F. L. SESSIONS.

CABLE WINDING MECHANISM.

APPLICATION FILED JUNE 27, 1908.

1,069,037.

Patented July 29, 1913.

3 SHEETS—SHEET 1.

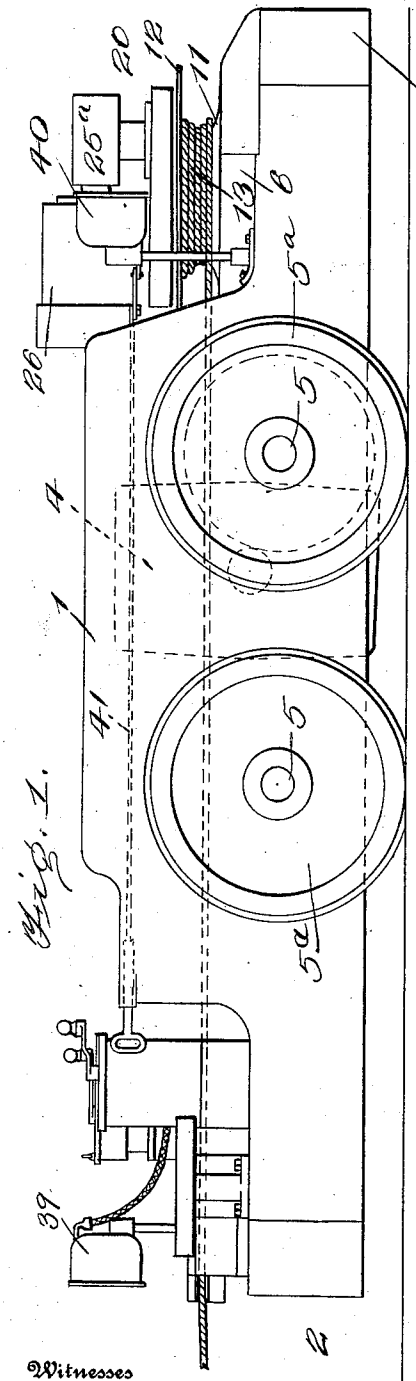


Fig. 1.

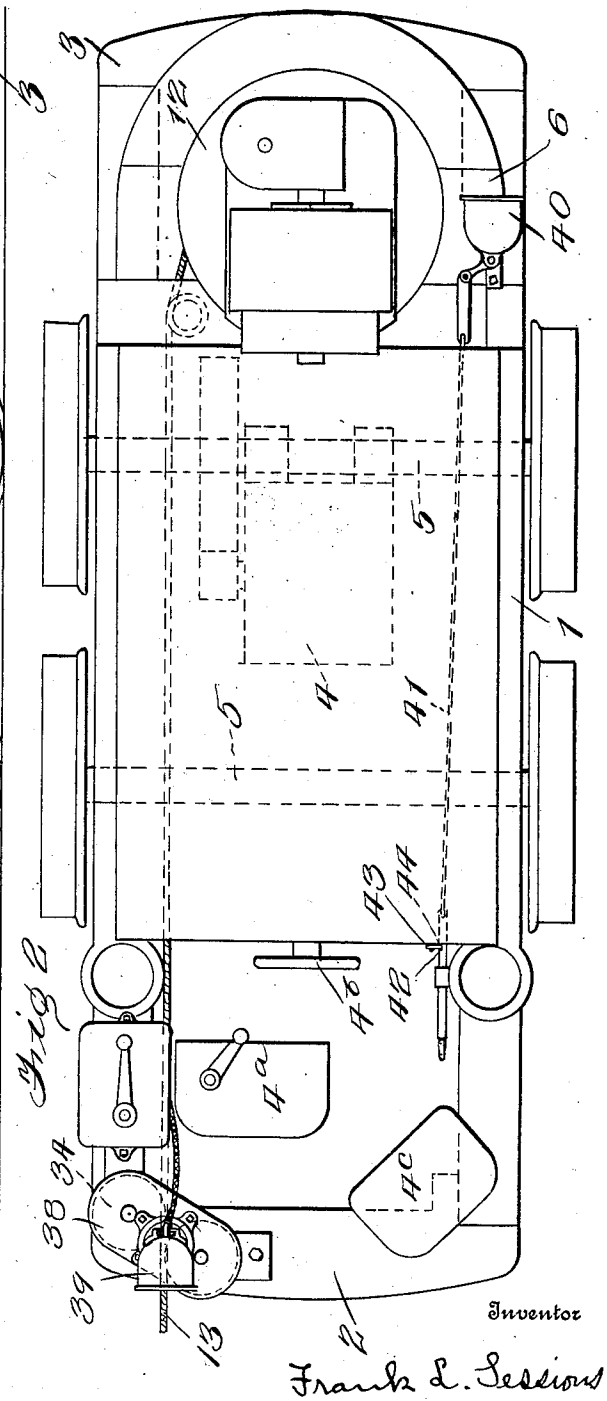


Fig. 2.

