2 Sheets—Sheet 1.

W. H. ABRAMS.

Saw-Mill Head-Blocks.

No. 201,376. **Patented March 19, 1878**

Fig. 1.

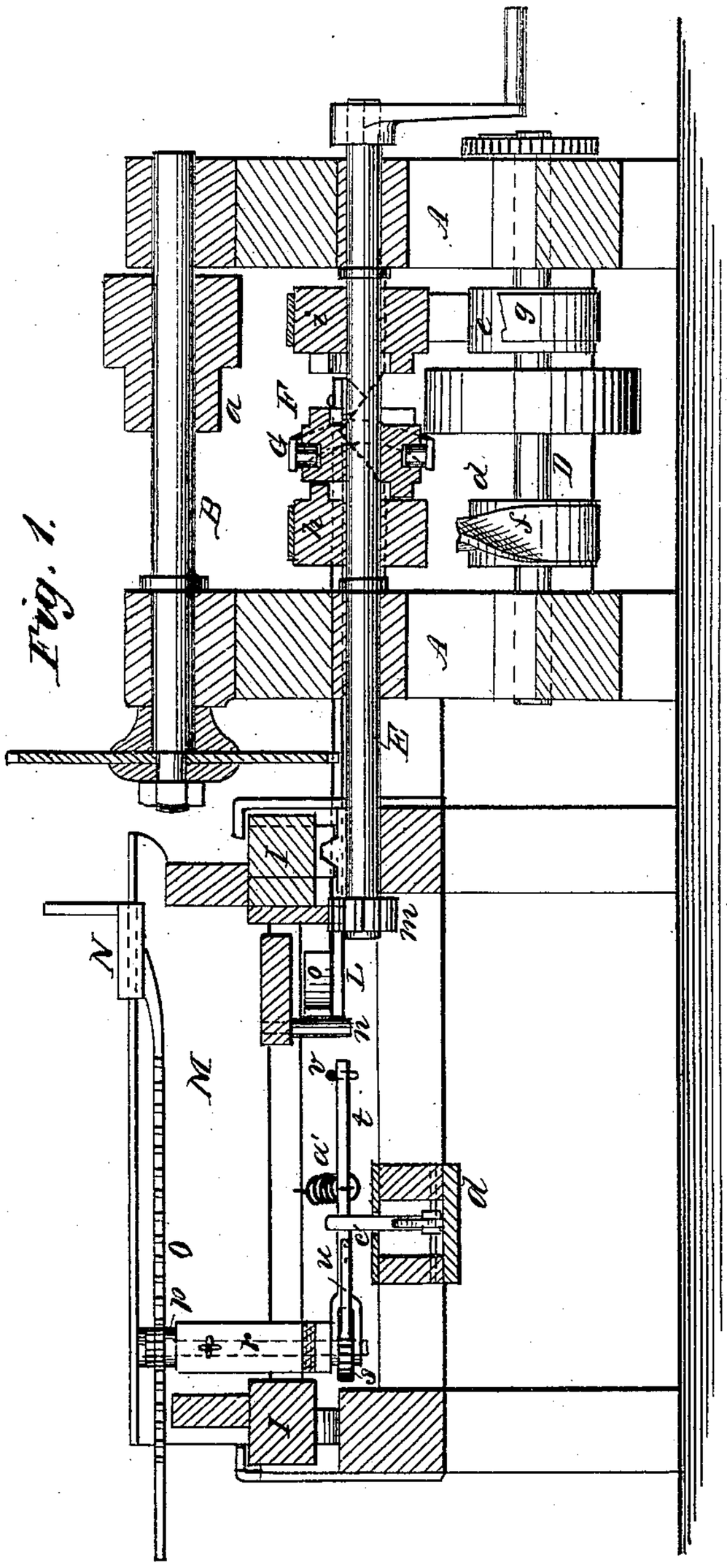
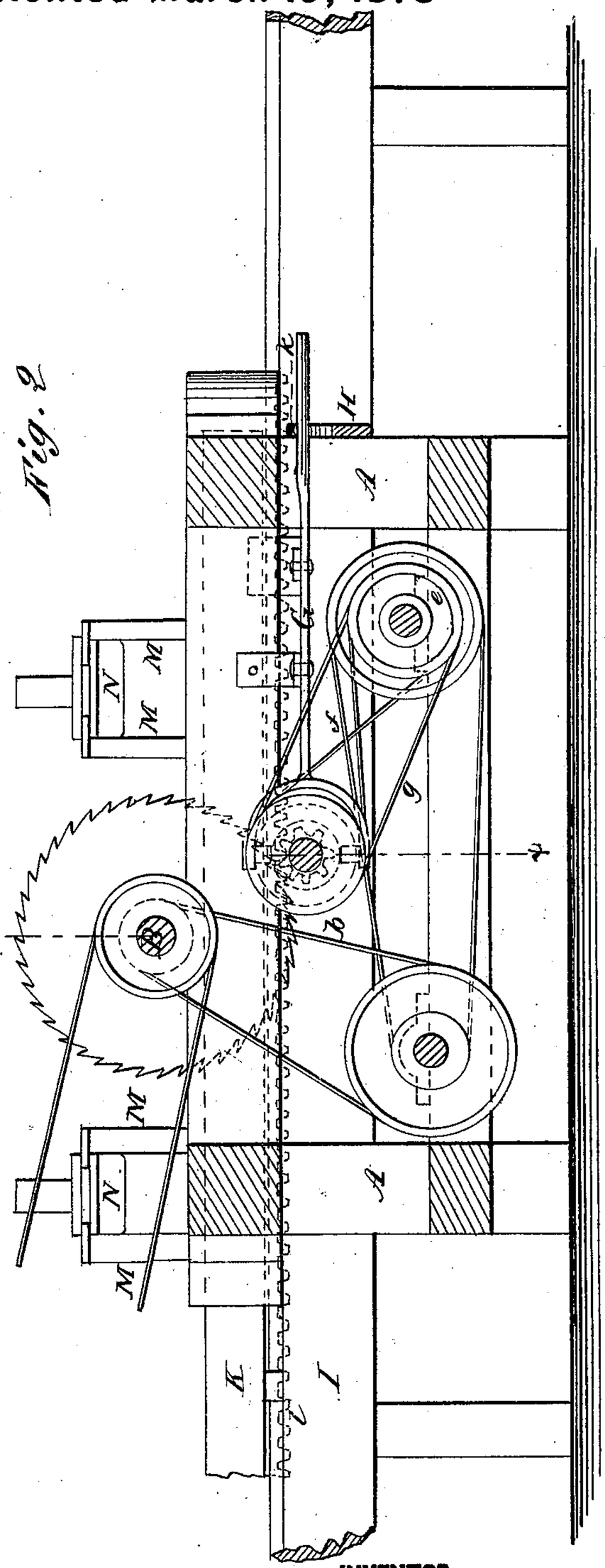


