relation throughout the length of said bed across one extremity of each sash; a lifting means for each sash carried by said bars and actuated in consequence of relative movement between said bars for contacting and lifting said sash; a threaded shaft having right and left-hand threads; a right-hand nut and a left-hand nut threaded on said shaft; means for connecting each of said nuts to one of said bars; means for rotating said shaft to impart relative movement to said bars; a thrust member rotatably mounted on said threaded shaft; means for preventing longitudinal movement of said thrust member on said shaft; and means connected with said thrust member for moving said shaft longitudinally to impart simultaneous movement to both bars.

5. A device for tilting the sash of a hot bed comprising: a pair of longitudinally movable draw bars extending in parallel relation throughout the length of said bed across one extremity of each sash; a lifting means for each sash carried by said bars and actuated in consequence of relative movement between said bars for contacting and lifting said sash; a threaded shaft having right and left-hand threads; a right-hand nut and a left-hand nut threaded on said shaft; means for connecting each of said nuts to one of said bars; means for rotating said shaft to impart relative movement to said bars; a thrust member rotatably mounted on said threaded shaft; means for preventing longitudinal movement of said thrust member on said shaft; a lever; and means connecting said lever to said thrust member for moving said shaft longitudinally.

6. A device for tilting the sash of a hot bed comprising: a pair of longitudinally movable draw bars extending in parallel relation throughout the length of said bed across one extremity of each sash; a lifting means for each sash carried by said bars and actuated in consequence of relative movement between said bars for contacting and lifting said sash; a threaded shaft having right and left-hand threads; a right-hand nut and a left-hand nut threaded on said shaft; means for connecting each of said nuts to one of said bars; means for rotating said shaft to impart relative movement to said bars; a thrust member rotatably mounted on said threaded shaft; means for preventing longitudinal movement of said thrust member on said shaft; a lever; means connecting said lever to said thrust member for moving said shaft longitudinally; and means for setting said lever in predetermined positions.

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