July 1, 1924. 1,499,756

L. H. STREET

SAWMILL

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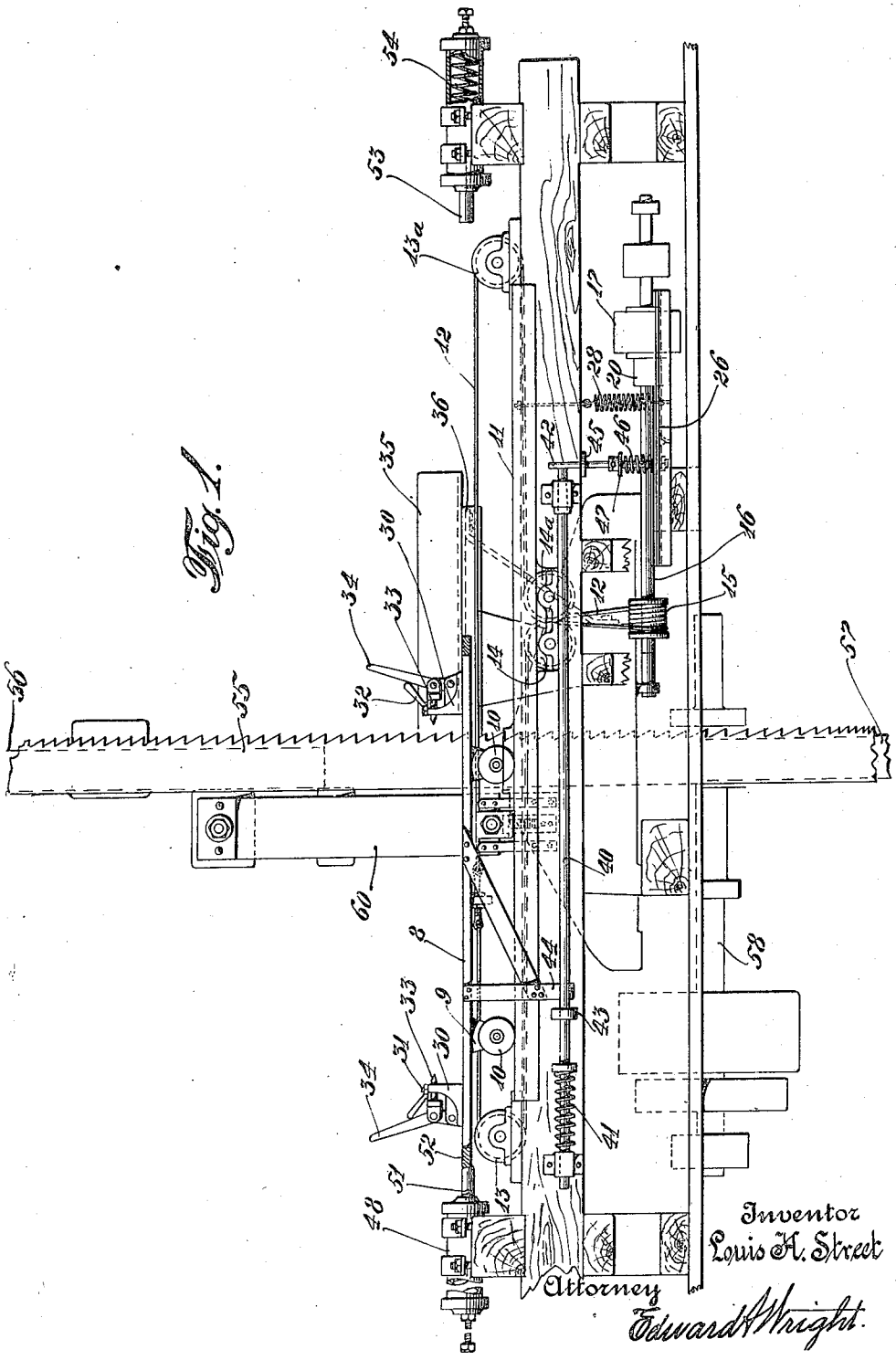


Fig. 1.