Fig. 2.



WITNESSES:

C. Neveux

C. Sedgwick

INVENTOR:

W. H. Abrams

BY Munn & Co

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

W. H. ABRAMS.

Saw-Mill Head-Blocks.

No. 201,376. **Patented March 19, 1878.**

Fig. 4

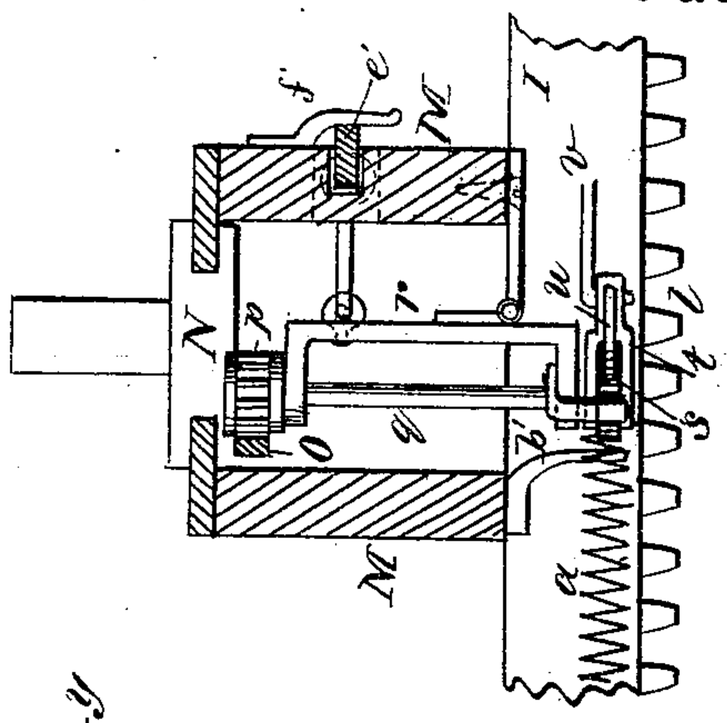


Fig. 3

WITNESSES:

C. Sereux

C. Sedgwick

INVENTOR:

W. H. Abrams

BY Munn & Co

ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILL H. ABRAMS, OF EUGENE CITY, OREGON.

IMPROVEMENT IN SAW-MILL HEAD-BLOCKS.

Specification forming part of Letters Patent No. **201,376,** dated March 19, 1878; application filed February 7, 1878.

To all whom it may concern:

Be it known that I, WILL H. ABRAMS, of Eugene City, county of Lane, and State of Oregon, have invented a new and Improved Saw-Mill, of which the following is a specification:

Figure 1 is a transverse section taken on line *x x* in Fig. 2. Fig. 2 is a longitudinal section on line *y y* in Fig. 3. Fig. 3 is a plan view. Fig. 4 is a transverse section of one of the head-blocks, taken on line *z z*, Fig. 3.

Similar letters of reference indicate corresponding parts.

The object of my invention is to furnish a saw-mill which will be automatic in its action; and it consists in certain peculiarities in the gearing by which the object is attained, which will be hereinafter more fully described.

