

G. M. EATON AND J. LE C. DAVIS,
 LOCOMOTIVE GATHERING REEL.

APPLICATION FILED SEPT. 18, 1911. RENEWED JUNE 19, 1919.

1,326,329.

Patented Dec. 30, 1919.

3 SHEETS—SHEET 1.

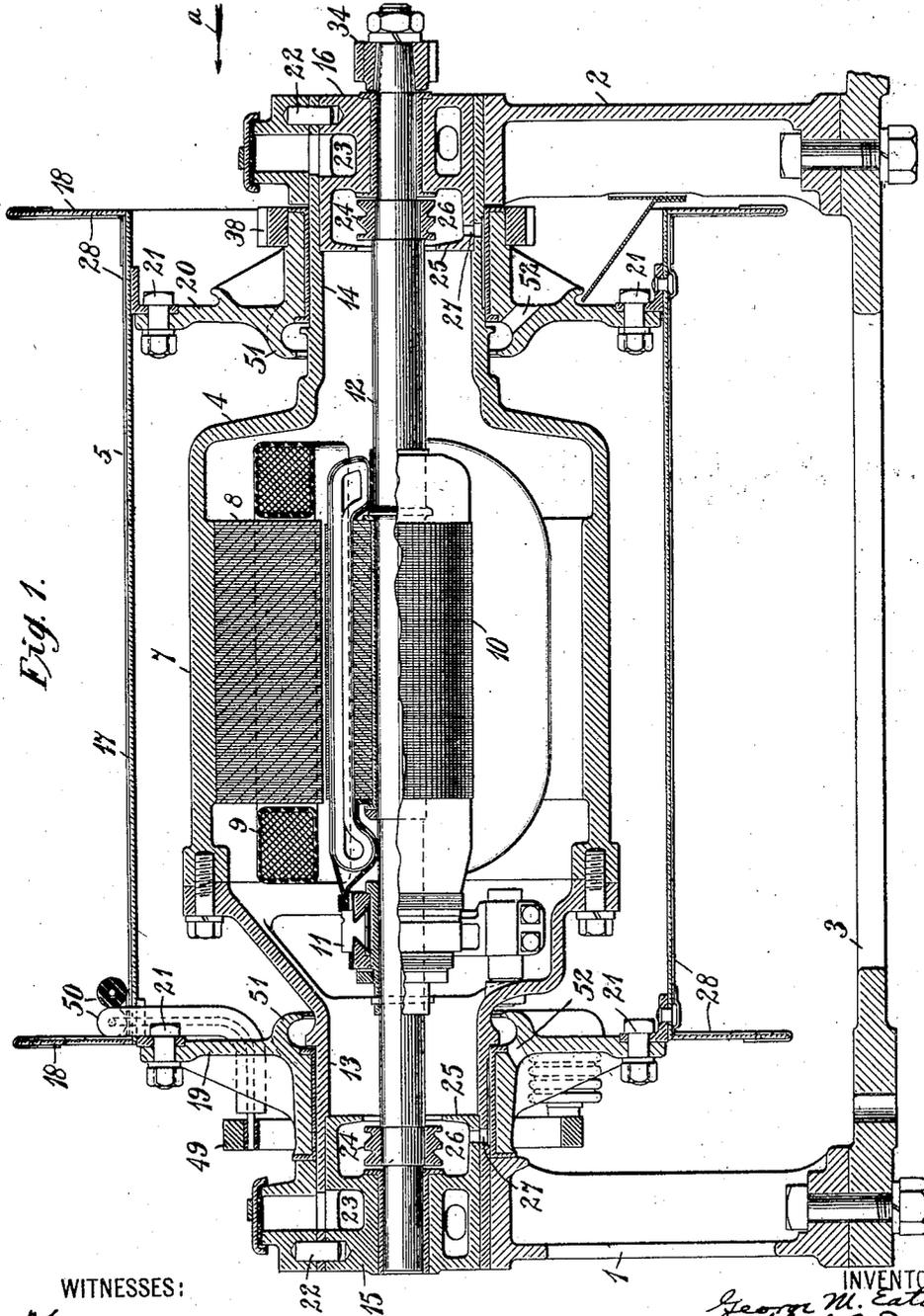


Fig. 1.

