

No. 655,595.

Patented Aug. 7, 1900.

J. ASKINS.

MECHANISM FOR REDUCING WOOD TO FIBER.

(Application filed Jan. 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

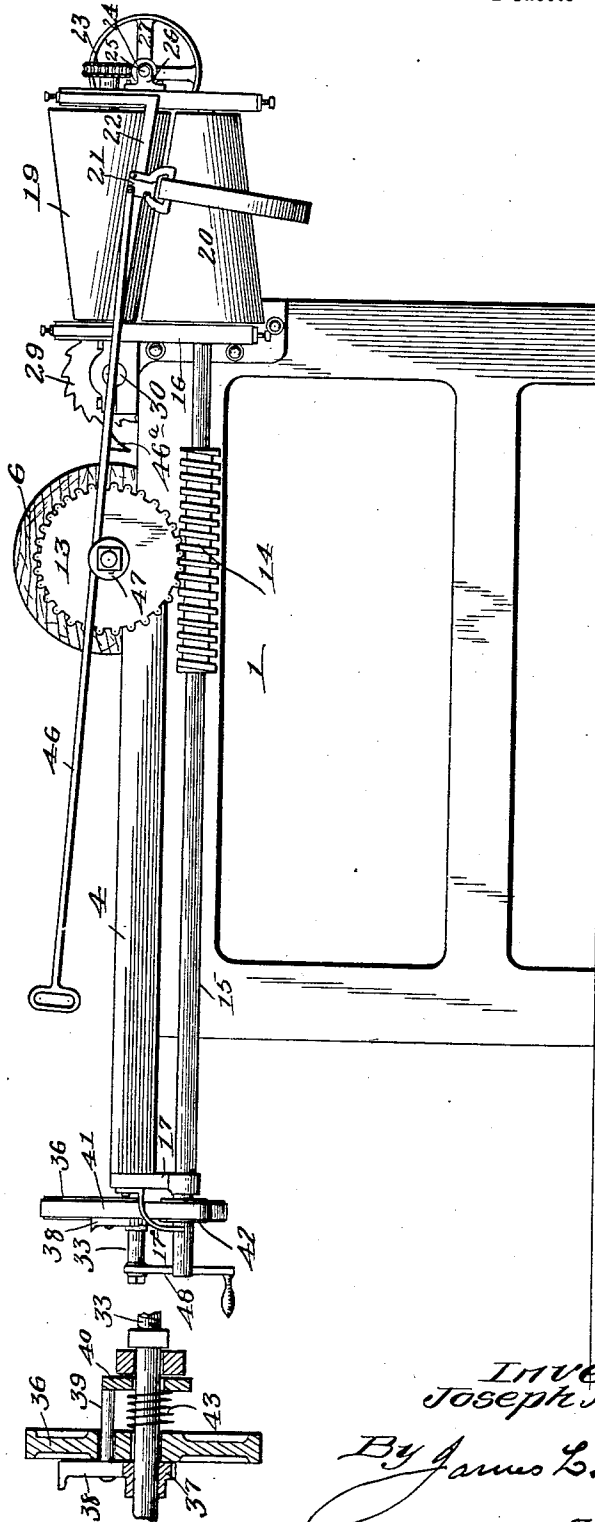


Fig. 3.