Witnesses

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3 SHEETS—SHEET 2.

Fig. 4.

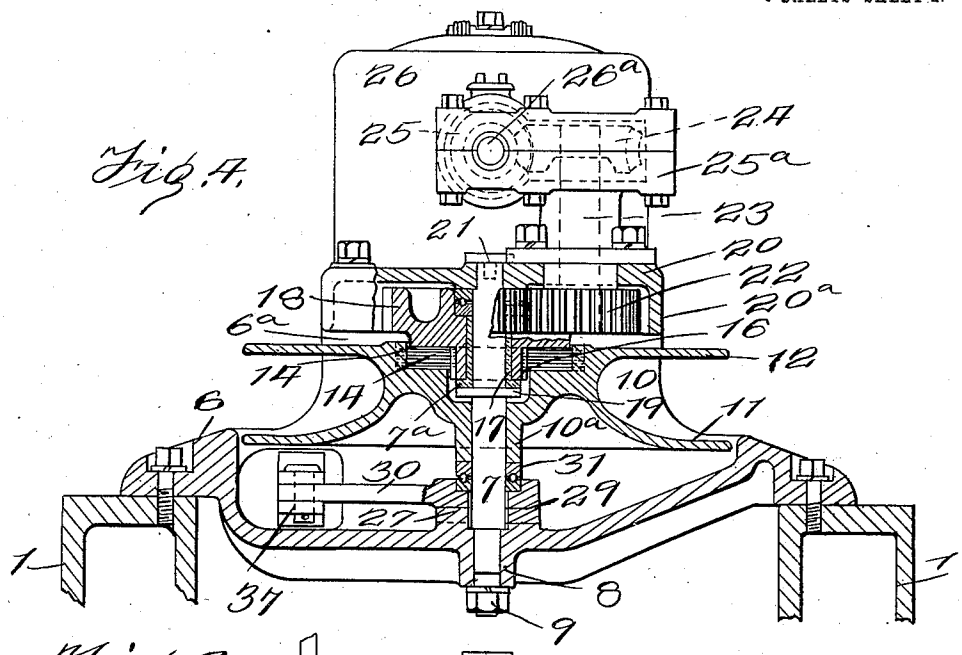
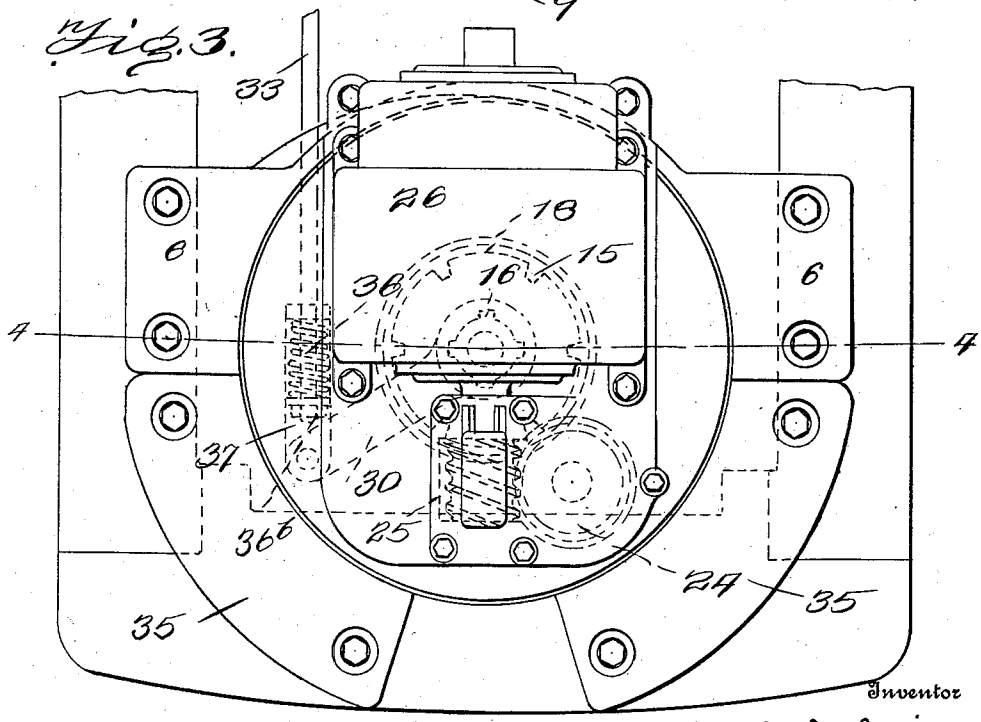


Fig. 3.



