No. 660,635. Patented Oct. 30, 1900.

L. J. HANHART.

FEEDING MECHANISM FOR BAND SAW MILLS.

(Application filed June 4, 1900.)

(No Model.) 2 Sheets—Sheet 1.

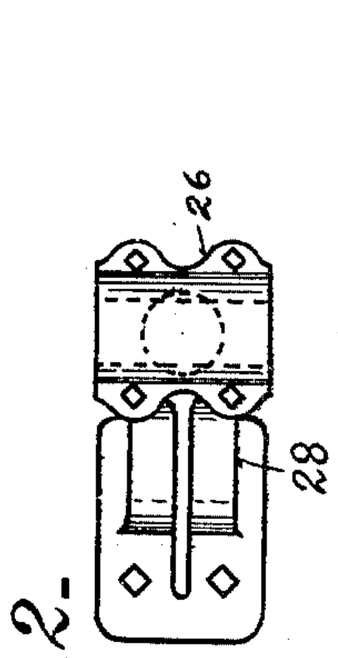

Fig. 2.

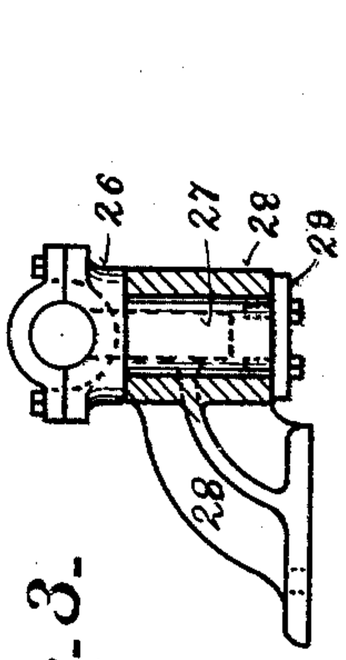

Fig. 3.

Fig. 1.

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Fig. 4.