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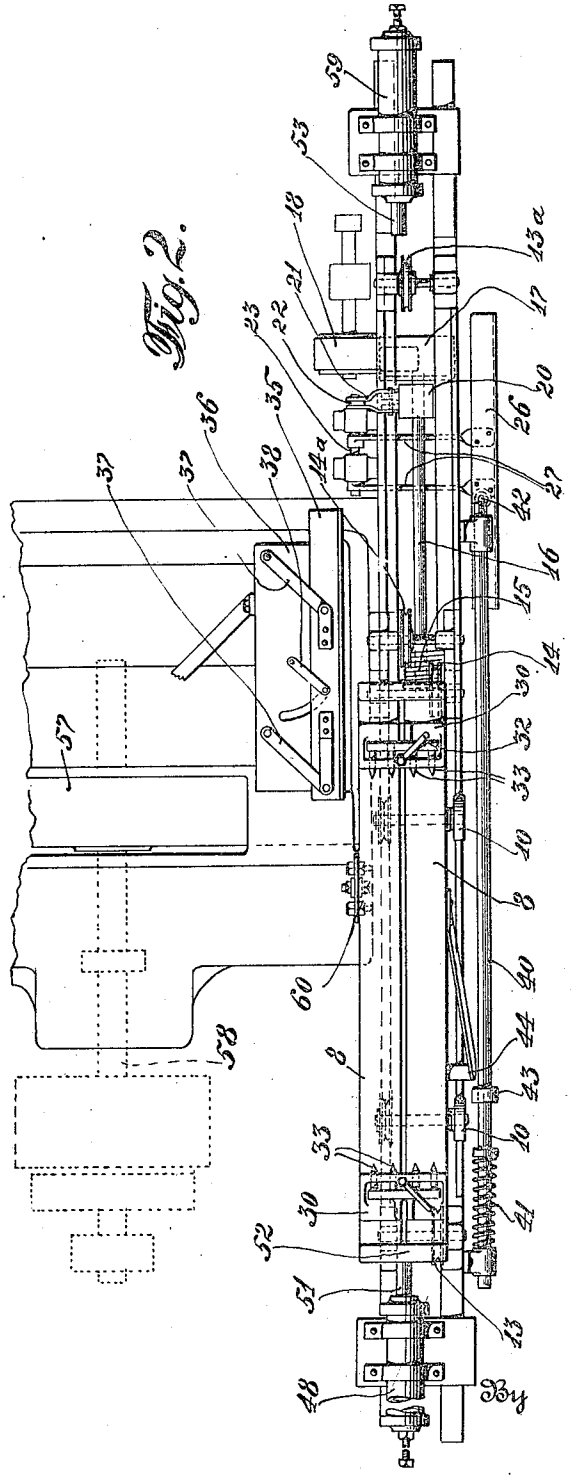


Fig. 2.

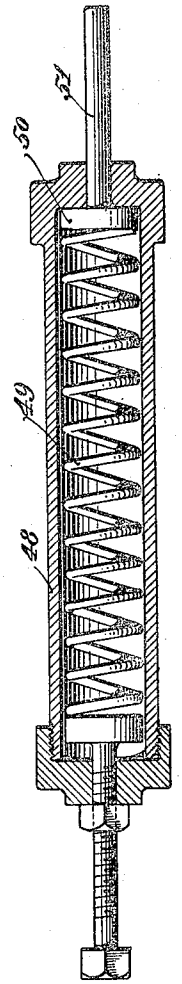


Fig. 3.

