(No Model.) 3 Sheets—Sheet 1.

N. F. CHASE.

ELECTRIC ATTACHMENT FOR LOCOMOTIVES.

No. 370,243. Patented Sept. 20, 1887.

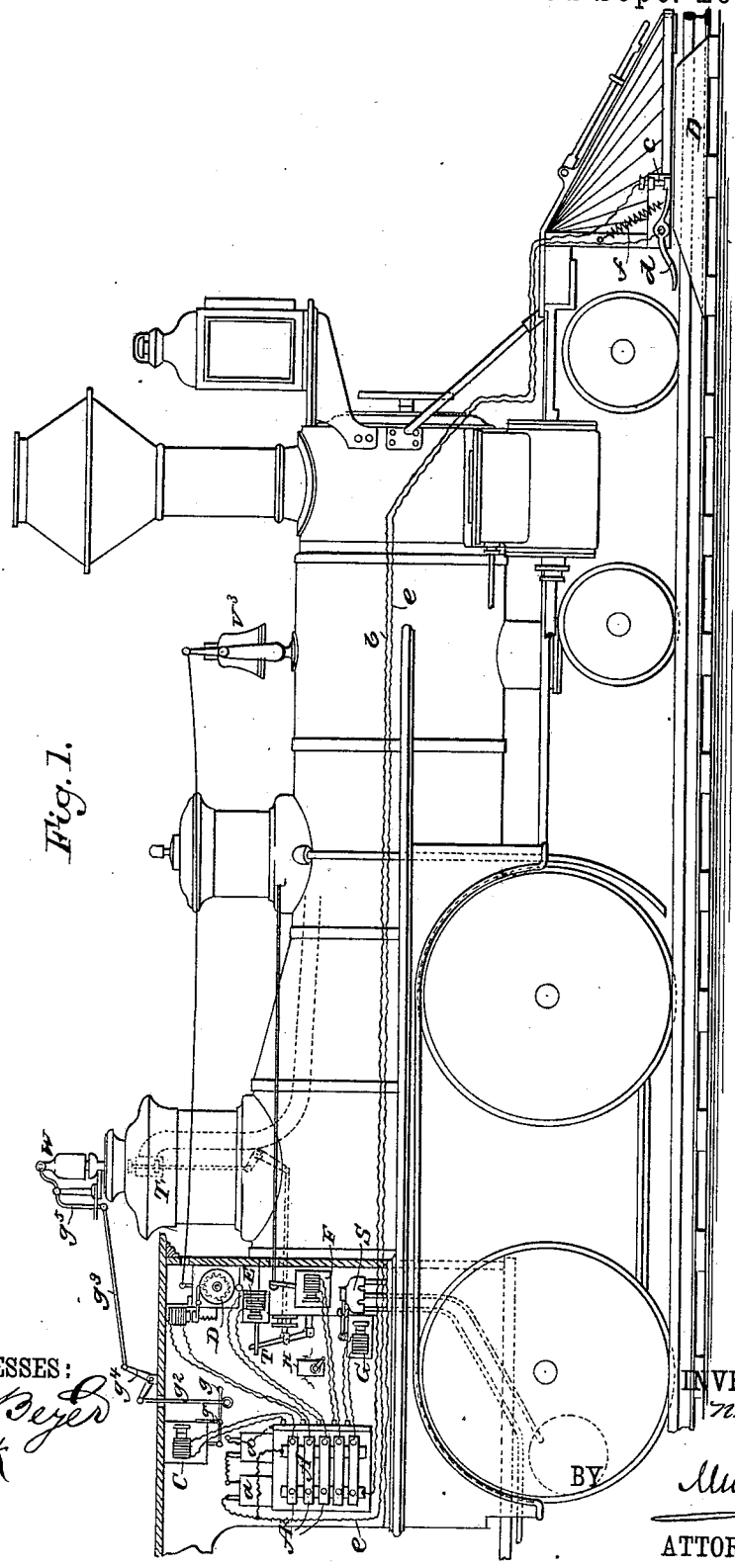


Fig. 1.

