H. N. COVELL.

LOGGING LOCOMOTIVE.

APPLICATION FILED APR. 9, 1909.

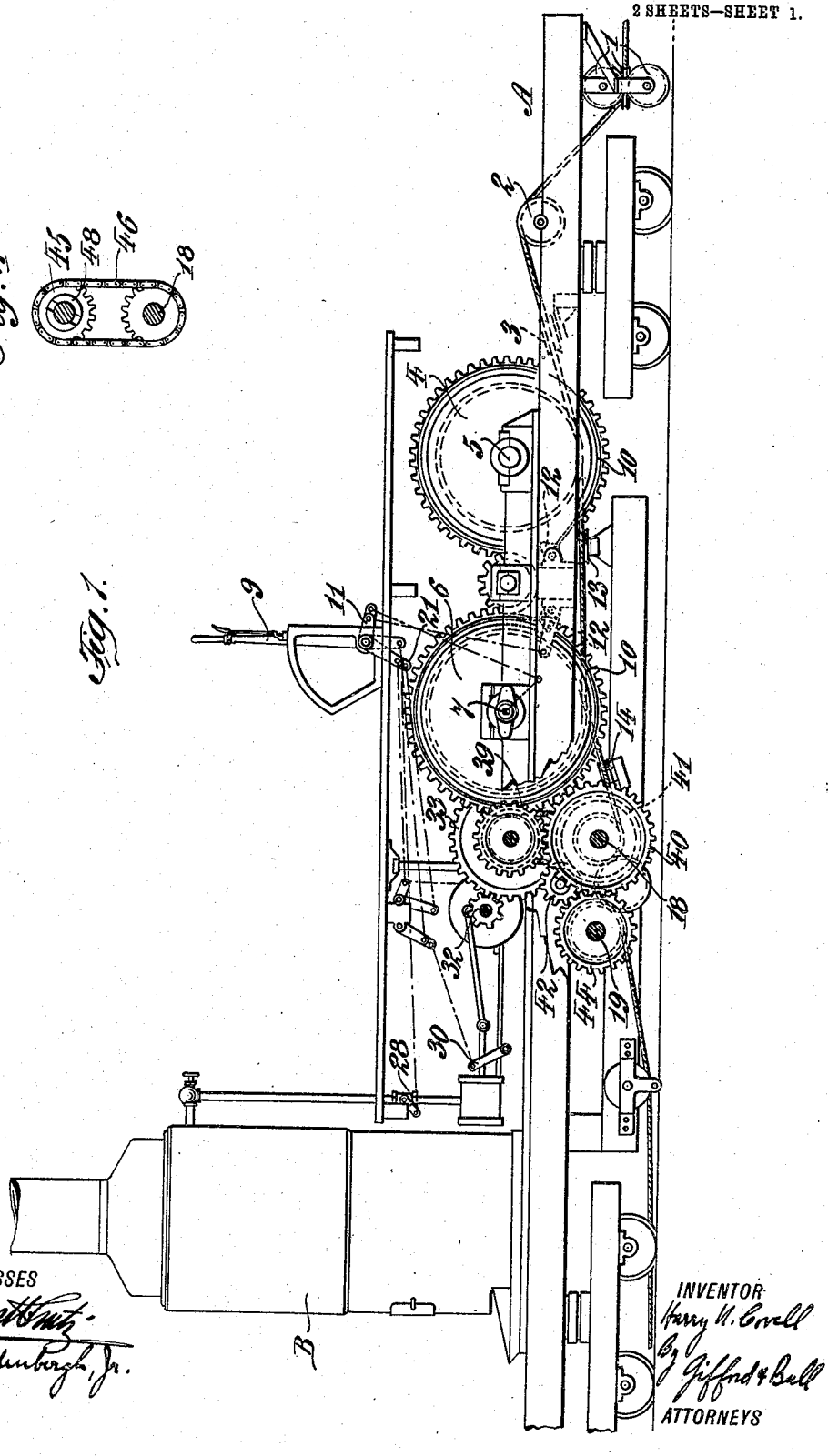
930,354.

Patented Aug. 10, 1909.