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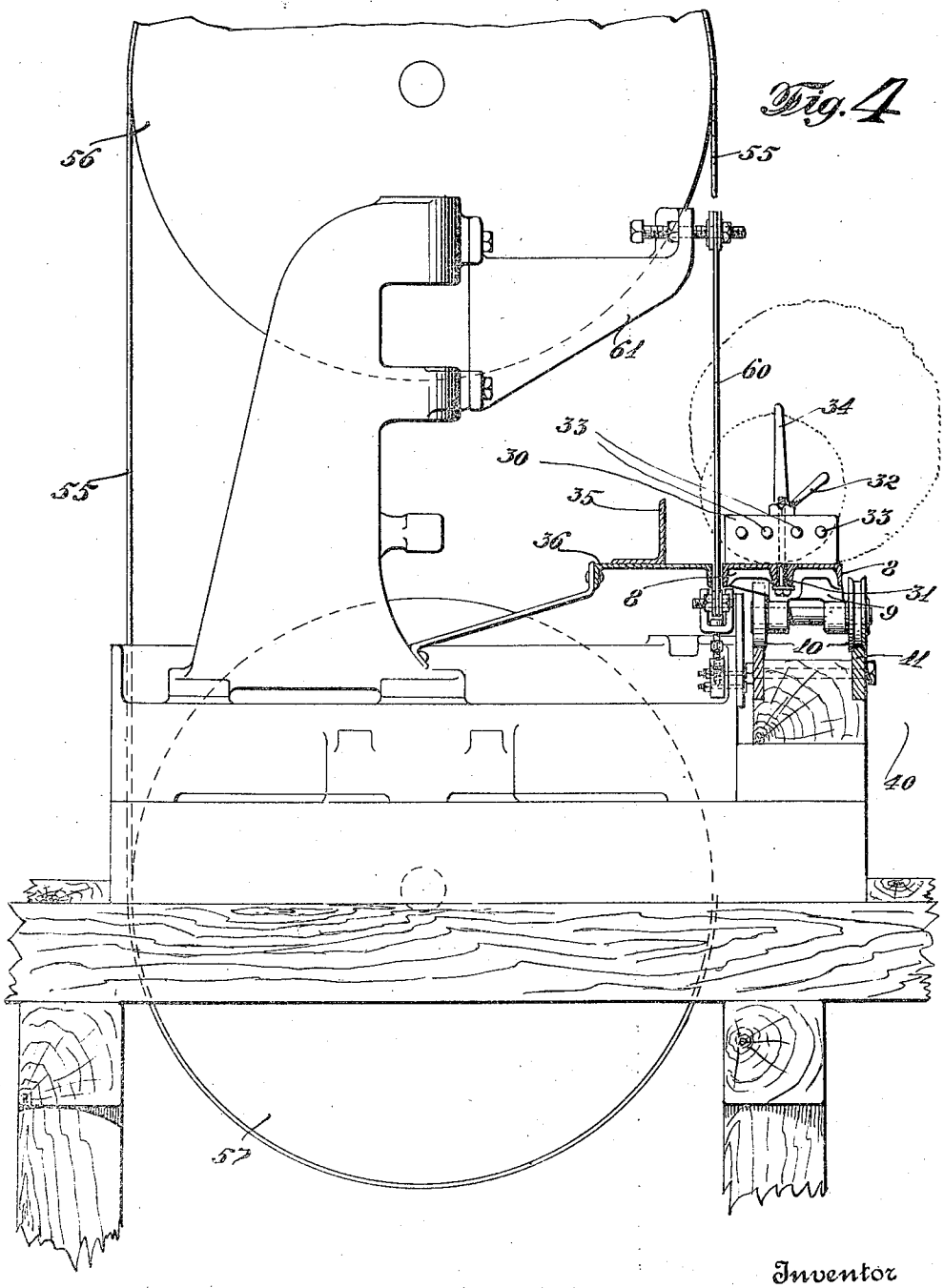
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Fig. 4



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Fig. 5.

