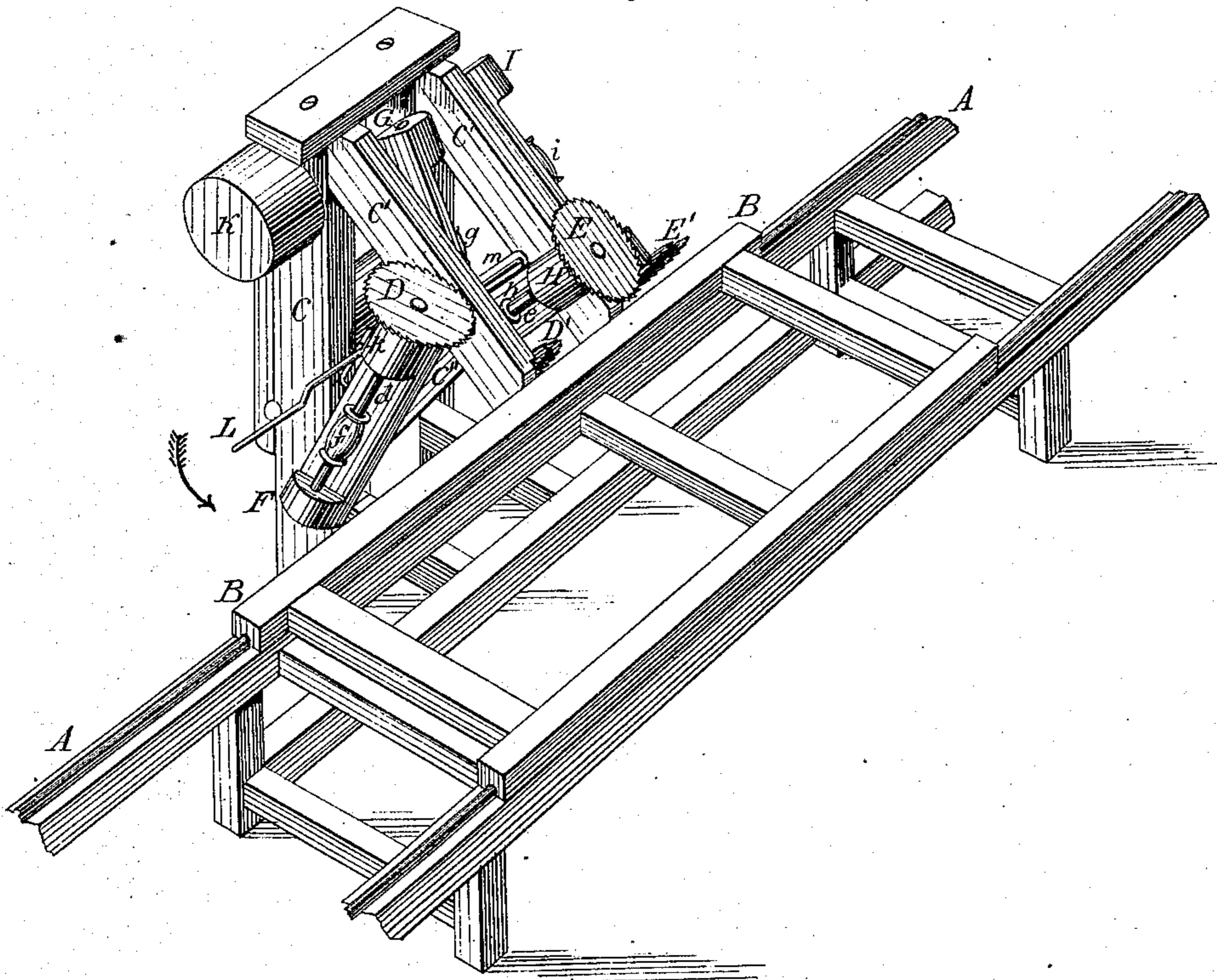


N. M. MILLER.  
Sawing-Machine.

No. 160,939.

Patented March 16, 1875.

Fig. 1.



Attest:  
*M. F. Hasselck*  
*A. Connolly*

Inventor:  
*Niles M. Miller,*  
*by Louis Bagge,*  
*att'y.*

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Fig. 2.

