

J. P. McDowell,
Circular Saw,
No. 1,721, *Patented Aug. 12, 1840.*

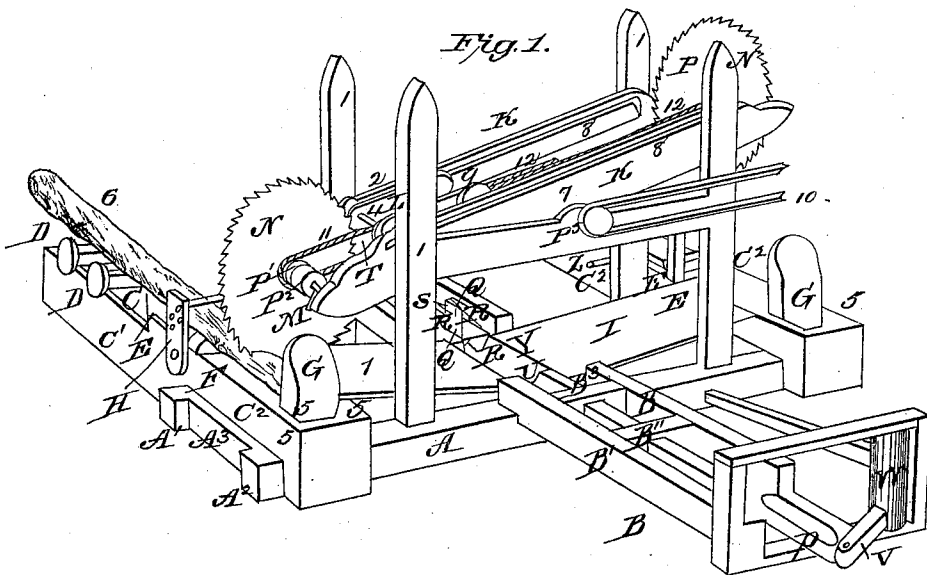


Fig. 2.

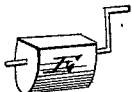
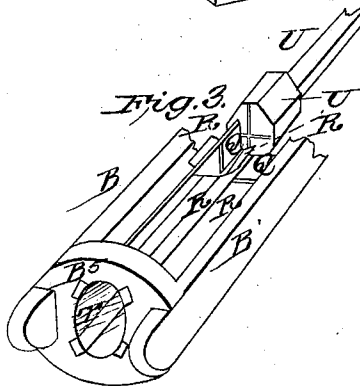


Fig. 3.



UNITED STATES PATENT OFFICE.

JNO. P. McDOWELL, OF SUMMIT, PENNSYLVANIA.

MACHINE FOR SAWING AND SPLITTING TIMBER.

Specification of Letters Patent No. 1,721, dated August 12, 1840.

To all whom it may concern:

Be it known that I, JOHN P. McDOWELL, of Summit, in the county of Cambria and State of Pennsylvania, have invented a new and useful Machine for Sawing and Splitting Timber and other Materials; which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a perspective view of one of the rollers and cranks. Fig. 3 is a perspective view of the splitters R and springs S and hole T, hereafter described.

Similar letters refer to similar parts in the figures.

This machine consists of a suitable frame A of proper size and strength composed of two parallel sills A¹ A² framed together by cross sills A³ into which are mortised and tenoned four posts 1, 1, 1, 1, and into these two parallel rails 2, 2, above the sills. Across the middle of this main frame A is placed another frame B composed of two parallel horizontal timbers B¹ B² united by cross timbers B³ B⁴ and let into the before-mentioned sills at right angles thereto, which may be termed the splitting frame. At each end of the main frame A is placed a railway and rest C¹ C² for the logs, each composed of two parallel timbers 5, 5, set edge-wise across the sills at right angles thereto; the upper edges of the parts placed over the sills called the rest C² is made horizontal and the upper edges of the parts which project beyond the sills and which are termed the ways C¹, are inclined planes, the inclination being downward toward the saw, over which a car D travels on which the log 6 to be sawed is placed and containing between them a propelling roller E, Fig. 2, turned by a crank for bringing forward the log to the saw and a rest F and a stop G with a turning button H at the side, and an inclined board I leading from the rest C² to the splitting frame for conveying the logs thereto. Between the before-mentioned posts 1, 1, 1, 1, and above the sills is placed a see-saw frame K, whose axis which passes through the center thereof turns in boxes 7, 7, on the parallel rails 2² before described; it is composed of two parallel timbers K, K, united by suitable rounds or cross timbers and grooved lengthwise as at 8, 8, for the axles g, g, of a weight car L to move in for shifting a weight from one end of the saw frame

