

S. N. MIGHELL.
LOCOMOTIVE.

APPLICATION FILED DEC. 15, 1902.

NO MODEL.

2 SHEETS—SHEET 1

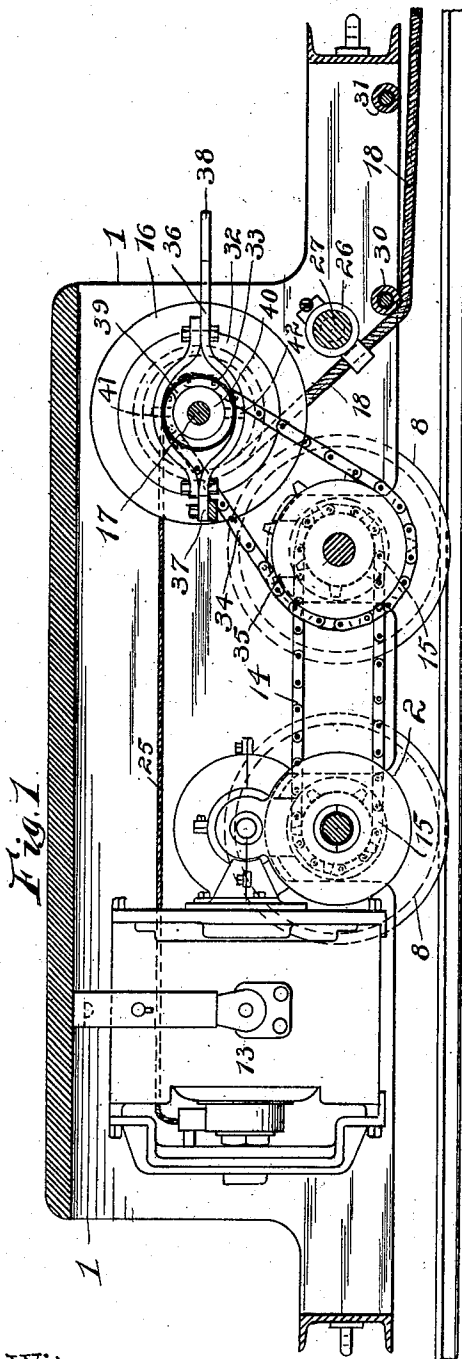


Fig. 1.

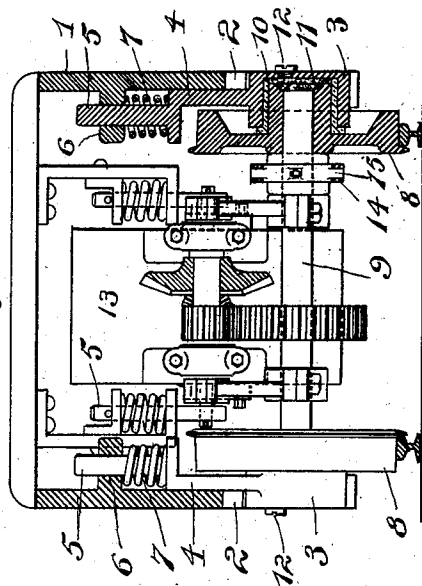


Fig. 2.

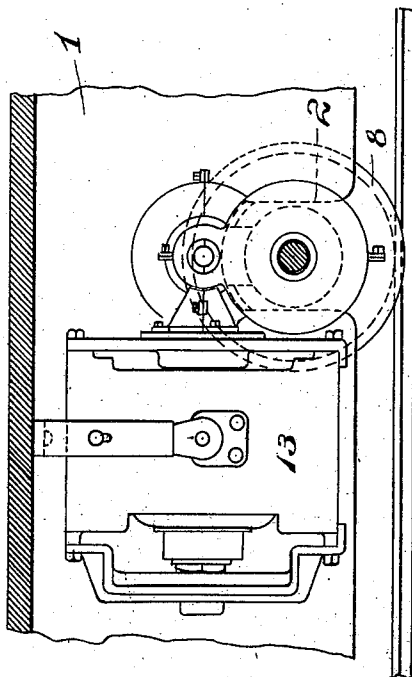


Fig. 3.

