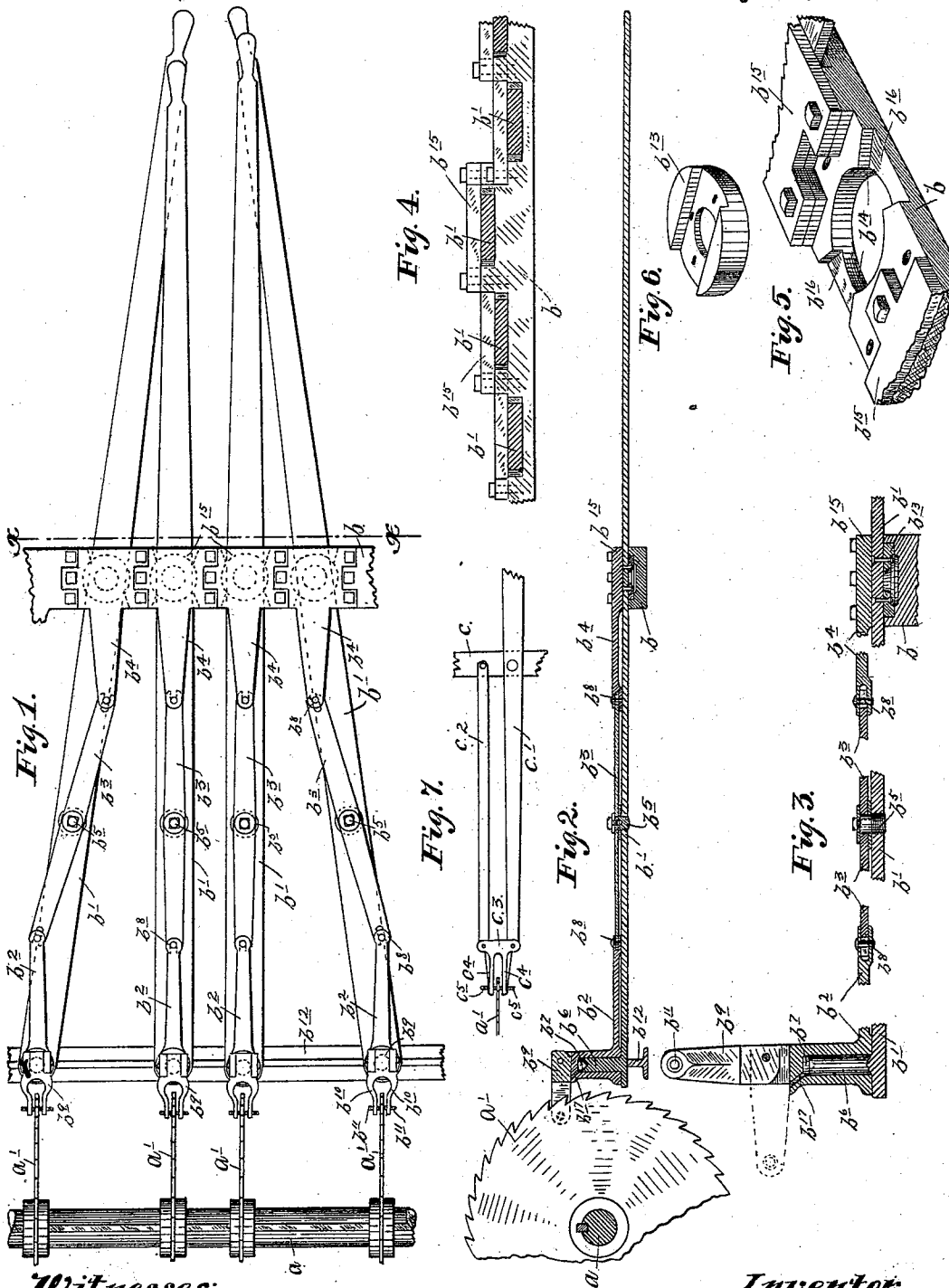


(No Model.)

C. F. NYBERG.
SAW SHIFTER FOR GANG EDGERS.

No. 539,637.

Patented May 21, 1895.



Witnesses:

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C. F. Kilgore. By his Attorney.

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CHARLES F. NYBERG, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO JOSEPH A. GILLARD, OF SAME PLACE.

SAW-SHIFTER FOR GANG-EDGERS.

SPECIFICATION forming part of Letters Patent No. 539,637, dated May 21, 1895.

Application filed January 15, 1895. Serial No. 535,021. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. NYBERG, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Saw-Shifters for Gang-Edgers, &c.; 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 saw shifters, for gang edgers and other machines, which have a series of saws adjustable on a common arbor; and has for its object to provide an improved device of this kind.

To this end the invention consists in the novel devices and combinations of devices, hereinafter fully described and defined in the claims.

