Feb. 27, 1951 M. J. POWER 2,543,128

OUTFEEDING MECHANISM FOR PORTABLE DEBARKING MACHINES

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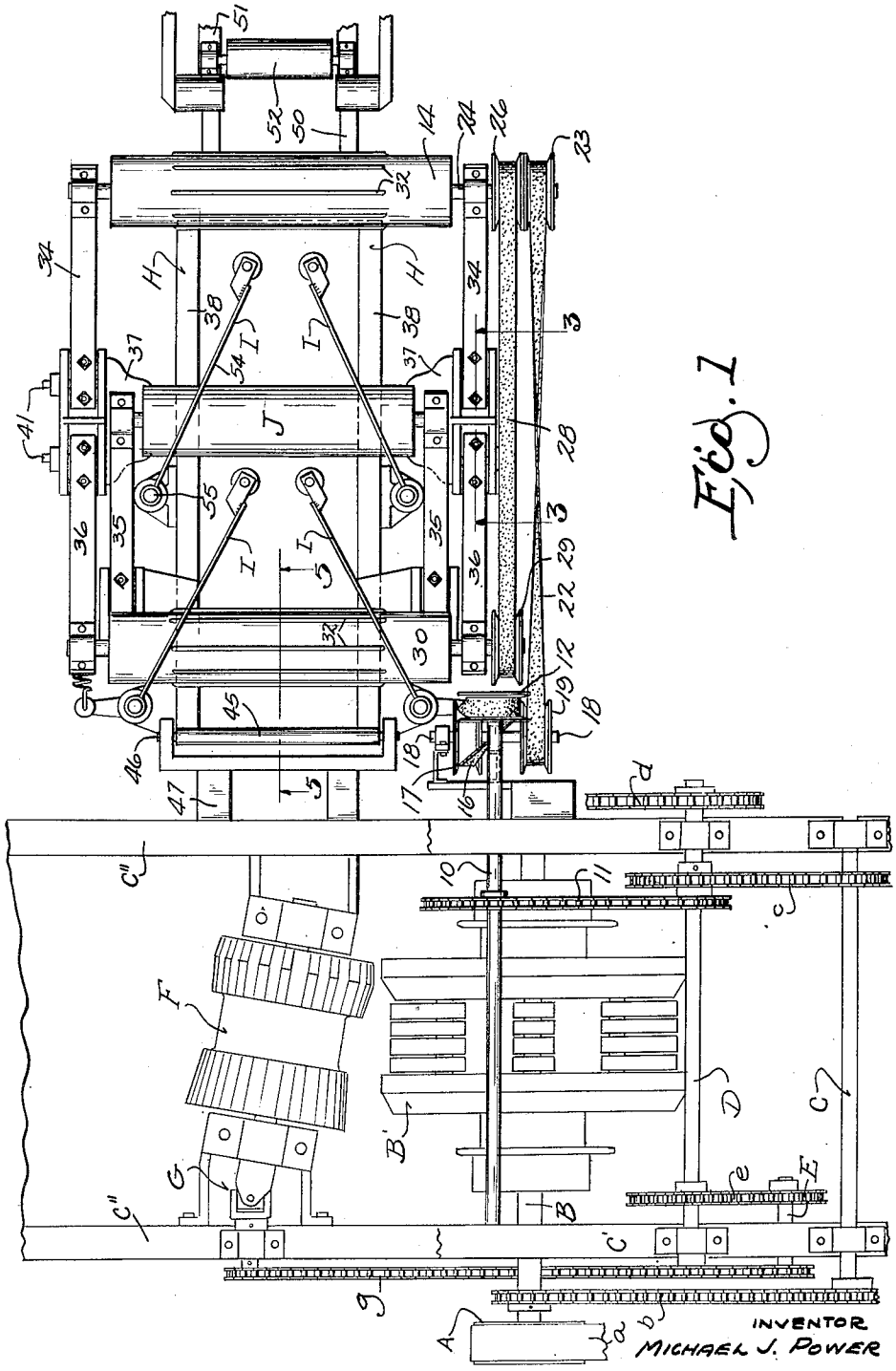