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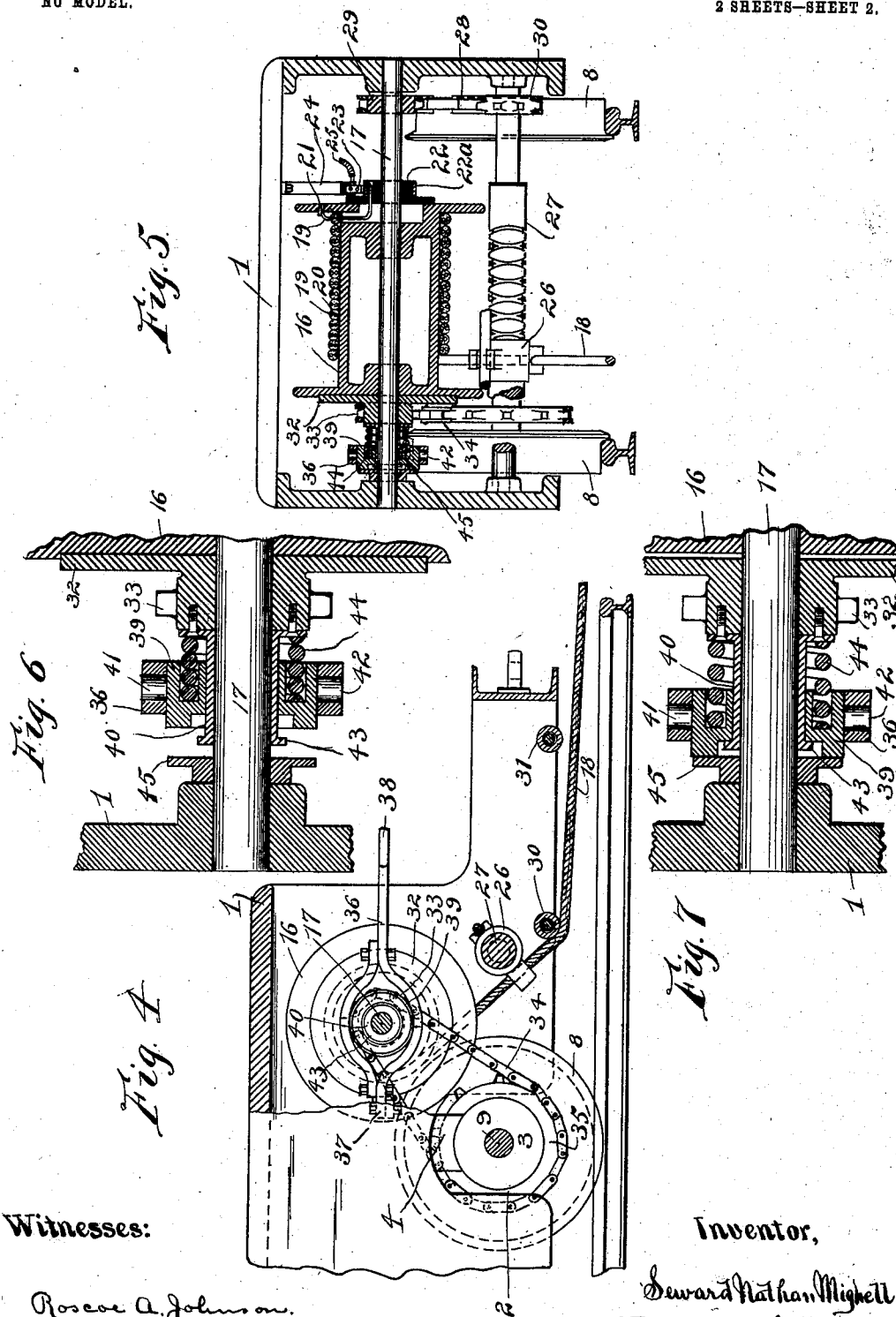
Seward Nathan Mighell.
By Glenn S. Noble,
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NO MODEL.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

SEWARD NATHAN MIGHELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO MORGAN-GARDNER ELECTRIC COMPANY, OF CHICAGO, ILLINOIS.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 732,768, dated July 7, 1903.

Application filed December 16, 1902. Serial No. 135,207. (No model.)

To all whom it may concern:

Be it known that I, SEWARD NATHAN MIGHELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locomotives, of which the following is a specification.