The invention is illustrated in the accompanying drawings, wherein like letters refer to like parts.

Figure 1 is a plan view of a part of a gang-edger or other machine having a series of saws on a common arbor with my improvements applied thereto. Fig. 2 is vertical longitudinal section through one of the saw-shifters when all the levers are in line with each other and in their normal position or plane of the saw. Fig. 3 is a sectional view of the saw-shifter, similar to Fig. 2, but on a larger scale, with some parts broken away and the jaw-head or yoke of the saw-engaging lever turned into its uppermost position. Fig. 4 is a cross-section on the line XX of Fig. 1, looking from the right. Fig. 5 is a perspective view of the fulcrum-seat for one of the primary levers, and Fig. 6 is a similar view showing the pivot block or disk detached. Fig. 7 is a plan view of a modified form of saw-shifter.

a represents a saw-arbor, and *a'* a series of saws, mounted on the said arbor and adjustable lengthwise of the same, for setting the saws to different spaces, in respect to each other.

Considering first a single saw and a single shifter, *b* represents a cross-bar, extending parallel with the saw-arbor, and at some distance on one side of the same, and shown as in the horizontal plane.

b' represents a main or primary lever pivoted to the cross-bar *b* and shown as adapted for operation by hand and as a lever of the first class.

b² is a saw engaging lever, which is carried by the primary lever and is pivoted thereon.

b³ is a compensating lever, which is also pivoted to the primary lever, and has one end pivotally connected to the outer end of the saw engaging lever *b²*, and has its other end pivotally connected to an arm or support *b⁴*, projecting inward from the cross-bar *b*. The lever *b³* has its fulcrum or pivot *b⁵* at its center. The pivotal connection between the lever *b²* and the lever *b'* is formed by a vertical pintle *b⁶* on the inner end of the lever *b'* engaging with the socket *b⁷*, on the lever *b³*. The lever *b³* is connected to the lever *b²* and the rigid arm *b⁴* by slot and pin connections as shown at *b⁸*. The pivotal center of the primary lever *b'* is in the same plane as the particular saw controlled thereby, when the said saw is in what may be called its normal or position in which it is most run. The lever *b²* is provided with a jaw-head or yoke *b⁹*, pivoted to the top of the socket body *b⁷*, and provided with a pair of jaws *b¹⁰*, adapted to embrace the saw and having fitted therein adjustable set-screws *b¹¹*, for fixing the clearance for the saw, at any desired amount, and for taking the strain when adjusting the saw.

The levers *b'*, *b²*, *b³*, and the rigid arm *b⁴* are so constructed and related, that when the saw controlled by the particular shifter is in its above assumed normal position, the pivotal centers of all the said levers and the said levers themselves will all stand in the same plane as the saw, controlled thereby. The distance from the pivotal center of the primary lever *b'* to the pivotal center of the saw engaging lever *b²* is as shown equally divided by the three intervening pivotal points *b⁵* and *b⁸*; or otherwise stated, the two arms of the lever *b³*, the outer arm of the lever *b²* and the length of the rigid arm *b⁴*, inward of the pivotal point of the primary lever, are all shown equal. Hence, under the pivotal or angular motion of the primary lever *b'*, the saw engaging lever *b²* will not only be carried thereby, so as to adjust the saw, but will also be turned on its pivot, so as to maintain the parallelism

of the same, with respect to its original or normal position and all other intermediate positions. For example, the relative positions of the parts of the saw-shifter, when in their
 5 above assumed normal position, with all the parts thereof in line with the saw, are illustrated by the two central members of the saw shifters, as shown in Fig. 1; and the positions
 10 which the parts of a given saw-shifter will take, in respect to each other and the saw controlled thereby, when adjusted out of the above assumed normal position, in either direction, from the normal position, are illustrated by the front and rear members of the
 15 said saw shifters. Shown in Fig. 1. By inspection of this view, it will be seen, that the saw engaging lever b^2 always remains in the same plane as the saw, no difference what may be the position of the primary lever b' . There
 20 will, therefore, be no tendency to buckle the saw on account of the angular motion of the primary lever b' . The lever b^3 and its connections, therefore constitute a parallel motion device or compensating device, for offsetting the angular motion which would be otherwise
 25 produced on the saw engaging lever b^2 , by the primary lever b' , so as to maintain the parallelism of the said saw engaging lever in all possible positions.
 30 b^{12} is a guide-rail or rest, underlying the loaded or inner ends of the primary levers b' , and serving to hold the saw shifters in their proper horizontal positions. Each of the primary levers has bolted thereto, a fulcrum disk
 35 b^{13} , which is adapted to work in a corresponding seat b^{14} , formed in the cross-bar b , as best shown in Figs. 5 and 6. The lever with its fulcrum is dropped into position from above and is held down by a cap-plate b^{15} , which,
 40 when in position, is bolted to the top of the cross-bar, as shown in Figs. 1 and 4. The said cam-plates b^{15} have tongue and notch engagement with each other, so that the said parts will interlock and be firmly held together.
 45 The bar b is cut away, as shown at b^{16} , in Fig. 5, so as to afford clearance for the angular movement of the lever b' .