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Fig. 2.

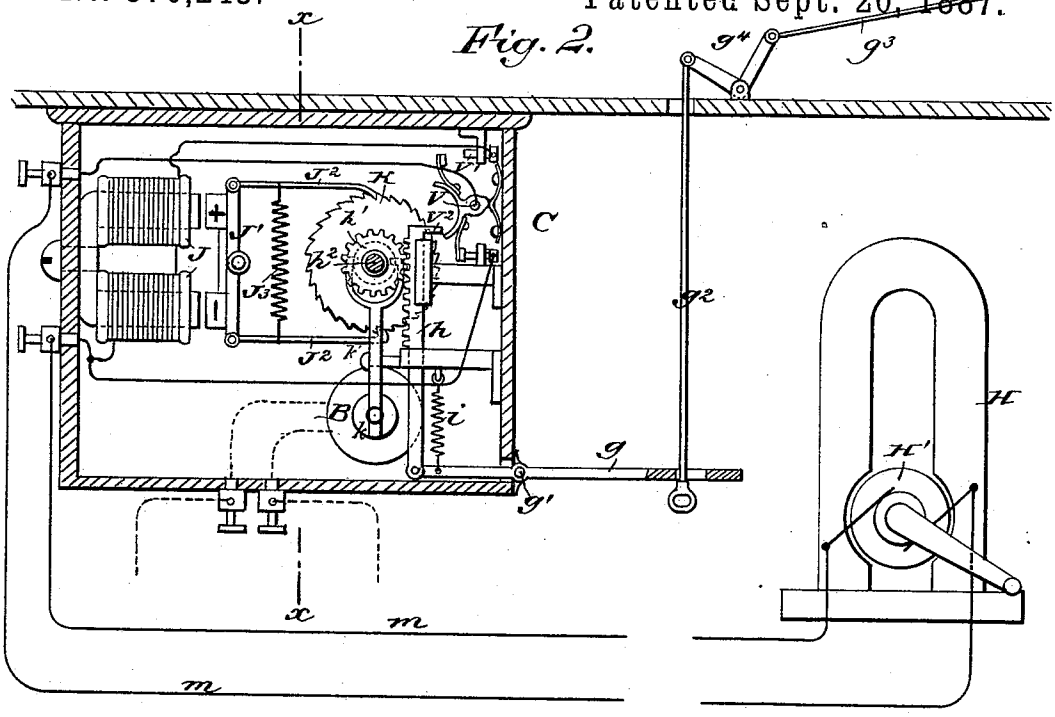
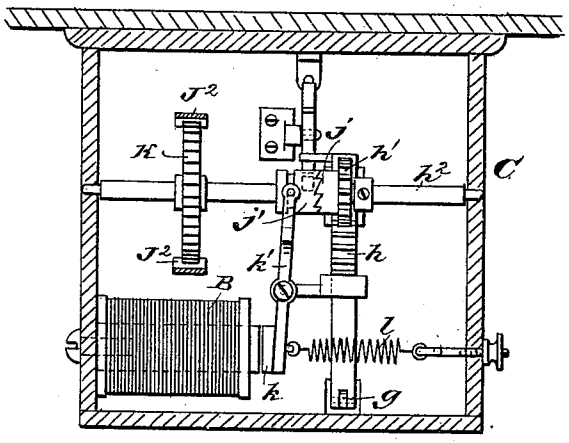