2 SHEETS—SHEET 1.

Fig. 4

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

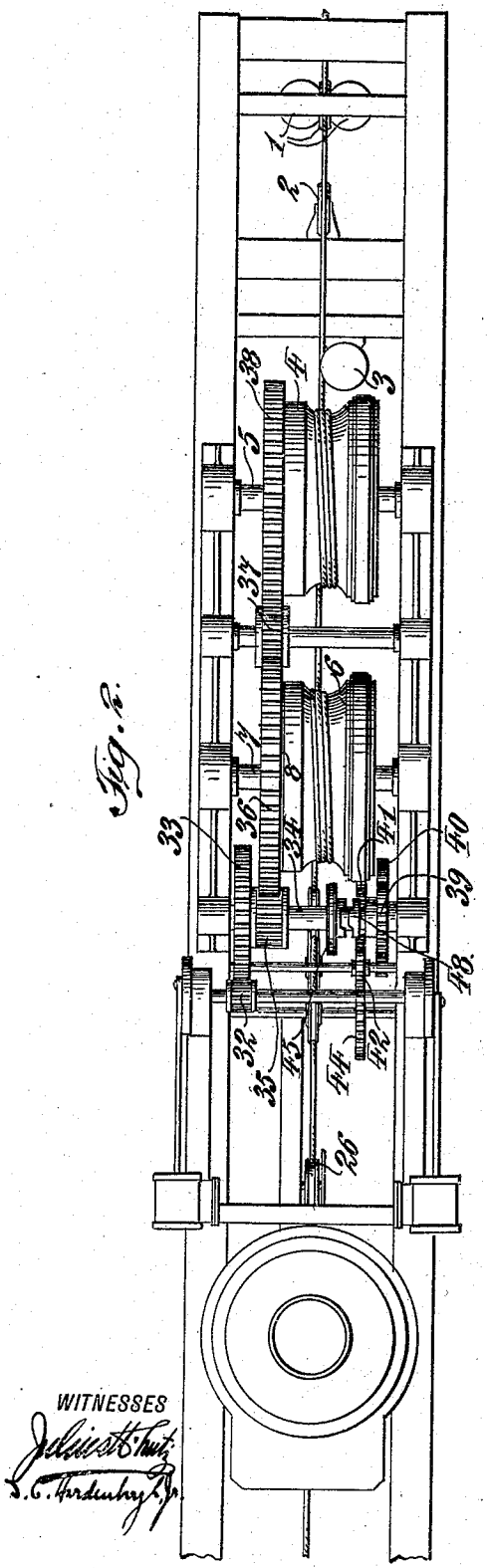
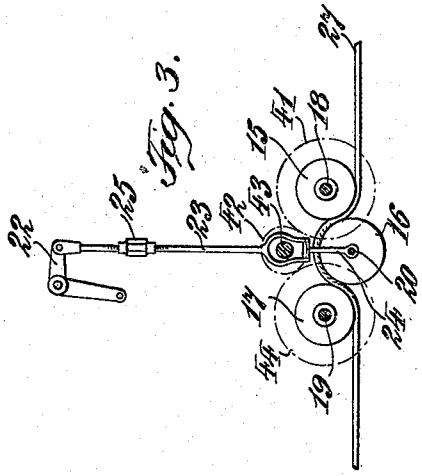


Fig. 3.



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UNITED STATES PATENT OFFICE.

HARRY N. COVELL, OF NEW YORK, N. Y., ASSIGNOR TO LIDGERWOOD MANUFACTURING COMPANY, A CORPORATION OF NEW YORK.

LOGGING-LOCOMOTIVE.

No. 930,354. Specification of Letters Patent. Patented Aug. 10, 1909.

Application filed April 9, 1909. Serial No. 488,809.

To all whom it may concern:

Be it known that I, HARRY N. COVELL, a citizen of the United States, and a resident of New York city, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Logging-Locomotives, of which the following is a specification.

My invention relates to that class of logging locomotives adapted to operate upon a grade in hauling logs or logging cars up or down the same, and which are operated by means of a cable.

It is the purpose of my invention to provide a logging locomotive of the class above described which may be operated on a steep grade to convey a train of logging cars up or down the grade with safety and which comprises among its advantages novel design, construction and operations of parts such as tension devices, and novel arrangement of operating mechanism designed to produce a locomotive of highest efficiency and simple in operation and control.

