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A. HARROLD.

GEARING.

APPLICATION FILED SEPT. 12, 1905.

FIG. I.

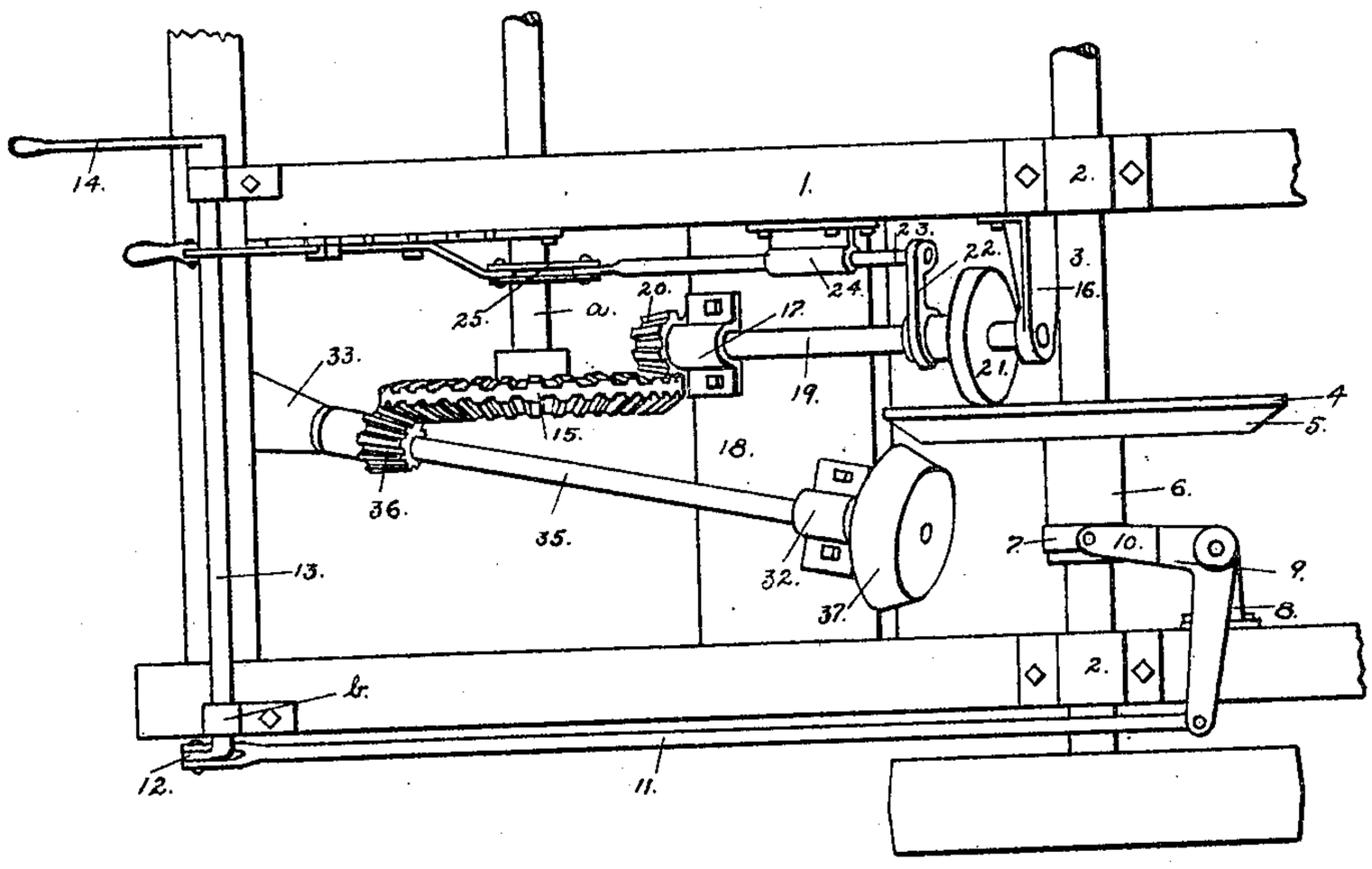
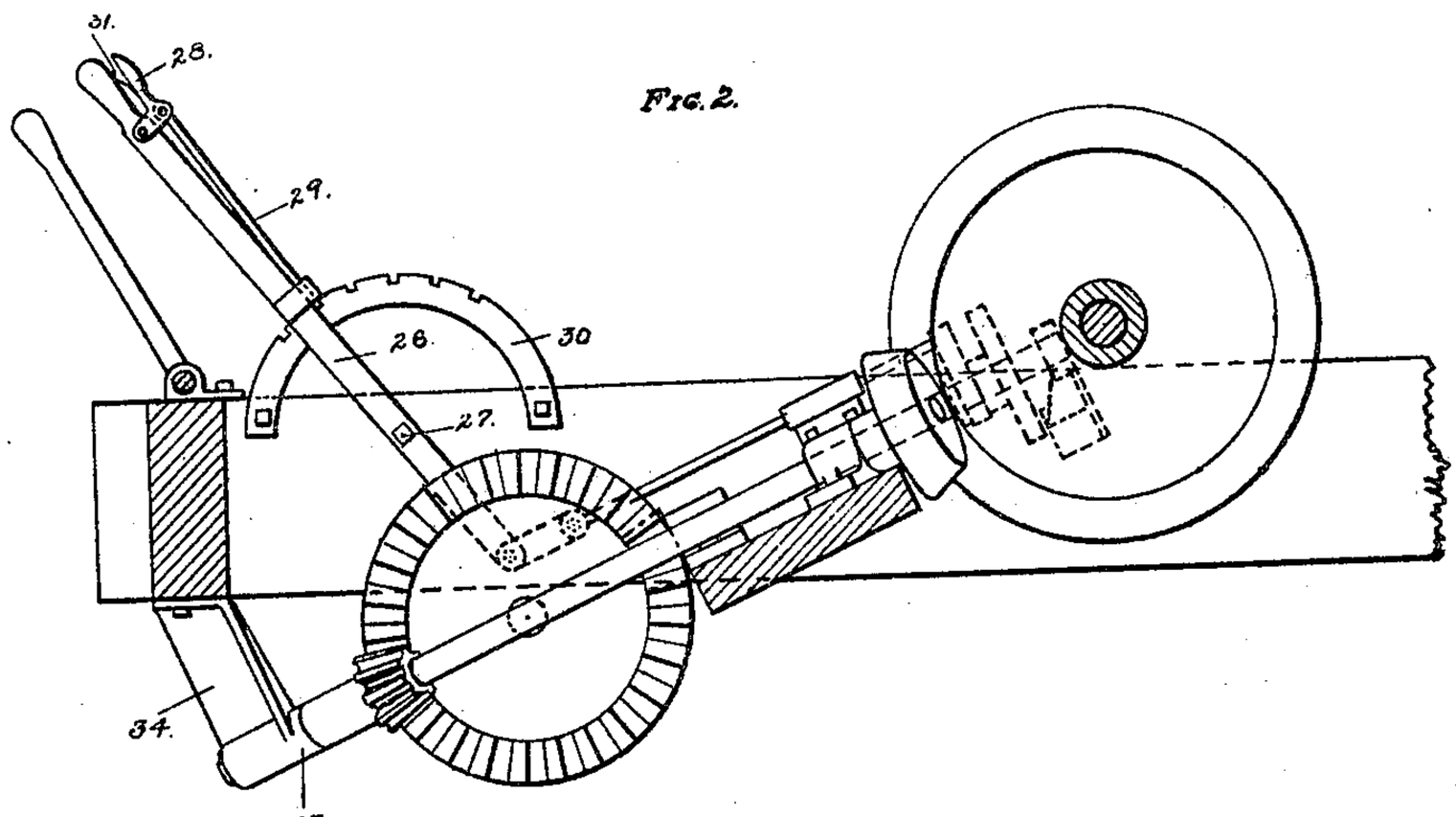