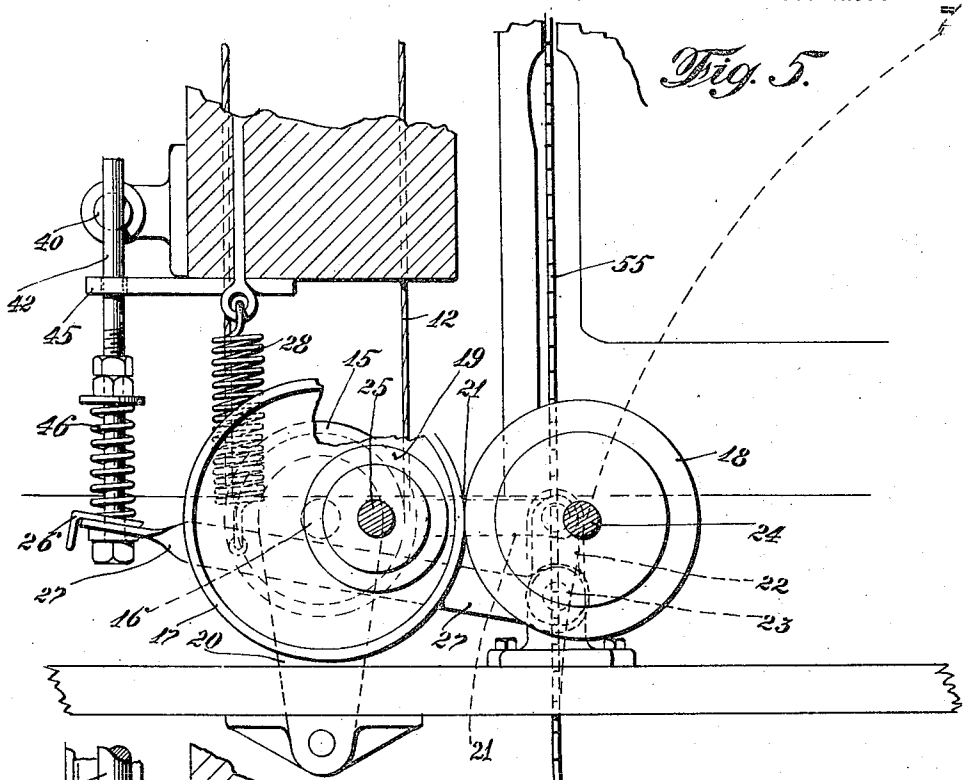
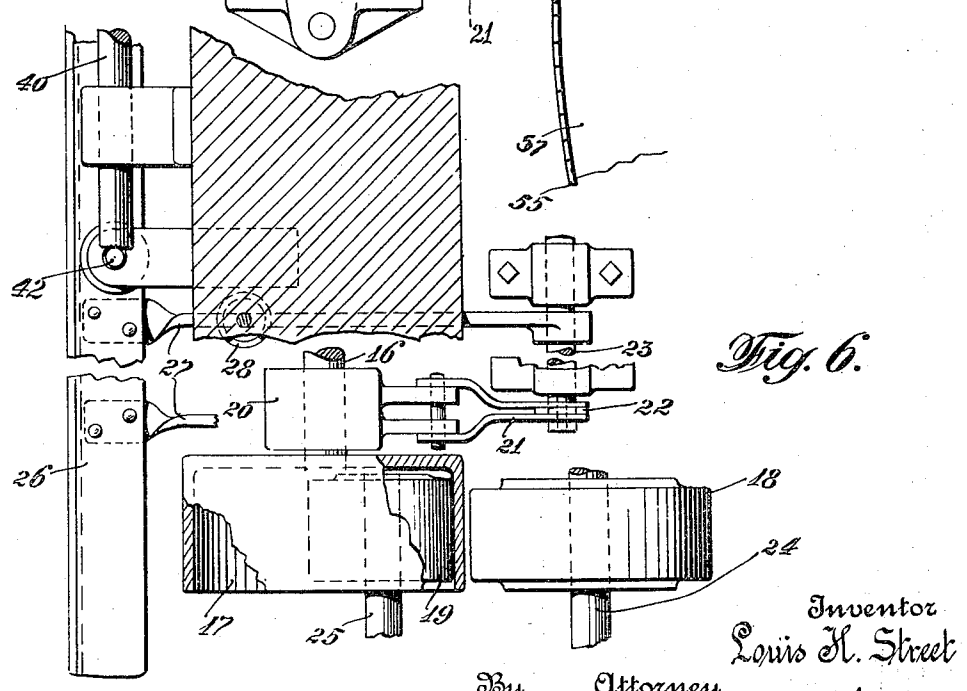


Fig. 6.



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Patented July 1, 1924. 1,499,756

UNITED STATES PATENT OFFICE.

LOUIS H. STREET, OF OLEAN, NEW YORK.

SAWMILL.

Application filed March 18, 1922. Serial No. 544,717.

To all whom it may concern:

Be it known that I, LOUIS H. STREET, a citizen of the United States, and a resident of Olean, in the county of Cattaraugus and State of New York, have invented a certain new and useful Improvement in Sawmills, of which improvement the following is a specification.

This invention relates in general to saw mills for cutting logs into lumber of various kinds and sizes, but is more particularly adapted for use in sawing short logs or "bolts," as they are termed, where the saw mill carriage has a short travel, and it is important to reverse the direction of movement quickly. In this class of work, the short logs, which may be from 2 feet to about 4 feet long, and from 8 inches to 24 or more inches in diameter, are sawed into square sticks, varying from $\frac{5}{8}$ of an inch to 4 inches square, to be used as turning stock by woodworking plants. Circular saws have been used for this work, but on account of the heavy kerf made by a circular saw, resulting in a considerable loss of stock in saw dust, I prefer to use a band saw which makes only a narrow kerf and thereby effects a saving in stock. However, while some of the features of my invention are particularly adapted for band saw mills, other features are of broad application and are equally well adapted for use with circular saws.

One of the objects of my invention is to speed up the operation by effecting a quicker reversing action and return movement of the carriage, and for this purpose I provide a return spring or other elastic means, adapted to be engaged and thrown into action upon the carriage during the last part of its forward or cutting movement, and just prior to the instant of reversing the driving mechanism, whereby the momentum of the carriage will be stopped, and its return movement begun without waiting for the return friction drive to effect this action. The return friction will then start very quickly, thereby avoiding delay and wear upon the friction mechanism.

