June 23, 1931. C. S. AMIDON 1,811,038

CONTROLLING MECHANISM FOR SAWMILL CARRIAGES

Filed June 29, 1927 2 Sheets-Sheet 1

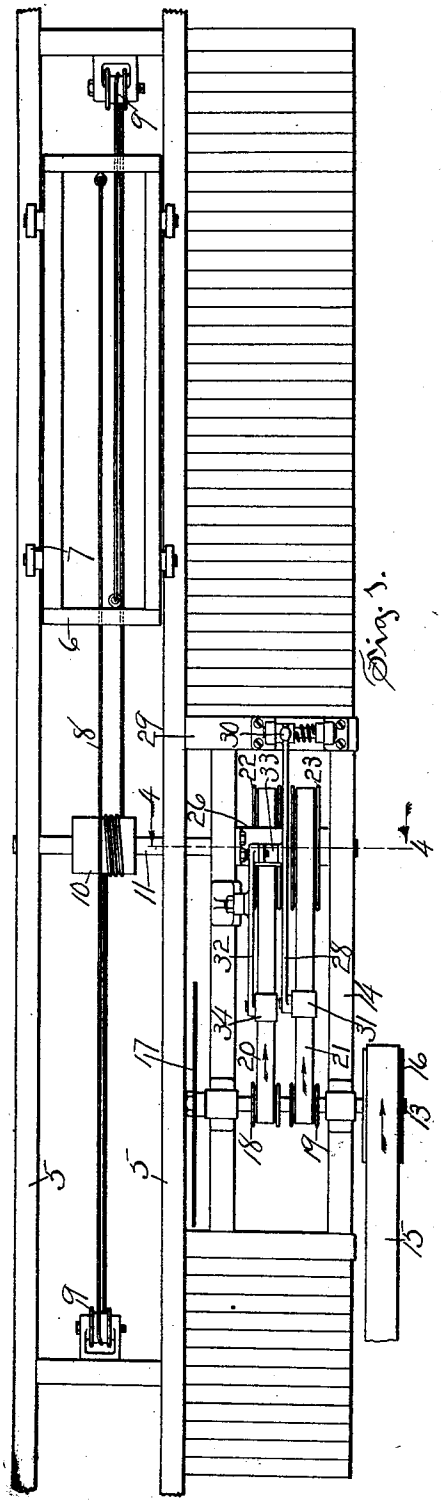


Fig. 1.

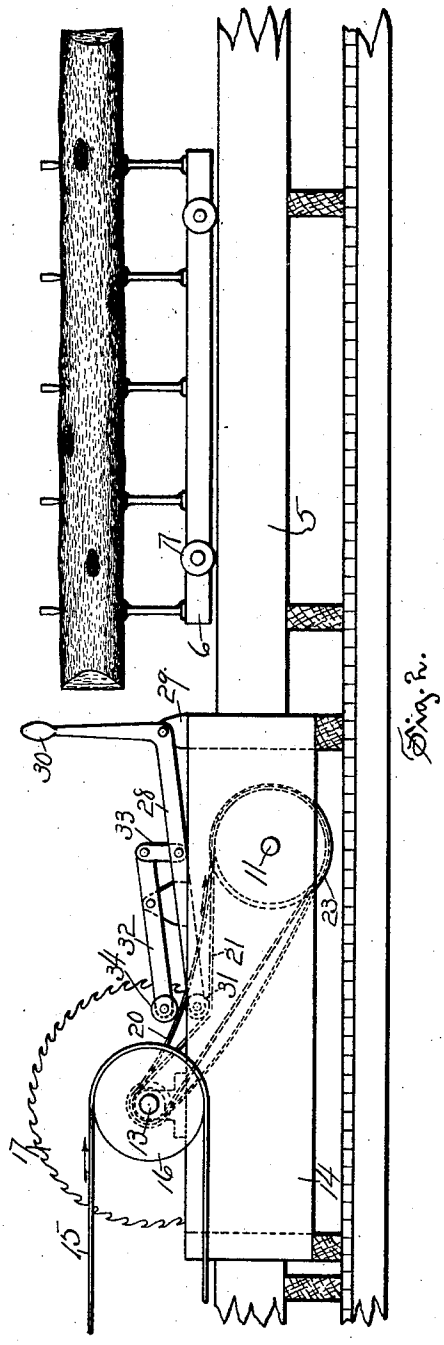


Fig. 2.

