

(No Model.)

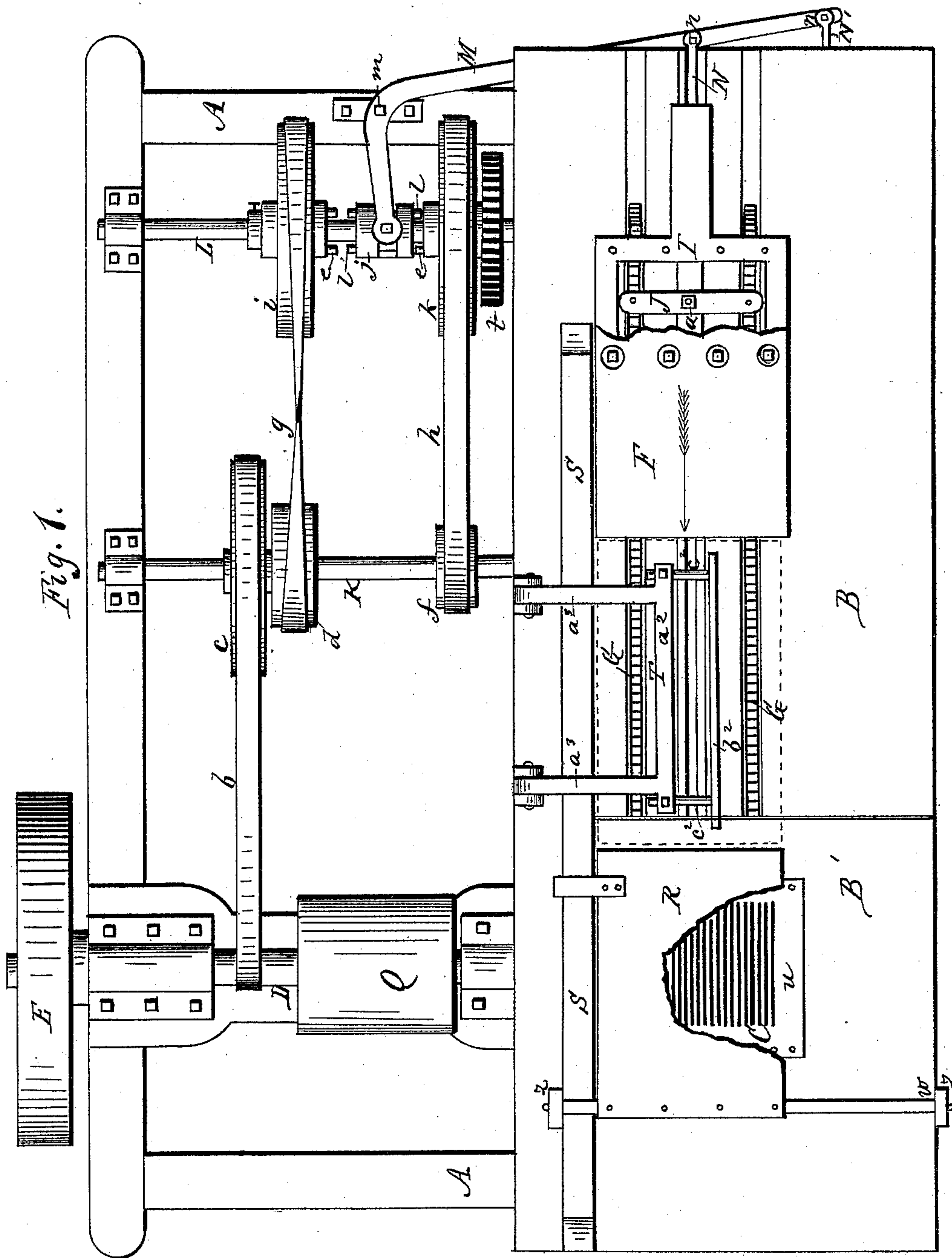
3 Sheets—Sheet 1.

C. R. PENFIELD.

MACHINE FOR SAWING STAVES.

No. 396,763.

Patented Jan. 29, 1889.



Attest.  
E. P. Follett  
A. F. Spencer

Inventor.  
Chas R Penfield,  
per R. F. Osgood  
Atty

(No Model.)

