

T. Harper,

Circular Sarring Machine.

N^o 50,119.

Patented Sep. 26, 1865.

Fig. 1.

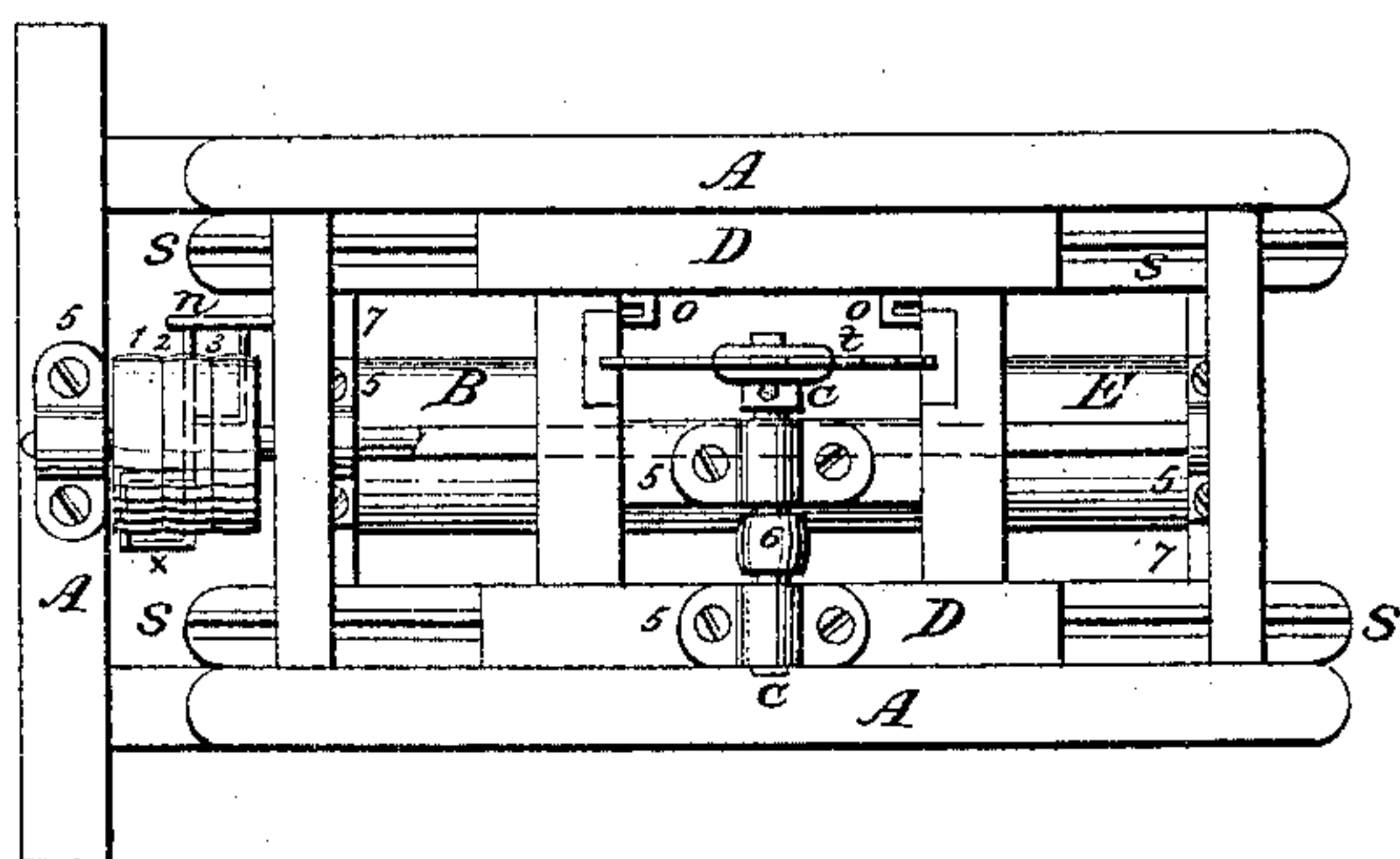
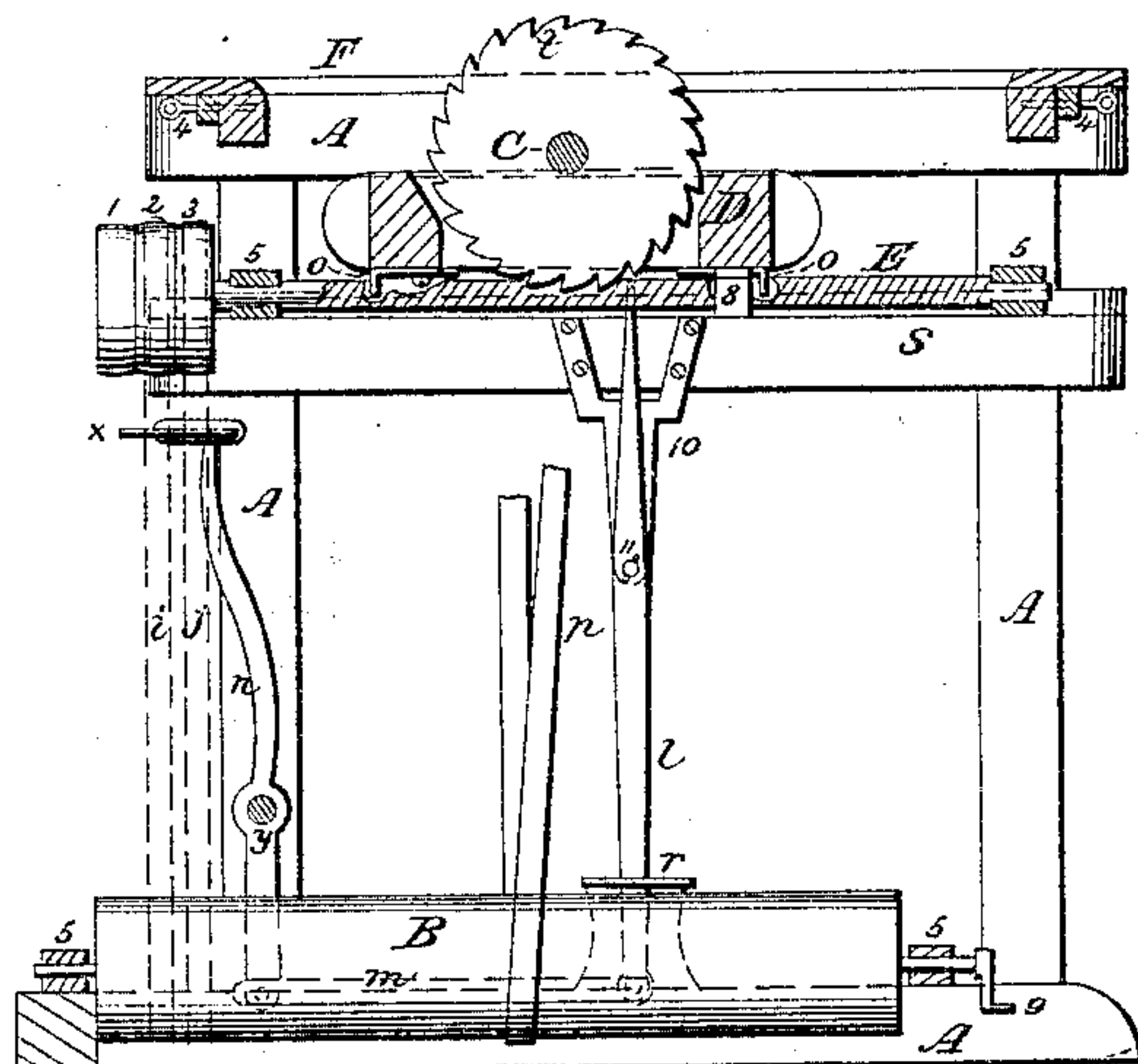