My invention consists in the design, arrangement, combination and operation of parts as set forth in and falling within the scope of the claims hereto appended.

In the drawings herewith like characters of reference denote like parts in all the figures thereof.

Figure 1 represents a view in side elevation of a logging locomotive embodying my invention, a portion of the side being broken away to show the gears; Fig. 2 represents a plan view of a logging locomotive embodying my invention, the operating platform being removed; Fig. 3 represents an enlarged detail view of the tension device; Fig. 4 represents a detail view of the sprocket and chain driving mechanism for the tension device.

Upon a car A is mounted a steam boiler and engine B, or any other desired means for furnishing motive power such as an electrically driven engine, or the like. At the opposite end of the car from the engine and underneath the car are guide sheaves 1, preferably four in number arranged in pairs horizontally and vertically to firmly position a rope passing between the same. A vertical guide sheave 2 is mounted in the floor of the car, as is also an inclined guide sheave 3. Adjacent the sheave 3 a rope drum 4 is mounted on the car, the drum being keyed on shaft 5; a second rope drum 6 is mounted on shaft 7 being movable thereon and driven with the shaft when in engagement with friction disk 8 at one end of the shaft, the drum 6 being moved into engagement with the friction by means of lever 9 and its connection with the drum. Each of the drums 4 and 6 is provided with a band brake 10 at one end operated by means of a lever 11 connected with the brake toggles 12. The drum 4 is preferably of smaller diameter than the drum 6 for the purpose of securing additional tension on the rope or cable passing between them as will hereafter be described. Between the drums and underneath the car is mounted a horizontal guide sheave 13.

Adjacent drum 6 underneath the car is mounted a slanting guide sheave 14 leading to a tension device comprising sheave wheels 15, 16 and 17; sheave wheels 15 and 17 are spaced apart, their shafts 18 and 19 being preferably mounted in the same horizontal plane, and the sheave wheel 16 is mounted below and extends up between wheels 15 and 17, the shaft 20 of wheel 16 being adjustable vertically to any fixed position to secure the desired tension on a rope running between wheel 16 and wheels 15 and 17. This adjustment is secured by means of tension lever 21 connected with an arm of bell crank lever 22, the other arm of which is connected by rod 23, through a swivel joint at the bottom of said rod, with the arms 24 which bear the shaft 20 of wheel 16. The rod 23 is preferably provided with a turnbuckle 25 to permit of adjustment of the length of the rod as desired. Adjacent the tension device is mounted a vertical guide sheave 26.

The rope 27 is secured at the upper end of the incline upon which the engine is to operate and lies loose in the center of the track; the rope passes between guide sheaves 1, over sheaves 2 and 3, thence on to drum 4, making two or three, or a desired number of turns around this drum, thence around drum 6 for a desired number of turns, down over guide sheave 14 between tension sheaves 15 and 17, and 16, and under guide sheave 26. The desired tension on the rope is maintained by reason of the fact that rope drum 4 is preferably smaller than rope drum 6,

and by the adjustment of the sheave 16 of the tension device. Should the tension on the rope between drums 4 and 6 become too great the friction disk 8 will slip, breaking of the rope being thereby avoided.

The engine B is provided with throttle valve 28 operated by connection with a throttle lever and is provided with reversing mechanism 30, of any desired and well known type, operated through connection with a reversing lever. The crank shaft 31 of the engine carries at one end a pinion 32 meshing with a gear wheel 33 on a shaft 34; a gear wheel 35 on the shaft 34 meshes with the gear 36 mounted on shaft 7 and bearing the friction disk 8; gear 36 in turn meshing with idler pinion 37 on a shaft mounted between drums 4 and 6, and pinion 37 with gear wheel 38 on drum 4. The drive of the rope drums is thus secured being in a direction as desired in accordance with the direction in which the engine is operated, and the desired speed of rotation of the drums being attained through an appropriate ratio of the driving gears.