FIG. 2.



33.

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GEARING.

No. 822,449. Specification of Letters Patent. Patented June 5, 1906.

Application filed September 12, 1905. Serial No. 278,178.

To all whom it may concern:

Be it known that I, AMOS HARROLD, a citizen of the United States of America, and a resident of Mansfield, Richland county, Ohio, have invented certain new and useful Improvements in Gearing, of which the following is a specification.

This invention relates to gearing used in working up timber, in which means are provided to regulate the feed of the carriage upon which the timber is carried forward while the saw is performing its work, controlling the movement of the carriage in such a manner as to transmit a predetermined but variable feed movement to the carriage at the discretion of the operator.

An essential feature of improvement is to construct the feed mechanism so as to obviate the necessity of using two gear-wheels to impart a direct and reverse movement to the carriage and to provide for the use of a shaft, upon which the reverse or return friction-wheel is mounted, of sufficient length as to permit the bearings being made ample in dimensions and placed on the frame of the machine such a distance apart as to insure minimum wear and vibration of the parts.

A further purpose is to devise a feed mechanism that is durable and efficient in operation and simple in construction.

I attain these and other objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view showing both pinions meshing with the master gear-wheel, with the feed slidable friction-wheel in contact with the face of the disk. Fig. 2 is a cross-sectional side elevation of Fig. 1, taken through the center, showing means for operating the feed mechanism through the medium of levers, also the relative position of the shafts with reference to the frame.

Similar reference-figures refer to similar parts throughout the several views.

In the drawings, 1 represents the main portion of the framework of the sawmill, upon which is mounted the feed mechanism. In suitable bearings 2, secured to the front end of the frame, a main shaft 3 is journaled, carrying an ordinary saw. On the shaft 3, between the bearings 2 2, is a slidable disk 4, having the periphery 5 thereof beveled, with a hub 6 formed thereon and an annular groove 7 formed therein. The disk revolves with the shaft and has a slidable movement thereon, as will be more fully described hereinafter.

A standard 8 is secured to the frame of the mill in front of the shaft and is provided with an aperture into which a bolt or shaft is fitted, having a bell-crank 9 pivotally journaled thereon. To one end of the lever a pin 10 is fitted, projecting downwardly and meshing with the groove 7. When the movement is imparted to the bell-crank, the pin being in engagement with the groove on the hub of the disk, it is forced to slide on the shaft in either direction at the will of the operator.

To the free end of the bell-crank one end of a connecting-rod 11 is pivotally secured. This rod extends along the side of the frame rearwardly and the opposite bifurcated end is pivotally connected to the crank 12 on the crank-shaft 13. An operating-lever 14 is keyed to the opposite end of the crank-shaft, through which, in connection with the parts described, the bell-crank is operated, forcing the disk to slide upon the shaft in either direction for the purpose intended. The crank-shaft is journaled in suitable bearings *b*, attached to the front end of the frame for the purpose of bringing the lever in close proximity to the operator.

Reference-letter *a* designates a broken portion of an ordinary shaft upon which a pinion is mounted, meshing with a rack secured to the carriage. (Not shown in the drawings.) The shaft *a* is journaled in suitable bearings to the bottom of the framework parallel with the main shaft 3, leaving one end extending toward the center of the frame with a master gear-wheel 15 rigidly secured to the end.

The master gear-wheel is beveled on both sides of the periphery and suitable teeth are formed on the beveled portions, forming a double master gear-wheel adapted to mesh with pinions on either side, as will be described. To one side of the frame a standard 16 is securely bolted, with the end having an aperture provided therein projecting inwardly toward the disk. A bearing-box 17 is attached to the lower end of the cross-piece 18 of the frame, which is secured to the frame at an inclination extending rearwardly therewith.

The journal in the bearing-box and journal in the standard 16 are placed in aline-

ment with each other and are adapted to carry a shaft 19. One end of the shaft projects beyond the bearing-box 17. A beveled pinion 20 is keyed to the end of the shaft, meshing with one side of the beveled master gear-wheel. Between the standard and the bearing on the shaft 19 a slidable friction-wheel 21 is mounted. An arm 22 is fitted to the hub of the wheel 21 and extends toward the side of the frame.

An aperture is provided in the free end of the arm, into which a rod 23 is fitted, extending rearwardly and supported by the elongated bracket-bearing 24. The flat end of the rod is pivotally connected to the links 25, the opposite ends of which are connected to the lever 26. The lever 26 is pivotally bolted to the frame by the bolt 27. A lever 28, having a rod 29, is attached to the lever 26, with the end adapted to mesh with the notched segment 30. The rod is kept in engagement with the notches by the pressure of the spring 31, inserted between both ends of the levers. This arrangement completes the connecting mechanism that operates the friction-wheel, forcing the slidable friction-wheel along the shaft toward the shaft 3 and back in line with the periphery of the disk when movement is imparted to lever 26. This arrangement gives a wide range of speed to the feed mechanism, as the rate of speed is dependent on the point of frictional contact by the friction-wheel on the face of the disk, which changes or varies the speed of the carriage according to the diameter of the disk at the point of contact.