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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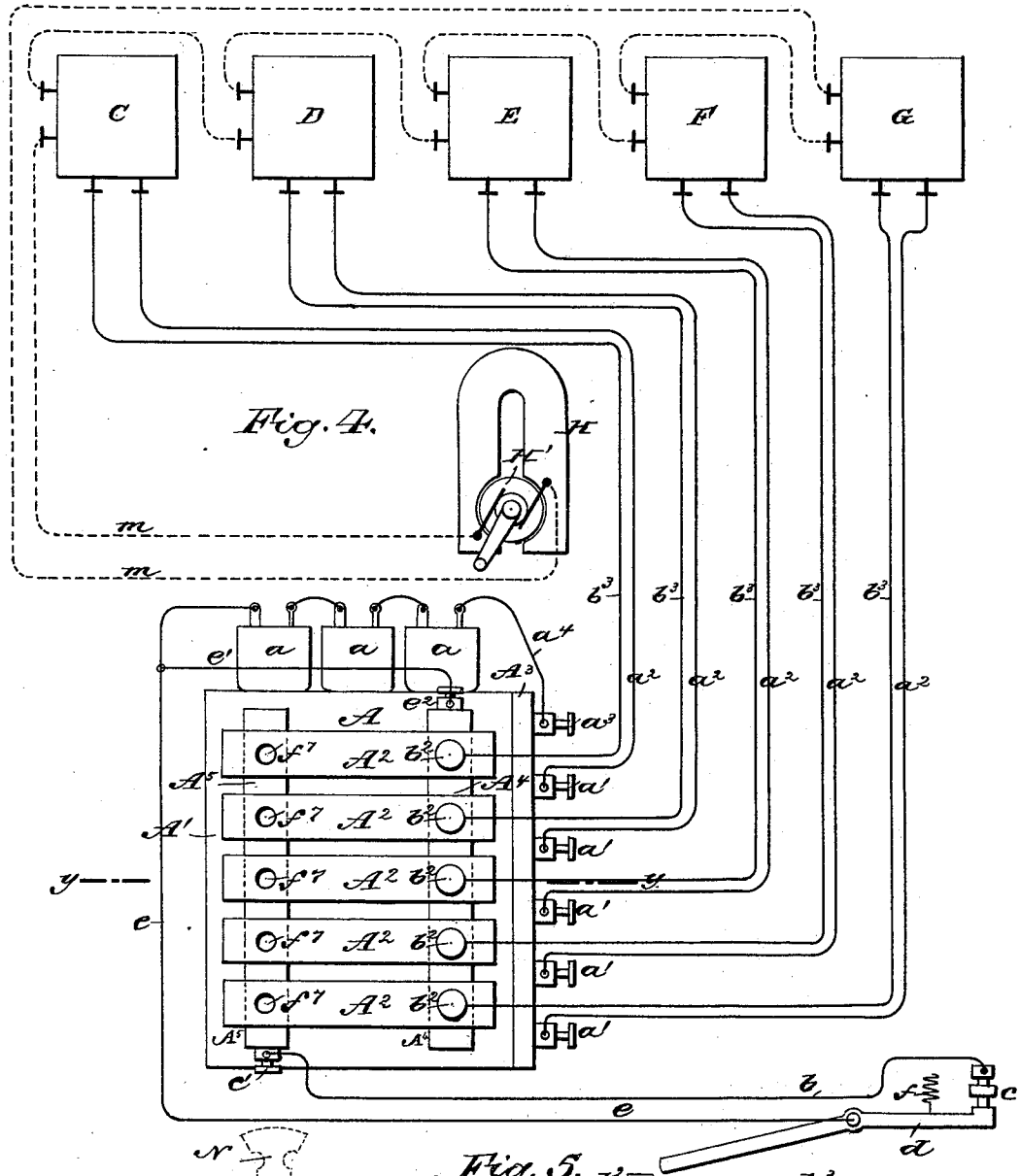


Fig. 4.

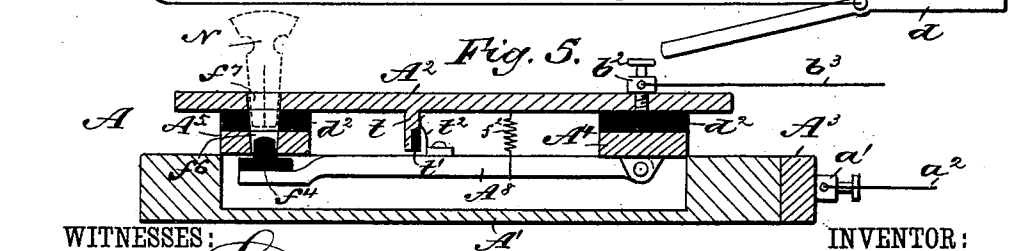


Fig. 5.