Witnesses

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3 SHEETS—SHEET 3.

Fig. 5.

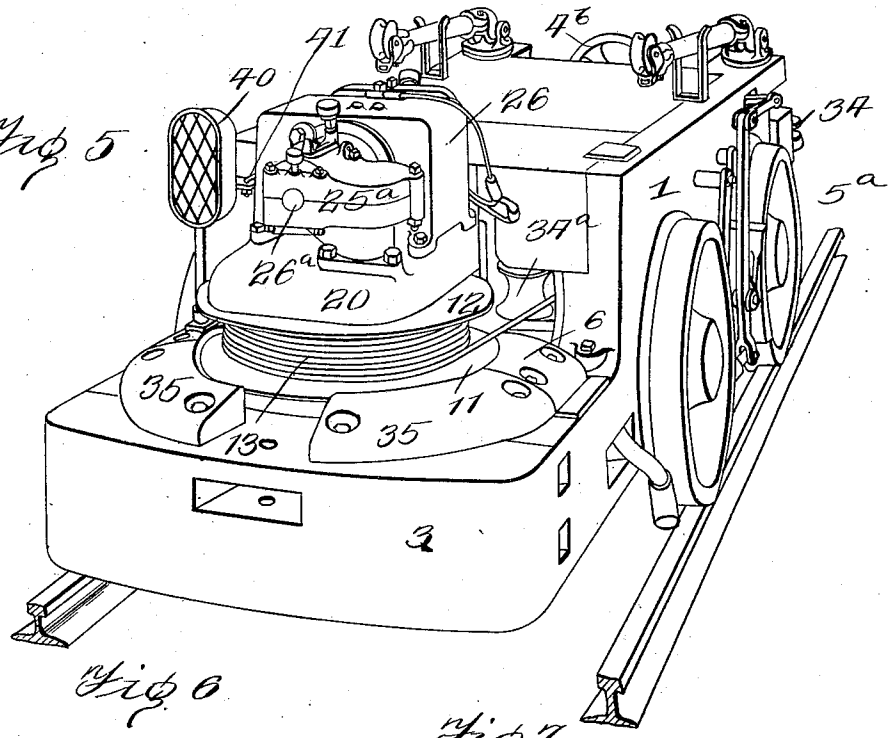
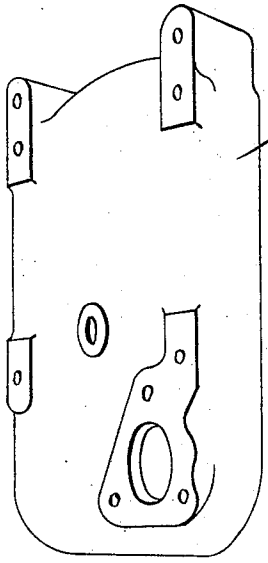
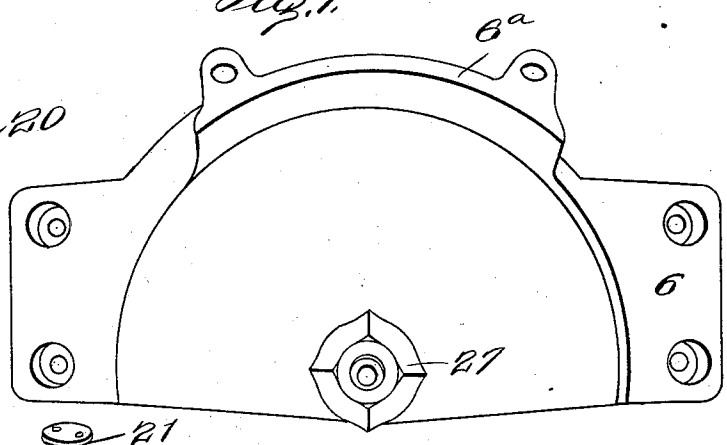


Fig. 6.

Fig. 7.





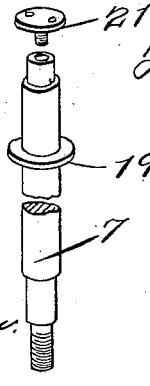


Fig. 8.