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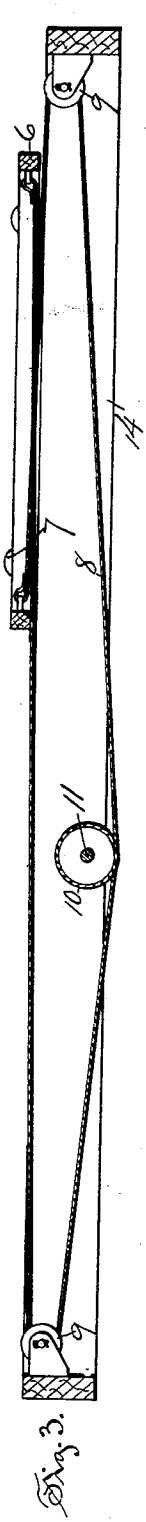


Fig. 3.

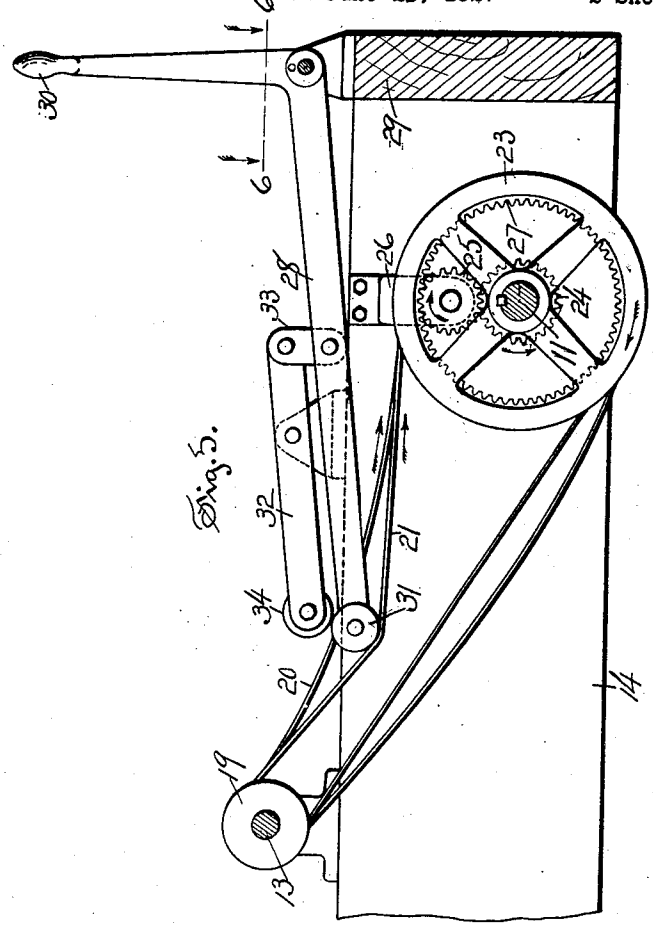


Fig. 5.

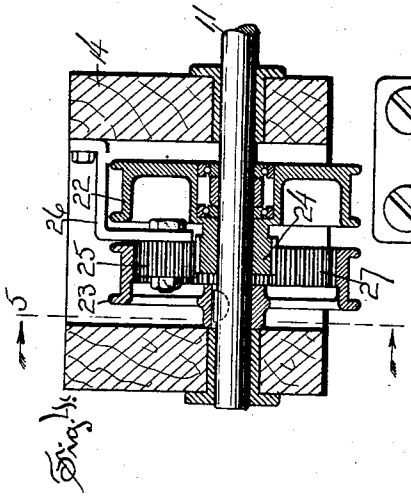


Fig. 4.

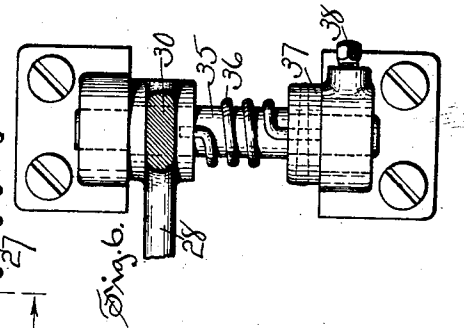


Fig. 6.

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UNITED STATES PATENT OFFICE

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CONTROLLING MECHANISM FOR SAWMILL CARRIAGES

Application filed June 29, 1927. Serial No. 202,367.