to the other, as it rises and falls. At each end of the saw frame is a revolving axle M on which is fixed a circular saw N and a fixed and a loose pulley P¹ P² which axles or shafts beside revolving with the saws do also move with them to and from the logs in a curve line of a radius equal to the distance that the saws are placed from the fixed center, and it is on account of this latter movement of the saws that their centers may be called shifting centers. On the fixed center are placed three pulleys, one of which P⁵ is for the band 10 leading to the propelling power and the other two are for the bands 11 and 12 passing around the pulleys on the saw axles M, one of the latter bands being crossed. The weight car L before mentioned runs back and forth in the grooves 8, 8, of the saw frame as it tilts to the right and left always running toward the lowest end, its purpose being to throw whatever weight may be necessary alternately on the two saws, *i. e.*, at all times on the one that is operating. The rollers and cranks E are intended to run the logs endwise the lengths required and have a segment cut from said rollers so as to flatten a part of them to allow the logs to rest on the rest bars F. The bumping blocks or stops G are for the logs to bump against or stop when run forward by the flattened rollers E, they are placed on the inner ends of rail tracks at such distance from the saws as the required length to be cut. The buttons H are perforated to admit levers or bars Z to pass through them and may be turned down so as to be out of the way when a log is to be put in and turned up after it is on. The perforations or holes in them admit the levers Z, which are to press the logs or poles (not having sufficient weight in themselves) upon the rest bars F to render them steady under the action of the saws. The car D supporting the outer ends of the logs and running on the railways should be four wheeled. To bring forward a log to be cut the crank of roller E is turned, this moves the log until it strikes against the stop G when its motion is arrested and the machine being in operation the saw frame is tilted and the circular saw applied to the log which soon cuts it in two parts, one of which (the short part cut) rolls down the inclined board I to the splitting frame. While this operation was going on the other saw was raised out of the way and its motion stopped by

shifting the band to the loose pulley and the log under it brought forward in the same manner as that under the other saw just mentioned. The band is put into gear and the saw frame again tilted which brings said raised saw down upon the log, which is cut in the same way, the weight having run down to the other end of the saw frame and thus increased the weight of the saw. The end of this log being cut rolls down the inclined board I to the splitting frame as on the other side.

The splitter is made in the following manner: The two centrally crossing splitting wedges Q, Q, may be composed of a solid piece of cast-iron. There may be four or eight more wedges R (see also Fig. 3) by which it is contemplated that each quarter of the log, at the same time that it is quartered by the central wedges will be split into three pieces, which last-mentioned splitting wedges are attached by spring bars S, Fig. 3, back of the central or crossed wedges to the inside of a hole T in the end piece or oval block B⁵ of the splitting frame B. The spring bars S are made wider as they approach the hole T in the oval end piece and when put together they form a box through which the four central pieces of the split log pass out of the machine. The two lower bars may be so much parted behind their wedges as to let the four central sticks drop through. The two upper bars are made broad to prevent the sticks which pass above from falling in between them. Said split sticks may be thrown to one or both sides. By having one or more additional rounds of the yielding wedges, on this same principle logs of any diameter may be split into small wood. The driver V for driving the log through between the wedges is made to slide freely and truly in the splitting frame, so as to drive the logs against and through the splitters. The end of it that presses against the ends of the logs is divided into four parts, so as to admit it into or between the splitters, in order that it may push the four inside or central sticks entirely through them as represented at *u*, Fig. 3. It may be necessary to have something additional on the driver for the purpose of pushing the outer sticks entirely beyond the edges of the splitters, so that the ends of those split may not by projecting through the splitters hinder the succeeding logs from getting on the cradle. The driver is connected by a pitman *p* or link to an arm V projecting from a shaft W, to which the motive power may be applied. At the lower end of the inclined planes for conveying the logs to the splitters is placed a yielding cradle Y for receiving the logs. This yielding cradle is made lowest in its middle, which stands opposite the vertical central splitting wedge Q, so that the logs shall rest

