J. McGOWAN.

Steam-Muffler for Vacuum Car-Brake.

No. 197,522. Patented Nov. 27, 1877.

FIG. 1.

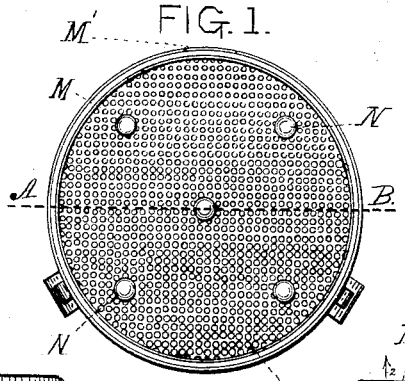


FIG. 2.

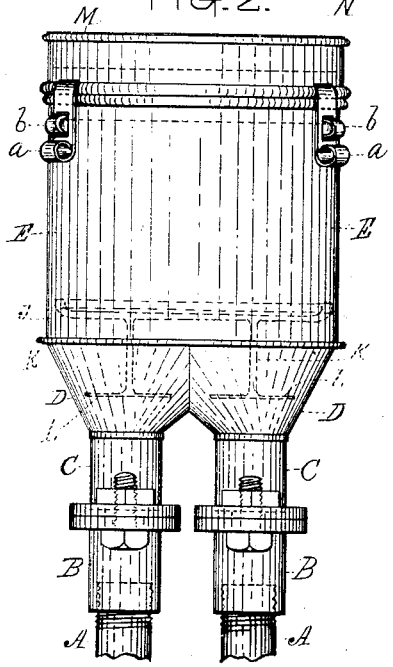


FIG. 3.

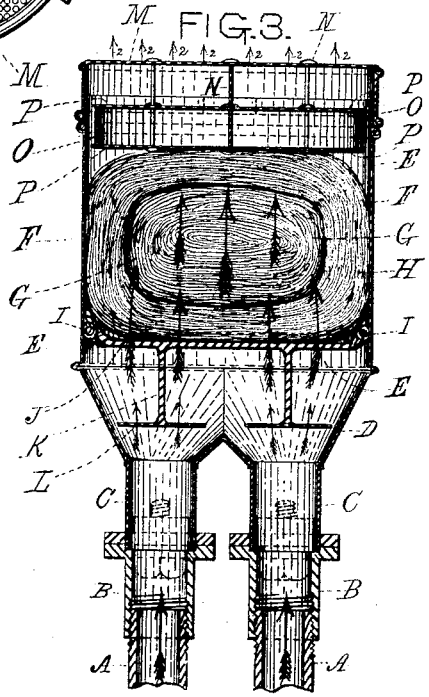
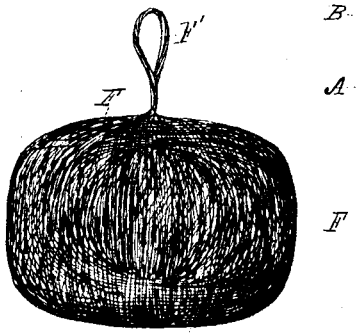


FIG. 4.



Witnesses;

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JAMES McGOWAN, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN STEAM MUFFLERS FOR VACUUM CAR-BRAKES.

Specification forming part of Letters Patent No. **197,522**, dated November 27, 1877; application filed September 22, 1877.

To all whom it may concern:

Be it known that I, JAMES McGOWAN, of the city and county of Worcester, and Commonwealth of Massachusetts, have invented a Steam Condenser and Muffler for Vacuum-Brakes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a top or plan view of my steam condenser and muffler for vacuum-brakes. Fig. 2 represents a side view of the same, looking in the direction indicated by arrow 1, Fig. 1. Fig. 3 represents a vertical central section of the device, taken on line A B, Fig. 1, looking in the direction indicated by arrow 1 of the same figure; and Fig. 4 represents a ball of coiled or round wire, as will be hereinafter described.

In the use of vacuum-brakes prior to my said invention, a serious objection was found to exist in consequence of the unpleasant and disagreeable noise made by the escaping steam employed for producing the vacuum by which the brakes were operated; and so great was this objection that the brake was even in some cases discarded. The noise or sound produced by the escaping steam proved not only disagreeable and offensive to the passengers on the train and residents along the line of the road, but also frightened horses near crossings and at stations.

The object of my present invention was the production of some device or invention whereby the vacuum-brake could be used without the attending objections above referred to, and in which effort I have been very successful, indeed, as practical tests have proved.

In the drawings, the parts marked A A represent the upper ends of the main steam-pipes, which conduct the steam from the boiler to the open air. B B are couplings, by means of which the lower ends of pipes or stems C C are connected to the upper ends of the pipes A A; but any other suitable means may be employed, however, for this purpose.

