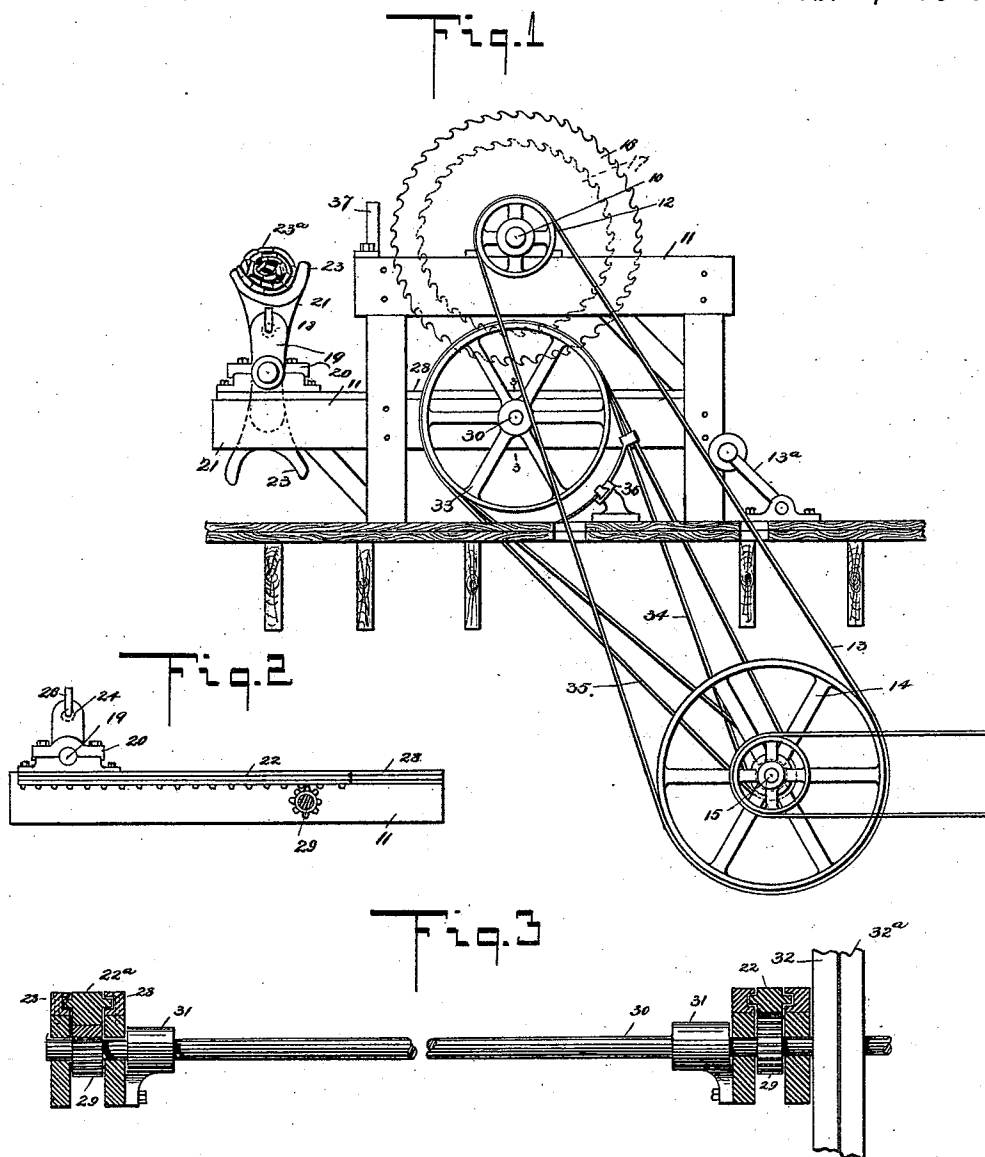


A. G. O'NEIL.
SAWING MACHINE.

No. 554,001.

Patented Feb. 4, 1896.



WITNESSES:

Charles E. Smith
Edmund A. Shaver

INVENTOR

Alexander G. O'Neil
BY *Present*

ATTORNEYS

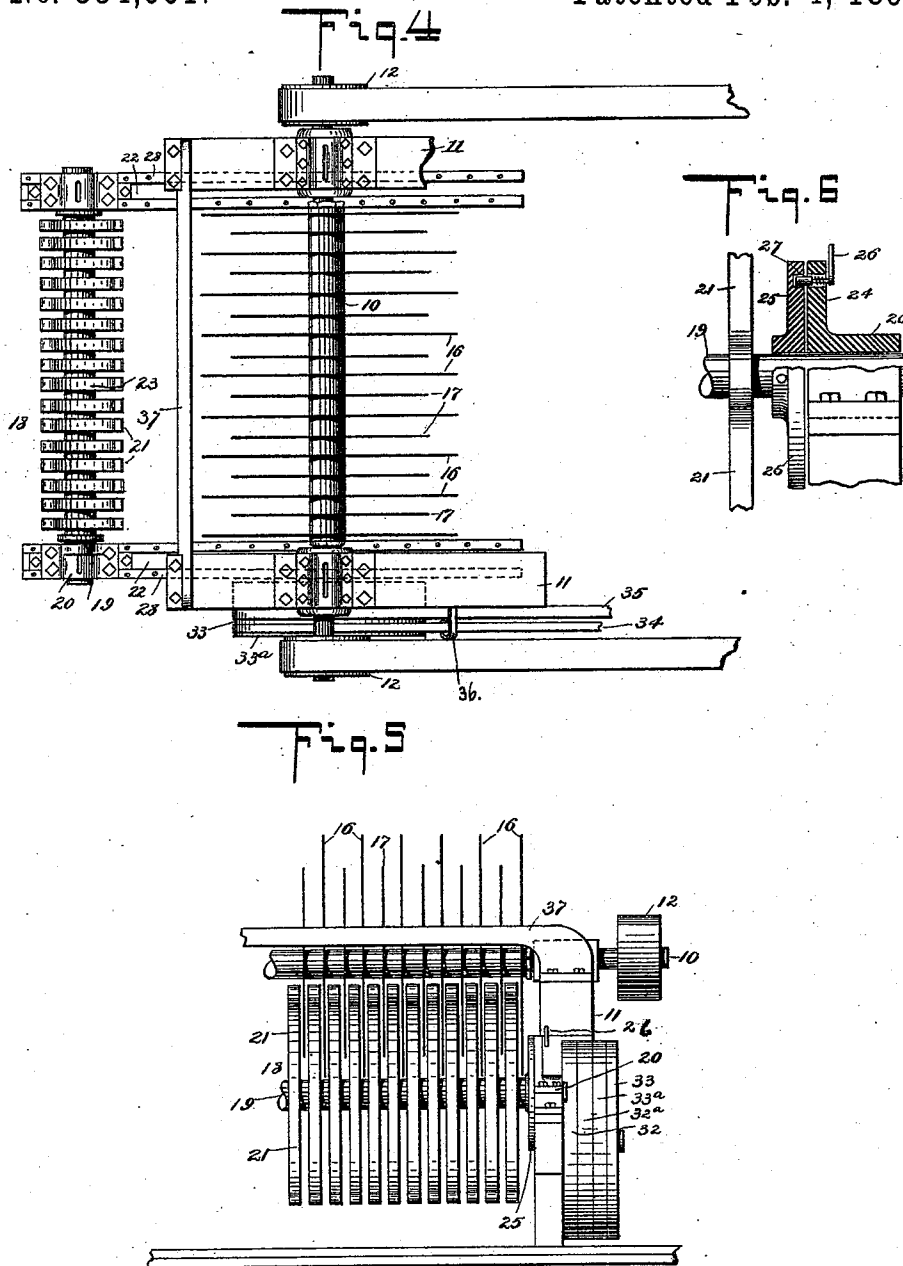
(No Model.)

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INVENTOR

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UNITED STATES PATENT OFFICE.

ALEXANDER G. O'NEIL, OF NEW YORK, N. Y., ASSIGNOR TO THE KINDLING
WOOD MACHINERY COMPANY, OF SAME PLACE.

SAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 554,001, dated February 4, 1896.

Application filed April 25, 1894. Serial No. 509,033. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER G. O'NEIL, of New York city, in the county and State of New York, have invented a new and Improved Sawing-Machine, of which the following is a full, clear, and exact description.

My invention relates to improvements in gang sawing-machines of that class which are used for cutting material, such as kindling-wood, into predetermined lengths. Under a certain process of manufacturing kindling-wood long sticks are tied together in bundles, the binding-wires being placed at frequent intervals; and the object of my invention is to produce a simple machine which rapidly severs bundles of this kind between the places at which they are tied, so as to produce a plurality of commercial bundles of kindlings, which bundles are comparatively short. The machine can obviously be used for other purposes, but this is its prime object.

A further object of my invention is to provide a series of saws that will require less power to drive them through the bundle to be severed than heretofore. To this end I provide a series of saws of different diameters, together with a carriage adapted to move backward and forward in relation to the saws, and to mount on this carriage a reversible holder, in which the bundle or other article to be sawed can be conveniently placed.

My invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine embodying my invention. Fig. 2 is a detail side elevation, partly in section, of a portion of the carrying mechanism. Fig. 3 is a detail cross-section on the line 33 of Fig. 1 and illustrates the means of actuating the carriage. Fig. 4 is a plan view of the machine. Fig. 5 is a broken front elevation thereof; and Fig. 6 is an enlarged detail view, partly in section, illustrating a means of fastening the carriage-holder.

In the drawings, 10 designates a stiff saw-

mandrel which is mounted in a suitable frame 11 and, as illustrated, is provided with driving-pulleys 12 driven by belts 13 provided with belt-tighteners 13^a and driven from pulleys 14 on a shaft 15. Any suitable means for turning the saw-mandrel may, however, be employed. On the mandrel 10 is a double series of saws 16 and 17, the saws 16 being larger than the saws 17 and the large and small saws being alternated, as clearly shown in Figs. 4 and 5—that is to say, each saw throughout is of a different diameter from that of the next adjacent saw.