Fig. 3.

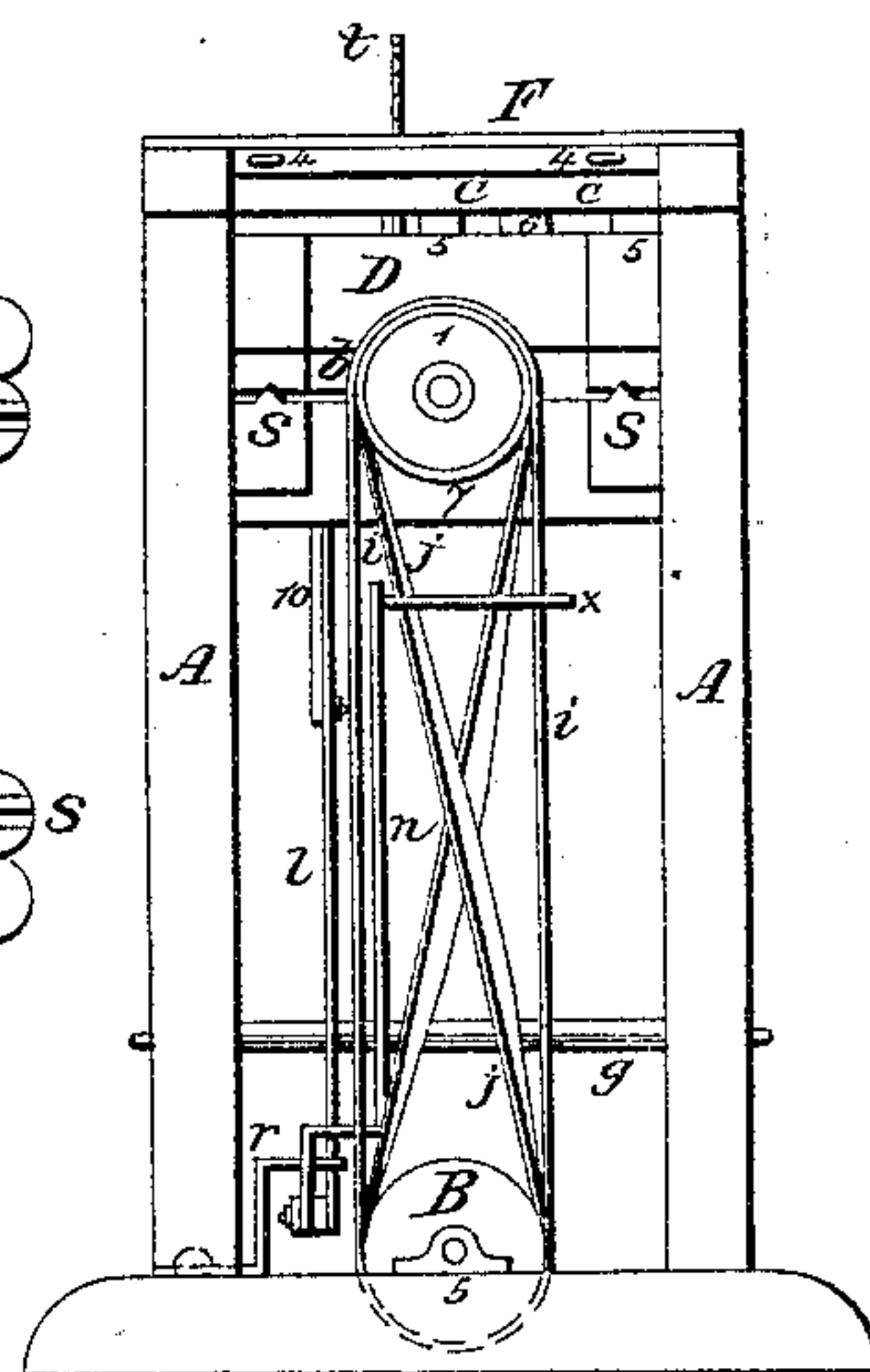


Fig. 2.

Witnesses.

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THOMAS HARPER, OF WEST MANCHESTER, PENNSYLVANIA,

IMPROVEMENT IN SAWING-MACHINES.

Specification forming part of Letters Patent No. 50,119, dated September 26, 1865.

To all whom it may concern:

Be it known that I, THOMAS HARPER, of West Manchester, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Automatic and Reciprocating Circular Saws; and do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the use of a long drum in combination with pulleys, belts, screw, sliding-frame, circular-saw, and levers, the whole being arranged, constructed, and operating in the manner herein-after described.

To enable others skilled in the art of constructing circular-saws to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, Figure 1 represents a longitudinal section of my improved automatic and reciprocating circular saw. Fig. 2 represents an end view of the same. Fig. 3 represents a top view of the same, with the top or table board removed.

In the drawings, A represents the frame-work of the saw, the construction of which will be readily understood by reference to the drawings. The size of the frame and the material used for constructing it I leave to the skill and judgment of the mechanic. B represents the long drum, which is arranged in the position represented in the drawings. It will be observed that the outer edge of the drum B is arranged on a line with the center of the pulley 6 on the saw-mandrel C. This is necessary for the perfect running of the belt which drives the saw. The proper arrangement of the drum B and pulley 6 is clearly shown in Fig. 3.

