

(No Model.)

C. SAWYER.

DRAG SAW.

No. 266,534.

Patented Oct. 24, 1882.

Fig. 1.

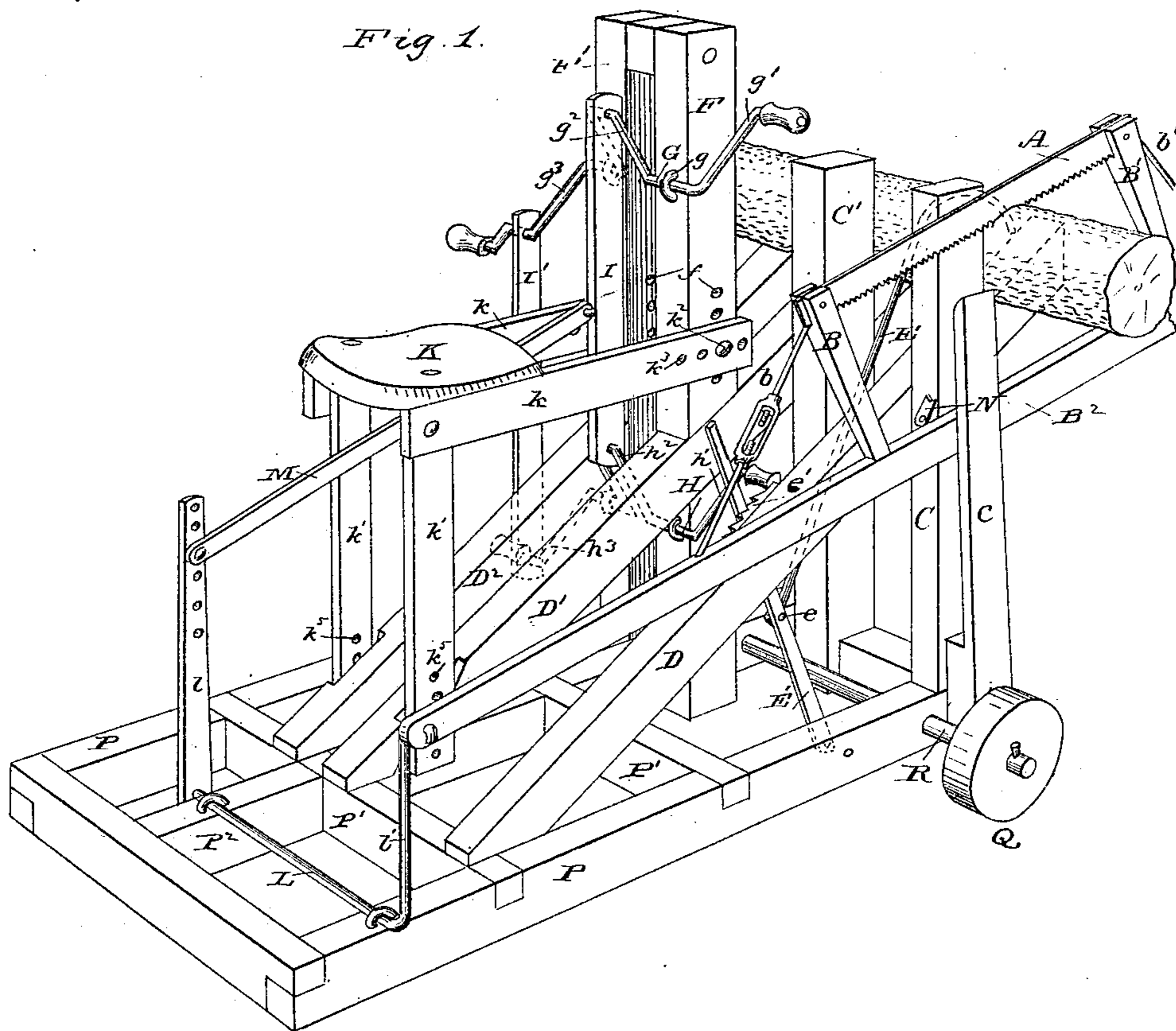
