(No Model.) 2 Sheets—Sheet 1.

W. E. DILLARD.

VARIABLE FRICTIONAL FEED FOR SAWMILLS.

No. 512,099. Patented Jan. 2, 1894.

Fig. 1.

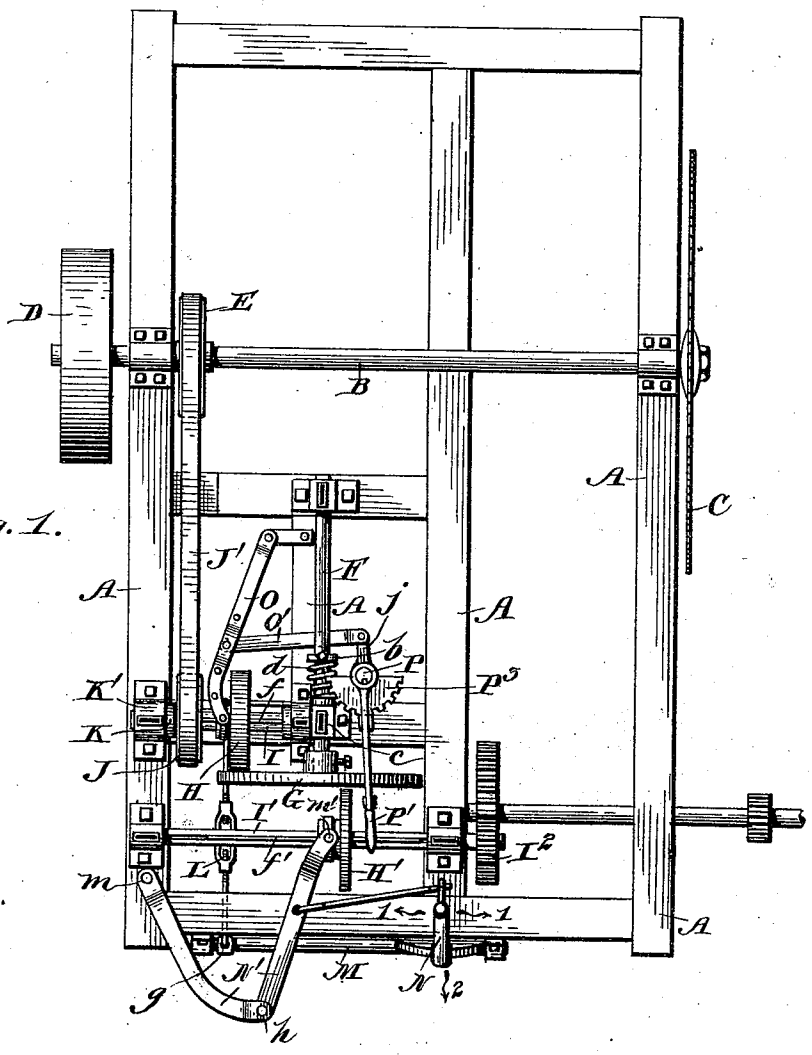
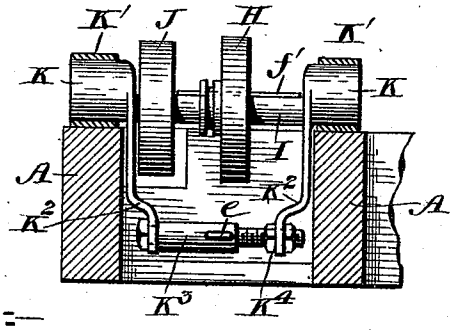