In the drawing, A is a frame, in which the saw-mandrel B is journaled, and in which the counter-shaft C, intermediate shaft D, and feed-shaft E are journaled. The saw-mandrel B is of the usual description, and upon it is placed a driving-pulley, and a pulley, *a*, which drives the counter-shaft C by means of the belt *b*. Motion is imparted to the intermediate shaft D by a belt, *c*, from a pulley on the counter-shaft; and upon the shaft D there are two pulleys, *d e*, that are connected by belts *f g* with pulleys *h i* on the feed-shaft E. The pulleys *h i* are loose on the shaft E, and are provided with lugs on their inner face, which are engaged by a clutch, F, having similar lugs on each side of it. The said clutch is prevented from turning on the shaft by a feather, and is moved longitudinally by a forked lever, G, that is pivoted to a cross-bar in the frame A. The belt *g* is straight and the belt *f* is crossed, so that the pulleys *h i* run in opposite directions. The outer end of the lever G is beveled on its under surface from its center toward each side, and when moved to shift the clutch F it moves over a triangular projection, *k*, on the bar H. The lever is made to spring, so that as it passes the apex of the triangular projection in either direction it carries the lever forward to the end of its stroke.

I I are the ways upon which the log-carriage K travels. The said carriage is provided with a rack, *l*, which is engaged by a pinion, *m*, on the feed-shaft E. The carriage K is provided with two pins or studs, *n*, one of which may be adjustable, and a bar, L, having the diagonal lip or ledge *o*, is pivoted to the lever G, and extends through a guide in one of the ways I, and is moved by the pins or rollers *n* at the end of the travel of the carriage K, so as to shift the lever G beyond the apex of the triangular projection *k* when the spring of the said lever completes the movement of the lever, and the clutch F reversing the motion of the feed-shaft.

The head-blocks carried by the carriage consist of ways M, to which a sliding head, N, is fitted. A rack, O, is attached to the head N, and a pinion, *p*, whose shaft *q* is journaled in a frame, *r*, hinged to one of the ways M, engages the rack.

To the lower end of the shaft *q* a ratchet, *s*, is fixed, and a lever, *t*, is placed on the same shaft, and is provided with a pawl, *u*, that engages the ratchet *s*. The mechanism in both heads is precisely alike, except that the lever *t* in the block at the head end of the carriage is lower than the similar lever in the block at the opposite end of the carriage.

The levers *t* of the two blocks are connected by a rod, *v*, which may be adjustable as to its length, and a spring, *a′*, is connected with one of the levers *t*, to draw it back after having been moved forward, and a stop, *b′*, is affixed to the ways M, to check the backward movement of the levers *t*.

A finger, *c′*, is placed in a movable support, *d′*, which slides in guides that are supported between the ways I. The finger *c′* is provided with a spring that keeps it in a vertical position against the side of the mortise in which it is placed, so that as the carriage is "gigged back" it engages one of the levers *t* and turns them both until the lever slips off, when the spring *a′* returns them to their normal position. When the carriage moves forward the finger *c′* yields and the levers *t* are not moved.

The movement of the levers *t* turns the pinions *p* through a partial revolution, throwing the heads N forward.

The distance through which the heads are moved is regulated by moving the finger *c′* toward or away from the shaft *q*. By moving it so that it strikes the lever near the shaft,

the lever is moved through a greater distance before it escapes from the finger than when the finger is near the outer end of the lever.

The operation of the mill is obvious. Timbers which have been previously squared are placed on the head-blocks and the mill is set in operation. The carriage moves forward and the saw takes off the first board, when the stud *n* at the back end of the carriage strikes the ledge *o* and shifts the clutch F, as before described, when the carriage moves back into position to take another cut, and in so doing the lever *t* is engaged by the finger *c'* and the pinions *p* are turned, throwing the heads N forward the thickness of a board, and the clutch F is again shifted, so that the feed may move the carriage forward, as before.

When the timber is cut the heads N are retracted by moving the hinged frames *r* by means of the levers *e'*, which are pivoted at the side of the head-blocks. This operation disengages the pinions *p* from the racks O, when the heads N may be carried back as far as may be required. The pinions *p* are replaced by means of the levers *e'*, and the said levers are locked by buttons *f'*.

The operation of the mill is automatic after the log is placed on the carriage.

By means of my improvements an important saving in time is effected and the work is more accurately done than in mills of ordinary construction.

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

1. The clutch F, lever G, bar H, having the triangular projection *k*, the bar L, having a diagonal ledge, *o*, and the studs *n* on the carriage K, in combination, substantially as herein shown and described.

2. The head N, rack O, pinion *p*, hinged frame *r*, and lever *e'*, in combination, substantially as shown and described.

3. The ratchets *s*, levers *t*, having pawls *u*, rod *v*, and finger *c'*, in combination, for moving the pinion *p*, substantially as shown and described.

WILL H. ABRAMS.

Witnesses:
JOSHUA J. WALTON,
GEO. M. MILLER.