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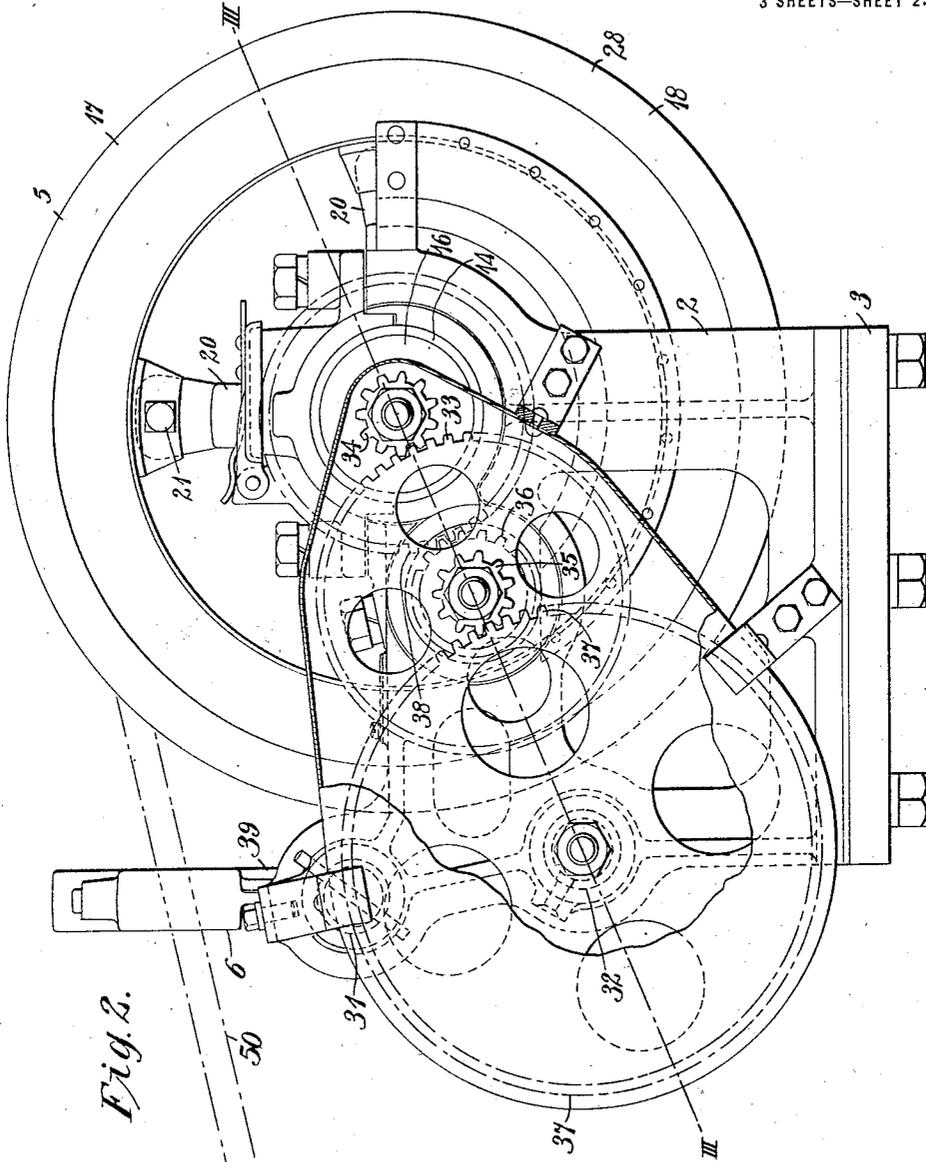


Fig. 2.

