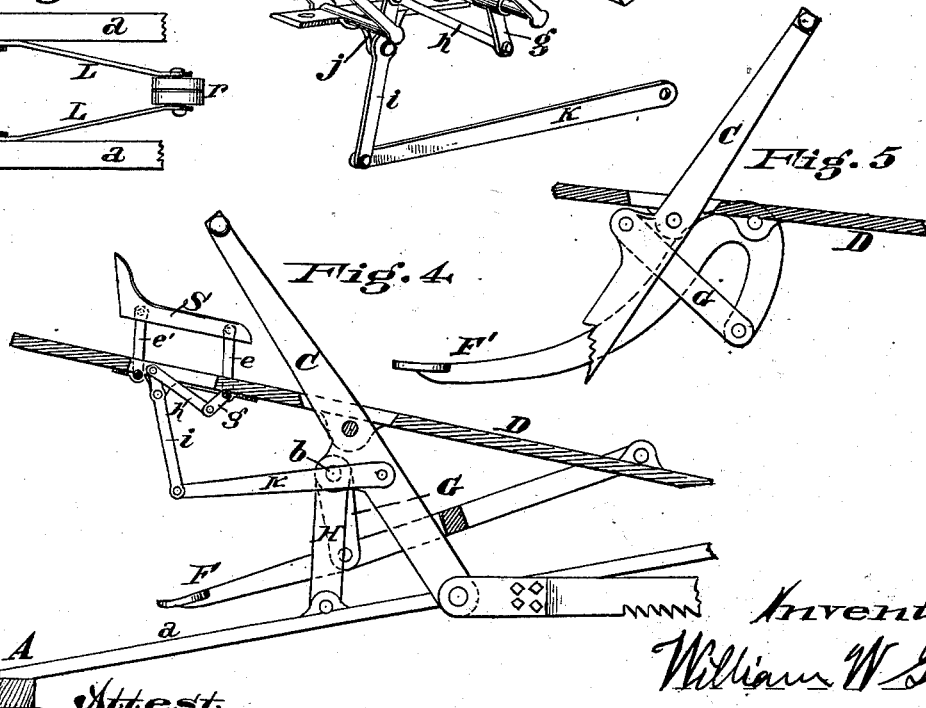
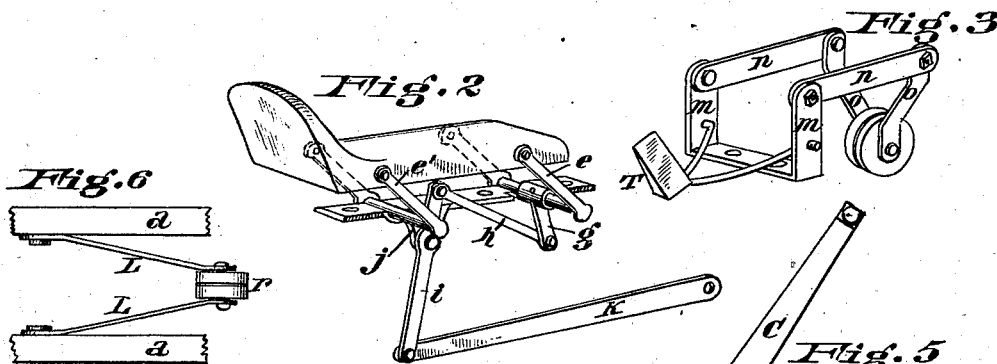
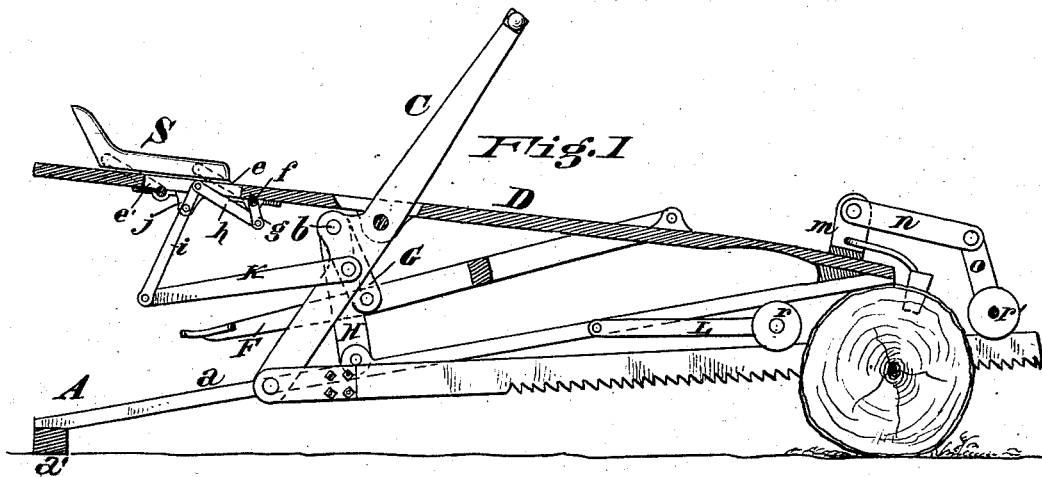


