(No Model.) 2 Sheets—Sheet 1.

R. WELLENS.

ELECTRIC STOP VALVE.

No. 397,260. Patented Feb. 5, 1889.

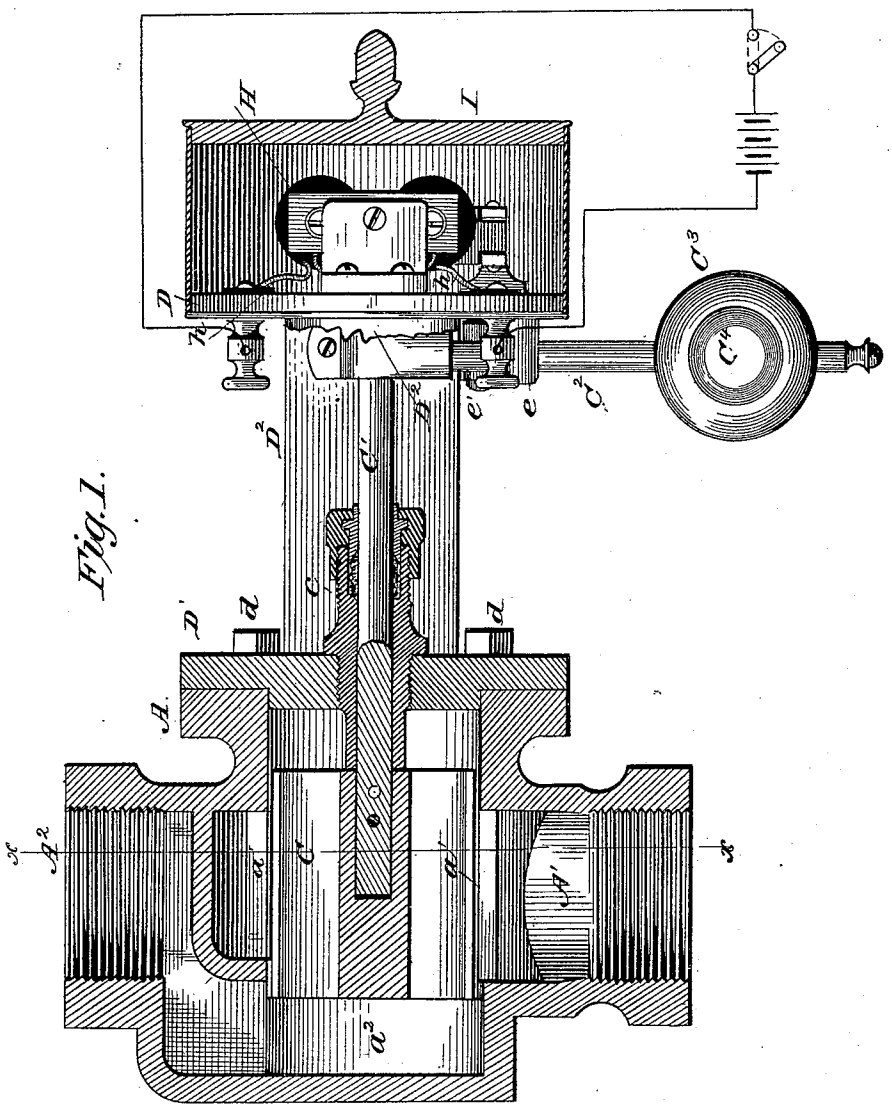

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

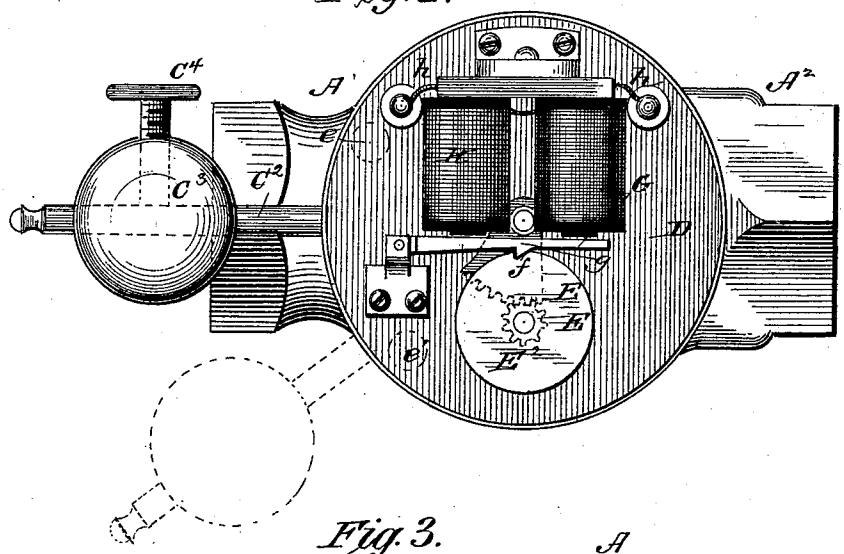


Fig. 3.

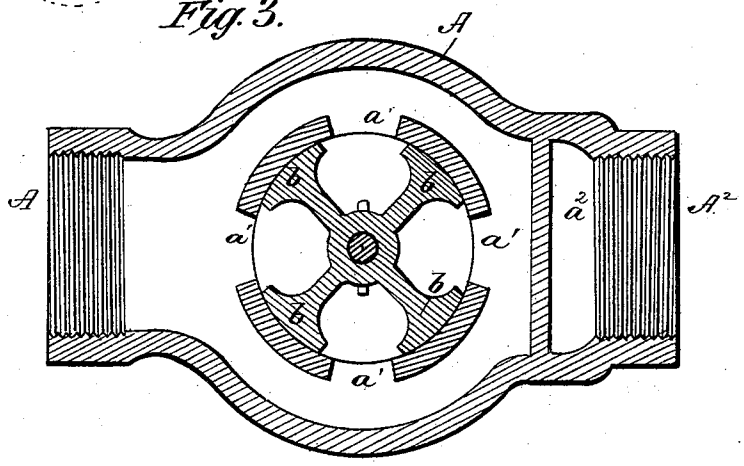
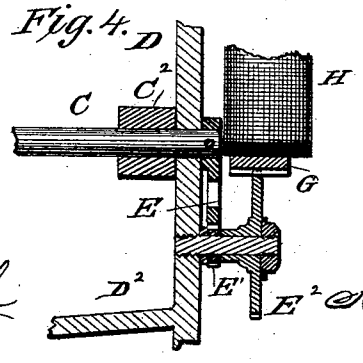


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT WELLENS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF, JOSEPH WELLENS, AND HUGH FERGUSON, ALL OF SAME PLACE.

ELECTRIC STOP-VALVE.

SPECIFICATION forming part of Letters Patent No. 397,260, dated February 5, 1889.

Application filed April 21, 1888. Serial No. 271,482. (No model.)

To all whom it may concern:

Be it known that I, ROBERT WELLENS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electric Stop-Valves, of which the following is a specification.

The object of my invention is to provide a stop-valve to be used in connection with the usual throttle-valve of steam and other engines for the purpose of quickly cutting off steam and stopping the engine from any part of the shop or building without the delay in getting to the throttle, so as to quickly stop the engine in case of accidents; and to this end it consists in an oscillating valve whose stem is provided with a weighted arm which, when released, drops and closes the valve, in combination with a catch and electro-magnets for operating the same, which electro-magnets are in the circuit of a battery whose wires extend throughout the building and are provided at suitable points with push-buttons for closing contact and operating the valve.

Figure 1 is a plan view partly in horizontal section. Fig. 2 is an end elevation with the protecting-cap removed. Fig. 3 is a cross-section through the valve-chamber, taken on line $x\ x$ of Fig. 1; and Fig. 4 is a sectional detail.