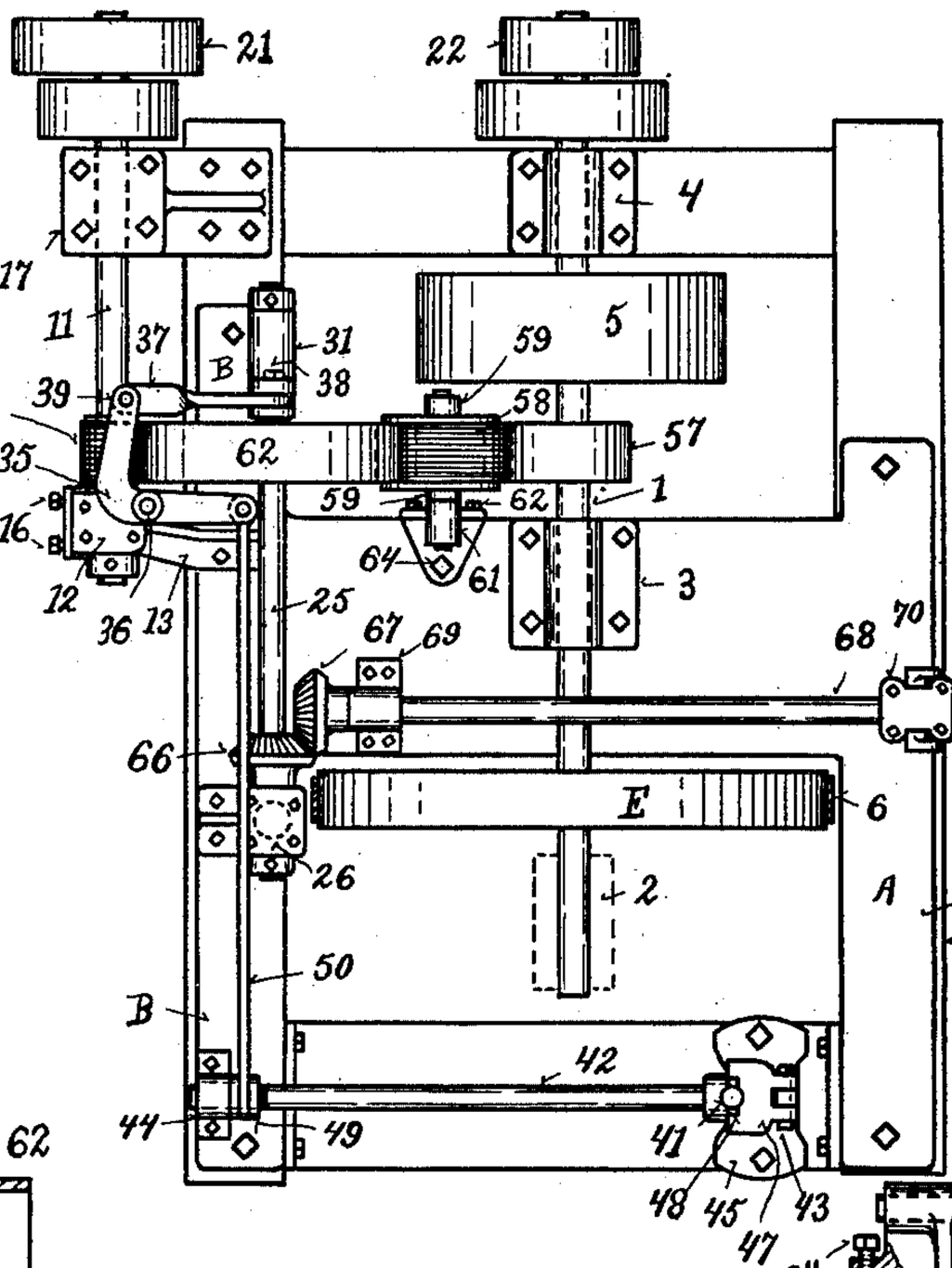


Fig. 6.

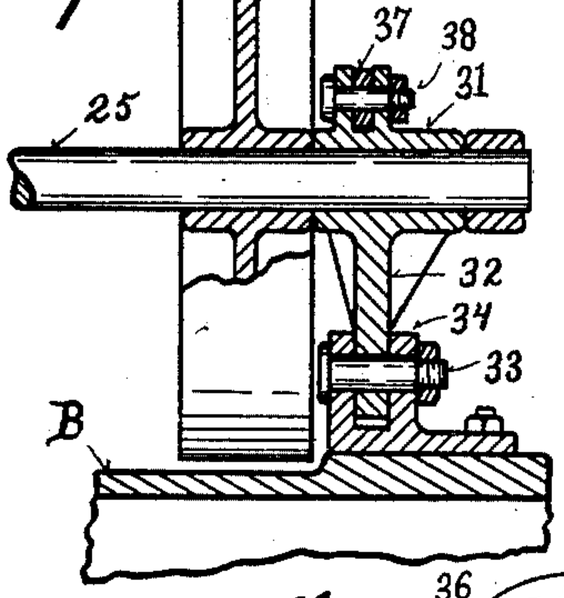
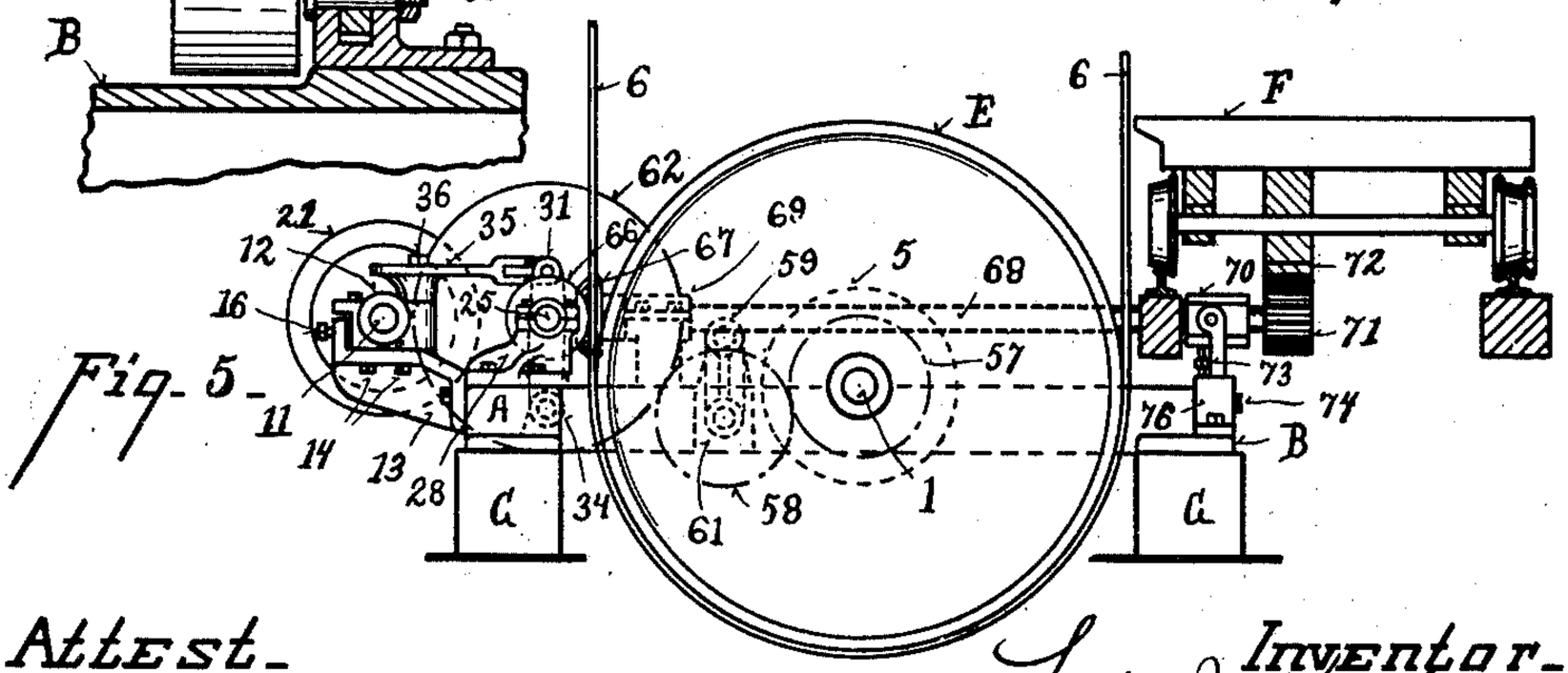