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

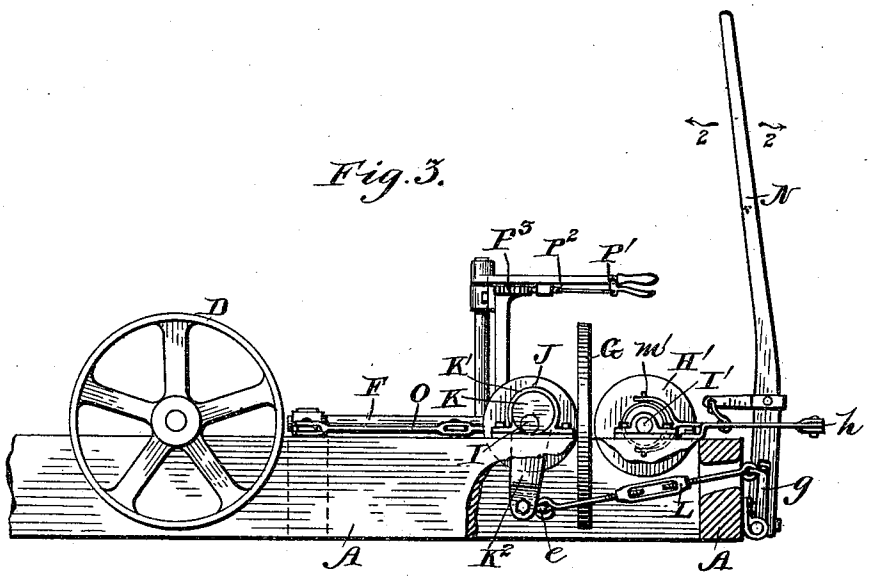
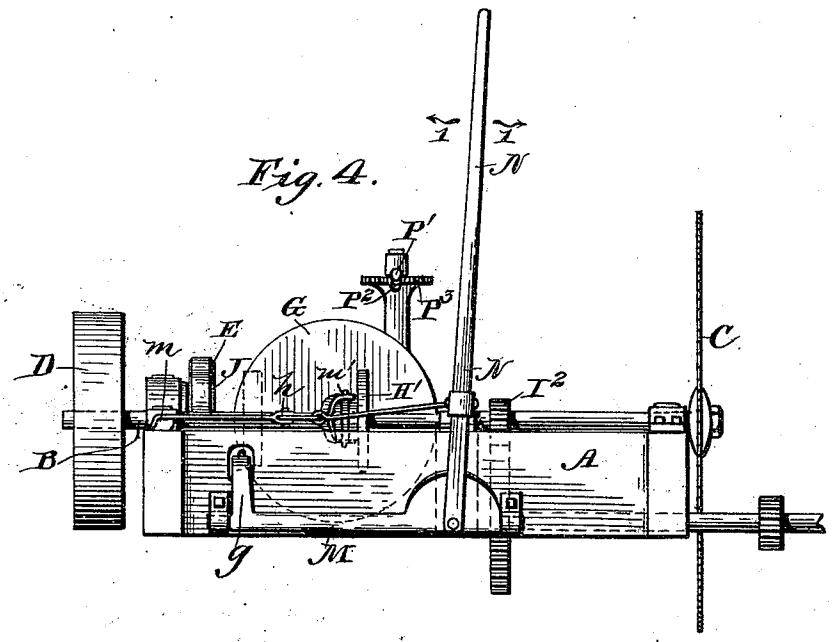


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER E. DILLARD, OF TAPPAHANNOCK, VIRGINIA.

VARIABLE FRICTIONAL FEED FOR SAWMILLS.

SPECIFICATION forming part of Letters Patent No. 512,099, dated January 2, 1894.

Application filed January 31, 1893. Serial No. 460,398. (No model.)

To all whom it may concern:

Be it known that I, WALTER E. DILLARD, a citizen of the United States, residing at Tappahannock, in the county of Essex and State of Virginia, have invented certain new and useful Improvements in Variable Frictional Feeds for Sawmills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to saw-mill carriages fed by frictional gearing, and its objects are to combine with the adjustable or variable speed regulating friction wheel on the toothed geared shaft which transmits the speed to the toothed geared shaft of the carriage, an adjustable or variable steam, air or other motive power-applying friction wheel whereby the extent of the power can be changed to a greater or lesser extent, while the speed of the carriage is allowed to remain at any determined degree, and to accomplish this by the aid of a single friction disk having two working surfaces, arranged intermediate the two friction wheels on shafts parallel with the saw mandrel or shaft.

Another object is to simplify the construction and arrangement of the means employed for effecting the throwing of the friction wheels into different positions for changing the speed; or varying the power without changing from a determined speed for the carriage; or varying the speed of the carriage without changing from a determined degree of steam or other motive power for operating it; and another object is to provide very simple and convenient means for manipulating the parts, so as to insure their most effective action, and for keeping them in and out of action.