Movement is transmitted to the friction-wheel and connections through the medium of the disk by sliding the disk on the shaft 3 and forcing the disk in contact with the periphery of the friction-wheel 23 at a point previously determined upon and regulated by the size, condition, and kind of timber that the operator is working up.

It is well known that in order to expedite the work after the saw has completed its work that a quick return of the carriage is important, and various means more or less complicated and inefficient are employed to accomplish this result. To perform this function, I secure a bearing 32 to the cross-piece 18 at an inclination that will correspond and aline with the elongated bearing 33, formed in the end of the standard 34. A shaft 35 is journaled in said bearings, having a pinion 36 meshing with one side of the master gear-wheel at a point diametrically opposed to the pinion 20. To the opposite end of the shaft 35 a beveled friction-wheel 37 is attached at an inclination corresponding with beveled periphery of the disk.

It will be observed that the shaft inclines rearwardly and toward one side of the frame and it is not obstructed by the shaft *a*, which in the construction of the ordinary feeding mechanism extends clear across the framework of the machine for the purpose of carrying two gear-wheels.

My arrangement permits the bearings to be placed such a distance apart as will prevent undue vibration and wear caused by the excessive strain on the shaft when the bearings are placed in close proximity to each other. The return or gig-back of the carriage is accomplished by the operator transmitting, through the medium of the lever 14, movement to the disk, bringing it in contact with the friction beveled wheel 37, which returns the carriage at increased speed preparatory to again being fed toward the saw.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a feed mechanism, a framework, a shaft mounted thereon, a disk slidably mounted thereon and having a groove in its hub, a bell-crank pivotally secured to the frame, a pin secured to the free end of said bell-crank extending into the groove in the disk-hub, a rock-shaft journaled in suitable bearings attached to the framework, a lever secured to said rock-shaft, a rod connected to one end of said rock-shaft, with the opposite end pivotally secured to the bell-crank, a support secured to the framework, bearings mounted on said support at an inclination with the plane of framework, a shaft journaled in said bearings, a pinion fitted on one end, a friction-wheel fitted on the opposite end, an auxiliary shaft journaled in the framework, a master gear-wheel fitted to the end of said auxiliary shaft meshing with said pinion, a shaft journaled in a suitable bearing mounted on said support, a pinion fitted to one end meshing with one side of the master gear-wheel, a friction-wheel splined to one end of the other shaft for movement in peripheral contact with the disk, an arm connected with the hub of said frictional wheel, a bracket-bearing, a rod slidable in said bearing, and a lever providing means to slidably move the friction-wheel upon the shaft to contact with the face of the disk to vary the speed of the feed.

2. A feed mechanism for sawmills, comprising a frame, a drive and a driven shaft, a disk slidably mounted upon said drive-shaft, a master gear-wheel secured to the driven shaft, two shafts journaled in the frame at an inclination to each other, a friction-wheel on one end of each shaft, said friction-wheels located on opposite sides of the slidably-mounted disk on the drive-shaft and a bevel-pinion at the opposite end of each shaft from the friction-wheel, one of which pinions is intermeshed with the teeth on one face of the master gear-wheel and the other pinion with the teeth on the opposite face, and means for imparting a sliding movement to the friction-wheel on one of said shafts to cause it to engage the face of the slidable disk at different

positions, whereby to vary the speed of the feed.

3. In a sawmill feed mechanism, a drive-shaft, a frictional disk slidably secured thereto, means for imparting a slidable movement to said disk, a bracket or support secured to the frame at an inclination with the plane of the frame, bearings mounted thereon and spaced apart, shafts journaled in said bearings, a master gear-wheel, pinions secured to one end of said shafts meshing with the master gear-wheel, a friction beveled wheel secured to one end of said shafts, a slidable friction-wheel mounted on one of said shafts, means to impart a sliding movement thereto.

4. The combination with a suitable frame-work, of four shafts journaled therein, two parallel with each other, one at right angles thereto and the fourth at an inclination, friction-wheels on three of the shafts, two of which are slidable, a double-faced bevel-gear on one of the shafts, bevel-gears on two of the shafts meshing with said double-faced gears, and means for shifting the slidable friction-wheels and locking them.

Signed at Mansfield, Ohio, this 9th day of September, 1905.

AMOS HARROLD.

Witnesses:
JOHN H. COSS,
H. E. BELL.