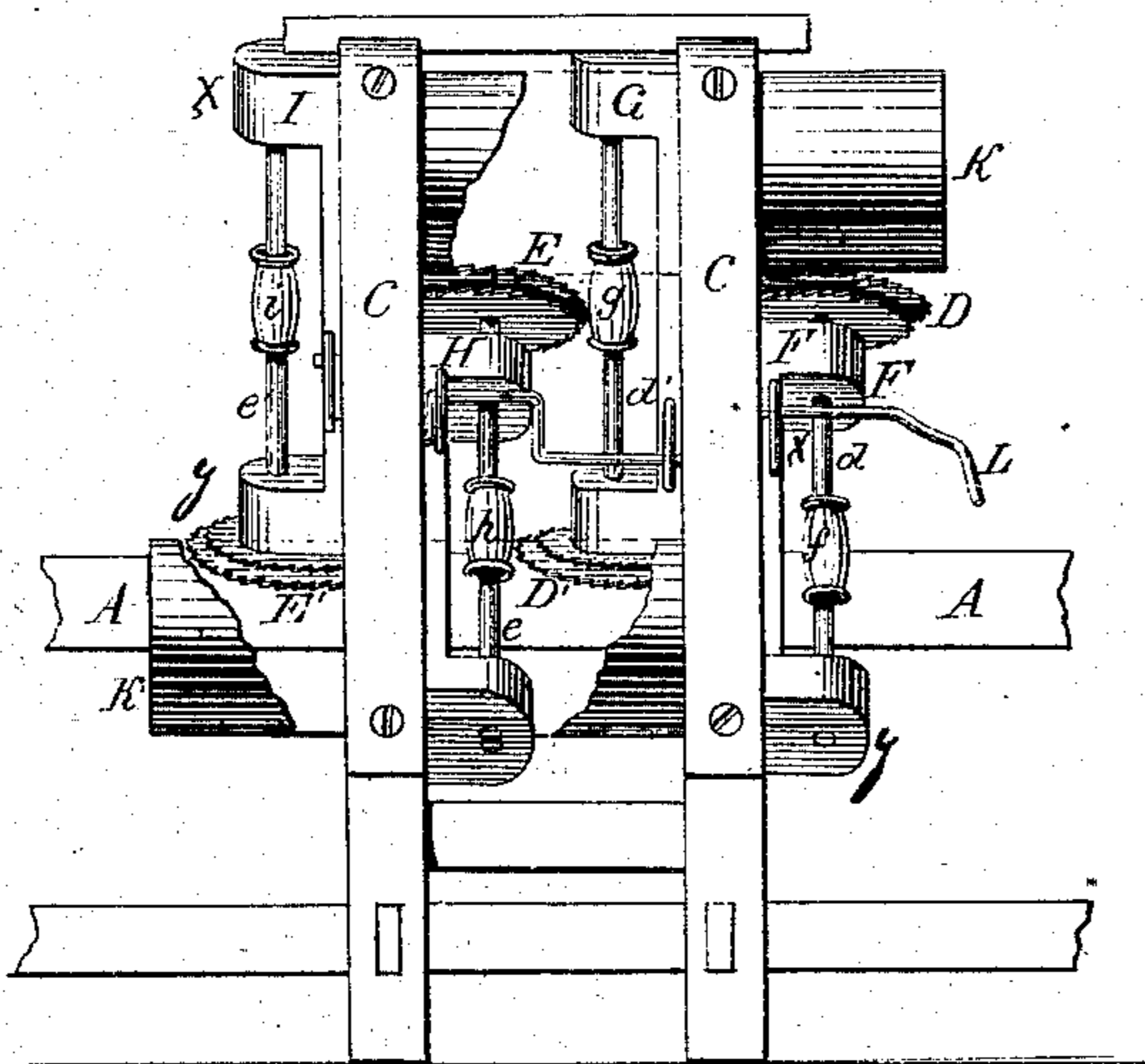
