G. C. ABBE.

REEL FOR MINE LOCOMOTIVES.

APPLICATION FILED FEB. 23, 1911.

1,110,995.

Patented Sept. 15, 1914

2 SHEETS—SHEET 1.

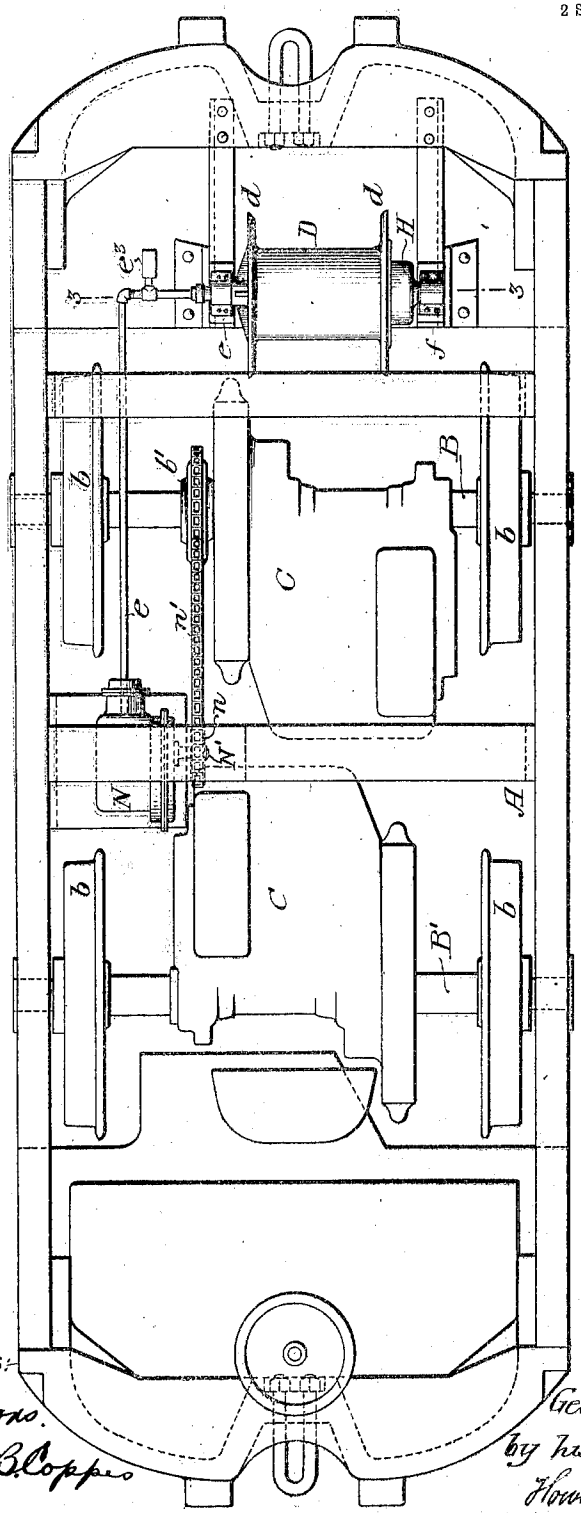


Fig. 1.

Witnesses:
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Augustus B. Coppes