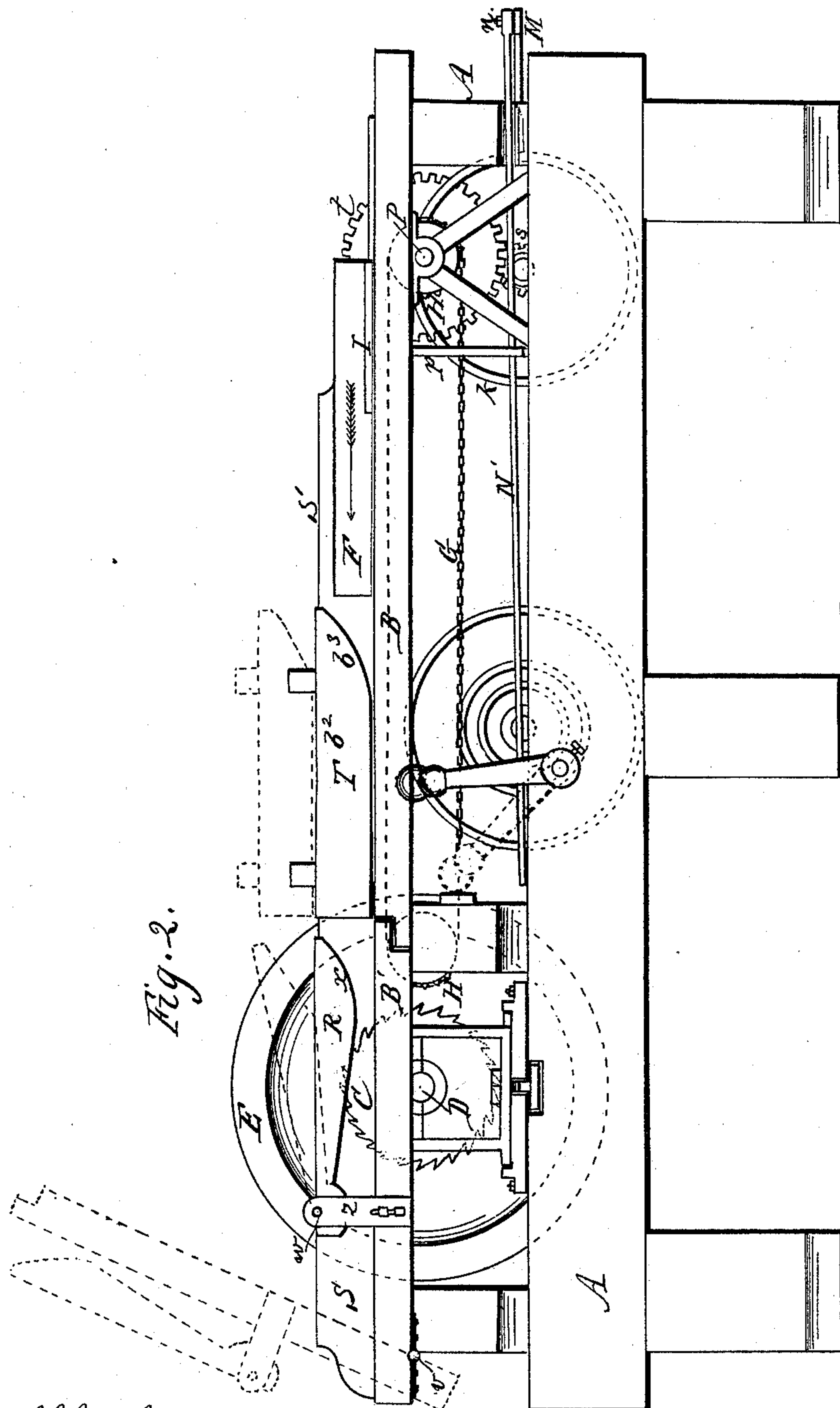
3 Sheets—Sheet 2.

C. R. PENFIELD.

MACHINE FOR SAWING STAVES.

No. 396,763.

Patented Jan. 29, 1889.



Attest.

E. P. Hollett  
A. F. Jensen

Inventor.  
Chas R. Penfield,  
per R. F. Osgood.  
Atty.