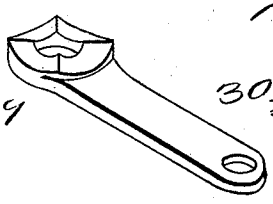


Fig. 9.

Witnesses

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UNITED STATES PATENT OFFICE.

FRANK L. SESSIONS, OF COLUMBUS, OHIO, ASSIGNOR TO THE JEFFREY MANUFACTURING COMPANY, A CORPORATION OF OHIO.

CABLE-WINDING MECHANISM.

1,069,037. Specification of Letters Patent. Patented July 29, 1913.

Application filed June 27, 1908. Serial No. 440,762.

To all whom it may concern:

Be it known that I, FRANK L. SESSIONS, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Cable-Winding Mechanism, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to mine gathering locomotives of the type in which a cable reel carrying a haulage cable is mounted upon the locomotive. These locomotives are used to gather the coal cars from the various rooms and places in which coal is being cut, into trains or trips preparatory to moving them through the mine entry to the outside. The locomotive is stopped in the entry at points where the rooms branch off, and the haulage cable is then unwound from the reel and dragged into a room where its outer end is secured to one of the cars. The reel is then rotated to rewind the cable and withdraw the car from the room, the cars being thus collected into trains in the entry way. In a similar manner cars may be hauled to the main track from any branch track or siding without the locomotive running on to such branch track or siding.

The object of this invention is to provide improved reel mechanism, and improved arrangement of the guiding devices and the illuminating devices for following the cable with a shaft of light.

Figure 1 of the drawings is a side view of a locomotive equipped in accordance with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a detail top plan view of the reel mechanism. Fig. 4 is a cross sectional elevation of the reel mechanism partly in section along the line 4—4 of Fig. 3. Fig. 5 is a perspective view of the locomotive. Figs. 6 to 9 show details.

In the drawings, 1—1 and 2—3 indicate the side and end pieces of the frame structure of the locomotive. In the side frames 1—1 are mounted the wheel axles 5, upon which are secured the wheels 5^a fitted to the track in the usual manner.

4 is the motor geared to the forward axle 5 and adapted to move the locomotive bodily along the track.

At the rear end of the locomotive are arranged the controlling devices, such as the electric controller 4^a, the brake wheel 4^b, etc., and the seat for the motorman 4^c.

To the side frames 1—1 near the forward end of the locomotive is secured the transverse base casting 6. A vertical shaft 7 is secured in a central boss or hub 8 of this base casting 6, by means of the nut 9. Journaled upon this shaft is a hub 10^a having flanges 11 and 12 forming a winding drum or winch to which is secured and upon which is wound the steel haulage cable 13. Between the reel, indicated as a whole by 10, and the stationary shaft 7, is the bearing bushing 7^a.

The upper face of the hub 8 is provided with spiral cam surfaces or teeth 27 which engage similar teeth on the lower side of the hub 29 of the lever 30 which is pivoted to the shaft 7. The upper face of the hub 29 is recessed to receive the ball bearing thrust collar 31 on which rests hub 10^a of the reel. The arm 30 is moved about its point of pivotal attachment by means of the lever rod 33, which is extended rearward to a point within reach of the operator. A certain degree of flexibility in the lever system allowing the rod 33 to be pulled far enough to be latched at 33^a, is obtained by means of the clevis 37 pivotally secured to the outer end of the arm 30 and the spring 36 interposed between the nut 36^b on the end of the rod and the clevis. This lever when pulled by the motorman operates to raise the reel bodily upon the shaft 7 for a purpose to be presently described.

The upper part of the hub 10^a of the reel is recessed to receive a stack of friction disks 14, each alternate disk having notches on its outer edge to engage with a plurality of keys 15 cast on the reel, the remaining disks having notches in their inner edges to engage the keys 16 cast on the hub 17 of the gear wheel 18 which is journaled on the shaft 7, above the reel hub and vertically supported by means of the collar 19.

The upper end of the shaft 7 is fitted into

the reel frame casting 20, which is bolted to the base casting 6. The shaft is secured in position by the screw 21.

The frame casting 20 is provided with a flange 20^a extending downwardly about its four sides affording thereby a protection to the gearing by which the reel is operated. This frame casting is supported by means of the rear upstanding wall 6^a of the base casting 6 and by the shaft 7. Meshing with the gear 18 is a pinion 22 fixed upon a vertical shaft 23 passing through an opening in the top of the frame casting 20. Upon the upper end of this shaft 23 is secured the worm gear 24 which meshes with the worm 25 fixed to the armature shaft 26^a of the motor 26. This motor is supported upon the frame casting 20 and its armature shaft is arranged longitudinally of the locomotive. A suitable gear casing 25^a is provided for the worm and worm wheel which also serve to support the shaft 23. The worm gearing 24—25 is self-locking and will remain stationary when acted upon by power transmitted from the reel.