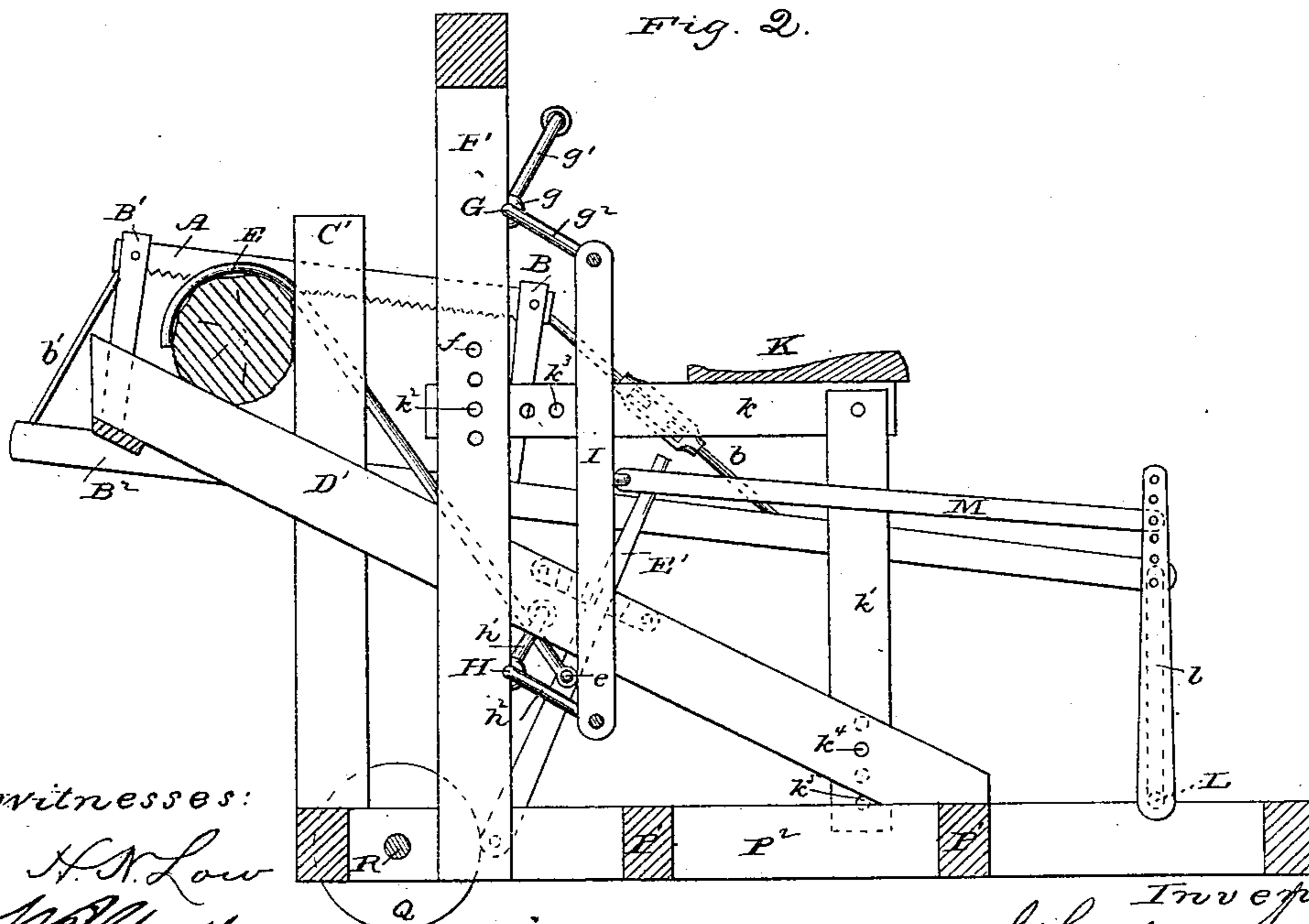


Fig. 2.



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DRAG-SAW.