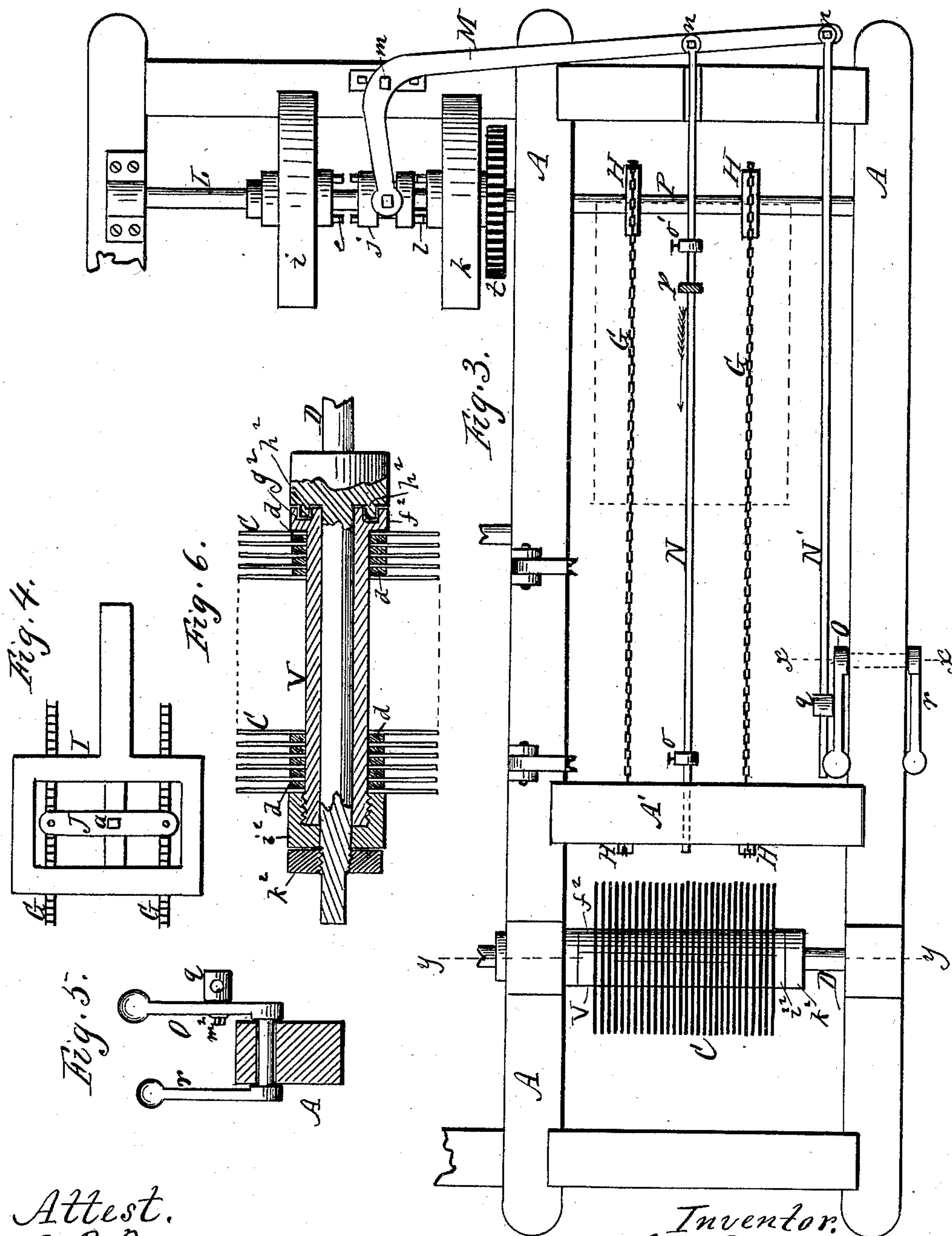
(No Model.)

3 Sheets—Sheet 3.

C. R. PENFIELD.  
MACHINE FOR SAWING STAVES.

No. 396,763.

Patented Jan. 29, 1889.



Attest.  
E. P. Follett  
C. F. Spencer

Inventor.  
Charles R. Penfield,  
per R. F. Cogood,  
Atty.



# UNITED STATES PATENT OFFICE.

CHARLES R. PENFIELD, OF ROCHESTER, NEW YORK.

## MACHINE FOR SAWING STAVES.

SPECIFICATION forming part of Letters Patent No. 396,763, dated January 29, 1889.

Application filed October 13, 1887. Serial No. 252,270. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES R. PENFIELD, of Rochester, in the county of Monroe and State of New York, have invented a certain  
5 new and useful Improvement in Machines for Sawing Staves; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

10 My improvement relates to that class of stave-sawing machines in which a gang of saws is used, and the plank from which the staves are made is sawed up at one operation.

The invention consists in the construction  
15 and arrangement of parts hereinafter more fully described and definitely claimed.

In the drawings, Figure 1 is a plan view of the machine, portions being broken away to show the interior construction. Fig. 2 is a  
20 side elevation of the same. Fig. 3 is a plan view similar to Fig. 1, but with the saw-table removed. Fig. 4 is a plan view of the iron frame to which the follower or pusher is attached. Fig. 5 is a cross-section in line *x x*  
25 of Fig. 3. Fig. 6 is a cross-section in line *y y* of Fig. 3.