witnesses.
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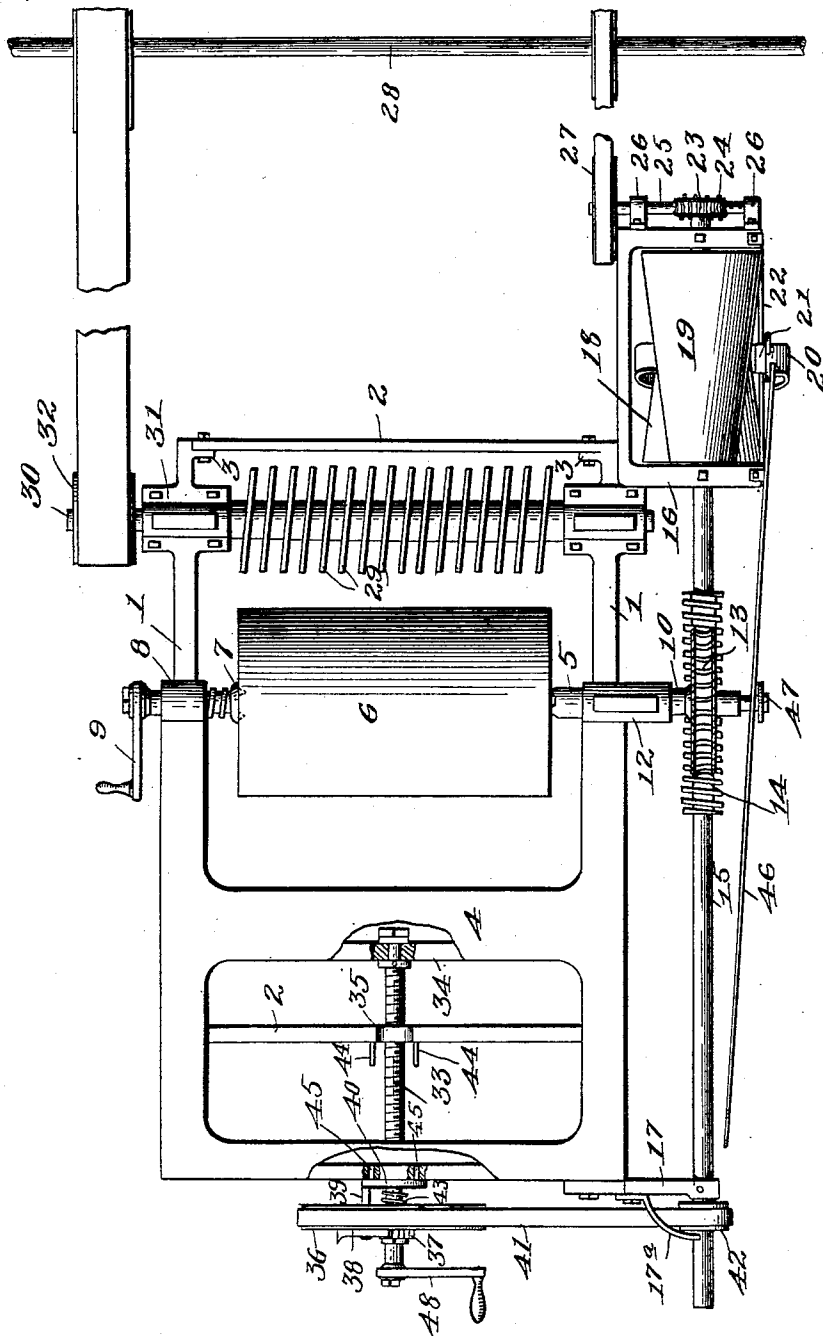
MECHANISM FOR REDUCING WOOD TO FIBER.

(Application filed Jan. 16, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2



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UNITED STATES PATENT OFFICE.

JOSEPH ASKINS, OF LIMA, OHIO, ASSIGNOR TO THE AMERICAN WOOD FIBER COMPANY, OF SAME PLACE.

MECHANISM FOR REDUCING WOOD TO FIBER.

SPECIFICATION forming part of Letters Patent No. 655,595, dated August 7, 1900.

Application filed January 16, 1900. Serial No. 1,679. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ASKINS, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have
5 invented new and useful Improvements in Mechanism for Reducing Wood to Fiber, of which the following is a specification.

My invention relates to mechanism for reducing wood to fiber.

10 One purpose of my invention is to provide a machine of this type which can be easily and instantly regulated to produce coarse or fine fiber, as may be desired; as well as fiber of different degrees of fineness between the
15 coarse and fine, each grade being of uniform character throughout.

It is a further purpose of my invention to provide such a machine with automatic means by which the two feed movements of the log or block shall both increase in speed as the
20 diameter of the block is reduced, thereby causing the machine to produce fiber of a uniform size or degree of fineness throughout.

It is also my object to provide automatic
25 means of simple character whereby the two feed movements of the wood may be regulated at any moment without arresting the operation of the machine and whereby knots and gnarled or hard portions of the block may be
30 presented to the saws or cutters in such manner as to meet the extraordinary demands upon the mechanism.

I aim also to provide the machine with simple and efficient devices whereby the recti-
35 linear feed movement will be arrested as soon as it has brought the wooden block to a point beyond which it ought not to pass, the rotary feed and the cutters being permitted to run until the operator stops them.

40 I also provide a machine in which the feed mechanism and cutters are driven from the same counter-shaft and are both started or stopped by merely shifting the belt.

The invention consists of the several novel
45 features of construction and new combinations of parts hereinafter fully explained and then particularly pointed out and defined in the claims.