on said cradle with its center opposite said wedge. The logs may roll, or be carried on cars which will unload themselves and return, or on belts and rollers down the inclined planes from the saws to the cradle. The cradle is placed just so high that a log so small as to only need quartering resting on it would present the center of its end to the center of the crossing point of the central wedges Q, Q. The center then of a leg of greater diameter would of course when lying on the cradle be above the edge of the central horizontal splitting wedge. The cradle is therefore made to yield downward by having it supported on springs placed below it not sufficiently far by the weight of the log alone, but by the weight of the log, together with a little additional pressure applied by the attendant. For this purpose he can use his hand or foot (or if he pleases a lever or shaft. Rollers may likewise be arranged in the cradle for the logs to lie on. When the machinery is intended to be portable neither the rail tracks nor the splitting establishment is framed into the sawing part of the machine. The reason is that their operations would be likely to jar and shake the sawing establishment so as to prevent that steadiness and trueness necessary in the operation of the saws. But when intended to be permanent and stationary, the whole framing may be united. In order to insure more trueness and steadiness to the motion of the saws the ends of the saw frame may be inclosed in curved frames attached to and moving with it. These curved frames may extend and be braced together above and below the saws. They may also be braced backward into the saw-frame. They may also be inclosed so as to slide to and from the logs in fixed frames.

Several other variations of the machinery have been contemplated which it may be necessary to mention, as only one plan will be shown in the drawings and be claimed in the specification.

1st. The saw frame may be only half of that represented in the drawing (*i. e.*, divided at the fixed center) and carrying only one saw instead of the two, which half-frame with its saw may turn on the stationary center, either over or under it, so as to move in either case alternately to a log on each side of said center, or the machine may be adapted to but one log at a time. Or the saw may move in a circular or curved slide alternately between the logs, so as not to have any connection with the stationary center, except by the straps by which their shafts are geared together and that of the frame of the machine.

Two saws placed opposite to each other and cutting the opposite sides of the same log may be used, on the same principle as

those shown in the drawing, except that their shafts, or else their frames must be coupled together by a stirrup to prevent their coming into contact. In some places the gearing may be cog-wheels. The splitting establishment may likewise be varied in several particulars.

1st. In its connection with the sawing establishment and the motive power.

10 2nd. In the plans of the splitters, &c.

3rd. The mechanical power used for forcing or propelling the driver.

1st. It may be either connected with or separated from the sawing machine, and in either case they may both be propelled by one and the same motive power or each by its own separate power, that in the case of being separated. The distance of separation must be small. When the distance of separation is anything considerable each must of course be propelled by its own motive power.

2nd. In the plans of the splitters of these there are two contemplated in the drawing and either perhaps as good as it, and somewhat different in principle. For instance there may be an outer and an inner frame in which are placed horizontal and vertical splitters; they both pass through the inner frame to the outer and are both firmly fixed in both frames. The edged splitters may be coupled together by coupling bars. The edged bars may all yield from the center, moving in the inner frame from their several blocks or stops to permit the passage of the sticks through between them, and when cleared of the sticks spring back to their places against the said blocks or stops. Also in having slabbing wedges or splitters, fixed on the rim or arms of a wheel turning on a vertical shaft on which are drivers on the thick or back part of the slabbing wedges intended for driving the slabs as they are split from the log through the splitters. The central splitter is fixed firmly, both at and in the cap. Those on each side of the central one are firmly fixed in the sill and secured against yielding backward by a cap yielding outward on each side to permit the passage of the sticks

and springing back when they are through to the blocks or stops. They must not, however, yield so much as to get into contact with the drivers. All the plans of the yielding wedges may be fixed with springs in various ways, so as to answer the purpose.

These slabbing wedges may be placed either on a wheel or on the end of the driver. On the wheel it would operate by a sudden rapid heavy blow. On the driver it may operate either in this same way, or by a slow and strong pressure.

3rd. It may be varied several ways in the mechanical powers used for propelling the driver viz:—It may be such as that represented in the drawing. It may be by a cog-wheel working in corresponding cogs on the stem of the driver. It may be a reacting screw, or lever, or it may be a crank and pitman.

For the purpose of regulating or equalizing the resistance in the process of splitting, there may be cogs or a rack set in the driver into which a pinion works, having an arm extending out from its shaft on which is placed whatever weight may be necessary, so that when the driver is being drawn back from the splitters it would be resisted by having to raise this weight, and when moving toward the splitters its force would be increased by the downward force of this weight.

There may be two splitting establishments to one sawing, *i. e.*, one placed convenient to each saw instead of one central to the logs from both saws. The splitting machine may be placed horizontally, vertically, or inclined and the logs in corresponding postures. It may stand on one side or be flat.

What I claim as my invention and which I desire to secure by Letters Patent consists in—

The before described combination and arrangement of the machinery for sawing with the machinery for splitting logs and other materials.

JOHN P. McDOWELL.

Witnesses:

B. K. MORSELL,
WM. P. ELLIOT.