Pipes C C project down from, and may form a part of, the conical base D of the condenser and muffler chamber E, in which is placed a ball of coiled or wound wire, F. (Shown in Figs. 3 and 4 of the drawings.) Said ball is manufactured from brass wire, by preference, although other kinds may be used, if desired, and is made in the following manner: A ball, G, is first coiled or wound from wire of, say, about thirty wire-gage, about one-half as large as the entire ball is required to be when finished, (see Fig. 3 of the drawings,) after which wire H, of about thirty-five wire-gage, is wound upon ball G until it is just sufficient in size to fit into chamber E, as indicated in Figs. 3 and 4 of the drawings.

For convenience of handling, a portion of the wire may be twisted together and extended up to form a loop or handle, F'.

I is an internal flange of, say, about one-half inch in width, extending around the entire inner surface of the muffler-chamber E, for the purpose of supporting the incased ball F above cross piece or bar J, the latter serving as a central support for ball F, and to assist in breaking the force of the steam as it passes up through and out of pipes A A.

Upon the under side of cross piece or bar J, and directly over the center of the openings of pipes C C, are secured two pendent rods, K K, and upon the lower ends of said rods K K are secured circular perforated plates L, the circumference of said plates being about half as large again as the openings in pipes C C.

As flange I extends in under the outer edge of muffler F, the steam is prevented from passing up between the outer edges of muffler F and the sides of chamber E, and is forced to pass up through the muffler, as indicated by arrows, Fig. 3.

The top of muffler-chamber E is provided with a hinged perforated cover, M, upon the under side of which is secured, by means of bolts N, a device consisting of a circular rim, O, a little smaller in diameter than chamber E, and upon each end of which rim O is fastened a perforated plate, P.

In the drawings, bolts or rods N are represented as being soldered to perforated cover M and plates P P; but, if preferred, said bolts or rods may be provided with screw-threads and nuts, to hold the several parts in their relative and proper positions.

The muffler could be made of some fibrous material, rather coarse, or partly of wire and

fibrous material; but I prefer the construction heretofore described.

The operation is as follows: The steam, after passing through tubes or pipes A A and C C, comes in contact with perforated plates L L, a portion of the steam passing up through said plates, which partly breaks its force, and at the same time spreads and condenses it as it passes through, while a portion of it is thrown laterally, and passes up around the outside of the plates. The steam having passed through and around plates P P, a portion of it then impinges against cross piece or bar J, which again breaks its force, and throws it laterally below the ball F, and before it enters chamber E above cross piece or bar J, when it then passes through the ball of coiled or wound wire F, and thence through perforated plates P P, and out through the perforated cover M, as represented by arrows 2, Fig. 3 of the drawings.

It will be observed that by means of the hollow cone parts or bases D, a considerable steam space or chamber is provided below the flange I and above the ends of the pipes C C, and which chamber or space permits the steam to expand before passing up through the muffler F.

By the above arrangement, the steam is separated and its force broken and somewhat condensed, so that when it passes out at the top, as before explained, it makes but little noise, and that not of a disagreeable nature.

Any water resulting from condensation of steam is blown out through the plates P P and cover M with the steam.

Cover M is hinged at M′ to chamber E, and is provided with hinged loops *a*, fitted to clasp over the ears *b* on the chamber E, when cover M is in its working position, as shown in the drawings; but the cover may be bolted on, if preferred.

It is rather desirable that the ball of wire F be coiled or wound systematically before being put into chamber E, instead of being put in otherwise made or formed, since by the former method more favorable results are obtained, so far as I have practically tested the same.

I have not described the vacuum-brake and its mode of operation for rail-cars, since it has heretofore been patented and its construction and mode of operation are well known; besides my invention comes into action at the ends of the pipes through which the steam is forced to the open air in the operation of exhausting the vacuum-cylinder.

Those skilled in the art will readily understand and appreciate my invention, and perceive that although I have shown and described but one practical way of carrying out the same, nevertheless it is susceptible of various modifications without departing from the principle of my invention; and I do not, therefore, wish to be understood as limiting myself to the special arrangement of parts as shown and described.

The invention is shown applied to two separate discharge-pipes, A A; but it may be used with one discharge-pipe, or with two or more, as may be preferred by the constructor and user.

Having described my steam condenser and muffler for vacuum-brakes, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the ends of the steam-pipes A and C, of the hollow cones D and perforated pendent plates L, substantially as and for the purposes set forth.

2. As a new article of manufacture, a muffler for steam vacuum-brakes, made of wire of different sizes—that is to say, an inner ball made of wire of a given gage, and surrounded by wire of a finer gage, substantially as described.

3. The combination, with the chamber E and coiled-wire steam-muffler F, of the supporting bridge or bar J, substantially as and for the purposes set forth.

4. The combination, with the chamber E and perforated cover or top M, of the rim O, provided with perforated heads P P, substantially as and for the purposes set forth.

5. The combination, with chamber E, of pipes C, conical parts D, cross-bar J, muffler F, and perforated top M, substantially as and for the purposes set forth.

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Witnesses:
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