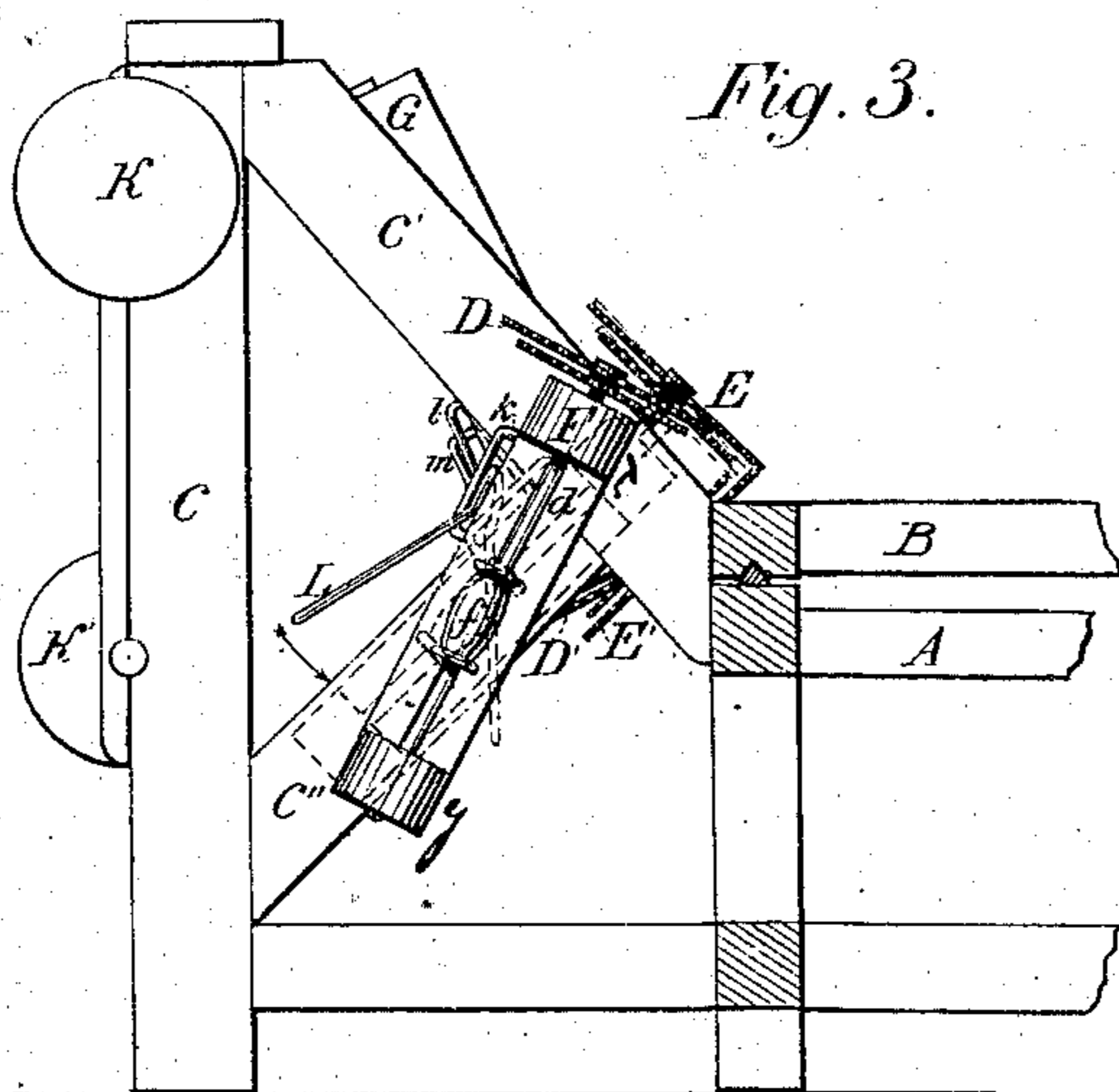