Fig. 7.

Fig. 5.



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UNITED STATES PATENT OFFICE.

LOUIS J. HANHART, OF CINCINNATI, OHIO, ASSIGNOR TO THE J. A. FAY & EGAN COMPANY, OF SAME PLACE.

FEEDING MECHANISM FOR BAND-SAW MILLS.

SPECIFICATION forming part of Letters Patent No. 660,635, dated October 30, 1900.

Application filed June 4, 1900. Serial No. 19,047. (No model.)

To all whom it may concern:

Be it known that I, LOUIS J. HANHART, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Feeding Mechanism for Band-Saw Mills, of which the following is a specification.

In constructions heretofore employed the motive power for the carriage of a band-saw mill has usually in machines for heavy duty been a separate device disconnected from the band-mill frame and located apart from the same, resulting in difficulty in the setting and adjustment of the devices for sawing and moving the carriage and their relative instability in operation, and it has also been attempted to operate the carriage of a band-mill by means of disk frictions in other constructions than that employed by me, but the power obtained has not been sufficient to successfully operate the same to their fullest capacity or their use has resulted in excessive wear of parts. I have therefore provided my improved construction, making the feeding mechanism of a band-saw mill self-contained with the band-saw-mill frame and driven from the lower band-saw-wheel mandrel, and employing peripheral friction-pulleys with wide contact-faces and having great feeding power, so that the carriage may be fed at high speed and with great power, and providing for stability of parts.

It is one of the objects of my invention to dispense with disk and bevel friction devices in a band-saw mill and to communicate the power for the sawmill-carriage through a shaft extending at substantially right angles to the saw-wheel mandrel and to obtain the power for the latter shaft from the saw-wheel mandrel through heavy, compact, and substantial peripheral friction-pulleys, affording a powerful feed.

My invention consists in the parts and in the construction, arrangement, and combinations of parts hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of my improved device. Fig. 2 is a plan detail of the trunnion-bearing. Fig. 3 is a side elevation of the same, partly in section. Fig. 4 is a plan view of my improved device with the column removed for better illustration of parts. Fig. 5 is a side elevation of the same with the operating-lever omitted and shown in connection with the carriage. Fig. 6 is a detail showing the pivoted bearing for the rocking gear-shaft; and Fig. 7 is a detail in side elevation, showing the hanging friction-pulley and its connection to the base.

A represents the frame of the machine, comprising a base B and column C, in which upper and lower band-saw wheels D E are suitably journaled.

F represents the log-supporting carriage of suitable construction.

The saw-mill frame is mounted upon a foundation G, consisting, preferably, of heavy timbers.

The lower band-saw wheel E is secured to a shaft or mandrel 1, journaled in bearings 2 3 on the frame and may also be journaled in a bearing 4. The mandrel also furnishes the power for driving the feed and return of the carriage. Motion is imparted to the mandrel through a pulley 5, mounted thereon, rotated from a suitable source of power. A band-saw blade 6 takes about the wheels D E and receives motion through the wheel E.