A indicates the frame of the machine, which may be of any desired construction.

30 B is the table or bed on top of the frame, on which the plank is laid to be carried to the saws.

C C are the saws, located on a shaft, D, having at one end a balance-wheel, E.

35 F is a follower or pusher moving forward and back on the table and serving to push the plank forward to the saws.

G G are endless drive-chains to which the follower is attached.

40 H H are sprocket-wheels around which the drive-chains pass and by which they are driven.

I is a metallic spider or frame to which the follower is bolted.

45 J is an arm forming an evener, pivoted at *a* to the spider I and attached at the ends to the drive-chains G G. By this means easy action is given to the follower, as the play of the evener will compensate for any unequal action of the chains and prevent the follower  
50 from binding.

The driving mechanism may be of any de-

sired kind. In the drawings a band, *b*, extends from the driving-shaft D to a pulley, *c*, on a shaft, K. On shaft K are two other pulleys, *d f*, having bands *g h*, that extend to pulleys *i k*, running loosely on a shaft, L. The  
55 band *g* is crossed, while the band *h* is uncrossed. It will be seen that the pulleys *i k* will run in opposite directions on the shaft L.

*j* is a sliding clutch resting on shaft L between the pulleys *i k*, and provided with teeth *l*, that engage with corresponding teeth, *e*, on the hubs of the pulleys, accordingly as the clutch is shifted from one side to the other to engage therewith. When the clutch stands  
60 centrally, it is out of gear with both pulleys.

M is a lever for operating the clutch, said lever being pivoted at *m* and the long arm extending around to the rear end of the machine, as shown in Figs. 1 and 3.  
70

N N' are two rods jointed to the long arm of the lever M at *n n*, said rods extending longitudinally of the machine under the table B. The inner end of rod N rests loosely in a socket in one of the cross-bars A' of the frame, so as to slide easily forward and back, and said rod is provided with adjustable stops *o o'*,  
75 Fig. 3, between which plays a vertical arm, *p*, attached to and depending from the bottom of the follower F. The other rod, N', passes through a hole in a swivel-head, *q*, and is held in place by a set-screw. The swivel is pivoted in a crank-shaped weighted shifter, O, arranged to turn in a socket in one of the side  
80 pieces of the frame. On the outer side of the shifter O is a handle, *r*, by which it can be operated by hand.

s, Fig. 2, is a pinion on shaft L, that engages with a spur-wheel, *t*, on the shaft P, that carries the rear sprocket-wheels, H H.  
90

The operation is as follows: Motion imparted to band-wheel Q is transferred to the pulleys *i k* through the medium of the several bands *b g h*. This causes the two loose pulleys *i k* to revolve in opposite directions, as  
95 before stated. The clutch *j* being in engagement with the wheel *k*, as shown in the drawings, it gives motion to pinion *s*, and the latter to spur-wheel *t*, which consequently gives motion to the rear sprocket-wheels, H H, that  
100 carry the chains G G. This causes the follower F to move forward on the table D, push-



ing the plank in advance up to and entirely through the gang of saws, where it is cut up into staves all at one operation. When the follower reaches the end of its forward stroke, the arm  $p$ , attached to the bottom of the follower, strikes the stop  $o'$  and throws the rods  $N N'$  forward and tilts the weighted shifter  $O$ , so that it falls over in front, carrying the rods  $N N'$  with it. The rods draw on the lever  $M$  sufficiently to throw the clutch  $j$  over from the hub of pulley  $k$  to the hub of pulley  $i$ , consequently changing the motion of the follower  $F$  and causing it to move backward to receive another plank. As the follower goes back, the arm  $p$  strikes the rear stop,  $o'$ , which throws the rods  $N N'$  and disengages the clutch from pulley  $i$ . The shifter  $O$ , however, instead of being thrown over at the rear is simply raised to a vertical position, as indicated by the full lines, Fig. 2. Consequently the clutch is not engaged again with pulley  $k$ , but stands centrally between the two pulleys and out of gear, and the follower is stopped. This gives time to insert the next plank in front of the follower. To start the follower again, the operator seizes the handle  $r$  and throws the stirrup over back, which engages the clutch with pulley  $k$  and starts the machine again. The under side of the follower is cut with kerfs or grooves corresponding with the saws, so that it will pass over the saws and push the plank entirely through and push staves clear, leaving the spaces between the saws entirely clear of the staves, by which means each stave is cut entirely free and passes off in front, and the pieces will not fly up nor be caught by the saws and thrown back, as in ordinary machines. A plate,  $u$ , is used over the saws, provided with slits through which the saws pass.