A is a coupling, which is fitted by screw-joints in the length of the steam-pipe A′ A^2. This coupling is turned on the inside to form a cylindrical seat for the oscillating valve C. The valve-chamber communicates with one end of the steam-pipes A′ through ports $a'\ a'\ a'\ a'$ and an annular space in the coupling, and said valve-chamber communicates with the other end of the steam-pipe A^2 through a port, a^2, at the end of the valve-seat. When the ports a' are closed, steam is cut off between pipe-sections A′ A^2, and when said ports are open steam freely passes from one pipe-section, A′, to the other, A^2. The valve C has its periphery turned to a close cylindrical fitting, and has on its periphery openings corresponding to the ports a', alternating with cylindrical faces b, which latter when turned over ports a' cut off steam and when turned off the same allow steam to flow through. At one end of the valve is a stem, C′, which emerges from the valve-chamber through a stuffing-box, c, and has a bearing in a disk-shaped plate, D, supported on the detachable head D′ of the valve-chamber by arms $D^2\ D^2$, cast therewith or bolted thereto. The head D′ of the valve-chamber is secured to the coupling by screw-bolts d.

On the valve-stem C′ is rigidly fixed an arm, C^2, projecting at right angles to the stem and playing between two pins or lugs, $e\ e'$, attached to the disk-plate D. These pins or lugs form stops for the arm, which drops from the upper one, e, to the lower one, e', and the latter is preferably provided with a rubber or other elastic cushion or bearing to prevent jar. On the arm C^2 is arranged an adjustable weight, C^3, which by means of a set-screw, C^4, may be adjusted on the arm for greater or less leverage in working the valve. The valve being, however, balanced, requires but a small amount of weight and leverage for its successful operation.

To hold the arm and its weight up and maintain the valve open for normal operation, a catch device is provided on the plate. This consists of a toothed segment, E, Figs. 2 and 4, rigidly fixed to the valve-stem and meshing with a pinion, E′, rigidly fixed to a disk, E^2, which turns upon a pin projecting from the plate and has a notch, f, in its periphery. In this notch (when the weight is raised and the valve open) there drops a tooth, g, formed on an armature, G, which is hung to an offsetting bracket from the plate. Just above this armature is disposed the poles of a pair of electro-magnets, H, whose terminal wires $h\ h$ are placed in a battery-circuit that extends throughout the building, and at suitable intervals is provided, after the manner of electric bells, with push-buttons which serve to close the circuit.

Whenever any accident occurs or there is any reason for suddenly stopping the engine, one of these push-buttons is pressed in, and the electro-magnet, being thereby charged, attracts the armature. This, rising, lifts its tooth out of the notch of the disk, and the weight on the arm being then free to fall, it drops from gravity, and in partially rotating the valve closes the ports in the valve-chamber and cuts off steam.

With respect to the catch mechanism I may

dispense with the toothed segment and pinion and place the notched disk directly on the valve-stem; but I prefer to use this diminishing gear, so as to make the weight exert less friction between the notch and tooth, and thus enable a lighter battery to successfully lift the armature and trip the valve.

I is a detachable cap, which is made to cover the electro-magnets and keep them clean and free from danger of short-circuiting by foul matters.

One very desirable application of my invention is to engines which drive the cables of traction-railroads, where great damage may be done by a continued motion of the engine after an accident has occurred.

Having thus described my invention, what I claim as new is—

1. The combination, with an oscillating valve and its case having arms D^2 and plate D, of a valve-stem extending from the valve to the plate D and having a weighted arm attached, a notched disk connected to and operated by the valve-stem, an armature provided with a tooth for engaging the notch of the disk, and an electro-magnet for operating the armature, the said armature and electro-magnet being supported upon plate D, substantially as and for the purpose described.

2. The combination, with the steam-valve and its weighted arm, of the diminishing gear E E′, the notched disk E^2, the toothed armature, and its electro-magnet, substantially as and for the purpose described.

3. The combination of the valve-chamber having ports a' and a^2, the valve C, with stem C′, the detachable head D′, with arms D^2 and plate D, the toothed segment E, pinion E′, and notched disk E^2, the toothed armature G, and the electro-magnet, substantially as and for the purpose described.

ROBERT WELLENS.

Witnesses:
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