My invention will be fully understood in the following specification, claims, and accompanying drawings.

In the drawings, Figure 1, is a plan view of a portion of a saw-mill carriage feed-mechanism illustrating my invention. Fig. 2, is a vertical section of a portion of the supporting frame, showing a friction wheel, a power transmitting shaft, a pulley, and eccentrics fitted loosely on the shaft and made adjustable in their bearings. Fig. 3, is a side view of the parts shown in Fig. 1, a portion of the frame being broken away to expose certain adjusting parts, and Fig. 4, is an end view of the parts shown in Fig. 1, looking toward the edge of the saw.

A, in the drawings is the saw-mandrel supporting frame, on which all the feed regulating mechanism is applied.

B, is the saw-mandrel, and C, the saw. On the mandrel a power receiving pulley D, and a power transmitting pulley E, are applied.

F, is a revolving and sliding shaft arranged on the frame A, at right angles to the saw-mandrel B. On this shaft a large friction disk G, having plain working faces on both sides is fastened. This shaft is constructed with a collar or shoulder *b*, and between this collar and the bearing box *c*, in which the shaft revolves and slides, a spiral spring *d* is applied having one of its ends bearing against the collar, and its other end against the box. By this spring the shaft is caused to slide, and force the disk G, frictionally in contact with a smaller friction wheel H, on a shaft I, and thereby certainly insure a revolution of this disk G during such time as the saw is revolving, and when the feed is stopped.

The shaft I, which carries the smaller friction wheel H, is arranged forward of the disk G, between the saw-mandrel and the disk; and it is furnished with a key *f*, which fits in a key seat of the wheel H, and by this means the friction wheel H, is allowed to have a sliding movement on the shaft I, and can be set near the axis, or near the periphery of the friction disk G, or at any intermediate point, so as to change the amount of leverage, or vary the amount of power transmitted by said disk. This shaft I, with its wheel is geared to the saw-mandrel B, by means of a pulley J, on it, the pulley E, on the mandrel and a belt J'. On the opposite side of the disk G, another friction wheel H' is applied, by means of a key *f'*, and a key seat, to a shaft I'. This latter shaft is provided with a suitable gear as I^2, for driving a log carriage, and it is arranged parallel with the shaft I, and mandrel D, of the saw. The key extends the whole length of the shaft, or nearly so, and the friction wheel can be moved from one side to the

other of the disk G, it being capable of passing right and left of the shaft F, and thus adapted to run the feed either right or left, accordingly as required in feeding the carriage forward and gigging it back.

For moving the wheel H, to a position which will allow of the disk G, maintaining its frictional contact with the wheel H, when the feed is stopped, the shaft I is provided at its ends with eccentrics K, which are fitted in boxes K′ of the frame A, and connected to vibrating pendent arms K^2 which are connected by an extensible rod K^3, which rod can be lengthened or shortened, as may be necessary, to secure a proper fit and position of the eccentric, by means of a screw thread and nut, as indicated at K^4. The eccentrics K, are moved so as to cause the wheel H, to force the disk G, into positive frictional contact with the wheel H′, by means of an adjusting turning buckle L, which is attached to a loop *e*, of the extensible rod, and extends along the bottom of the frame A, and attaches to a crank arm *g*, of a rocking bar M, on one end of which bar is pivoted a hand lever N, said lever being so pivoted that it may be moved in the direction of the arrows 1, while it is adapted for rocking the bar in the direction of the arrows 2. The lever N, is connected to one of a pair of links N′, said links being jointed together at *h*, and pivoted respectively to the frame A, and to a collar of the friction wheel on the shaft I′ as indicated at *m* and *m*′.

By the construction, arrangement and combination of mechanism described, between the eccentrics which adjust the shaft I toward and from the shaft I′, and the rocking bar M; and between the wheel H′ and lever N, the wheel H′ can be slid any distance desired on its shaft, by moving the said hand lever N, in either of the directions indicated by the arrows 1, and then by moving the lever in the direction of the arrows 2, the friction wheel H can be moved to a position which will permit the disk G to slide with its shaft out of contact with the wheel H′, as illustrated in Figs. 1 and 3; and to bring the wheel H′ in contact with the disk G, it is only necessary to reverse the movement of the hand lever.

