(No Model.)

C. A. MILLER.

AUTOMATIC FEED REGULATOR.

No. 403,056. Patented May 7, 1889.

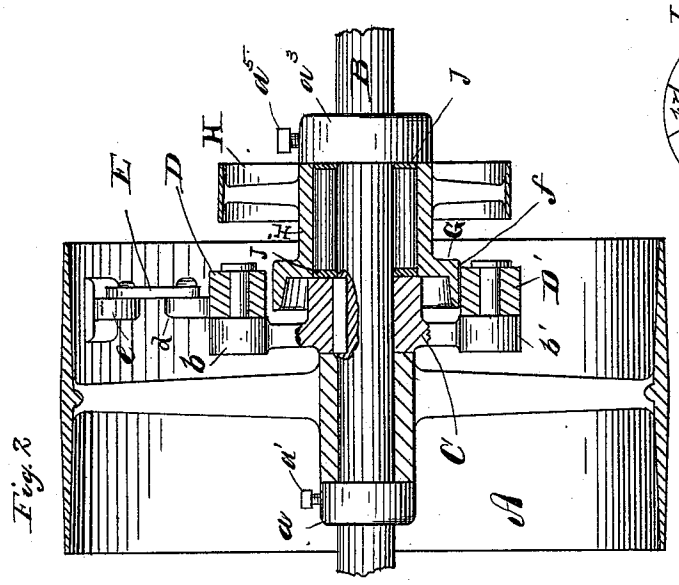


Fig. 2.

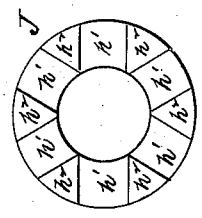


Fig. 4.

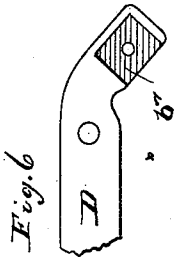


Fig. 6.

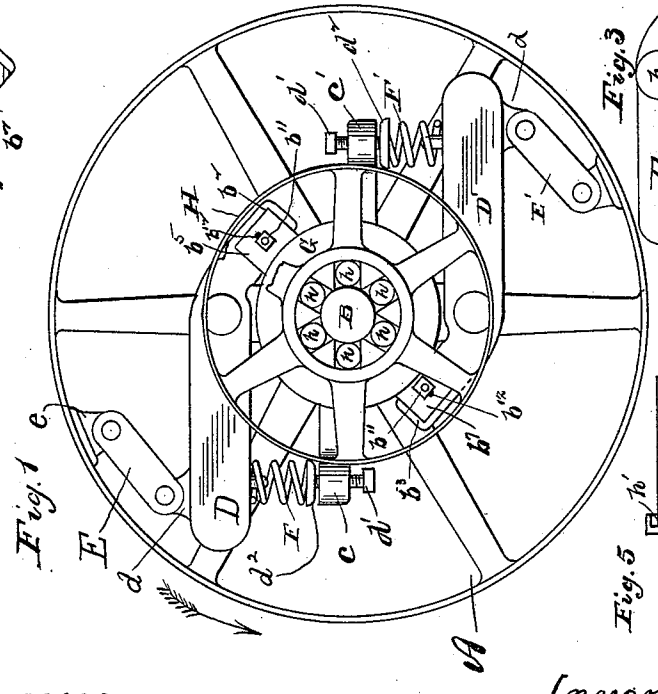


Fig. 1.

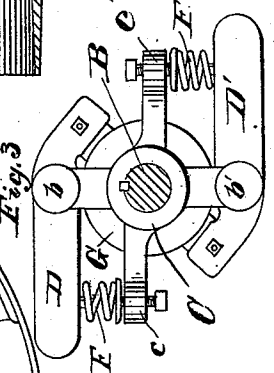


Fig. 3.

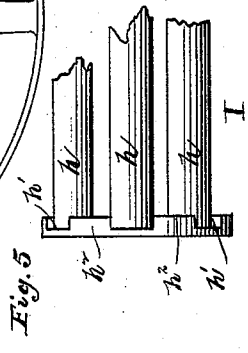


Fig. 5.

Witnesses.
Isaiah Richards
Chas. D. Welch.

Inventor
Charles A. Miller
By Paul A. Staats Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

CHARLES A. MILLER, OF URBANA, OHIO, ASSIGNOR OF ONE-HALF TO SHERMAN HUSTED, OF SAME PLACE.

AUTOMATIC FEED-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 403,056, dated May 7, 1889.