SPECIFICATION forming part of Letters Patent No. 266,534, dated October 24, 1882.

Application filed February 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SAWYER, a citizen of the United States, residing at Morris, in the county of Stevens and State of Minnesota, have invented certain new and useful Improvements in Drag-Saws; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in the construction and manner of operation of drag-saws.

Referring to the drawings, Figure 1 is a perspective view of my invention. Fig. 2 is a vertical longitudinal section.

Similar letters refer to similar parts.

A is the drag-saw, of any preferred and suitable construction, which is mounted at its ends in the standards B B'. These standards project upwardly from a reciprocating and substantially horizontal bar, B², of such weight and material as are found desirable, to which they are secured at their bases, being also stayed in position by means of rods b b'. The stay-rods, in connection with any suitable shortening device, may be used to tighten the saw. The bar B² is guided in its reciprocation by the vertical post C and keeper c, which latter is secured to the post in such a manner as to leave a space between it and the post of substantially the same width as the bar B², in which the bar may be moved up and down. A stick of wood which is being sawed is supported in the angle formed by the vertical posts C C' C² and the projecting ends of the braces D D' D², and for additional security is held firmly in position in the angle by means of the hook or holding-rod E. This hook is operated by a hand-lever, E', within reach of the operator's position, to which lever it is pivoted at point e, the lower end of the hand-lever being pivoted to the bed-frame. Attached to the inner surface of the brace D is a ratchet, e', which holds the hand-lever, and through it the hook, in position against the wood. The posts C C' C² and braces D D' D² are secured at their lower ends to a suitable bed-frame, P P' P².

F F' are posts situated near the front of the machine and immediately behind the frame for holding the wood, and secured to the braces D² D³, and also at their lower ends to the bed-frame. Near the upper end of these posts a shaft, G, is mounted horizontally in bearings g. This shaft is provided at its ends with hand-cranks g' g³, and also with an intermediate crank, g², which revolves in the space between the posts F F'. Near the lower end of these posts is mounted a shaft, H, having similar cranks, h' h² h³, the cranks h' h³ being for the feet of the operator, and the crank h² being connected with the crank g² by the bar I. One of the foot-cranks, h³, is also connected to the corresponding hand-crank, g³, by a similar bar, I'. The lengths of the cranks and bars are such that the shafts G and H are made to revolve simultaneously. The object of the supplemental connecting-bar I' is to insure that these shafts shall revolve continuously in the same direction, and that one shaft shall not stop at the dead-center and rotate in the contrary direction while the other shaft continues its revolution. It is obviously necessary to this end that the cranks g² h² shall not be parallel to the cranks g³ h³. As they revolve the connecting-bar I is thrown from one side to the other of the posts F F', remaining all the time in a vertical position.

K is the seat or saddle for the operator. It is supported by means of the horizontal bars k, to which the seat is secured, and which are supported at one end by the vertical pieces k' and at the other end on the posts F F' by removable pins k². The posts F F' are provided with holes f and the bars k with similar holes, k³, by means of which the bars can be adjusted both vertically and longitudinally, to regulate the distance of the seat from the cranks and to secure that inclination which permits the most economical application of power by the operator. The pieces k' can also be adjusted vertically on the braces D² D³ by means of pins k⁴ and holes k⁵, the bars k and k' being connected pivotally to admit of this adjustment.

L is a shaft mounted horizontally and transversely in the bed-frame behind the operator, and having two crank-arms, l l', which project upward. The upper end of arm l is pivoted to a connecting-rod, M, of the proper de-

gree of stiffness, which is pivoted at its other end to the bar I. The crank-arm l' is pivoted to the end of the bar B^2 , and reciprocates it. The arm l is provided with a series of holes, so that by changing the point of connection of the rod M up or down the throw of the saw is regulated.

At one end of the base-frame I have mounted a shaft, R, and set of wheels Q, by means of which, after lifting the other end of the frame, my machine may be easily transported. On again resting the end having no wheels upon the ground the machine remains firmly in position.