The material—for instance, log H—is sawed by being passed back and forth, supported by the carriage F, past the band-saw blade 6, and I provide mechanism self-contained with the band-saw-mill frame to accomplish this purpose in such manner that cheapness in construction is obtained, combined with stability of parts in operation. I am also enabled by my improved construction to build the parts in proper relation to the base of the band-saw mill at the constructing-factory and in such manner that there is no necessity for removal of the shifting parts from the base in shipment, so that the customer receives the machine with those parts in proper relation on the frame, thereby saving trouble, expense, and annoyance to the manufacturer and user.

My feeding mechanism comprises parts preferably as follows: A shaft 11 extends parallel to the shaft or mandrel 1, supported in a bearing 12 on a bracket 13, secured to the base. The bearing is given a lateral adjustment on the bracket by means of bolts 14,

passing through slots in the bracket and into the bearing, with set-bolts 16 taking through internally-threaded apertures in the bracket and against the bearing. This adjustment is given so that wear of the paper friction-pulley may be taken up from time to time. It is necessary to have set-bolts 16 only on the outside of the bearing, as the pressure of the series of friction-pulleys is always outward. The outer end of the shaft 11 may be journaled in a bearing 17. Motion is imparted to the shaft 11 from the mandrel 1 by means of a belt passing about pulleys 21 22 on the shafts 1 and 11, respectively. There may be different-sized pulleys on the shafts, as shown in Fig. 4, to provide for various speeds. The mandrel 1 and shaft 11 revolve in the same direction throughout the operation of the band-saw mill. A third or intermitting shaft 25 extends parallel with the saw-wheel mandrel 1, intermediate of the latter and shaft 11. At its end adjacent to the lower saw-wheel it is mounted in a bearing 26, supported on a trunnion 27, taking into a box 28, mounted on the base. The bearing 26 may seat on the box 28 and be secured against endwise movement or lift by a plate 29, secured to the trunnion and taking under the box. Near its other end the shaft 25 is journaled in a bearing 31 on an upright 32, pivoted rockingly on a pin 33 in lugs 34 on the base. A bell-crank lever 35 is pivoted with relation to the base on a pivot 36 on the bracket 13 and connects with the bearing 31 by a link 37, pivoted to the bearing and bell-crank lever, respectively, by pivots 38 39, for the purposes hereinafter explained. The bell-crank lever is operated from an operating-lever 41, secured to a rock-shaft 42, mounted in bearings 43 44, the former in a stand 45 at the operator's position. The stand embraces an upright 46, to which a stop 47 is pivoted, so as to be thrown back out of the way of the lever. The stop has a catch 48 to center the lever. The rock-shaft also has a crank 49 thereon, through which it is connected to the bell-crank lever by means of a link 50.

The shaft 11 has a paper or other friction-pulley 56, preferably non-metallic, thereon. The shaft 1 has a pulley 57 upon it. A paper or other friction-pulley 58, also preferably non-metallic, is journaled in arms 59, swinging from a stud 60, supported in a frame 61, adjustably secured to the base by bolts 62, passing through slots 63 in the frame and into the base, a set-bolt 64 being also provided to raise the frame. This adjustment is also given to take up the wear of friction-pulley 58. The shaft 25 has a pulley 62 mounted thereon, the latter rocking with the shaft when the operating-lever 41 is manipulated, thereby bringing the pulley 62 in contact with the friction-pulley 56 or the friction-pulley 58. The pulleys 56, 57, 58, and 62 are normally out of contact with one another and are held out of contact so long as the operating-lever is held in the catch 48, the pulleys 56 and 57, however, continually revolving in the same direction while the saw-wheels are turning. The pulley 58 is normally suspended perpendicularly in its frame, so as not to contact with the pulleys to either side of it. If it is desired to feed the carriage so as to make a cut, the operating-lever is shifted to one side of its normal position, which causes the bell-crank lever to swing on its pivot, rocking the pulley 62 into contact with the friction-pulley 56 on the shaft 11, thereby revolving the shaft 25 in one direction and feeding the log on the carriage against the saw-blade in a manner to be presently explained. After the cut is finished or when it is desired to return the carriage to its initial position the operating-lever is thrown to the other side of its normal position, which releases the contact between the pulleys 56 and 62 and causes the pulley 62 on the rocking shaft 25 to be thrown into contact with the friction-pulley 58 and then swinging the latter into contact with the pulley 57 on the mandrel 1, thereby revolving the shaft in the opposite direction and at a greater rate of speed by reason of the larger diameter of the operating-pulleys, thereby giving the carriage an accelerated return.