Fig. 3.



Attest  
M. F. Halleck  
C. A. Moley

Inventor:  
Niles M. Miller,  
by Louis Bagge  
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# UNITED STATES PATENT OFFICE.

NILES M. MILLER, OF MOLINE, ILLINOIS.

## IMPROVEMENT IN SAWING-MACHINES.

Specification forming part of Letters Patent No. 160,939, dated March 16, 1875; application filed December 15, 1874.

*To all whom it may concern:*

Be it known that I, NILES M. MILLER, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Sawing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view. Fig. 2 is a rear elevation of the frame carrying the saws, with the belt-drums K K' partially removed to show the arrangement of saws more plainly; and Fig. 3 is a side elevation of the saw-carrying frame.

Similar letters of reference indicate corresponding parts in all the figures.

My invention consists in the combination of a series of adjustable circular saws, arranged in sets of two saws placed at an angle to each other, with a lever so arranged that by it one set of saws may be brought into action and another set thrown out of action by one and the same operation, and without stopping the machine.

My improved machine is particularly useful in the cutting and shaping of V-shaped wooden troughing or battens, but it may be used to advantage for many other purposes; and the alternating principle embodied in it and hereinafter described may be used to great advantage in saw-mills generally.

A is the table; B, the carriage; and C is the frame carrying the saws. This latter consists of two uprights, connected with the table so as to face its side by beams C' C''. In the frame is secured a series of circular saws, D D' E E', each of which is rigidly attached to the end of a shaft, *d d' e e'*. These shafts are journaled in corresponding adjustable bearings F G H I, which are pivoted to the beams of the saw-frame in such a manner that the pulley on each shaft by which the saw is operated is just opposite the pivoting-point, so that the pulley and pulley-band of each saw will retain substantially its position, without regard to the adjustment of the bearing, shaft, or saw. In the uprights C of the frame are

journaled two drums, K K', by which the pulleys *f g h i* are operated by belts or endless bands, in the usual manner.

In the machine represented in the drawing are shown two sets of saws, each set consisting of two saws. D D' is one set, and E E' is the other. But a greater number of sets may be used without departing from the spirit of my invention. The sets are so arranged in the frame that the bearings and shafts of each set form angles, and the saws secured to the ends of said shafts (of a set) will accordingly fall in planes of corresponding angles. Thus, by reference to the drawing, it will be seen that the saws D D' are at right angles, or nearly so, to each other, and so are the corresponding shafts *d d'* and bearings F G. It will also be seen by Fig. 1 that in the position of the saws therein shown, only one set, E E', presents angular cutting-surfaces to the table and carriage, while the other set D D' is thrown out of the way—that, is, their peripheries do not fall within the side of the table or carriage nearest them.

This adjustment of the sets in their relation to each other is effected by a lever, L, which works in sliding boxes secured to each of the bearings, F, G, H, and I. This lever is journaled in the frame, and, after entering the frame, is bent in a series of right angles, as shown in Fig. 2. The horizontal projecting parts of the lever engage with the sliding boxes *k, l, m, and n* by passing through them, so that, by turning the lever L by its crank or handle, each set of saws is alternately thrown into or out of operation. In the position of the lever shown in Fig. 1 on the drawing, the set E E' is shown in operation; but by moving the lever in the direction indicated by the arrow, this position would be reversed, and D D' would become operative, while E E' would be inoperative. The object of this is to enable my machine to cut the lumber or planks without regard to from what side it is fed. The plank to be cut up into troughs or battens being placed upon the carriage B, this is, by hand or by any suitable mechanism, moved against the saws E E'. A V-shaped cut is thus made in the side of the plank, and after its whole length has passed the saws the lever L is turned, and the carriage, traveling back, now

feeds the plank to the saws D D', which make a cut corresponding to that of E E', their angle being the same. With every movement of the carriage the position of the saws is reversed, and this reversion may be effected automatically by suitable mechanism, so that there is no stoppage in the operation until the plank is used up.

It is obvious that two or more saws may be placed upon each shaft, so as to cut a number of troughs or battens, varying in size, by one running through of the plank. These may be cut of any thickness of wood by placing rings of a width corresponding to the desired thickness of wood upon the shafts between the saws.

It is also obvious that the saws and their shafts may be so arranged in their bearings as to cut the lumber at any desired angle. This adjustment can be made in a variety of ways, preferably by journaling the shafts in boxes *x*

*y*, that may be moved sidewise on the bearings F G H I, and secured, by set-screws or otherwise, in any given position, without changing materially the position of the respective pulley relative to the pivoting or swinging point of the bearing.

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

The combination of the saws D D' E E', arranged in adjustable bearings F G H I, substantially as described, with a lever, L, substantially as and for the purpose hereinbefore set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

NILES M. MILLER.

Witnesses:

BARTON H. MILLER,  
FRANK BEERY.