Fig. 1

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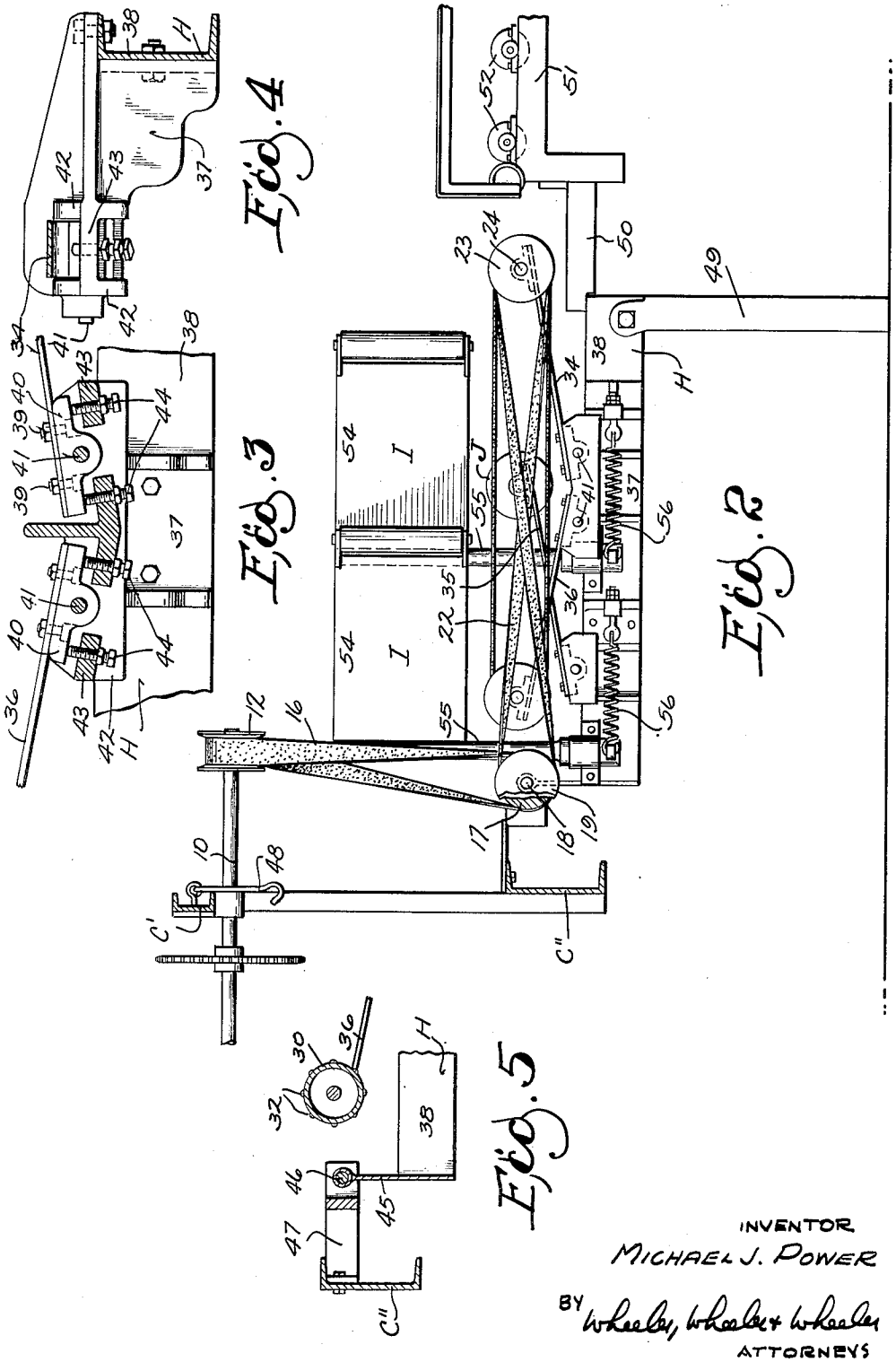


Fig. 4

Fig. 3

Fig. 2

Fig. 5

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OUTFEEDING MECHANISM FOR PORTABLE DEBARKING MACHINES

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My invention relates to improvements in outfeeding mechanism for portable debarking machines of the general type disclosed in my former Letters Patent of the United States No. 2,390,459, granted December 4, 1945. Machines of this type are mounted on wheeled vehicles whereby they can be transported from one pile of logs to another.

The so-called log infeeding and outfeeding conveyor sections as heretofore constructed comprise sets of log guiding devices and log supporting idle rollers resiliently mounted on frames which can be attached at each place of use, and detached for transportion to the next place of use, it having been heretofore deemed impractical to apply engine power to the vibrating rollers of the detachable infeeding and outfeeding conveyor sections.

But it has been found in practice that while logs may safely be manually advanced along the infeeding conveyor section until gripped and rotated by the pinch rollers of the debarker, the exposed ends of a crooked log will thereafter be swung by said pinch rollers in a circular path, thus making further manual log advancement difficult and dangerous. Also, during the final stages of a debarking operation the pinch rollers cannot always be relied upon for proper log advancement.

Therefore, the object of this invention is to solve the problem of providing at least some of the rollers of the log outfeeding attachment with power transmitting connections capable of successful use notwithstanding roller vibrations.

A further object is to provide belt driving mechanism for outfeeding rollers operative under tension which slightly increases in proportion to load.