As before stated, the mandrel 1 and shaft 11 rotate continuously in the same direction, and the difference in direction of revolution of the shaft 25 is obtained by imparting motion to it through the intervention of an intermediate pulley 58 when it is to be rotated in one direction and by direct contact with the pulley 56 on the shaft 11 when it is to be rotated in the opposite direction.

A bevel-gear 66 is secured to the shaft 25 and meshes with a bevel-gear 67 on a shaft 68, extending at right angles to the shafts 1, 11, and 25, adjacent to the lower band-saw wheel. The shaft 68 is journaled in bearings 69 70 on the base of the band-saw mill and carries at its outer end a sawmill-carriage-operating device, which I have shown as a pinion 71, meshing with a rack 72 on the carriage. Other carriage-operating devices, such as a rope feed, may also be provided. The bearing 70 is given a vertical adjustment by means of a set-screw 73 and held in place by a set-bolt 74, taking through a slot 75 into its base 76.

It frequently happens that in setting up the band-saw mill and the carriage-track there is found to be a slight difference in elevation between the two, so that the pinion and rack will not meet properly. I therefore provide this last-named adjustment, so as to give a nicety of connection between the pinion and its rack.

I claim—

1. In a band-saw mill, a series of peripheral friction-pulleys extending bodily successively in a plane at right angles to the main mandrel, and having faces extending operatively in planes parallel to the main mandrel and driven from main mandrel with a bevel-wheel

for transmitting the feed and reversing power at right angles to the mandrel, substantially as described.

2. In a band-saw mill, the combination of a base and column supporting band-saw wheels and a series of parallel shafts two of which rotate unintermittingly, with mechanism for permitting the third shaft of the series to be rotated alternately in opposite directions at different speeds, with a transverse shaft supported by the base for transmitting the motion of the third shaft to a log-supporting carriage, and forming a self-contained band-saw mill and feedworks, substantially as described.

3. In a band-saw mill, with feeding mechanism self-contained with the band-saw-wheel-supporting frame, a saw-wheel shaft or mandrel supporting a lower band-saw wheel and a peripheral friction-pulley with face operatively parallel with the mandrel, a second shaft parallel with the mandrel and driven therefrom, a second peripheral friction-pulley mounted thereon and parallel to the first friction-pulley, with a pair of peripheral friction-pulleys swingingly mounted between the two first-mentioned friction-pulleys, with faces operatively parallel therewith, a third shaft parallel with the mandrel on which one of the same is mounted, and a fourth shaft at right angles to the mandrel, a driving connection between the third and fourth shafts, all mounted in the casting of the band-saw-wheel-supporting frame, a lever for rocking the third shaft, and means connecting the fourth shaft with the carriage, and constructed and arranged for alternately driving the carriage in opposite directions, substantially as described.

4. In a band-saw mill, the combination of a frame for the band-saw wheels, with a mandrel for the lower wheel and a second shaft journaled on the frame, a peripheral friction-pulley for the latter shaft, a third shaft journaled on the frame at one end and at its other in a bearing mounted on an upright arm, a pivot for the arm below its center of gravity, a pulley on the third shaft, a peripheral friction-pulley supported from a pivot, with a pulley on the saw-wheel shaft, a lever for rocking the third shaft, a fourth shaft journaled in the frame at right angles to the saw-wheel shaft, a driving connection between the third shaft and the fourth shaft, and means connecting the fourth shaft with the carriage, and constructed and arranged for alternately driving the carriage in opposite directions, substantially as described.

5. In a band-saw mill, the combination of a frame, a band-saw-wheel shaft or mandrel and a second parallel shaft, a belt taking power direct from said mandrel to said shaft, a third shaft, a peripheral friction-pulley on each of said mandrel and shafts, means for vibrating said third shaft, an additional peripheral friction-pulley mounted between the friction-pulleys on the mandrel and second shaft, means for adjusting the position of said additional friction-pulley with relation to the frame for accommodating for wear, a transverse shaft, a driving connection between it and the third shaft, means connecting the transverse shaft with the carriage, and constructed and arranged for imparting the feed to the carriage from the band-saw-wheel mandrel through the belt and peripheral friction-pulleys and imparting a return movement to the carriage from the band-saw-wheel mandrel through peripheral friction-pulleys, substantially as described.

In testimony whereof I have signed my name hereto in the presence of two subscribing witnesses.

LOUIS J. HANHART.

Witnesses:
PARKE S. JOHNSON,
PHILIP W. TOZZER.