For shifting the wheel H, on the face of the disk and thereby changing the length of leverage for receiving and transmitting the power of a steam or other engine, a vibrating bar O, pivoted to the frame A, is connected to a collar of the sliding and revolving wheel H, and to this bar a connecting link O′ is pivoted, said link being pivoted to a crank arm *j*, of an upright vibrating shaft P, having its bearing in a standard of the frame. A hand lever P′ is fastened to this shaft, and said lever is provided with a spring latching lever P^2 which takes into notches of the toothed arc, P^3. By moving the lever P, the friction wheel H, can be slid on its shaft either farther from or nearer to the periphery of the friction disk, and thus the leverage point of applying the power from the engine, adjusted as circumstances may demand.

From the foregoing description and the drawings, it will be evident that my construction and arrangement possess an advantage in having the driving pulley on the saw-mandrel very near the transmitting pulley on the same, and in having both belts pulling in opposite directions—there consequently being a balancing action and but very little, if any undue friction on the saw-mandrel. The arrangement for operating this special type of feed, that I have contrived, admits of the belt being kept tight both when feeding and backing the saw-carriage, and of its being left comparatively loose when at rest; this result being due to the fact that the pulley J, draws the belt tight when the lever N, is adjusted so as to cause the carriage to feed forward, or gig back, and to slacken it when the feed is stopped. The turn buckle connecting rod enables me to adjust the parts so as to compensate for any wear of the friction wheel, and thus the lever can be set so as to remain in any position desired, either when at work or rest. By placing the friction wheel back of the disk, I am enabled to give the disk any speed or revolution desired; and any change desired can be made even while the saw is in the log. This is a very important matter, for it often occurs that a lot of small or soft logs require to be sawed, in which case, the feed and gigging back should be very fast, while on the other hand, when it occurs that a lot of extra heavy tough timber has to be sawed, the feed and gigging back should be very slow.

In my arrangement I have a frictional feed which is changeable to any size or kind of timber, and in its operation the spring *d* on the shaft F, causes the disk G, to follow the friction wheel H, when the disk H′ is thrown out of gear with the disk G; and thus the disk turns at all times that the saw is revolved. The key seating of the two friction wheels admits of all the necessary adjustments of these wheels, the wheel H′ being free to pass from side to side so as to reverse the movement of the carriage.

The leading benefits of my invention result from the combination of two friction wheels and a single frictional disk having two smooth working faces; the tightening of the driving belt, while feeding forward and gigging back, and slackening it while out of work; and the simple arrangement of the hand levers and their connections for manipulating the mechanism of the frictional feed.

What I claim is—

1. In a variable friction feed for saw mills, the combination of a shaft F carrying a friction disk G having two plain working faces; a saw-mandrel, pulleys on the mandrel, said mandrel being at right angles to the shaft carrying the said disk; a shaft I, friction wheel H and pulley J on the shaft I; and a shaft I′, a friction wheel on shaft I′, key seated along the whole length or nearly so of the shaft, and

the two shafts I I′, carrying the friction wheels, being at right angles to the shaft carrying the friction disk F, and the wheel H being adapted to be brought in contact with the disk G, and the disk G, to be brought into contact with the wheel H′ substantially as described.

2. In a variable friction feed for a saw mill, the combination of a longitudinally movable spring yielding shaft F, mounted on the frame A and carrying a friction disk G having two plain working faces, a shaft I also mounted on said frame and carrying a friction wheel H which bears against one side of the disk G, a saw mandrel B carrying a pulley E, said shaft I being at right angles to the shaft which carries the disk G, and the said wheel H being key seated on the shaft I and movable toward and from the shaft F, a device for adjusting said friction wheel H toward or from the shaft F, a feed shaft I′ carrying a friction wheel H′ against which the opposite side of the disk G may be brought to bear and which is key seated on said shaft along its whole length or nearly so and movable longitudinally on said shaft, and a device for moving said wheel along the shaft I′, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

WALTER E. DILLARD.

Witnesses:
G. W. DAINGERFIELD,
R. B. RAUZIE.