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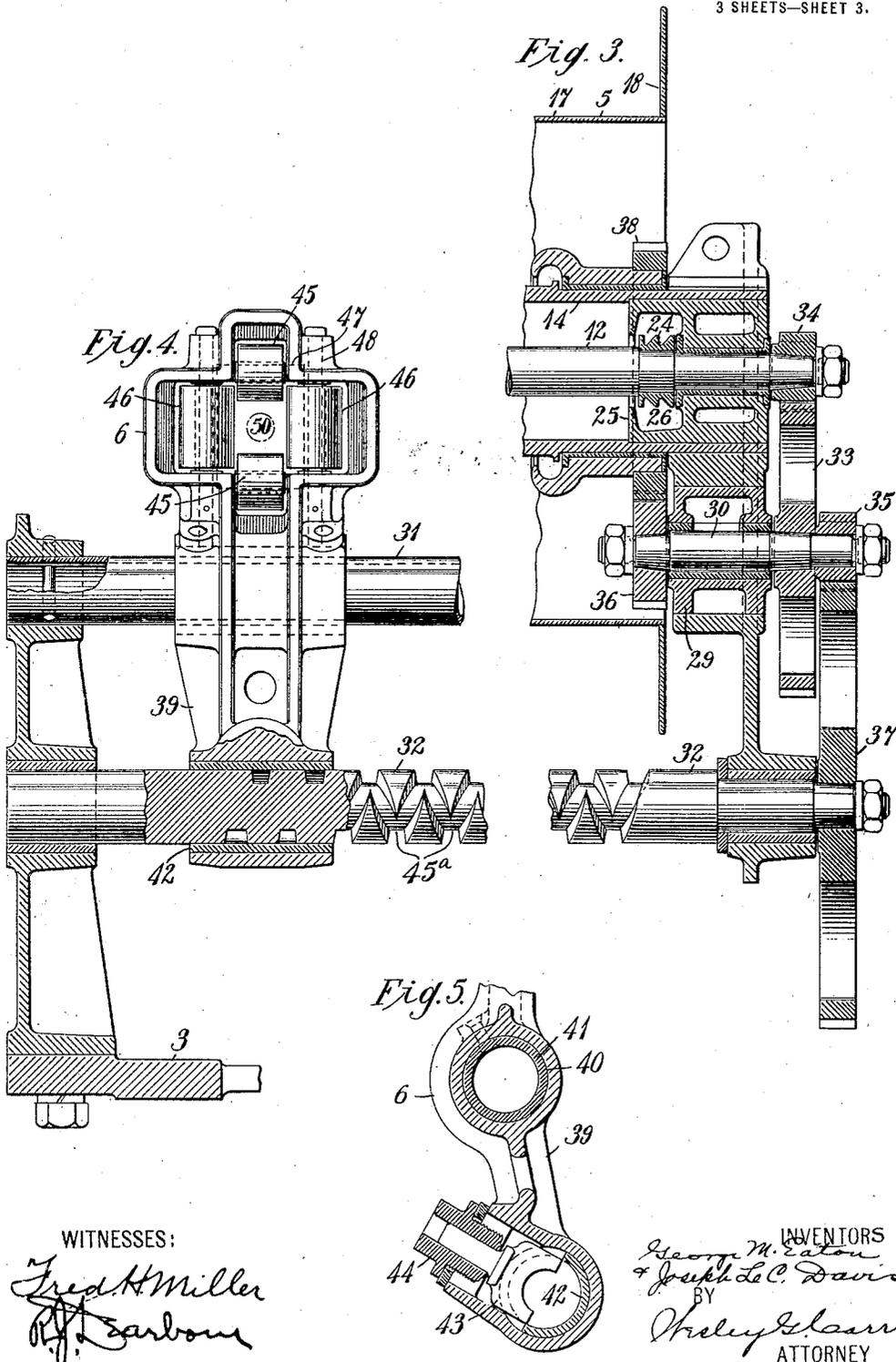
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LOCOMOTIVE GATHERING-REEL.

1,326,329.

Specification of Letters Patent.

Patented Dec. 30, 1919.

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To all whom it may concern:

Be it known that we, GEORGE M. EATON and JOSEPH LE C. DAVIS, citizens of the United States, and residents, respectively, of Wilkinsburg and Pittsburgh, both in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Locomotive Gathering-Reels, of which the following is a specification.

Our invention relates to gathering reels for mining locomotives and for similar purposes and it has special reference to such reels as are operated by electric motors.

The object of our invention is to provide a device of the class above indicated that shall be simple and durable in construction and adapted to occupy a minimum amount of space, and the bearings and other wearing parts of which shall be easily accessible.

Electrically operated locomotives for mine purposes are frequently provided with conducting cables which enable them to enter sections of the mine which are not equipped with any trolley or other supply circuit conductor.

In order to satisfactorily operate the cable and to protect it from injury, it is usually carried on a drum or gathering reel which is mounted on the locomotive and is usually either operatively connected to a locomotive axle, or is driven by an independent motor.

According to our present invention, we provide a gathering reel having an independent driving motor which may be so designed as to exert a torque which varies to suit the conditions of operation, thereby producing a predetermined pull on the cable at all times. In order to save space, we mount the motor within the drum and introduce suitable gearing for driving the drum at relatively low speeds although the motor armature is adapted to operate at relatively high speeds.

Various novel features and points of advantage in the structure which we propose will be more fully set forth hereinafter.