Another feature of my invention comprises an improved automatic trip device for reversing the movement of the carriage.

A further object is to provide an improved driving connection from the rope drum to the carriage, when used in connection with a hand saw mill, in which the rope drum shaft remains parallel with the main band wheel shaft and the direction of movement of the carriage.

Still another object is to provide means for guiding the "bolt" or log when used with a band saw, whereby the band is relieved from excessive pressure and the bolt is required to travel true and parallel with the band. Still another feature comprises an improved carriage construction with adjustable dog blocks adapted to be quickly and easily brought to any desired position.

In the accompanying drawings: Figure 1 is a side elevation of a saw mill carriage and operating mechanism embodying my improvement, as applied to a band saw; Fig. 2, a plan of same; Fig. 3, a detail view, in section, of the return spring and cylinder; Fig. 4, an end elevation of the mill and carriage with certain parts shown in section; and, Figs. 5 and 6, an end elevation and plan, respectively, showing the friction drive and trip mechanism for reversing the same.

In the practice of my invention, any suitable form of carriage may be employed, but I have shown a carriage composed of two channels, 8, mounted on the castings, 9, forming a supporting frame and having bearings for the truck wheels, 10, which run on a track, 11, the wheels at one side being grooved to engage a V track rail in the usual manner. The wire rope, 12, for driving the carriage is connected at its ends to the carriage by suitable eye bolts, and passes over the fixed idle wheels, 13, 13^a, at opposite ends of the track and then over the idle wheels, 14, 14^a, and around the rope drum, 15, which is fixed on the shaft, 16, of the driving friction wheel, 17. The friction wheel, 17, is formed with an annular flange or rim adapted in one position to have external engagement with fixed friction wheel, 18, and in another position to have internal engagement with friction wheel or pulley, 19, the bearing of shaft, 16, carrying the driving friction, 17, being mounted in the rocker box or arm, 20, and actuated from one position to the other by link, 21, and crank, 22, on the pedal shaft, 23. The friction wheels, 18 and 19, are mounted on the respective shafts, 24 and 25, and are driven by suitable pulley and belt connections in the usual way. The pedal, 26, is carried at the outer ends of the pedal arms 27, which are fixed upon the shaft, 23, and normally held by a spring, 28, in such position that the driving friction wheel, 17, engages the return or recede friction wheel, 18,

which drives the rope drum 15, in the direction to propel the carriage upon its backward or return stroke. When the pedal is pressed down, the driving friction wheel, 17, is swung over into engagement with the forward or feed friction wheel, 19, which operates to propel the carriage on its forward or cutting stroke.

In the operation of sawing up the "bolts," or short logs, it is the practice for the operator to adjust and hold the "bolt" by hand and not to clamp the "bolt" to the carriage for the forward cutting stroke, except for the first cut when the slab is removed, at which time the log may be clamped, or "dogged," as it is termed, by suitable dogs mounted on the carriage. I have shown one form of dogs for this purpose, comprising castings, 30, having T-headed bolts, 31, extending through the slot between the channels, 8, of the carriage, which slots run substantially the full length of the center of the carriage and provide an adjustable locking way for the bolts, 31, whereby the dog castings, 30, may readily be adjusted and locked in any desired position by turning the handle of the locking nuts, 32. On the dog castings are mounted the movable dog points, 33, operated by hand lever, 34, and adapted to be set into the end of the log to securely hold the same to the carriage.

For the purpose of guiding the bolt in its forward movement, and for gauging the thickness or width of the cuts, I have shown the adjustable guide, 35, which may be a steel angle, mounted on the table, 36. The position of the guide may be quickly adjusted by means of the attaching links, 37, and lock handle, 38, to determine the thickness of the stock.

