W. R. PATRICK.

Rotary Grinding-Machine for the Manufacture of Paper-Pulp from Wood.

No. 204,077. Patented May 21, 1878.

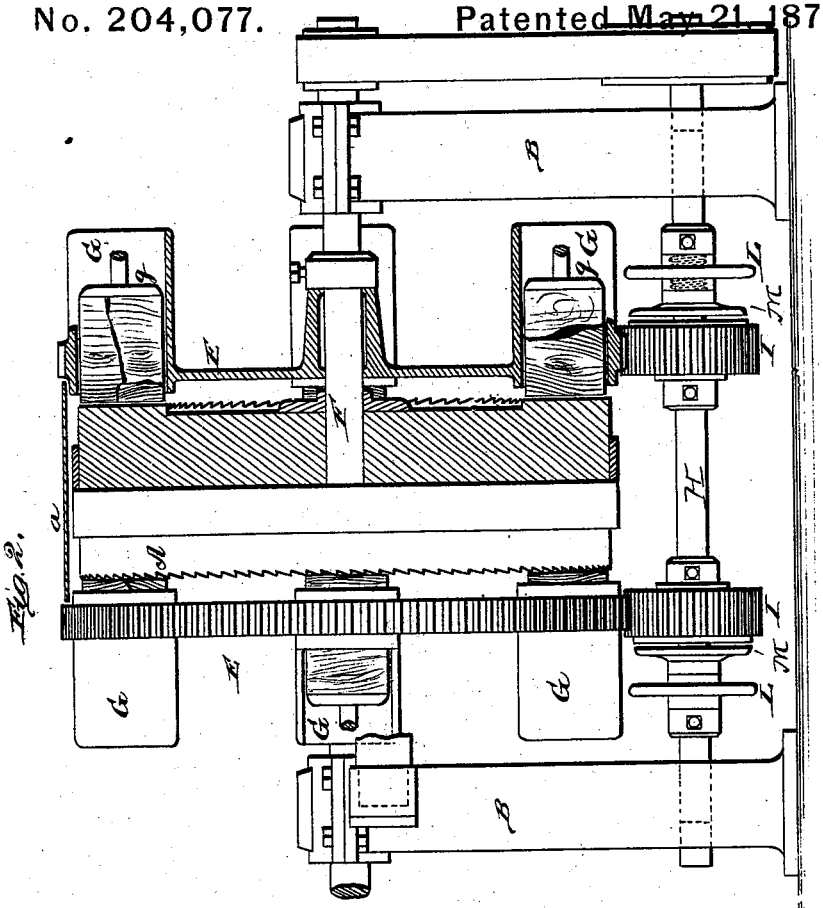

Fig. 2.

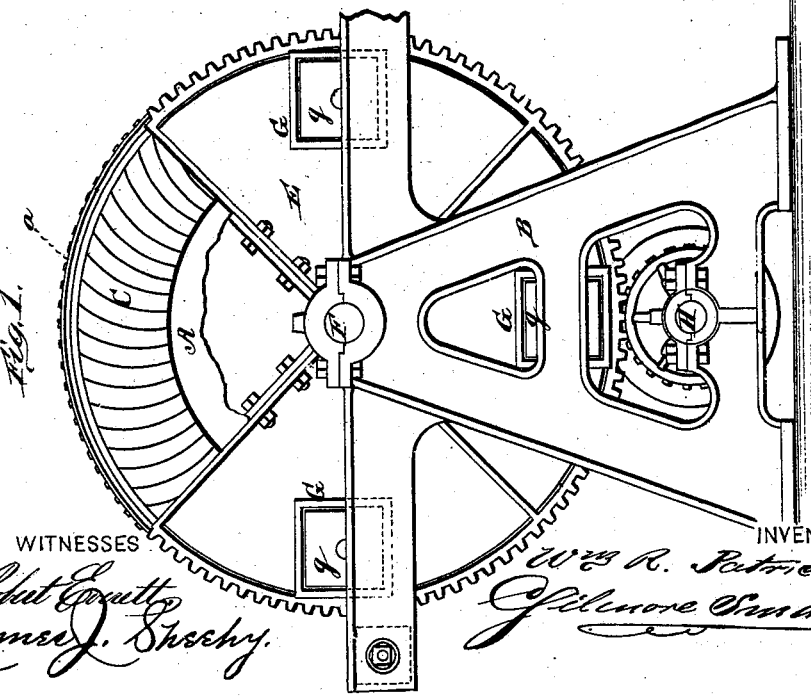

Fig. 1.

WITNESSES:

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WILLIAM R. PATRICK, OF MARINETTE, WISCONSIN.