Figure 1 of the accompanying drawings is a transverse section of a gathering reel structure constructed in accordance with our invention. Fig. 2 is an end elevation looking in the direction of the arrow *a* of Fig. 1, and Fig. 3 is a sectional view on the line III—III of Fig. 2, showing only one

end of the gathering reel and the gearing by which the reel is driven from the motor shaft. Fig. 4 is a fragmentary elevation of the structure shown in the other figures, particularly illustrating the spooling device which guides the cable to and from the reel. Fig. 5 is a sectional view of the spooling device shown in Fig. 4.

Referring to the drawings, the structure here shown comprises bearing brackets 1 and 2, which are secured to the structure of a mining locomotive, or to some other suitable base 3, an electric driving motor 4 a gathering reel 5, a spooling device 6 and suitable gearing. The motor 4 comprises a stationary field magnet frame 7 having polar projections 8 and field magnet windings 9, and an armature 10 having a commutator 11 and mounted on a relatively long shaft 12.

The frame 7 is provided with end members having cylindrical projections 13 and 14 which are rigidly secured to the bearing brackets 1 and 2 at their ends.

The motor shaft 12 is supported at its ends in bearing blocks 15 and 16 which are fitted into the ends of the hollow frame projections 13 and 14.

The reel 5 comprises a hollow cylindrical drum 17 having flanges 18 at its ends and end spiders 19 and 20 which are rotatively supported on the cylindrical projections 13 and 14 and to which the drum 17 is secured by bolts 21.

The bearing blocks 15 and 16 are held in position by means of pins 22 and are provided with oil pockets 23 corresponding to those in the usual railway motor armature bearings. The shaft 12 is provided with oil-throwers 24 adjacent to the bearing blocks which are provided with overhanging cylindrical projections 25, forming annular chambers 26 in which the excess oil from the shaft bearings is collected. Oil passages 27 are provided between the chambers 26 and the bearings on the gathering reel, the arrangement of parts being such that the oil is assisted by gravity through the passages 27 into the reel bearings and, consequently, it is only necessary to keep the shaft bearings adequately lubricated.

Attention is directed to the fact that the shaft bearings are particularly accessible, as are also the reel bearings, while the concentric arrangement of the motor and the reel

permits the complete device to occupy a minimum amount of space on the locomotive.

The drum 17 and the flanges 18 are preferably formed of metal, but they may be insulated by a jacket or covering 28 of treated canvas or some other suitable insulating material. The bearing bracket 2 is further provided with a bearing block 29 in which a relatively short countershaft 30 is rotatively supported. A guide rod or shaft 31 is rigidly secured to the bearing brackets 1 and 2 at its ends and a feed screw 32, which is parallel to the shaft 31 and to the motor shaft 12, is rotatively supported in bearings formed in the brackets 1 and 2.

The countershaft 30 is parallel to the motor shaft 12 and is provided with a gear wheel 33 which is driven at relatively low speeds by a pinion 34 mounted on the end of the motor shaft. The countershaft 30 is further provided with pinions 35 and 36 located at its respective ends and cooperating with gear wheels 37 and 38 which are secured, respectively, to the feed screw 32 and the drum spider 20. The gear wheels and pinions are so arranged and proportioned that, when the motor shaft operates at a relatively high speed, the drum will be rotated at a comparatively low speed, while the feed screw 32 will be rotated at a very low speed, double reduction gearing being interposed in each case.

The spooling device 6 comprises a casting 39 having a hole 40 intermediate its ends containing a sleeve 41 through which the guide rod or shaft 31 extends. The feed screw 32 extends through another sleeve 42 at the lower end of the device, and a guide tongue 43, which is supported by a removable bushing 44, is adapted to engage grooves 45, cut in the surface of the screw 32.

The arrangement of parts is such that, when the screw 32 is rotated, the spooling device travels slowly backward and forward along the guide shaft 31, which supports the weight of the device and relieves the feed screw of a considerable amount of wear.

The upper end of the casting 39 is provided with a cruciform opening in the arms of which two pair of wooden rollers 45 and 46 are rotatively supported on removable pins 47 and 48.

The end of the cable 50 which is wound upon the drum 17, is usually provided with a hook (not shown), and the arrangement of parts is such that, by removing one of the pins 48 and one of the rollers 46, the hook and cable can easily be threaded through the cruciform opening and the cable placed between the rollers 45. The roller 46 which was removed may then be replaced and the cable paid out or reeled in without any material wear on its insulating covering. The pitch of the feed screw 32 is

so related to the diameter of the cable, as to properly wind the turns and layers of the cable upon the reel.