This invention relates more particularly to electric locomotives, such as are commonly used for mining purposes. These locomotives are usually supplied with electricity from a trolley wire or conductor which is more or less permanently secured adjacent to the track. In many instances it becomes desirable to use a locomotive for short hauls and in runs where it is not considered practicable to install a permanent trolley-wire. This invention is designed for such use and comprises a novel design of locomotive in combination with a flexible electric conductor by means of which it is supplied with electricity and means for reeling up and unreeling the conductor as the locomotive moves along the track. The particular means of accomplishing these objects are described and claimed hereinafter and are shown in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a locomotive embodying this invention. Fig. 2 is a fragmentary detail showing the method of supporting the motor. Fig. 3 is a vertical cross-section also showing the motor-support and the connections between the wheel-bearings and the frame. Fig. 4 is a detail showing the winding-drum and its connection with the axle. Fig. 5 is a vertical cross-section with parts in elevation showing the winding apparatus. Fig. 6 is an enlarged detail of the shifting mechanism for the friction-disk, showing the disk in engagement with the drum. Fig. 7 is a view similar to Fig. 6 with the disk out of engagement.

1 is the frame of the locomotive, which is cut away on the sides at 2 for the journal-boxes 3. These boxes are provided with upwardly-extending arms 4, which are flanged at the top and provided with rods 5, which slide in lugs or keepers 6 on the sides of the frame 1. Springs 7, interposed between the lugs and the flanges, provide for the yielding

support of the frame. As shown in Fig. 3, the hubs of the wheels 8, which are rigidly secured to the axles 9, are the bearing-journals. These may be provided with bushings 10, as shown, and are slightly cut away at 11 to allow the introduction of waste for lubrication. The ends of the boxes are closed, as shown, but are tapped, as at 12, for oiling.

The motor 13 is yieldingly supported from the frame 1 and is geared to the axle 9 in any well-known manner. In order that both sets of wheels may be driven, they are connected by a sprocket-chain 14, passing over sprocket-wheels 15 on the axles. At the end of the frame opposite the motor is a winding-drum 16, secured to a shaft 17, which is supported in bearings in the frame. This drum is for the purpose of reeling up and unreeling the flexible electrical conductor 18. A preferred form of conductor is one comprising two wires or cables 19 and 20, insulated from each other and also wrapped to prevent leakage and wear. The wire 19 is secured to the flange of the drum at 21, so that it is in general circuit with the frame of the machine. The other wire is carried through a flanged hub 22, of insulating material, at one end of the drum and is in contact with a conductor-ring 22^a, secured on said hub. An insulated wiper or brush 23, carried on an arm 24 from the frame 1, contacts with this ring, and a wire 25 carries the current from thence to the motor, where the connections are made in the usual manner, the return current being through the frame of the machine. As the conductor 18 is wound on the drum it is guided by a reciprocating guide-block 26, which is driven by a double-threaded shaft 27, having its trunnions bearing in the sides of the frame 1. This shaft is driven from the drum-shaft by a chain 28, passing over a sprocket 29 on the drum-shaft and a sprocket 30 on the shaft 27 and is so timed that the conductor will be evenly wound on the drum. Idler-rollers 30 and 31 guide the conductor below a cross-piece at the end of the frame.

An important feature of this invention is the means employed for operating the winding-drum, whereby the conductor may be reeled up and unreeling in consonance with

the rate of travel of the locomotive at the control of the operator and yet no undue strain be placed thereupon. A friction-disk 32 is loosely fitted on the shaft 17, adjacent to the end of the drum 16, and adapted to engage therewith. On the hub of this disk is a sprocket-wheel 33, which is driven by a chain 34, passing over sprocket 35 on the axle 9. These sprockets are so proportioned that the drum may be driven by the disk at a sufficiently-rapid rate to reel up the conductor at the highest rate of speed for the locomotive. The disk is thrown into and out of engagement with the drum by means of a yoke-lever 36, pivoted at 37 to the frame and extending out to form a handle 38 convenient for the operator. The yoke takes over a collar 39 on a sleeve 40 and engages pins 41 42 on the same, whereby it may be shifted. The sleeve 40 may be flanged and secured to the hub of the disk 32 or may be formed integral therewith and has a second flange or rim 43 at the opposite end to engage the collar 39 on the side away from the drum. A spring 44 is interposed between the collar 39 and the flange of the sleeve 40. A disk or plate 45 is rigidly secured to the shaft 17, adjacent to the flange 43 on the end of the sleeve 40, so that a rim on the collar 39 may be brought into frictional engagement therewith as the lever 36 is swung out.