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UNITED STATES PATENT OFFICE.

NORMAN F. CHASE, OF MONTROSE, NEW YORK.

ELECTRIC ATTACHMENT FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 370,243, dated September 20, 1887.

Application filed January 24, 1887. Serial No. 225,304. (No model.)

To all whom it may concern:

Be it known that I, NORMAN F. CHASE, of Montrose, in the county of Westchester and State of New York, have invented a new and Improved Electric Attachment for Locomotives, of which the following is a full, clear, and exact description.

The object of my invention is to devise electrical means whereby a person alongside a railway-track or at a station may cause certain devices upon the locomotives of passing trains to be operated for signaling the engineer or stopping the locomotive, and so that signals of danger, &c., may be effective, and may be given at any place on the line.

The invention consists of the construction, arrangement, and combination of parts, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a broken side elevation of a locomotive having my invention applied thereto, an obstruction being shown at the side of the track for setting the electric appliances in action. Fig. 2 is an enlarged sectional elevation of one of the electric devices, the same being applied in this figure to the whistle-valve, and this figure also shows a device for resetting the apparatus. Fig. 3 is a sectional elevation taken on the line x x of Fig. 2. Fig. 4 is an enlarged diagram view of the battery, switch-resetting device, and circuit closing or breaking lever. Fig. 5 is a sectional view taken on the line y y of Fig. 4.

In the cab of the locomotive is located an electric battery consisting of one or more cells, a a, one element of which is connected by the wire b to the button c at the front of the locomotive, the other to the lever d by the wire e. The wire e is connected directly to one of the elements of one of the cells, while the other, b, forms its connection with the other element through the switch A, hereinafter described. In this instance the lever d is normally held in contact with the button c by the spring f, so that the circuit is constantly closed, thus constantly charging the magnets B in each system of the electric appliances. The rear end of the lever d is bent somewhat downward, so that in case an obstacle, D, should be placed adjacent to the track the depressed end of the lever will strike the same as the locomotive passes the obstacle and move the opposite end of the lever out of contact with the button c, thus breaking the circuit to the magnets. In this instance I have shown five systems of electric appliances, (marked C D E F G,) and they are each inclosed in a box or casing. The appliance C is for operating the valve of the steam-whistle W, the appliance D is for striking the bell V^3, the appliance E is for operating the throttle-valve T, the appliance F is for sanding the track, and the appliance G is for operating the air-brake valve S. The appliances C D E F G are substantially duplicates of each other, and the description of one—C, for example—will serve for all; and it will be understood that while I have shown several appliances attached to different parts of the locomotive, I may use one or more of such appliances, and I may apply it or them to the parts of the locomotive named or to other signaling or governing devices, as desired.

Referring to Figs. 2 and 3, g represents a lever, pivoted at g' and connected at its outer end by the rods g^2 g^3 and bell-crank lever g^4 to the valve-lever g^5 (see Fig. 1) of the whistle W. To the inner end of the lever g is attached the rack h, which engages with the pinion h' on the shaft h^2, so that by turning the said shaft the inner end of the lever g may be depressed against the tension of the strong spring i. The pinion h' is loose upon the shaft h^2, and is formed with the clutch j, by which the sliding clutch j' on shaft h^2 locks the pinion h' to the shaft h^2. The clutch j' is normally held in contact with the clutch j by the magnet B, acting through the armature k and lever k'. When the electric current is broken, however, by the locomotive passing an obstacle, D, or otherwise, the armature k and lever k' are drawn away from the magnet by the spring l, which slides the clutch j' from the clutch j and permits the spring i to draw upward the inner end of the lever g and force downward its outer end, which will operate the rods and levers g^2, g^3, g^4, and g^5 and open the whistle-valve. As soon as the current of electricity is established again by the lever d being drawn again into contact with the button c, the magnet B will slide the clutch j' into engagement with the clutch j, and the inner end of the lever g