In accordance with one of the features of my invention, I provide automatic mechanism for reversing the direction of movement of the carriage at the end of its forward travel and elastic means adapted to be engaged by the carriage in advance of the action of the reversing mechanism, for overcoming the inertia of the carriage, and starting the same on its return movement. One form of tripping mechanism for shifting the reversing mechanism of the carriage is shown as comprising a slidably mounted rod, 40, having a spring, 41, for pressing said rod outward against a trip pin, 42, at its end, and a tappet collar, 43, adapted to be engaged by the projecting arm, 44, fixed upon the carriage, 8, for tripping said pin at the end of the forward stroke of the carriage. The pin, 42, slides through a guide plate, 45, and through an opening in the pedal, 26, being provided with a nut under the pedal and a spring, 46, between the pedal and a collar, 47, on said pin. As one form of elastic means for arresting and reversing the movement of the carriage, I have shown a fixed cylinder or casing, 48, containing an adjustable spring, 49, plunger, 50, and stem, 51, adapted to engage a buffer block, 52, of wood or other suitable material, mounted at the end of the carriage, the dimensions being such that the stem, 51, is engaged by the buffer block, 52, in advance of the engagement of the arm, 44, with the collar of the trip rod, 40.

When the carriage nears the ends of its forward travel, the block, 52, strikes the stem, 51, comprising the spring 49, which then exerts sufficient force to arrest the carriage and start it on its return movement just as the arm, 44, strikes the collar, 43, of the rod, 40, and releases the trip pin, 42. The spring, 28, thereupon pulls up the pedal arm, 27, to shift the driving friction wheel, 17, into engagement with the reverse or recede friction, 18, as shown in Fig. 5, thereby reversing the rope drum, 15, to return the carriage. The action of the spring, 49, in thus arresting the carriage and starting the same on its return stroke greatly relieves the stress and wear upon the reversing friction so that the same will start easily and quickly and drive the carriage through its return stroke. When the carriage reaches the end of the return travel it strikes the plunger stem, 53, of the buffer spring, 54, contained in fixed casing, 59, which acts as a stop to slip the friction, and is held there while the operator turns or adjusts the "bolt" to the desired position for the next cut, after which he steps upon the pedal forcing it downward against the spring, 28, until the trip pin, 42, is below the end of the shaft, 40. The spring, 41, then forces the shaft, 40, over the top of the pin, 42, and locks the pedal in position by means of the spring, 46. By the movement of the pedal to this position, the driving friction wheel, 17, is thrown over into engagement with the forward or feed friction wheel, 19, as indicated in Fig. 6, which operates to drive the rope drum forward and propel the carriage forward through its cutting stroke.

Where my invention is employed in connection with a circular saw mill, the shafts of the friction pulleys will preferably be parallel with the shaft of the saw and driven by a simple belt connection, in which case the axis of the rope drum is at right angles to the direction of movement of the carriage. I prefer, however, to use a band saw mill, and have indicated the same in the drawings by the band saw, 55, passing over the upper and lower band wheels, 56 and 57. In this case, the power shaft, 58, for driving the lower band wheel and the saw is parallel with the saw and the direction of movement of the carriage, and the shafts of the friction wheels are also parallel therewith in order to use ordinary belt connections. This arrangement, however, makes the axis

of the rope drum parallel with the direction of movement of the carriage and in order to operate the rope from the drum in this position, I have introduced intermediate guide means for deflecting the rope, such means being shown as the two idle rope wheels, 14 and 14ª, above the drum, 15, and between it and the respective idle wheels, 13 and 13ª, at the oposite ends of the track. By this means the rope may pass from the drum directly over the idle wheels to the carriage, and the use of bevel gears or other means for driving the drum at right angles is avoided.

Another feature of my invention when used with band saw mills, is the adjustable guide plate or pressure plate, 60, which is supported on a bracket, 61, just at the rear edge of the band saw, 55, and is provided with suitable adjusting screws at the top and bottom. This plate is for the purpose of affording a stiff surface for the operator to hold the "bolt" against in making the cut. The dog points are used only during the first cut or when trimming the log, while in the rest of the operation of sawing up the stock the "bolt" is not locked at all but is merely pushed against the guide plate and held there by the operator while each cut is being made. The band saw itself does not offer sufficient surface for the operator to bear against. The position of the guide plate may be readily adjusted by means of the adjusting means so as to be kept in perfect alignment with the band saw.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a saw mill, the combination with a carriage, and a friction mechanism for driving the carriage in opposite directions, of a pedal device for reversing the friction driving mechanism, a tripping mechanism for holding the pedal depressed, and a tappet device operated by the movement of the carriage at the end of its forward stroke for releasing the tripping mechanism.

2. In a saw mill, the combination with a carriage, and a friction mechanism for driving the carriage in opposite directions, of a pedal device for reversing the friction driving mechanism, a trip pin connected to the pedal, a tappet rod for holding down the trip pin, and an arm carried by the carriage for releasing the tappet rod from said trip pin.

In testimony whereof I have hereunto set my hand.

LOUIS H. STREET.