It will be seen that the larger saws will almost sever a bundle before the smaller ones begin to saw, thus enabling the saws to be driven through the bundle to be severed with an exertion of considerably less power than would be required if such saws were all of the same diameter.

A carriage 18, which is arranged in front of the machine, is adapted to move backward and forward with relation to the saws, and it comprises a cross-shaft 19, the bearings 20 for the same, the holders 21 on diametrically opposite sides of the shaft, and the toothed racks 22, which are secured to the bearings 20, and are moved in a manner hereinafter specified. The holders 21 are arranged so as to project from the opposite sides of the shaft 19, as shown in Figs. 1 and 4, and the outer ends of the holders are concaved, as shown at 23, so that a bundle may be laid and held firmly in the said ends.

The bundle 23^a to be sawed is bound at frequent intervals, and the holders are arranged so that there will be a binding-wire or equivalent fastening above each holder, so that when the carriage moves toward the saws the latter will turn between the holders, and thus an individual bundle will be held by each holder after the saws have done their work. It is necessary to hold the holders in a vertical position while the sawing is being done, and any suitable fastening device may be used for this purpose, a convenient fastening being illustrated in Figs. 1 and 6. Here the shaft 19 is shown with a collar 25, turning opposite a stationary lug 24 on the bearing 20, and these parts are perforated laterally, as shown at 27, to receive an angle-

pin 26 which is pressed by a spring into the perforation in the collar 25, but which may be pulled back into the perforation in the lug 24 so as to permit the collar 25 and shaft 19 to turn. When the holders 21 are reversed and the collar 25 comes opposite the pin 26, the latter springs into the perforation of the collar 25 and locks the collar, the shaft 19, and the holders 21.

Each rack 22 is held to move in a slideway 28 on the frame 11 and is geared to a pinion 29 on a counter-shaft 30, which is also supported on the frame 11 and turns in suitable bearings 31, the counter-shaft having a common arrangement of tight and loose pulleys to provide for reversing it. This arrangement will be described below, although I do not claim it as new. The shaft has two pairs of tight and loose pulleys 32 and 32^a and 33 and 33^a which are driven by a cross-belt 34 and a straight belt 35 and which are moved by a shipper 36, the arrangement being such that when the straight belt is on a tight pulley the cross-belt will be on a loose pulley, and vice versa, and thus by manipulating the shipper the shaft 30 will be alternately turned in opposite directions, so as to carry the carriage in the desired way.

The bundle 23^a to be sawed is laid in the holders 23, which are fastened by the pin 26, as illustrated, and then the machine is started so as to move the carriage forward, carrying the bundle into the paths of the saws 16 and 17, which pass through the bundle, thus forming it into a series of commercial bundles, after which the carriage-driving mechanism is reversed so that the holders are brought back to their original position. The pin 26 is pulled out and the holders tipped over, thus depositing the several bundles and bringing the other set of holders into position for use, these being fastened as above specified, and the operation repeated.

Just in front of the saws is a guard 37, which is secured to opposite sides of the frame 11 and which extends just above the bundle which is being sawed and serves to prevent the bundle from jumping out of place. The saws are preferably circular, as illustrated, but it is obvious that any other suitable form of saws may be substituted for them without departing from the principle of my invention.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. A sawing-machine of the character described, the combination of a series of saws of different diameters mounted upon a single mandrel, each saw throughout being of a different diameter from that of the next adjacent saw, a bed for the material to be cut, such bed having means for the reception of all of the saws below the supporting-surface thereof, and means for feeding the bed and the advance face of the material to be sawed into and out of range of the saws in a direction parallel to the axis of rotation thereof, substantially as described.

2. A sawing-machine, comprising a series of revoluble saws, a carriage, power-operated means for moving said carriage into and out of range of the saws during the operation thereof, and rotary holders mounted on the carriage and adapted to pass between the saws, substantially as described.

3. A sawing-machine, comprising a series of revoluble saws, a carriage, means for moving said carriage back and forth in relation to the saws, a series of holders rotatably mounted on the carriage to move between the saws, the holders having concave outer ends and means for holding the rotatable holders against rotation during the cutting operation, substantially as described.

4. A sawing-machine, comprising a series of revoluble saws, a carriage, power-operated means for moving said carriage into and out of range of the saws during the operation thereof, a plurality of rotary holders on the carriage, and a guard extending across the machine in front of the saws, substantially as described.

5. A sawing-machine comprising a series of saws, a carriage, racks connected with the carriage, rotary holders on said carriage adapted to move between the saws, a counter-shaft geared to the racks, and power-operated mechanism for reversing the counter-shaft, whereby the carriage may be moved into and out of range of the saws during the operation thereof, substantially as described.

ALEXANDER G. O'NEIL.

Witnesses:

G. C. CURRIER,
D. W. O'NEIL.