The front portion,  $B'$ , of the saw-table is hinged at  $v$ , so that it can be thrown up clear of the saws, as indicated by the dotted lines at the left in Fig. 2.

$R$  is a presser pivoted at  $w$  to adjustable standards  $z z$ , attached to the frame. It consists of a block which bears on top of the staves over the saws and prevents them from springing up or riding the saws as they pass through. The inner end of the presser is beveled, as shown at  $x$ , so that when the plank strikes it the presser rides up over the plank, as indicated by the dotted lines, Fig. 2.

$S$  is a fixed gage consisting of a bar on the back side of the table. The edge of the plank runs against this gage in going forward to the saws.

$T$  is an adjustable supplementary gage for guiding narrow pieces where it is not necessary to use the whole gang of saws. It consists of a cross-head,  $a^2$ , having arms  $a^3 a^3$ , pivoted to the back of the table, so that the frame can turn up and down, and a face-plate,  $b^2$ , which constitutes the gage proper, provided with stems  $c^2 c^2$ , that pass through the cross-head  $a^2$  and are secured by set-screws. By this means the supplementary gage can

be moved in and out to adapt it to the different widths of the stuff to be cut, and also can rise vertically to allow passage of the follower under it. The inner end of the plate  $b^2$  is beveled, as shown at  $b^3$ , so that when the end of the follower strikes it the gage will be lifted up, as indicated by dotted lines, Fig. 2, and the follower will pass under it. By moving the face-plate out or in it is adapted to pieces of plank of varying width less than the whole width of the gang of saws, and therefore the work will be brought on the side next to the operator, where the work is more easily done and lessening the wear on the rear saws.

$V$  is a hollow sleeve or arbor fitted on the main shaft  $D$ , the saws being fitted on said arbor and separated by washers or rings  $d^2 d^2$ , which also slip on said arbor, as shown in Fig. 6. In said figure only portions of the saws are shown in place. At one end the arbor has a head,  $f^2$ , provided with sockets  $g^2$ , in which rest corresponding pins,  $h^2$ , of a head,  $j^2$ , on the shaft  $D$ . At the opposite end a cap,  $i^2$ , screws on the end of the arbor, and outside of this a nut,  $K^2$ , screws on the end of the shaft to hold the arbor in place. The arbor is provided with a spline and the saws and washers with slots fitting the same, by which means the parts are locked together.

The machine above described will do very rapid work, as a whole plank of stave length is sawed into staves at one operation, and one block follows another at intervals, the feed being intermittent.

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

1. In a machine for sawing staves, the combination, with a gang of saws, of a follower constructed to run over the saws forward and back, chains with which the follower is connected, and an evener,  $J$ , pivoted to the follower and attached to the chains, as herein shown and described.

2. In a machine for sawing staves, the combination of the table  $B$ , a gang of saws,  $C C$ , at one end of the table, a follower,  $F$ , resting on the table and arranged to run over the saws, chains  $G G$ , to which the follower is attached, a pivoted rock-lever,  $M$ , carrying at one end a clutch,  $j$ , which shifts from one to the other of the pulleys  $i k$  to reverse the motion, the rods  $N N'$ , attached to said lever, the rod  $N$  being provided with adjustable stops  $o o'$ , for limiting the throw of the follower, and the weighted shifter  $O$ , provided with a swivel-head,  $q$ , through which the rod  $N'$  passes, as shown and described, and for the purpose specified.

3. In a machine for sawing staves, the combination of the table  $B$ , a gang of saws,  $C C$ , at one end of the table, a follower,  $F$ , resting on the table and arranged to run over the saws, chains  $G G$ , to which the follower is attached, arranged to reciprocate forward and back, a presser,  $R$ , pivoted back of the saws

and in longitudinal line with the motion of  
the follower, and a gage, T, provided with an  
adjustable face-plate,  $b^2$ , located between the  
presser and follower and pivoted to turn trans-  
5 versely of the machine, said presser and gage  
being beveled at the ends next the follower,  
as shown and described, and for the purpose  
specified.

In witness whereof I have hereunto signed  
my name in the presence of two subscribing 10  
witnesses.

CHAS. R. PENFIELD.

Witnesses:

WM. J. MCPHERSON,  
R. F. OSGOOD.