may be depressed by hand by lifting upward its outer end, or it may be done electrically by turning the magneto-electric machine H. This machine H will be used only in case several electric apparatus be used, so that all may be reset simultaneously, as all will operate at the same time unless switched out of the current, as below described. The magneto-electric machine H is connected by the wires *m m* to the magnets J, in front of which is centrally pivoted the polarized armature J′, which will be reciprocated when the spool H′ of the magneto-machine H is revolved. To each end of the armature J′ is pivoted a pawl, J^2, held in contact by spring J^3 with the teeth of the ratchet K, secured to the shaft h^2, so that the reciprocation of the armature J′ will cause the pawls J^2 to turn the ratchet-wheel K and shaft h^2, causing the pinion h' to force downward the rack *h* and lever *g* to their original position ready for another operation.

The switch A may be of any approved construction to throw out of the circuit any one or all of the appliances C D E, &c. In this instance it is formed of a frame or back piece, A′, of wood, and as many switch-plates A^2 as there are appliances C D E, &c. One edge of the frame A′ is provided with the metal cleat A^3, provided with binding-posts *a′*, each connected by a wire, a^2, to the magnets of the appliances C D E, &c. This cleat is also provided with a binding-post, a^3, connected by wire a^4 to one element of the battery. The plates A^2 are each provided with a binding-post, b^2, connected each by a wire, b^3, to the magnets B. The plates A^2 are mounted upon the cleats A^4 A^5, and insulated therefrom by the insulating-blocks d^2. To the cleats A^4 are hinged the levers A^8, each held forward by a spring, f^2. The free end of each of these levers is provided with a block, f^4, of insulating material, placed in line with the holes f^6 in the cleats A^5. Corresponding holes, f^7, are formed in the plates A^2 and insulation d^2, so that when a peg, N, is inserted contact is established between plates A^5 and A^2, so that the current passes through wire *b*, the said plates, and the wire b^3.

The switch is put in the main circuit by the branch wire *e′*, connected to wire *e* and binding-post e^2, and the wire *b*, attached to the button *c* and the binding-post *c′*. Each plate A^2 is provided with a stud, *t*, having the insulating-block *t′*, and each lever A^8 is provided with a contact-spring, t^2, which connects the lever A^8 with the plate A^2, and makes the circuit through the said parts when the peg N is removed; but when the peg is inserted the spring t^2 is carried upon the insulation *t′* at or about the time that connection between the plate A^2 and cleat A^5 is formed.

When the rack *h* is lifted by the action of the spring *i*, (the current being broken,) the current is shunted from the magnet B by the switch *v*, (shown clearly in Fig. 2,) which is turned into contact with the point *v′* by the projection v^2 on the rack *h*. When the rack *h* is lowered to the position shown in Fig. 2, the projection v^2 throws the switch *v* out of contact with the point *v′* and switches the current back to the magnet B.

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

1. The lever *d* and button *c*, connected to the locomotive, in combination with the circuit-wires *b e*, electric battery, magnets B, lever *g*, rack *h*, spring *i*, shaft and pinion *h′* h^2, clutches *j j′*, and armature and lever *k k′*, the latter connected to the clutch *j′*, substantially as and for the purposes set forth.

2. The combination, with the appliances C D E, &c., the electric battery, the lever *g*, magnets B, rack *h*, spring *i*, pinion *h′*, shaft b^2, and ratchet-wheel K, of the magnets J, magneto-electric machine H, polarized armature J′, and pawls J^2, substantially as described.

3. The combination, with the rack *h*, magnet B, and an electric circuit leading to the magnet through the circuit-breaking lever *d*, attached to the locomotive, the electric machine H, magnets J, armature J′, pawls J^2, ratchet K, and pinion *h′*, of an electric switch, *v*, arranged to be operated by the rack *h*, for switching the electric current out of and into the magnet B, substantially as described.

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A. F. CHASE.