The tension device is driven in the following manner: At one end of shaft 34 a gear wheel 39 meshes with a gear wheel 40 on shaft 18 of sheave 15; a second gear 41 on shaft 18 meshes with a pinion 42 on a shaft 43, pinion 42 in turn meshing with a gear 44 on the shaft 19 of sheave 17. The revolution of shafts 16 and 19, and their sheaves, in the same direction is thus secured; the arms 24 of the tension adjustment device are forked to permit of the passage of shaft 43 without interference with the operation of the tension adjustment. On shaft 34 is also mounted a sprocket wheel 45 connected by a chain 46 with a second sprocket wheel 47 on shaft 18 of sheave 15. The gear wheel 39 and sprocket wheel 45 on shaft 34 are loosely mounted on the shaft and are driven with the shaft when connected thereto by the double clutch member 48 which is movable lengthwise of the shaft 34 and turns with the shaft. When the clutch member 48 is in engagement with gear wheel 39 the sheaves 15 and 17 will be rotated in a certain direction through gears 39, 40, 41, 42 and 44; and when clutch member 48 is in engagement with sprocket wheel 45 the sheaves 15 and 17 will be rotated in an opposite direction through sprockets 45 and 47 and gears 41, 42 and 44. The direction of rotation of sheaves 15 and 17 in accordance with the direction of operation of the engine is thus secured, the clutch member 48 being operated through its connection with a clutch lever.

The various operating levers are preferably mounted, in line with lever 9 shown, on a platform C elevated above the mechanism on the car A, the operator being thus enabled to obtain a clear view and to readily control the throttle, brakes, friction, reversing mechanism, clutch, and tension without moving from his station.

The operation of my improved logging locomotive engine will be readly understood from the foregoing description, it being capable of hauling a train of logging cars up a grade beyond the capacity of a traction locomotive, and of safely heading such a train in its descent at a desired rate of speed. Any desired tension of the rope or cable may be readily secured, the engine may be geared to any desired speed and may be stopped in any position, or operated in either direction with ease and without danger.

It will readily be seen that modifications in the arrangement of parts such as of guide sheaves and gears may be readily made without departing from the spirit of my invention.

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

1. In a logging locomotive adapted to operate on a cable in combination a plurality of cable drums, one of the drums being of smaller diameter than a second of the drums, and means for operating the drums, said means comprising a friction disk member in driving engagement with one of the drums.

2. In a logging locomotive adapted to operate on a cable in combination means for maintaining a tension on the cable, said means comprising a plurality of cable drums around which the cable is passed, one of said drums being of smaller diameter than a second of the drums, and means for operating the drums comprising friction means adapted to engage with one of the drums to operate the same.

3. In a logging locomotive adapted to operate on a cable in combination a drive shaft, an intermediate shaft, driving connections between said shafts, a gear on said intermediate shaft, a second gear engaging with the first gear and provided with a friction surface, a cable drum adapted to be brought into engagement with said friction surface, a second cable drum of smaller diameter than said first drum and provided with a gear, a pinion between and engaging with said second gear and the gear of said second drum, and means for operating the drive shaft.

4. In a logging locomotive adapted to operate on a cable in combination a plurality of cable drums, means for maintaining tension on the cable, said means comprising a plurality of tension sheaves between which the cable passes, one of said sheaves being adjustable and means for operating the drums and the sheaves.

5. In a logging locomotive adapted to operate on a cable in combination a plurality of cable drums, means for maintaining ten-

sion on the cable comprising a plurality of tension sheaves adapted to operate in a fixed position and an adjustable sheave, the cable passing between said fixed and said adjustable sheaves, and means for operating the drums and the sheaves.

6. In a logging locomotive adapted to operate on a cable in combination a plurality of cable drums, means for maintaining tension on the cable comprising two tension sheaves adapted to operate in a fixed position, a third sheave extending between said two sheaves and vertically adjustable, the cable passing between said two sheaves and said one sheave, and means for operating the drums and the sheaves.

7. In a logging locomotive adapted to operate on a cable in combination a drive shaft, means for operating the drive shaft, a plurality of cable drums, driving connections between the drums and the drive shaft, means for maintaining a tension on the cable comprising a plurality of tension sheaves, one of the sheaves being adjustable, driving connections between the drive shaft and the sheaves adapted to operate the latter in one direction, and driving connections between the drive shaft and the sheaves adapted to operate the latter in the opposite direction.

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

HARRY N. COVELL.

Witnesses:
T. E. HARDENBERGH, Jr.,
W. A. PAULING.