My invention relates to the class of devices employed for regulating or controlling the movements of the carriages of saw mills, and an object of my invention, among others, is the provision of a controlling device for this purpose that shall be simple in construction and particularly efficient in operation.

One form of mechanism embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a top view of a saw mill mechanism illustrating the carriage and means for driving it.

Figure 2 is a side view of the same.

Figure 3 is a view in section through the carriage and its runway.

Figure 4 is a view in cross section, scale enlarged, through the frame for supporting the driving mechanism, and on a plane denoted by the dotted line 4—4 of Figure 1.

Figure 5 is a detail view, scale enlarged, in lengthwise section through a portion of said frame and on a plane denoted by the dotted line 5—5 of Figure 4.

Figure 6 is a view in section on a plane denoted by the dotted line 6—6 of Figure 5.

In the accompanying drawings the numeral 5 denotes the rails of the runway for the carriage 6 of a saw mill mechanism, which carriage may be of any ordinary form and construction, supported upon wheels 7 and having any suitable mechanism, see Fig. 2, for securing logs or timbers thereto.

A cable 8 is secured at its opposite ends to opposite ends of the carriage, as shown in Figure 1, this cable extending around sheaves 9 located near opposite ends of the runway and also around a drum 10 secured to a carriage driving shaft 11. All of the mechanism thus far described is of old and well known construction, and, except in connection with parts to be hereinafter set forth, forms no part of my present invention.

The numeral 13 denotes a main driving shaft supported in bearings upon a frame comprising sides 14, which shaft may be driven in any suitable manner, as by means of a belt 15 passing around a pulley 16 secured to the shaft. A saw 17 is also secured to said shaft in any ordinary manner.

In constructing my improved carriage controlling mechanism I provide two carriage driving pulleys 18—19 secured to the shaft 13 from which belts 20—21 extend to pulleys 22—23 mounted on the shaft 11. The pulley 22 is mounted on the shaft 11 to rotate independently thereof and the pulley 23 is keyed to said shaft. The pulley 22 is preferably mounted on ball bearings, as shown in Figure 4 and it has a pinion 24 rigid therewith and which meshes with a direction pinion 25 rotatably mounted on an arm 26 secured to and projecting from one of the sides 14. This pinion 25 meshes with an internal gear 27 formed inside of the rim of the pulley 23, and as shown in Figure 5 of the drawings.

A belt tensioning lever 28 is pivotally mounted on a cross piece 29 of the frame 14 and has a handle 30 by means of which it may be operated. At the end opposite the handle the lever has an idler 31 in engagement with the belt 21. A second tensioning lever 32 is pivotally mounted on the side 14 and is connected by a link 33 with the lever 28, said lever 32 having an idler 34 in engagement with the belt 20.

From this description it will be noted that with the parts of the controlling mechanism in the position shown in Figures 2 and 5, tension being upon the belt 21 the pulley 23 will be driven in the direction indicated by the arrow in Figure 5. This pulley being keyed to the shaft 11 said shaft will be driven in the same direction as that of said pulley, this effecting rotation of the drum 10 in a direction to cause movement of the carriage 6 toward the right, as seen in Figure 1.

In this operation the pinions 25 and 24 will effect rotation of the pulley 22 upon the shaft 11, the looseness of the belt 20 permitting this movement in a direction opposite to that of rotation of the pulley 23. From this it will be seen that the shaft 11 is driven directly from the shaft 13, rotating in the same direction as said shaft 13.

If the handle 30 be moved to the right from the position shown in Figure 5 the belt 21 will be loosened and the lever 32 will be actuated to bring the idler 34 into contact with the belt 20 thus placing tension upon said belt 20 and releasing the tension upon the belt 21. This will cause the pulley 22 to be rotated in the same direction as hereinbefore described with respect to the pulley 23, but the meshing of the pinions 24 and 25 and the latter with the gear 27 will cause the pulley 23 to be rotated in a direction opposite to that hereinbefore described and opposite to the direction of rotation of the pulley 22, with a result that the shaft 11 is rotated by the pulley 23 but in a direction reverse to that hereinbefore described, thus reversing the movement of the drum 10 and effecting movement of the carriage to the left from the position as shown in Figure 1.

In short the shaft 11 is driven directly from the pulley 23, when the belt 21 is tightened, in the direction indicated by the arrow in Figure 5, but when the belt 20 is tightened it will be driven in a reverse direction. When it is desired to maintain the carriage stationary the handle 30 will be thrown to a neutral position so that tension will be placed upon neither of the belts 20 nor 21.