Inventor:—
George C. Abbe,
by his Attorneys:
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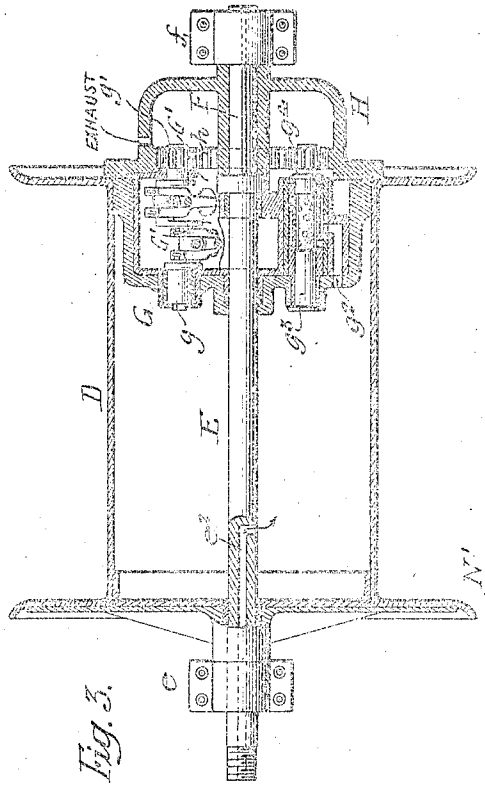
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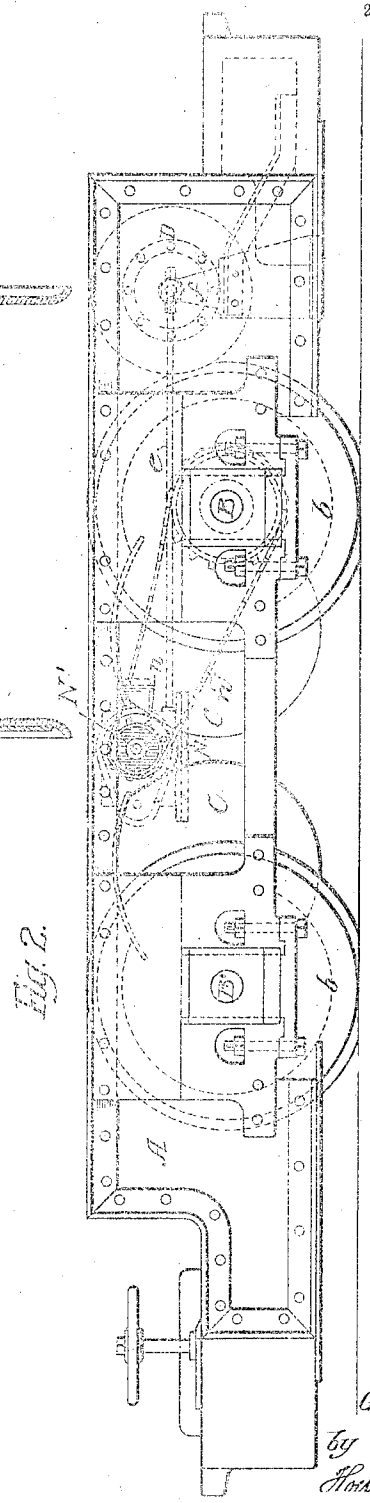
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2 SHEETS—SHEET 2.





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Arthur N. Stone.
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UNITED STATES PATENT OFFICE.

GEORGE C. ABBE, OF LANSDOWNE, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE BALDWIN LOCOMOTIVE WORKS, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

REEL FOR MINE-LOCOMOTIVES.

1,110,995. Specification of Letters Patent. Patented Sept. 15, 1914.

Application filed February 23, 1911. Serial No. 610,245.

To all whom it may concern:

Be it known that I, GEORGE C. ABBE, a citizen of the United States, residing in Lansdowne, Delaware county, Pennsylvania, have invented certain Improvements in Reels for Mine-Locomotives, of which the following is a specification.

One object of my invention is to provide means for accumulating sufficient air under pressure to drive the cable drum of an electric locomotive so that the slack can be taken up at all times, and especially if the engine should slip or slide on the rails.

A further object of the invention is to so construct the parts that the mechanism will take up but comparatively little room, yet will be effective for the purpose for which it is intended.

In the accompanying drawings.—Figure 1, is a plan view of an electric locomotive, (to illustrate my invention parts of the mechanism have been omitted in order to avoid confusion); Fig. 2, is a side view of an electric locomotive shown in Fig. 1, and Fig. 3, is a transverse sectional view on the line 3—3, Fig. 1; illustrating the cable drum in section.

A is the frame of an electric locomotive having axles B—B′ on which are mounted the flanged traction wheels *b*.

C, C are the motors by which the locomotive is driven. In the present instance there are two motors—one motor mounted on one axle and the other motor mounted on the other axle.

D is the cable drum having flanges *d*—*d*. This cable drum, as shown in Fig. 3, is mounted on two spindles E and F. The spindle E is secured to bearings *e* on the frame A and the spindle F is adapted to bearings *f* also mounted on the frame A. The drum D is hollow, as shown in Fig. 3, and mounted within the drum at one end is an air engine G. The crank axle *g* of this engine has a pinion *g′* which meshes with an internal gear *h* on a casing H secured to the spindle F. The engine rotates with the drum while the casing H is a fixture, in the present instance.