More specifically, my object is to provide debarking machines with auxiliary log outfeeding rollers capable of vibration in correspondence with the contours of logs, and which can be continuously driven from the source of power which drives the debarking mechanism, without subjecting the debarking mechanism to shocks or strains due to the vibration of such rollers.

In the drawings:

Figure 1 is a plan view of the log supporting and debarking elements of a debarking machine equipped with an outfeeding conveyor embodying my invention.

Figure 2 is a side elevation of the outfeeding conveyor.

Figure 3 is a detail sectional view of the means for adjusting the roller supporting springs of

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the outfeeding conveyor, drawn to line 3—3 of Figure 1.

Figure 4 is a rear end elevation of the parts shown in Figure 3.

Figure 5 is a detail view in cross section drawn to line 5—5 of Figure 1.

Like parts are identified by the same reference characters throughout the several views.

In a debarking machine of the type disclosed in my former patent, engine power is ordinarily applied to a pulley A by an engine driven belt *a*. The pulley A is fixed to a shaft B, on which a drum B' is mounted which carries debarking hammers or tools. From shaft B power is transmitted by a sprocket chain *b* to an overhead jack shaft C supported by upper frame elements C'. Power is transmitted from jack shaft C to another jack shaft D through chain *c*, and from shaft D to shaft E through chain *e*. A log supporting and rotating roller F is mounted on a knuckle-jointed shaft G which is driven by chain *g* from the jack shaft E, and from jack shaft D, a chain *d* drives log gripping and rotating devices (not shown) which cooperate with roller F in presenting the log to the debarking elements on drum C. The logs are delivered to the machine by an infeeding conveyor (not shown) and are delivered from the machine by an outfeeding conveyor section having frame elements H and pairs of convergent flag-like guides I, between which the debarked log is delivered over one or more resiliently supported idle rollers J.

These elements may be of any ordinary construction. They are not claimed herein, and as corresponding elements are disclosed in said former patent, further illustration and description of them and their functions is deemed unnecessary.

For the purposes of the invention herein disclosed, I have added an overhead countershaft 10 which is journaled in the upper frame elements C' and is driven from shaft D by a sprocket chain 11. The shaft 10 carries a pulley 12, from which an outfeeding conveyor roller 14 is driven by a crossed and twisted belt 16, pulley 17, shaft 18, pulley 19, crossed belt 22, pulley 23, and shaft 24, on which the outfeeding roller 14 is fixedly mounted. The shaft 24 also carries a pulley 26, from which power is transmitted by a belt 28 and pulley 29 to a spring supported roller 30 near the log receiving end of the outfeeding conveyor. The rollers 14 and 30 are provided with longitudinally extending projections or ribs 32 for engagement with the outfeeding log, whereby

the latter may be urged by these rollers toward the delivery end of the conveyor.

Pairs of inclined leaf springs 34, 35 and 36 each have one end adjustably secured to frame elements 38 of the outfeeding conveyor H. The raised ends of the springs 34 support the bearings of the outfeeding roller 14, the raised ends of the springs 35 support the bearings of the idle roller J, and the raised ends of the springs 36 support the bearings of the outfeeding roller 30. Therefore each of the outfeeding rollers may be depressed independently of the others. When equally subject to the weight of a straight log, all of them may be uniformly depressed, but ordinarily the rotating logs will have knots or bends which will unequally distribute its weight on the rollers and keep them in a state of continuous vibration while the log is being rotated and advanced in contact with them. The lower or frame supported end of each of the springs 34, 35 and 36 is connected by a pair of bolts 39 with a rockable mounting 40, which is supported by a pivot pin 41 from a pair of spaced walls 42 forming part of a bracket-like frame member 37. These parallel walls are cross connected by a web 43, and adjusting screws 44 which extend through this web in threaded engagement therewith and have their upper ends in bearing contact with the end portions of the mounting 40 on opposite sides of the pivot pin 41. Therefore, by retracting one of these screws and advancing the other, the pitch of the associated roller supporting springs 34, 35 and 36 may be adjusted to determine the normal position of each roller with reference to the other rollers of the outfeeding conveyor section. All of the rollers may thus be normally supported in a common plane.

The inner ends of the frame H are suspended by hangers 45 from a pivot shaft 46 in line with the belt driving shaft 18. The shaft 46 is supported by a bracket 47 which extends laterally from one of the lower frame bars C'' of the debarking mechanism. Therefore, when the debarker is being transported from place to place, the frame H of the outfeeder may be swung upon pivot shaft 46 to a raised position, carrying with it the belts 22 and 28 without unshipping them from their respective pulleys. The frame H may be held in its raised position by a hook 48 carried by one of the upper frame elements C'. At each place of use the frame H is swung downwardly and laterally, and its outer end is supported from the ground by legs 49. As shown in the former patent, it is provided with short outwardly extending arms 50 which support an auxiliary frame 51 provided with idle rollers 52, over which the debarking logs may be finally delivered. The flag-like guides 54 have supporting posts 55 urged to guiding position by springs 56 substantially as disclosed in said former patent, and the posts which support these guides may, if desired, be removed preparatory to swinging the frame H to its upright position.