My invention enables me to effect an economy, not only in the construction of the apparatus, but in the operation thereof, and by this simple arrangement of belts and gears I am enabled to provide an efficient mechanism not embodying the use of a cross belt.

The lever 28 is so arranged that it will automatically assume a neutral position, that is so that neither of the belts 20 or 21 will operate to drive their respective pulleys. In effecting this arrangement the lever is so mounted on a spindle 35 secured against rotation, the lever 28 being mounted to rotate independently of this spindle. A spring 36 is mounted on the spindle with one end engaged with the lever and the opposite end engaged with a collar 37 secured to the spindle.

By placing the lever 30 in a neutral position and then securing the collar 37 as by means of the set screw 38, the spring will be so positioned that when the lever is moved in either direction the spring will be tensioned and when the lever is released it will return to its neutral position.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the mechanism which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim—

1. In combination with a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft, a belt to drive said pulley, a pulley loosely mounted on the shaft next adjacent the secured pulley, a belt for driving said last mentioned pulley, and a connection, independent of said shaft, between said last mentioned pulley and the pulley secured to the shaft for driving the latter in a direction contrary to that effected by its belt.

2. In combination with a carriage mounted for reciprocating movement, a controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft, a pulley loosely mounted on said shaft, a belt for driving each of said pulleys, and a geared connection between said pulleys and substantially housed thereby for driving the shaft through the secured pulley in a direction opposite to that effected by the belt on the secured pulley.

3. In combination with a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft, a pulley loosely mounted on the shaft next adjacent the secured pulley, belts for driving said pulleys in the same direction, and a connection between said pulleys which is independent of said shaft for driving the pulley secured to the shaft in a direction opposite to that effected by its belt.

4. In combination with a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft, a pulley loosely mounted on said shaft, belts for driving said pulleys in the same direction, means for tensioning said belts and for loosening them, and a geared connection between said pulleys for driving the shaft through the secured pulley in a direction opposite to that effected by the driving of the secured pulley by its belt.

5. In combination with a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft, a pulley loosely mounted on said shaft, belts for driving said pulleys in the same direction, means for simultaneously loosening one of said belts while tensioning the other and vice-versa, and a two unit gearing connection between and substantially housed by said pulleys for driving the one secured to

the shaft in a direction opposite to that effected by its belt.

6. In combination, a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft, a belt for said pulley, and means for driving said pulley in a direction opposite to that in which it is driven by said belt, said means including a driven member, a pinion driven with said member, and a geared connection between the pinion and the pulley independent of said shaft.

7. In combination, a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft and having internal gearing, a belt for said pulley, and means for driving said pulley in a direction opposite to that in which it is driven by said belt, said means including a driven member loose on said shaft and having a pinion driven therewith, and an idle pinion meshing with the internal gearing and the first mentioned pinion.

8. In combination, a carriage mounted for reciprocating movement, controlling mechanism operatively connected with said carriage and including a carriage driving shaft, a pulley secured to said shaft and having internal gearing, a belt for said pulley, and means for driving said pulley in a direction opposite to that in which it is driven by said belt, said means including a driven member loose on said shaft and having a pinion driven therewith, an idle pinion meshing with the internal gearing and the first mentioned pinion, and a support for the idle pinion to hold the same against movement around the shaft.

9. In combination, a frame, a carriage mounted for reciprocating movement with respect to the frame, a controlling mechanism operatively connected with the carriage and supported by the frame, said mechanism including a carriage driving shaft journaled on parallel members of said frame, a pulley secured to said shaft between said members, a belt to drive said pulley, a second pulley loosely mounted on the shaft adjacent the first pulley, a belt for the second pulley, radially aligned sets of gear teeth formed integral with said pulleys, a pinion meshing with both sets of gear teeth, and a support for the pinion mounted on one of said parallel members.

10. In combination, a frame, a carriage mounted for reciprocating movement with respect to the frame, a controlling mechanism operatively connected with the carriage and supported by the frame, said mechanism including a carriage driving shaft journaled on parallel members of said frame, a pulley secured to said shaft between said members, a belt to drive said pulley, a second pulley loosely mounted on the shaft adjacent the first pulley, a belt for the second pulley, radially aligned sets of gear teeth formed integral with said pulleys, a pinion meshing with both sets of gear teeth, and an angular arm mounted on one of said parallel members and projecting between the pulleys to support the pinion.

CHARLES S. AMIDON.