For the purposes of the following description
50 reference is had to the accompanying drawings, in which--

Figure 1 is a side elevation of a machine for reducing wood to fiber organized in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional
55 view.

The reference-numeral 1 in said drawings indicates the side portions of the supporting-frame of the machine, which are of any suitable material and construction, said members
60 being connected by horizontal tie-bars 2, bolted at the ends to lugs 3 upon the vertical side portions 1. Upon said portions is mounted a carriage 4, consisting of an open frame having sides which straddle the upper edges
65 of the parts 1. Upon one side of this carriage is a chuck 5 or other suitable device for holding the end of a log or block of wood, such as is indicated by the numeral 6, and on the opposite side is a clamping-head 7,
70 suitably supported in a bracket-bearing 8 and having a crank-arm 9 or other means by which it can be operated to force the end of the log or block into engagement with the chuck. The latter is upon a shaft 10, journaled in
75 a bracket 12 upon the carriage and having upon its outer end a worm-gear 13. This gear meshes with a worm 14 upon a shaft 15, arranged upon the side of the machine, one end being supported in brackets 16, which
80 project laterally from the side 1, while its other end has bearing in a bracket arm 17, which is mounted upon the rear end of the carriage 4 and moves with the latter. Upon the shaft 15, between the two brackets 16, is a
85 cone-pulley 18, and in the same brackets is a second reversely-tapered cone-pulley 19, with its face in close proximity to but not touching the face of the pulley 18. Revolution is
90 communicated from one pulley to the other by a friction band or strap 20, which encircles one of said pulleys and is of a length somewhat in excess of the greatest diameter of the latter. The thickness of the belt is such as
95 to insure its compression between the conical faces of the two pulleys to a degree that will impart rotation without slipping. The position of the band is controlled by a shifter 21, which slides on a guide-bar 22, mounted
100 on the brackets 16 and arranged in parallelism with the upper side of the lower cone-pulley 18, with which the friction-band 20 is

in operative contact. Revolution is communicated to these pulleys by a worm 23, meshing with a worm-gear 24 on the shaft of the upper cone-pulley 19. This worm is on a shaft 25, journaled in lugs 26, which project from the end of the bracket-frame that gives support to the cone-pulleys 18 and 19. On the end of said shaft is a pulley 27, which is driven by a belt from a counter-shaft 28, suitably arranged for the purpose.

The cutters or saws 29, which may be of any preferred form, are on a shaft 30, journaled in bearings 31 on the sides of the machine-frame. A pulley 32 is on the end of this shaft and is driven from the same counter-shaft 28 that drives the cone-pulleys.

The carriage 4 is moved horizontally to feed the wood to the saws 29 by a screw 33, which extends centrally from a cross-bar 34 of the carriage-frame through a bearing 35 in the rearward tie-bar of the machine-frame and then through the end of the carriage, beyond which it extends rearwardly, the projecting portion being without a screw-thread. A pulley 36, of suitably-large diameter, is loose upon the projecting portion of the shaft and is operatively connected with it by a ratchet 37 and a pawl 38, the latter being mounted on a pin 39, which projects from an annulus 40, surrounding the screw 33, but not engaging it. This annulus lies against or close to the rear end of the carriage, as shown in Fig. 2, and the pin 39 passes through the web of the pulley 36. The pulley 36 is driven by a belt 41 from a small pulley 42, which is keyed or splined upon the shaft 15, so as to move with the carriage 4, said pulley lying between the bracket-arm 17 on the rear end of the carriage and an arm 17^a, bolted to the bracket-arm. A spiral spring 43, coiled on the screw-shaft between the annulus 40 and the pulley 36, normally preserves the operative engagement of the pawl 38 with the ratchet 37. When the limit of the feed movement has been reached, the pawl is disengaged from the ratchet by pins 44, which project from the rearward tie-bar 2 of the machine-frame. As the end of the carriage closely approaches the tie-bar the pins 44 enter and pass through openings 45 in the end of the carriage, (shown in dotted lines in Fig. 2,) and the annulus 40 encounters their ends, whereby the movement of the pin 39 with the carriage 4 is arrested. As the ratchet 37 continues to move with the screw it is drawn out of mesh with the pawl and the movement of the carriage ceases, the rotary motion of the block continuing until the operator stops the cutters by shifting the diverging belt to the loose pulley on the counter-shaft 28.