Application filed December 5, 1888. Serial No. 292,700. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MILLER, a citizen of the United States, residing at Urbana, in the county of Champaign and State of Ohio, have invented a certain new and useful Improvement in Automatic Feed-Regulators, of which the following is a specification.

My invention relates to devices for automatically regulating feed for wood-working machinery, and for similar purposes.

The object of my invention is to provide an automatic feed-regulator especially adapted for wood-working machinery, and particularly for saw-mills, the device being so constructed that the feed of the material being operated upon shall be proportionate to the amount of power, the quality of the material, and such other determining influences as effect the relation of the feed to the power applied. I accomplish this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view, in elevation, of a device embodying my invention, one of the end collars being left off to better disclose some of the operating parts. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a detail view of the friction-brakes or clutching devices. Figs. 4, 5, and 6 are detail views hereinafter referred to.

Like parts are represented by similar letters of reference throughout the several views.

I have illustrated the device as especially adapted to saw-mills, and will describe the same as in use with the feed device of a saw-mill, it being understood that the same operating parts may be readily applied to any form of wood-working machinery or other similar operating mechanism where a variable feed of the material with reference to the cutting or working parts is desired.

In the said drawings, A represents the main driving wheel or pulley located on the mandrel B, which carries the saw, in the ordinary manner. The pulley or wheel A fits on the mandrel B, but is adapted to turn independently thereof. The pulley A is held against longitudinal movement on the shaft or mandrel B, in one direction by a collar, *a*, secured to the mandrel B by a set-screw, *a'*, or in any other suitable manner. On the opposite side of the pulley A is a spider, C, keyed or otherwise firmly secured to the shaft B, and adapted to turn therewith. This spider C is provided with projecting ears or lugs *b* and *b'* and supporting-arms *c c'*.

Pivoted to the projecting ears *b b'* of the spider C are oscillating arms D D', each provided at the outer end with a projecting ear, *d*, to which are attached connecting-links E E', which extend outwardly and are attached at their other ends to lugs or ears *e*, secured to the inside of the rim of the driving wheel or pulley A. Located under the arms D D' are springs F F', which bear, respectively, at one end against the oscillating arms D D', and the projecting supporting-arms *c c'* on the spider C.

Located on the mandrel B, adjacent to the spider C and on the opposite side thereof from the pulley A, is a friction-wheel, G, the bearing-surface *f* of which stands adjacent to and in line with the oscillating arms or levers D D', which, by the action of the springs F F', are kept at their inner ends in contact with the face *f* of the said friction-wheel G. The friction-wheel G is preferably made of iron with a plain periphery, *f*, and in order that a sufficient degree of friction may be obtained between the inner end of the operating or brake levers D and the said friction-wheel, I preferably provide the said arms with sockets b^2 b^3, adapted to receive brake-blocks b^5 and b^7, of wood or other suitable material, the said blocks being held in place in the receptacles by fastening bolts or screws b^{11}, which pass through slotted openings b^{12} in the said blocks. The brake-blocks are preferably made of wood, with the end grain placed next to the periphery of the friction-wheel, the slotted openings in the blocks furnishing means for adjusting the position of the same as they become worn.

The friction-wheel G is connected to the feed-pulley H, from which the power to drive the feed mechanism is conveyed. The said friction-wheel and feed-pulley are preferably connected together by a hub or sleeve, H', cast

in one piece with said wheel and pulley. A collar, a^3, secured to the mandrel B by a set-screw, a^5, or in any other suitable manner, serves to hold the friction-wheel G and the feed-wheel H against longitudinal movement on the said mandrel B.

The power to drive the saw, as before stated, is applied to the driving-wheel A, which turns in the direction of the arrow in Fig. 1, the power thus conveyed being transmitted to the mandrel through the links E E′, arms D D′, and the spider C. The springs F F′ force the levers D D′ against the friction-wheel G, thus forming a friction-clutch, which causes the feed-wheel H to revolve with the pulley A and the mandrel B. The tension of the springs F F′ is sufficient to hold the levers D against the propelling force to drive the saw under ordinary working conditions. When, however, the saw becomes choked or the resistance thereto becomes too great for the ordinary propelling force, the springs are compressed, the friction-wheel G becomes thus released, and the feed-wheel H turns at a less speed than the mandrel B, thus compensating in the speed of the feed mechanism for the extra resistance at the cutting-point of the saw.

Means are provided by which the tension of the springs F F′ can be regulated as desired. This I preferably accomplish by set-screws d', which pass through the arms c and bear against a washer or spring-cap, d^2, at the end of the springs F F′.