N is an air compressor of any suitable type mounted on the frame of the locomotive and on the shaft of the compressor is a sprocket *n* around which passes a chain *n′* over a sprocket wheel *b′* from the axle B and a pipe *e′* extends from the air compressor to the spindle E, which is tubular for part of its length. In the pipe *e′* is a safety valve *e²* which can be set at any pressure desired. The passage *e²* in the spindle communicates with the interior of the drum, as clearly shown in Fig. 3. The engine casing communicates with the drum through the passage *g²* and the admission of air to the cylinder of the engine is controlled by a valve *g³* operated in the present instance by a pinion *g⁴* which meshes with the internal gear *h* on the casing H.

While I have shown a particular form of engine using two cylinders G′ and a particular form of valve, any suitable air engine may be used without departing from the essential features of the invention.

The operation of the mechanism is as follows: The locomotive receives its supply of current through a trolley or third rail and each locomotive has a drum on which is wound a cable so that when a locomotive enters a side room or gallery, for instance, in the mine, which is not supplied with a permanent surface rail or wire, the cable is attached to the permanent wire in the main gallery and the cable is paid out as the locomotive passes into the side room.

While these locomotives are provided with brakes and other appliances for controlling the locomotive, nevertheless, the wheels oftentimes slip and, consequently, the cable will become slack or too taut as heretofore the drum was driven directly from the axles. By my invention the locomotive drives the air compressor N and the compressed air is forced into the hollow drum D, which becomes a container for air under pressure and the air from this drum is supplied to the air engine G which rotates the drum in one direction to wind the cable upon the drum. The drum is of such a capacity as to store sufficient air to rotate it a certain length of time when the locomotive is not in motion.

I prefer to utilize the engine as an air compressor when the cable is being paid out and the safety valve *e³* will control the excess pressure developed either by the air compressor when the locomotive is traveling

a long distance, or when both the air compressor and the engine are pumping air into the drum.

I claim:—

1. In a mine locomotive, the combination of a frame, axles upon which said frame is mounted, means for driving one of said axles, an air compressor mounted on said frame and driven from said axle, a hollow drum, bearings carried by the frame in which said drum is rotatably mounted, said drum forming a combined cable reel and storage chamber for compressed air, a self-contained air engine carried by said drum for driving the latter, a pipe or conduit connecting the air compressor with the interior of the drum, and means affording communication between the interior of the drum and the air engine carried thereby.

2. In a mine locomotive, the combination with a frame, axles upon which said frame is mounted, means for driving one of said axles, and an air compressor mounted on said frame and driven from said axle, of a hollow drum forming a combined cable reel and storage chamber for compressed air, an air engine mounted in one end of said drum and rotating therewith, gears driven thereby, spindles on which the drum is mounted, one of said spindles being hollow and opening into the drum for the passage of air under pressure from the compressor; the ports of said engine being in direct communication with the interior of said drum, said engine acting as a pump during rotation of the reel as the cable is paid out and acting to drive the drum to coil the cable thereon, and fixed gearing carried by the frame of the structure for engagement by the gearing driven by the engine.

3. The combination of a hollow drum forming a combined cable reel and storage chamber for compressed air, a spindle upon which one end of said drum is mounted for rotation, a spindle rotatable with the drum for the opposite end of the same, fixed supports for said spindles, and an air engine for driving said drum mounted in one end of the latter and in communication with the compressed air chamber formed by said drum.

4. The combination of a hollow drum forming a combined cable reel and storage chamber for compressed air, a spindle upon which one end of said drum is mounted for rotation, a spindle rotatable with the drum for the opposite end of the same, means for supplying said drum with air under pressure, fixed supports for said spindles, an air engine for driving said drum mounted in one end of the latter and in communication with the compressed air chamber formed by said drum, a fixed frame disposed at the engine end of said drum, an internal gear carried by said frame, and a pinion driven by said engine and meshing with said gear.

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

GEORGE C. ABBE.

Witnesses:
WM. E. SHUPE,
WM. A. BARR.