The operation of this invention is as follows: The conductor being reeled on the drum and the free end in circuit with any desired source of electricity, (not shown,) the motor is started, and as the locomotive moves forward the tension on the conductor may be relied upon to unwind the drum, or it may be assisted by the throwing the friction-disk into partial engagement. In case the locomotive is stopped somewhat suddenly there may be a tendency of the drum to spin and unwind more of the conductor than desired. This is overcome by pressing out on the lever-handle 38, which causes the rim of the collar 39 to engage the disk 45 and act as a brake on the drum-shaft. When the locomotive has reached the end of the conductor and the return trip to be made, the operator presses in on the lever-handle and throws the friction-disk into engagement with the drum, and as the motion of the disk is reversed with the motion of the locomotive the conductor is again wound up. As the drum becomes filled the conductor will be wound more rapidly on account of the increased diameter; but this is compensated for by the apparatus slightly releasing the pressure on the lever and allowing a slipping between the disk and the drum. The spring 44, which at all times makes the engagement between the disk and drum somewhat yielding, will allow a slip-page in case of any undue strain on the conductor. The operation of the other devices is either well known or apparent and will be omitted.

I do not desire to limit this invention to the precise form of construction shown; but

What I claim, and desire to secure by Letters Patent, is—

1. A locomotive, a conductor winding-drum on said locomotive, a disk adjacent to said drum and adapted to engage therewith to cause said drum to revolve, means for driving said disk and means for forcing it into yielding engagement with said drum.

2. An electric locomotive, a shaft having bearings in the frame thereof, a conductor winding-drum on said shaft, a friction-disk mounted on said shaft adjacent to one of the heads of said drum, means for driving said disk, a sleeve on said disk, a collar on said sleeve, a spring interposed between said collar and a shoulder on said disk, and a lever whereby said collar may be shifted.

3. In an electric locomotive, a conductor winding-drum secured to a shaft, a reciprocating conductor-guide adjacent to said drum, means for operating said guide from said shaft, a friction-disk mounted on said shaft adjacent to one head of the drum and adapted to engage therewith, means for driving said disk, a sleeve on said disk, a collar mounted on said sleeve, a rim on said sleeve to engage the collar as it is pressed away from the disk, a spring interposed between said collar and a shoulder on said disk or sleeve, a lever pivoted to the frame of the locomotive and engaging said collar whereby said collar may be pressed toward or away from said disk.

4. In an electric locomotive, a winding-drum on a shaft, a friction-disk on said shaft, means for driving said friction-disk, a sleeve on said disk, a collar on said sleeve adapted to shift said disk into and out of engagement with said drum, a lever for shifting said collar, a second friction-disk rigidly secured to said shaft and adapted to engage said collar as a brake, when the lever is thrown out to disengage said first-named friction-disk from the drum.

5. In an electric locomotive, a winding-drum on a shaft, an electric conductor comprising two insulated wires, one wire being grounded to said drum, the other wire passing through an insulating-hub on said drum and contacting with a metallic ring on said hub, an insulated wiper engaging said ring and an electric conductor leading from said wiper to the motor of the locomotive.

6. In an electric locomotive, a winding-drum on a shaft, a friction-disk on a sleeve on said shaft, a sprocket on said sleeve, a chain engaging said sprocket and a sprocket on the axle of the locomotive, a collar on said sleeve adapted to shift said disk into and out of engagement with said drum, a second friction-disk on said shaft adapted to be engaged by said collar as it is shifted to disengage said first-named disk from the drum to act as a brake on said drum, a lever for shifting said collar, a double electric conductor having one

wire grounded to said drum, the other in contact with an insulated ring on said drum, means for conducting electricity from said ring to the motor, and means operated from
5 said drum-shaft for automatically guiding the conductor as it is wound on or unwound from the drum.

7. In combination, a frame, wheels mounted on an axle, journal-bearings for said
10 wheels closed over the ends of said journals, recesses in the ends of said journals for lubricant, slots in said frame for said bearings, upwardly-extending arms from said bearings, having shoulders or flanges thereon, rods

from said arms engaging with lugs or keep- 15
ers on said frame and springs interposed between said lugs and the shoulders on the arms.

8. In a locomotive, the combination of a frame yieldingly supported on wheels and 20
axles, a motor yieldingly mounted in said frame and means for transmitting power from said motor to one or more pairs of said wheels and axles.

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Witnesses:

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