It is necessary to have an independent shifter for each of the several saws; and to
 50 afford the requisite power, the handle arms of the said levers must be of considerable length. Some provision must therefore be made to provide clearance for the levers to pass each other, under their angular adjustments. I accomplish this result by having
 55 the fulcrum seats for adjacent levers in staggered relation, in respect to each other, in the vertical plane, as best shown in Fig. 4 of the drawings. For example, between any two of
 60 the primary levers b' , which have their fulcrum seats in the same level, two other levers will be located which have their seats in different levels, both in respect to each other and to the pair of seats which occupy a common
 65 level. Under this arrangement, of the fulcrum seats, for the primary levers b' , any pair

of the said levers which lie in a common level, will be sufficiently far apart to permit the angular movements thereof, without interference with each other, and the said two levers
 70 will clear the intermediate levers, because moving in different planes.

Having regard to the modification shown in Fig. 7, the principle of the parallelogram is employed for maintaining the parallel motion
 75 of the saw engaging lever. To the cross-bar c , both the primary lever c' and the lever c^2 are pivoted. The saw engaging lever c^3 is in the form of a link connecting the inner ends of the levers c' and c^2 . The lever c^2 is of the
 80 same length as the inner arm of the lever c' and is parallel therewith. Hence, under the angular movement of the primary lever c' , the lever c^2 will always move through the same angular distance and preserve its parallelism with the lever c' ; and the link-like
 85 lever c^3 will always remain parallel with the saw arbor. The lever c^3 is provided with jaws c^4 which embrace the saw a' and have set-screws c^5 which operate in the same way as
 90 the corresponding parts of the lever b^2 . In both forms, the saw embracing jaws of the saw engaging lever should be of sufficient length to permit the in and out motion of the said lever, without disengagement of the saw.
 95 The form of saw-shifter, shown in Fig. 1, is preferable to the form shown in Fig. 7, because more compact, in respect to the lateral space required.

It will be observed that in both of the above
 100 illustrated forms, the device comprises, broadly considered, a saw-engaging lever for engagement with the saw, and a pair of controlling levers, connected to said saw-engaging lever at points off-set from each other;
 105 the controlling lever being arranged to move the saw-engaging levers, and to hold the same always parallel with the saw; and, further, that the above is accomplished solely by lever connections, without the use of guides for the
 110 saw-engaging lever.

Referring to the preferred form, the socket body b^7 is provided with an oil duct b^{17} , leading to the socket and pintle bearing, and adapted to be closed by the jaw-head or yoke b^9 when
 115 in its working position.

It is obvious, that either of the two forms of saw-shifter herein disclosed, is of simple and cheap construction.

Modifications in the construction herein disclosed may be made without departing from the broad principle of my invention. For example, the saw engaging lever b^2 and the rigid arm b^4 have been shown in Fig. 1, as of equal length; and the two arms of the lever b^3 have
 120 also been shown of equal length. It will be understood, however, that the relative lengths of these various parts or arms are simply a matter of proportion. The dimensions of the several arms may be varied, relative to each other,
 125 provided the proper proportional lengths are provided for, with respect to the different piv-

otal points, so as to maintain the parallelism of the saw engaging lever under all the angular movements of the primary lever b' .

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A sawshifter, comprising a saw-engaging lever and a pair of controlling levers connected to said saw-engaging lever at points offset from each other, and arranged to move said saw-engaging lever and to hold the same always parallel with the saw, substantially as described.

2. A saw shifter, comprising a primary lever, a saw engaging lever pivoted on and carried by the primary lever, and a compensating lever centrally pivoted to said primary lever and having one end pivotally connected to said saw engaging lever, and having the other end pivotally connected to a fixed arm or body, with the said fixed arm, and the arm of the

saw engaging lever connected thereto, all of the same length, substantially as and for the purposes set forth.

3. The combination with the cross-bar b , of the primary lever b' , pivoted to said cross-bar, and provided with the pintle b^6 , of the saw engaging lever b^2 having the socket b^7 , engaging said pintle and provided with the pivoted jaw-head or yoke b^8 , the lever b^2 pivoted to the lever b' and having one end connected by slot and pin to the lever b^2 , and its other end connected by slot and pin to the fixed arm b^4 , all constructed and operating substantially as and for the purpose set forth.

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

CHARLES F. NYBERG.

Witnesses:

JAS. F. WILLIAMSON,
JOSEPH A. GILLARD.