The band-shifter 21 is operated by a rod 46, which extends over and rests upon the end of the shaft 10, a collar 47 being provided to retain it in place. The said rod 46 has a lug or projection 46^a depending therefrom, which is arranged in the path of the shaft 10 in such manner that as the carriage advances the said

shaft will engage the lug or projection and cause the rod 46, and with it the shifter 21 and band 20, to move forward between the cone-pulleys, thereby varying the speed of the shaft 15, and consequently the feed of the block of wood and the rotation of the latter. When the block of wood is first placed in the machine and the latter set in motion, the rod 46 is drawn back to bring the friction-band 20 to the small end of the cone-pulley 19. The feed of the carriage and the rotary movement of the block are both imparted through the large end of the cone-pulley 18. As the diameter of the block lessens under the action of the saws the forward movement of the carriage 4, through the shaft 10 and rod 46, as just described, gradually carries the friction-band in the same direction, causing it to communicate a forward movement to the carriage and a rotary movement to the wooden block of constantly-increasing speed. In case the block of wood being cut should be very hard or is full of knots the rod 46 can be raised so as to allow the lug or projection 46^a to pass over the shaft 10, thus permitting the machine to remain on the slow feed, which requires less power than when operating on the variable feed. It is a simple matter to proportion this increase properly by the relative diameters of the various gears. By this automatic control of both feed movements the fiber produced will be of uniform fineness. After a block or log has been reduced to fiber the carriage 4 is drawn back by hand, a crank 48 being provided for that purpose on the end of the screw.

A marked advantage of the invention is that the mechanism can readily be adjusted to cut fiber of a coarse or a fine grade. If fine fiber is desired, the shifter is so placed as to bring the friction-band to the small end of the upper cone-pulley 19 and leave it there during the operation of the machine. If coarse fiber is desired, the band will be placed at the large end of the cone-pulley 19, and by placing it at different points between the two mentioned fiber of various degrees of fineness can be produced.

Another advantage is that if a tough, knotty, or gnarled piece of wood is put in the machine the shifter can always control the rate of feed according to the quality of the stuff operated upon by merely adjusting the friction-band in one direction or the other.

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

1. In a machine for reducing wood to fiber, the combination with the cutters, of a carriage movable toward the cutters, revoluble means for supporting a log or block of wood on said carriage, a screw for advancing the carriage, a worm-wheel to operate the revoluble supporting means, a single shaft arranged beside the machine and having a pulley belted to a pulley on the screw and a worm meshing with the worm-wheel, and means for rotating

said single shaft at a variable speed, substantially as described.

2. In a machine for reducing wood to fiber, the combination with a series of cutters, of a carriage movable toward said cutters, a revoluble support on said carriage for the block or log of wood, a screw to move the carriage, a single shaft geared to rotate said screw and also the support for the wood, reversely-arranged cone-pulleys one of which is fast on said shaft, a friction-band between said cone-pulleys, and means for automatically controlling the position of said friction-band by the feed movement of the carriage, substantially as described.

3. In a machine for reducing wood to fiber, the combination with the cutters, of a carriage movable toward the cutters, a revoluble support on said carriage for the block or log of wood, a screw to move said carriage, a single shaft geared to the revoluble support and having a small pulley belted to a larger pulley loose on the screw, a ratchet fast on the screw, a pawl connecting the pulley with the ratchet, an annulus loose on the screw and having a pin carrying the pawl, and pins mounted on a rigid part of the machine-frame and adapted to engage the annulus as the carriage reaches the limit of its feed movement and disengage the pawl from the ratchet, substantially as described.

4. In a machine for reducing wood to fiber, the combination with the cutters, of a carriage movable toward the cutters, revoluble

means for supporting a log or block of wood, a screw for advancing the carriage, a worm-gear to operate the revoluble support, a single shaft arranged beside the machine and having a pulley belted to a pulley on the screw and a worm meshing with the worm-gear, reversely-arranged cone-pulleys to operate said shaft, a friction-band between said cone-pulleys, and automatic means for controlling the position of said band by the movement of the carriage, substantially as described.

5. In a machine for reducing wood to fiber, the combination with the cutters, of a movable support for the wood, a single shaft operating through suitable connections with the support for advancing the wood to the cutters and simultaneously revolving the same, reverse cone-pulleys one of which is fast on said shaft, a friction-band between said pulleys, and means for controlling the position of said band by the movement of the wood toward the cutters as its diameter lessens, whereby the speed of the shaft will be proportionately increased, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH ASKINS.

Witnesses:

J. N. HUTCHISON,
EMANUEL CRIST.