IMPROVEMENT IN ROTARY GRINDING-MACHINES FOR THE MANUFACTURE OF PAPER-PULP FROM WOOD.

Specification forming part of Letters Patent No. **204,077**, dated May 21, 1878; application filed March 23, 1878.

To all whom it may concern:

Be it known that I, WILLIAM R. PATRICK, of Marinette, in the county of Oconto and State of Wisconsin, have invented a new and valuable Improvement in Rotary Grinding or Scraping Machines for the Manufacture of Paper-Stock; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 is a front elevation of my machine, with a part of the disk removed to show the cutting-face of the rotary cylinder. Fig. 2 is a side or an end elevation of the same, showing a part thereof in section.

This invention relates to a machine for reducing wood to the form of "half-stuff" or long fiber, torn or scraped off lengthwise, or with the grain of the wood, this half-stuff being too long to enter directly into paper, but intended to be treated by another process recently patented to me. For the purpose of the chemical action necessary in such process, the wood ground to a fine material is objectionable, as I desire to have long fine fibrous material.

The object of my invention is to provide a machine that will rapidly make the aforesaid half stock or stuff from wood by scraping it off with the grain, making a fiber longer, finer, softer, and stronger, thereby admitting a greater proportion of this material after being treated, and rebeat, as provided in my patent referred to, to be used with other stock, and thus making a great saving in the manufacture of paper.

The invention consists in the application of a revolving disk to either side of a rotary cylinder provided with scraping-surfaces. Attached to the disks are any convenient number of pockets or chambers for receiving the wood; also, in the arrangement of friction-plates, hand-wheels, &c., in connection with the disks for readily starting, stopping, slacking, and regulating the speed, and acting as a safety-friction in cases of excessive feed or accident. In connection with each of the disk pockets or chambers are feed-works, for the purpose of forcing the wood at any required speed to the scraping-surfaces of the cylinder; and it finally consists in the particular construction and arrangement of parts, as will be hereinafter more fully set forth.

B represents a frame or standards, secured by bolts or otherwise to the floor, and upon the same is mounted a cylinder, A, provided with a covering, *a*, and suitable journals in boxes or bearings. The scraping-surfaces on either side are formed to any required width from the periphery in the form of teeth, as shown in Fig. 1. These scraping-surfaces C C may be made either on circular lines or on straight lines radiating from the center.

In connection with the cylinder are two disks, E E, with movable quarter, for the purpose of repairing or removing the scraping-surfaces of the cylinder. These disks revolve upon the same shaft F, and are provided with any suitable number of chambers G, for receiving the wood preparatory to scraping or grating, it being placed in position, as shown in Fig. 2. At the back of the wood in each chamber is placed a moving head-block, *g*, acted upon by suitable feed-works.

H is a counter-shaft, driven by belt or any other convenient means from the main shaft, and upon the same are loosely mounted two toothed pinions, I, which mesh into corresponding teeth formed on the periphery of the disks E E. The teeth of the pinions are wider than those of the disks, to admit of the disks being moved nearer the cylinder as it becomes worn.

The hand-wheels L, acting as screw-nuts, in connection with friction-plates M, which are threaded to correspond and feathered on the shaft, are for the purpose of starting. When these friction-plates are separated, the shaft H will revolve without affecting the disks; but as soon as the plates M are brought in contact with the loose pinions I by means of the hand-wheels, they are locked and motion is given to one or both disks, as desired. This device is also used for stopping, slacking, and regulating the motion.

The operation of the machine is as follows: When power is applied to the main shaft, the cylinder and counter-shaft revolve, the latter by means of the pulleys and belt, the disks remaining stationary. When the chambers

are filled with wood, placed with the grain in the direction shown, and the feed-works adjusted, the hand-wheels are moved so as to bring the friction-plates in contact with the pinions I either firmly or loosely, according to the speed required by circumstances.

By this means I succeed in procuring the long, thin, soft, strong fibrous material from the wood in a very rapid and economical manner.

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

1. A machine for the manufacture of half-stuff or fine, long, soft, and strong fibrous material from wood, consisting of a frame, B, scraping-cylinder A, disks E, with chambers G, pinions I, friction-plates M, and hand-wheels L, for the purpose set forth.

2. The combination, with the rotary cylinder A, provided with scraping-surfaces C, and mounted upon a frame, B, of two revolving disks, E, containing pockets or chambers G, substantially as described.

3. The combination of two geared disks, having chambers for receiving the wood, and revolving upon a shaft, F, in connection with rotary cylinder A, each provided with a gear-pinion revolving upon a shaft acted upon by friction-plates M at discretion, substantially as set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

W. R. PATRICK.

Witnesses:
GEORGE CLARK,
JOHN B. FAIRCHILD.