W. W. GILES.
 Drag-Sawing Machine.

No. 216,669.

Patented June 17, 1879.



Attest

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UNITED STATES PATENT OFFICE.

WILLIAM W. GILES, OF CINCINNATI, OHIO.

IMPROVEMENT IN DRAG-SAWING MACHINES.

Specification forming part of Letters Patent No. **216,669**, dated June 17, 1879; application filed March 17, 1879.

To all whom it may concern:

Be it known that I, WILLIAM W. GILES, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Sawing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of the specification, in which—

Figure 1 is a sectional elevation of a sawing-machine showing my improvements. Fig. 2 is a perspective view of the saddle and its connections. Fig. 3 is a perspective view of the forward roller-weight and its frame, together with the wedge. Fig. 4 is a sectional elevation of the machine, showing the saw and operating mechanism in positions opposite to those shown in Fig. 1. Fig. 5 is a side elevation of a modification in the form and support of a foot-lever, and Fig. 6 is a plan view of the inner weight-roller and its connections with the frame of the machine.

Similar letters of reference indicate corresponding parts in the several figures of the drawings.

My invention has for its object to improve the construction and operation of the sawing-machine for which Letters Patent of the United States were granted and issued to me dated October 1, 1878, No. 208,472; and to this end it consists, first, in combining with the machine an independently-moving seat or saddle, and mechanism for connecting it with the main operating-lever, for the purpose of more completely utilizing the weight and muscular force of the operator to drive the saw.

It also consists in an improved arrangement of the foot-levers or treadles and their connections.

It also consists in the employment of devices to prevent the saw from buckling when in operation, and to keep it from whipping in the kerf of the log or other object being sawed.

In the accompanying drawings, A represents the frame of the machine, consisting of two long sills, *a a*, firmly united at their forward ends, so as to rest upon the log or other object to be sawed, and connected at their rear diverging ends by a cross-piece, *a'*, which forms a base to support the frame upon the ground.

D is the seat-board, joined to the front end of the frame at an acute angle, and extending backward over the frame to a point near its rear end.

C is the main lever, pivoted in an upright position in a slot of the spring-seat board. H H are supporting-braces projecting upward from the sills and pivoted at *b* to a rear extension of the operating-lever under the seat-board. These parts constitute the main features of the machine to which my improvements are applied.

In order to utilize the full effect of the operator's weight in moving the saw in both directions, I add certain devices to the machine, which I will now proceed to describe.

In my former invention I used two foot-levers or treadles, F, connected with the working-lever C in such a way that the weight of the operator being transferred to his feet should aid in thrusting the saw forward, at the same time affording a standing support by which the muscular effort of the operator in drawing the upper ends of the lever backward with his arms should be rendered easier and more effective. In order to accomplish this result more perfectly, I attach to the treadles F two short connecting-links, G, uniting them with the main lever C upon the rear pivot, *b*. The treadles F being pivoted at their forward ends to the spring-board D, the weight of the operator, being relieved from the seat upon the spring-boards and transferred to the treadles at their rear ends, tends to elevate the spring-board D, and by consequence the main lever; and the pivot *b* and braces H, operating as a fulcrum, the effect of the leverage is to throw the saw forward.

To facilitate the movement of the saw backward, I provide an independent seat, S, above the rear portion of the spring-board, mounted upon a system of levers, by which the relative movement of the body of the operator backward when thrusting the main lever C forward with his arms is utilized to aid the same result.

The saddle S is mounted upon and held above the spring-board by parallel supporting-braces *e e'*, pivoted to the saddle and to the spring-board. The two forward braces, *e*, are rigidly secured to a pivot or shaft, *f*, which is journaled in the spring-board, and which carries a crank, *g*, projecting below. From the pin of the crank *g* a connecting-rod, *h*, extends to the upper end of a lever, *i*, pivoted to

a lug, *j*, on the under side of the spring-board; and another connecting-rod, *k*, connects the lower end of this lever with the main operating-lever C at a point below its central pivot. By this system of levers the weight of the operator's body upon the saddle and its backward pressure, caused by the effort of thrusting forward the handles of the lever, operates to aid the movement of the lever in that direction. The weight of the operator also operates through the spring-board and the main pivot of lever C (the supporting-braces H operating as a fulcrum) to move it in the same direction.