A collector ring 49 is secured to and insulated from the end member 19 of the gathering reel and is connected to the inner end of the cable 50 in the usual manner.

The end members 19 and 20 of the reel are provided with oil grooves 51 which collect the excess oil from the reel bearings and discharge it through passages 52.

The bearing blocks 15 and 16 and the sleeve projections 13 and 14 are so proportioned that the armature 10 of the motor may be taken out for repairs or renewed by simply removing one of the blocks. With this arrangement, the alinement of the motor and reel bearings is not disturbed.

Our invention is not limited to the structural details illustrated and various modifications may be effected within the spirit and scope of our invention.

We claim as our invention:

1. A locomotive gathering reel comprising end bearing brackets, an electric driving motor having a stationary member associated with the brackets and a movable member rotatively mounted therein, and a drum surrounding the motor and rotatively mounted at both ends on the stationary member.

2. A locomotive gathering reel comprising a base, bearing brackets associated with said base, an electric driving motor having a field magnet member carried by the brackets and an armature rotatively mounted therein and supported at both ends by said magnet member, a drum surrounding the motor and rotatively mounted at both ends upon said magnet member, and reducing gearing between the motor armature and the drum.

3. A locomotive gathering reel comprising a base, bearing brackets associated with said base, an electric driving motor having a field magnet member carried by said brackets and an armature rotatively mounted therein, a drum surrounding the motor and rotatively mounted on both ends of the motor frame, and double reduction gearing between the motor armature and the drum.

4. A locomotive gathering reel comprising a base, bearing brackets associated with said base, a hollow cylindrical electric motor field magnet provided with hollow cylindrical end projections respectively carried by said brackets, shaft bearings located in the projections, an armature having a shaft rotatively supported in said bearings, and a drum surrounding the motor and rotatively mounted on the outer surfaces of both of said projections.

5. A locomotive gathering reel comprising a base, end bearing brackets having openings therein and associated with said base,

a hollow cylindrical electric motor field magnet provided with hollow cylindrical end projections respectively disposed in said bracket openings, shaft bearings located in said projections, an armature having a shaft rotatively supported at both ends in said bearings, a drum surrounding the motor and rotatively mounted on the outer surfaces of both of said projections, and gearing between said shaft and said drum. 45

6. A locomotive gathering reel comprising a base, bearing brackets having openings therein and associated with said base, a hollow cylindrical electric motor field magnet provided with hollow cylindrical end projections respectively disposed in said bracket openings, shaft bearings located in said projections, an armature having a shaft rotatively supported in said bearings, a drum surrounding the motor and rotatively mounted on the outer surfaces of both of said projections, a countershaft rotatively supported in one of the bearing brackets and parallel to the armature shaft, and reducing gearing between the armature shaft and the countershaft at one end and between the countershaft and the drum at the other end. 50

7. A locomotive gathering reel comprising a base, bearing brackets associated with said base, an electric motor field magnet provided with hollow cylindrical end projections respectively carried by said brackets, shaft bearings located in the projections, an armature having a shaft rotatably supported in said bearings, and a drum surrounding the motor and rotatively mounted on the outer surfaces of the projections, said armature being removable through one of said cylindrical end projections. 55

8. A gathering reel comprising an electric motor, supporting members for said motor and a drum rotatively mounted upon both

ends of the motor frame, the motor bearings and the drum bearings having coincident axes. 60

9. A gathering reel comprising an electric motor, supporting members for said motor, and a drum rotatively mounted upon both ends of the motor frame, the motor bearings and the drum bearings being concentrically disposed but longitudinally displaced with respect to each other. 65

10. A reel for gathering locomotives, comprising a driving motor having a stationary field magnet, a rotatable armature, and a rotatable metal drum having an insulating covering and surrounding the motor in concentric relation to the armature shaft. 70

11. A gathering reel comprising a driving motor having a stationary frame provided with oppositely disposed integral end projections, and a drum rotatably mounted upon both of said end projections. 75

12. A gathering reel comprising a driving motor having a stationary frame provided with oppositely disposed integral end projections of tubular form, a rotatable drum having bearings upon both of said integral end projections, and an armature disposed within said frame and having bearings within both of said tubular end projections. 80

13. A gathering reel comprising a motor having a stationary frame provided with oppositely disposed end projections and a drum rotatably mounted upon both of said end projections. 85

In testimony whereof, we have hereunto subscribed our names this 12th day of Sept., 1911.

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Witnesses:

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