C represents an ordinary saw-mandrel furnished with its pulley 6 and draw *t*. This mandrel is secured to the sliding frame D, which is placed on slides *s*, which are secured to the frame A. On the under side of the frame are two shifting-pieces, *o*, which are held in the desired position by means of set-screws. These pieces *o* are used for operating the lever *l*, which moves the levers *m* and *n*, and thereby change the position of the belts *i* and *j*. There is also on the under side of the sliding frame D a screw-

nut, in which is placed the screw E, which is furnished with pulleys 1, 2, and 3. The pulleys 1 and 3 are what are termed "loose pulleys" and the pulley 2 is what is termed a "tight pulley." The screw E is permanently secured to the cross-bars 7 of the slides *s* by means of journal-boxes 5. The lever *n* is placed on the cross-piece *y*, and to the lower end of lever *n* is attached a lever, *m*, which is attached to the lower end of the lever *l*, which is hung on the piece 10, which is secured to the slides *s*. It will be observed that the lever *l* oscillates on the pin 11 of the piece 10. On the upper end of the lever *n* is placed the belt-shifter *x*, which is of ordinary construction. Its form is clearly shown by dotted lines in Fig. 3.

r represents a guide for the lower end of the lever *l*.

p represents a section of the belt which is used for driving the saw *t*. This belt is placed on the long drum B and over the pulley 6. The belts *i* and *j* are also placed on the long drum B and over the pulleys 1, 2, and 3.

F represents the top or table board, and is secured to the frame A by means of pins 4.

5 in all the drawings represents journal-boxes.

The distance which the sliding frame will travel without reversing the motion of the saw will depend on the position of or distance between the shifting-pieces *o*.

The operation of my invention is as follows: Having all things constructed and arranged as herein described, I apply power to the crank 9, which will turn the drum B, which will move the belts *p*, *i*, and *j*, which will turn the pulley 6, which revolves the saw *t*. The screw E will be turned by the belts *i* and *j* coming on the pulley 2. Now, when the belt *i* is over the pulley 2 then the belt *j* (which is a cross-belt) will be over pulley 3, and when the belt *j* is over pulley 2 then the belt *i* (which is a straight-belt) will be over the pulley 1. It will be observed that the belt *i*, when it is over the pulley 2, will turn the screw E in one direction, and when the belt *j* is over pulley 2 it will turn the screw in an opposite direction. The turning of the screw E will cause the screw-nut 8 to travel along the screw, which will cause the frame D to move along on the slides *s*, and when one of the shifting-pieces *o* comes in con-

tact with the upper end of the lever *l* it will move the lever which moves levers *m* and *n*, which will change the belts *i* and *j* on the pulleys 1, 2, and 3—that is to say, if the belt *j* was on pulley 3 and belt *i* on pulley 2, the belt *i* would be changed onto pulley 1 and belt *j* onto pulley 2—which would reverse the motion of the screw *E* and cause the frame *D* to travel in an opposite direction. Thus the frame *D*, with its saw *t*, will travel back and forward by the turning of the screw *E*, which will turn in a different direction at each change of the belts *i* and *j* on the pulleys 1, 2, and 3, which change will take place every time the shifting-pieces *o* come in contact with the upper end of the lever *l*.

It will be observed that the belt *p* travels back and forward on the long drum *B*. As the sliding frame *D* moves so moves the belt *p*, to keep in harmony with the pulley 6.

The advantages of my improvements are as follows: By the use of the long drum in connection with the belts, pulleys, screw, levers, and shifters I make the saw automatic in its action, and also give to it a reciprocating mo-

tion, causing it to travel up to the work and back from it, thereby dispensing with the labor of at least one man in sawing lumber—to wit, the labor of the man who draws the frame and saw up to the work, which now is the practice where saws placed in sliding frames are used. The pressure of the saw on the work will be more regular and even by the use of my invention, and the operator can with greater ease and with more certainty guide his work to the saw.

Having thus described the nature, construction, operation, and advantage of my improvement in automatic and reciprocating circular saws, what I claim as of my invention is—

The arrangement of the drum *B*, pulley 6, sliding frame *D*, screw *E*, pulleys 1, 2, and 3, levers *l*, *m*, and *n*, and shifting-pieces *o*, the whole being constructed, arranged, and operating substantially as herein described, and for the purpose set forth.

THOMAS HARPER.

Witnesses:

JAMES J. JOHNSTON,
ALEXANDER HAYS.