A modified form of the treadles and connections is shown in Fig. 5, in which the lever F' is curved upward and pivoted to the spring-board D at a point nearer the working-lever than in the case described, and then bent back upon itself in a V-curve. The link G connects the front end of the bent lever with the rear pivot of the working-lever C, as before. By this means the pressure of the foot upon the treadle is made more directly operative upon the working-lever, and a gain in power results.

The saw may be pivoted to the lower end of the operating-lever, or made with a notch to drop over a pin passed through the lever. If the latter mode of connection is employed the saw can be readily applied and removed when desired without taking out the pivot-pin.

In working a crosscut-saw with this machine it is sometimes desirable to weight the saw in order to cut faster. It is also desirable to prevent the whipping of the saw-blade, from whatever cause, in the kerf. I accomplish both these results by providing rollers or sheaves *r r'*, set in frames and adapted to ride upon the saw-blade, of sufficient weight to hold the saw to its work, yet so braced as to prevent its lateral vibration. One of these operates between the bars *a a* of the frame, between two braces, L L, pivoted laterally to the inner sides of the frame and holding the roller *r* between their free ends. If desired, the arms may be made adjustable on the frame to change the position of the roller on the saw. The other sheave, *r'*, is set in an adjustable frame, so as to be adapted to pass over logs of different sizes and rest upon the saw beyond. The frame consists of two standards, *m m*, rising from the end of the supporting-frame, two horizontal braces, *n n*, pivoted thereto and extending beyond the end of the machine, from the ends of which braces depend two short suspension-braces, *o o*, between the ends of which the sheave *r'* is pivoted. The pivots connecting the horizontal braces *n n* and the suspension-braces *o o* are provided with set or thumb screws, by which the proper adjustment of the parts is secured. The sheaves have a narrow slot cut in their periphery, in which the saw travels and is guided.

The operation of the machine and parts is easily understood. The frame of the machine being placed in position with its rear end upon

the ground and its front end on the log to be sawed, the saw is adjusted to its place, and the sheaves *r r'* placed upon it. The operator then takes his seat in the saddle S, with his feet resting lightly upon the treadles, and grasps the handles of the lever C. The weight of the operator, aided by a thrust of his arm forward, throws back the saw, when, by transferring his weight to the treadles and aiding the movement by drawing back the lever C, the saw is thrust forward, and the saddle and spring-board raised into position for a repetition of the first movement. The alternation of these movements causes the saw to travel back and forth into the kerf and cut the log. T is a wedge, pivoted or hinged by an arm to the saw-frame, so that it can be swung forward and driven into saw-kerf to prevent the saw from binding in the log.

It will be apparent that the machine can be applied with great advantage to any of the purposes to which such mechanical power is desirable, such as propulsion of vehicles, boats, and machinery, as well as for sawing ice, stone, &c.

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

1. The combination, with the seat-board and the operating-lever pivoted thereto, of the rising-and-falling saddle connected to the operating-lever by means of links, for the purpose specified.

2. The combination, with the seat-board, the operating-lever, and the treadles, of the rising-and-falling saddle connected to the operating-lever by means of links, substantially as described, for the purpose specified.

3. The rising-and-falling saddle S, connected to the operating-lever by the crank *g*, connecting-bar *h*, pivoted rod *i*, and rod K, substantially as described, for the purpose specified.

4. The combination, with the operating-lever pivoted to the spring-seat board, of the treadles F and the fulcrum formed by the braces H and pivot *b*, whereby the operator is enabled to apply his full weight as well as muscular strength in making the forward cut with the saw.

5. The combination, with the operating-lever pivoted to the spring-seat board, of the treadles F, the fulcrum formed by the braces and pivot, as aforesaid, and the rising-and-falling saddle connected to the operating-lever by means of links, whereby the alternate movements of the saw are effected, substantially as described.

6. The sheave attachment consisting of the frame *m n o*, the sheave, and the wedge, substantially as described.

In testimony of which invention I hereunto set my hand this 13th day of March, A. D. 1879.

WILLIAM W. GILES.

Witnesses:

EDW. GURNEY,
EDGAR J. GROSS.