The crossed and twisted belt 16 will not be subject to variation in tension since the shafts 10 and 18 are mounted in fixed journals. The belt 22 will be subject to a slight increase in tension when the roller 14 is depressed from its normal position to or across a horizontal plane which includes the mounting of its supporting spring 34. But since the belt also tends to swing toward or across a horizontal plane which includes the axis of the shaft 18, its increased tension will merely increase its tractive power in a certain proportion to the extra load imposed by the log upon the roller 14 without subjecting any of the parts to shock or excessive strain.

For similar reasons, downward vibrations of the outfeeding rollers 14 and 30 will cause a slight increase in tension of the belt 28 and increase its tractive power without subjecting any of the parts to undue strain or shock. The raised ends of the leaf springs which support the power driven rollers swing downwardly in arcs which curve in the same direction as the arcs in which the belts swing, although at a shorter radius.

The object of connecting the belt 22 with a remote roller on the feedway and of connecting that roller to the receiving roller 30 by another belt is to provide means for utilizing belts of such length that undue strains will not be imposed upon them by the above mentioned variations in tension.

I claim:

1. In a log debarking machine provided with a feedway frame extending laterally from its outfeeding side and a plurality of rollers journaled in resiliently supported bearings carried by said frame, said rollers normally having coplanar axes, the combination therewith of a power driven shaft mounted on the debarking machine on an axis normally coplanar with the roller axes, and a belt connection between said shaft and one of the rollers remote from the shaft, whereby to allow the roller to vibrate in an arc intercepting the plane in which the shaft axis is disposed, under pressure of a rotating log, without objectionable change in belt tension.

2. In a log debarking machine provided with a pivotally connected feedway frame extending laterally from its outfeeding side and rollers journaled in resiliently supported bearings carried by said frame, the combination therewith of a power driven shaft aligned with said pivotal connection and mounted on the debarking machine in a position parallel to said rollers, a belt connection between said shaft and a remote roller in said set, and another belt connection between said remote roller and another roller in said set adjacent the debarking machine.

3. In a log debarking machine having a feedway frame extending laterally from its outfeeding side, rollers journaled in bearings supported by sets of leaf springs with the springs of at least one of the sets having their inner ends connected with the frame and their outer ends extending in a raised position in supporting relation to a roller near the outer end of said frame, the combination therewith of a power driven shaft mounted on the debarking machine in a position parallel to said roller and at nearly the same level, and a belt connection between said shaft and roller whereby said roller and the associated end of said belt may vibrate in arcs of different radius and which curve in the same direction without objectionable change in belt tension.

4. In a log debarking machine having a pivotal feedway frame extending laterally from its outfeeding side, a pair of leaf springs each having one end secured to an intermediate portion of the frame and projecting longitudinally thereof and upwardly toward the outer end of said frame, another pair of springs secured to an intermediate portion of the frame and projecting upwardly toward the inner end of said frame, rollers journaled in bearings mounted on the upper ends of the respective pairs of springs, said rollers normally having horizontal and coplanar axes, the combination therewith of a power driven shaft mounted on the outfeeding side of the de-

barking machine with its axis slightly below the normal horizontal plane of the roller axes, a belt connection between said shaft and the roller mounted on the outwardly and upwardly projecting springs, and another belt connection between said outer roller and the roller carried by the inwardly and upwardly projecting springs.

5. In a log debarking machine having a feedway frame extending laterally from its outfeeding side, leaf springs obliquely disposed in pairs on opposite sides of the frame and in substantially parallel relation, adjacent ends of each pair of springs having mountings oscillatable upon individual pivotal connections with the frame, a plurality of rollers journaled in bearings on corresponding divergent ends of opposite springs, and means for adjusting individually the oblique angle of the respective springs, said means comprising abutments and set screws respectively connected with the frame and respective springs at opposite sides of the respective pivotal connections.

6. A log outfeeder for a debarking machine, comprising the combination with a supporting frame having side bars provided with bracket-like members, a rockable spring mounting pivotally secured to each bracket-like member, adjusting screws engaging said rockable mounting and mounted in each bracket in spaced relation with the pivotal axis of said rockable mounting for determining the pitch of the mountings, leaf springs each having one end secured to one of the mountings, log supporting rollers journaled in bearings supported by the other ends of said leaf springs, and a power driven shaft having a belt connection with one of said rollers adapted to swing with it across a horizontal plane which includes the axis of said shaft.

MICHAEL J. POWER.

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