The manner of operation of my machine is as follows: The operator having raised the bar B^2 and secured it by means of the support N, placed at a proper height, and having placed the stick to be sawed in position between the saw-blade and the bar B^2 , the saw is dropped upon the wood, and the operator, taking his seat upon the saddle, by means of the hand and foot cranks applies the power necessary to reciprocate the saw in a very advantageous and economical manner, as will readily be seen. The wood is held firmly in position by a device which is peculiarly useful in combination with my machine. It consists of the lever E, pivoted to the base-frame, and having a handle which projects upwardly to a point within reach of the operator; hook E', pivoted to lever E' at e and adapted to be pulled down upon the wood; and ratchet e' , with which the operator in his seat can engage the lever E', and so hold the hook in position. After having sawed off a portion of the stick the operator, without leaving his saddle, disengages the hook E, raises the saw to its position upon the support N, and shoves the wood along the proper distance, again secures the wood by the lever and hook, and after releasing the saw continues his work. It will be easily seen that any wood-securing device which requires the operator to leave the position in which he works would be very inconvenient in my machine on account of trouble of dismounting from the saddle.

The advantage of using the operation of gravity to keep the saw in engagement with the wood, by means of a saw-frame of proper weight, over a spring for the same purpose, as shown in United States Patent No. 14,462, is obvious, for the pull of the former is constant and not variable, and to utilize the gravity of the saw-frame and avoid the binding of the saw in the wood, a frame of the construction I have devised is very advantageous.

It will be readily seen that one set of cranks only may be used, operated by either the hands or the feet, dispensing with the bars I I' and connecting the bar M to the crank, directly or by any simple mechanical contrivance, as a bell-crank. By increasing the degree of inclination of the seat, the front end being lower, the weight of the operator is thrown more directly and effectively upon the foot-crank.

I do not wish to be limited to the arrange-

ment of the shafts G and H in the same vertical plane, for it may under some circumstances be more advantageous to adjust the operator's seat more directly over the cranks, and if the shaft G should then be mounted vertically above the shaft H it will be too near the operator for the use of the hand-crank.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. As a means for operating a drag-saw, the combination of the shafts G and H, rotated respectively by hand and foot cranks, connecting-bars I I', which cause the rotation of said shafts to be simultaneous and in the same direction, and the link M, rock-shaft L, and crank-arms l l' , which arms connect said shaft with the link M and bar B^2 , whereby the power is transmitted from the connecting-bar I to the bar B^2 , substantially as shown and described.

2. The combination, with the reciprocating saw, of the crank-shafts G and H, adapted to be rotated by the hands and feet and connected by links, so as to revolve together, and means for transmitting the motion of the cranks to the saw, substantially as shown and described.

3. The combination, with the reciprocating saw, of the crank-shafts G and H, adapted to be rotated by the hands and feet, connected by links, so as to revolve together, and connected by an adjustable link to the rock-shaft, whereby the motion of the cranks is transmitted to the saw, substantially as set forth.

4. The means for adjusting the seat horizontally relative to the power-crank, consisting of the upright bars k' , pivoted to the main frame, and the bars k , pivoted to the bars k' and longitudinally adjustable on the main frame, substantially as shown and described.

5. The means for adjusting the seat vertically, consisting of the bars k , carrying the seat and pivoted at one end to the main frame, and the uprights k' , pivoted to the bars k and vertically adjustable on the main frame, substantially as set forth and described.

6. The means for adjusting the seat relative to the power-crank, consisting of the combination of the upright bars k' , adjustably pivoted to the main frame, and bars k , carrying the seat and vertically adjustable upon the main frame, substantially as shown and described.

7. The combination, with a drag-saw adapted to operate in a vertical plane, of the frame for mounting the saw, consisting of the gravitating bar B^2 below the saw, and supports which connect the bar B^2 and the saw-blade, said bar B^2 being arranged to lie below the wood and keep the saw-blade in engagement with the wood by the action of gravity, substantially as set forth and described.

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

CHARLES SAWYER.

Witnesses:

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A. L. CHOLLAR.