When it is desired to wind the cable 13, the motor is started, the arm 30 is rotated by pulling the rod 33 causing the cam surface 28 to climb on the cam surfaces 27. The hub 29 is thereby lifted together with the ball bearing 31 and the hub 10^a, the disks 14 being pressed together operatively and yieldably connecting the reel with the gear wheel 18. Between the gear 18 and the top wall of the frame casting 20 is interposed the ball bearing 32 which prevents the gear wheel from being elevated when the rod 33 is pulled and takes the thrust of the upwardly pressed friction disks. When now it is desired to unwind the cable, the rod 33 is pushed back rotating the lever arm 30 in the reverse direction. The cam faces slip into their former position, allowing the hub 10^a to drop away from the disks 14. The pressure in the friction clutch is relieved and the winch is allowed to spin freely under the tension of the cable as it is carried into the rooms by the operator. The gears 18 and 22 are held stationary by means of the self-locking worm gearing 24—25. If at any time the cable unwinds too rapidly or in a jerky fashion, the rotation of the reel can be steadied by pulling the lever 33 sufficiently to apply the desired brake pressure between the friction disks 14.

Suitable cast iron guards 35 are bolted to the end frame 3 to prevent loose coils of the cable from fouling under the flange 11 of the winch.

The cable may be drawn out from the forward end of the locomotive to either side, or it may pass back to the control end of the locomotive guided by the roller 34^a and the sheaves 34, which are supported in the bracket 38 secured to the side of the end frame piece 2 opposite the motorman's seat. The line joining the axes of these sheaves is inclined somewhat to the transverse lines of the locomotive. From these sheaves the cable can be carried in any direction over an angle of 180° or greater, as local conditions may dictate.

On top of the bracket 38 is pivotally mounted the head-light 39, within reach of the motorman, which he can turn to direct the rays of light in whatever direction the cable may be carried. At the forward or reel end of the locomotive another head-light 40 is pivotally mounted upon the side frame 2 adjacent the reel motor. This head-light is therefore mounted in a position such that its rays can be directed upon the cable, when it is carried directly from the front end of the locomotive. By means of the lever rod 41 which extends backward to a point within reach of the motorman and which is held by a slight frictional contact at 44 in any desired position, the motorman can face the head-light in any desired direction. The lever is notched, as at 42, to engage a latch 43 when it is desired to direct the rays of light straight ahead, as required for the normal operation of the locomotive when hauling trains of cars along the entries.

What I claim is:

1. A cable reel mechanism for an electric locomotive comprising in combination a vertical stationary shaft, a cable reel rotatably mounted thereon and centrally recessed at its upper end, a vertically movable thrust support for the reel, a gear wheel adapted to drive the reel rotatably mounted upon the shaft, a collar rigid with the shaft and within the said reel recess adapted to support the gear wheel, means for limiting the upward axial movement of the gear wheel, a friction clutch interposed between the gear wheel and the reel and mounted within the said reel recess, and means for elevating the end thrust support for the reel, to throw into operation the said friction clutch.

2. In a cable reeling mechanism for an electric locomotive, the combination of a haulage cable reel mounted for rotation about a vertical axis, a gear wheel rotatably mounted concentrically with the reel, a manually controllable friction clutch interposed between the gear wheel and the reel, a motor mounted above the reel with its armature shaft horizontal, a vertical power shaft, a worm on the armature shaft of the motor, a worm wheel on the vertical power shaft meshing with the said worm, the said worm and wheel gearing being non-overhauling, and a pinion on the power shaft meshing with the said gear wheel.

3. In a cable reeling mechanism for electric locomotives, the combination of a lower horizontal supporting plate, a vertical non-rotary shaft secured at its lower end to the

said plate, a cable reel rotatably mounted on the shaft, an upper horizontal plate above the reel, the said upper plate being secured to and in part supported by the shaft at its upper end, a vertically extending connection between one edge of the lower plate and the corresponding edge of the upper plate, a motor mounted upon and supported by the upper plate, and gearing interposed between the motor and the reel.

In testimony whereof I affix my signature, in presence of two witnesses.

FRANK L. SESSIONS.

Witnesses:

E. P. SNIVELY,

A. K. STEVENSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."