In order that the friction-wheel G and feed-wheel H may turn freely on the shaft or mandrel B with as little friction as possible, so that the said friction-wheel and feed mechanism will be more sensitive to the action of the brake-levers D D′, I preferably provide the said friction-wheel with a roller-bearing, I, made up of a series of rollers, h, located at intervals around the mandrel B and between the same and the inner surface of the hub H′ of the friction-wheel G and feed-wheel H, the said hub being formed in the nature of a sleeve for this purpose. The rollers h are separated from each other at the ends and held in their respective positions by means of small disks J, provided with recesses h', adapted to receive the ends of the rollers h, and projecting portions h^2, adapted to separate the said rollers. (See Figs. 4 and 5.) These disks are placed at each end of the sleeve or hub H′, and are held in position by the collar a^3, which also holds the friction-wheel in place.

I have shown in the drawings two brake levers or arms, one on each side of the friction-wheel G. It is obvious that the number may be varied as desired. Under some circumstances and with a roller-bearing as described one lever might be found to answer, though two is the preferable number. It is obvious that other modifications in the construction of this device may be made which would suggest themselves to the mind of an ordinary mechanic. I do not, therefore, limit myself to the exact construction shown and described, but reserve the right to modify any of the various constructions and forms as come clearly within the scope of my invention.

I claim—

1. In an automatic feed-regulator, as described, a main driving-wheel and a feed-wheel, both mounted loosely upon their supporting-shaft, a spider secured rigidly to said shaft between the said driving and feed wheels, and a friction-clutch between said spider and feed-wheel adapted to be released by the propelling force applied to the driving-wheel, substantially as specified.

2. In an automatic feed-regulator, a driving-wheel and a feed-wheel, each mounted loosely on the same supporting-shaft, a friction-wheel connected to said feed-wheel, brake-arms bearing against said friction-wheel, connected to said shaft so as to turn positively therewith, springs to force said arms against said friction-wheel, and connections from said arms to the driving-wheel, whereby the resistance to the driving-shaft operates with the propelling force to overcome the tension of the said springs and release the said friction-wheel, substantially as specified.

3. The combination, with a driving-wheel and a feed-wheel, each mounted loosely on the supporting-shaft, of the spider connected rigidly to said shaft and provided with pivoted brake-levers attached thereto, a friction-wheel connected to said feed-wheel, springs attached to force said levers against said friction-wheel, connecting-links from said levers to the driving-wheel, and means for regulating the tension of said springs, substantially as specified.

4. In an automatic feed-regulator, a driving-wheel and a feed-wheel mounted on the same supporting-shaft and adapted to turn loosely thereon, said feed-wheel being provided with a roller-bearing, as described, a friction-wheel connected to said feed-wheel, brake-arms engaging with said friction-wheel, springs for operating said brake-arms, connecting-links from said arms to said driving-wheels, and means for connecting said arms to the supporting-shaft, so they shall turn positively therewith, substantially as specified.

5. The combination, with a driving-wheel and a feed-wheel, each mounted loosely on the same supporting-shaft, of a friction-wheel connected to said feed-wheel, a spider connected rigidly to said shaft and provided with brake-levers supported thereon, adjustable brake-blocks in the said brake-levers, springs for operating the said brake-levers against the said friction-wheel, and connecting-links from the said brake-levers to the driving-wheel, substantially as specified.

6. The combination, with a driving-wheel and a feed-wheel mounted loosely on the same supporting-shaft, said feed-wheel being provided with a roller-bearing and a friction-wheel, as described, of a spider having brake-levers with removable brake-blocks adapted to bear against said friction-wheel, springs for operating said brake-levers against said friction-wheel, connecting-links from the said brake-levers to the driving-wheel, and means for adjusting the tension of the said springs, substantially as specified.

In testimony whereof I have hereunto set my hand this 30th day of November, A. D. 1888.

CHARLES A. MILLER.

Witnesses:
CHAS. I. WELCH,
CHASE STEWART.

Correction in Letters Patent No. 403,056.

It is hereby certified that the name of the assignee in Letters Patent No. 403,05(granted May 7, 1889, upon the application of Charles A. Miller, of Urbana, Ohio, fo an improvement in "Automatic Feed-Regulators," was erroneously written and printe "Sherman Husted," whereas said name should have been written and printed *Sherma Huston;* and that the said Letters Patent should be read with this correction therei that the same may conform to the files and records of the case in the Patent Office.

Signed, countersigned, and sealed this 14th day of May, A. D. 1889.

[SEAL.]

CYRUS BUSSEY,

Assistant Secretary of the Interior

Countersigned:

C. E. MITCHELL,

Commissioner of Patents.