E. A. WARREN.

Device for Lubricating and Preventing Heating of Car-Axle Boxes.

No. 163,285. Patented May 11, 1875.

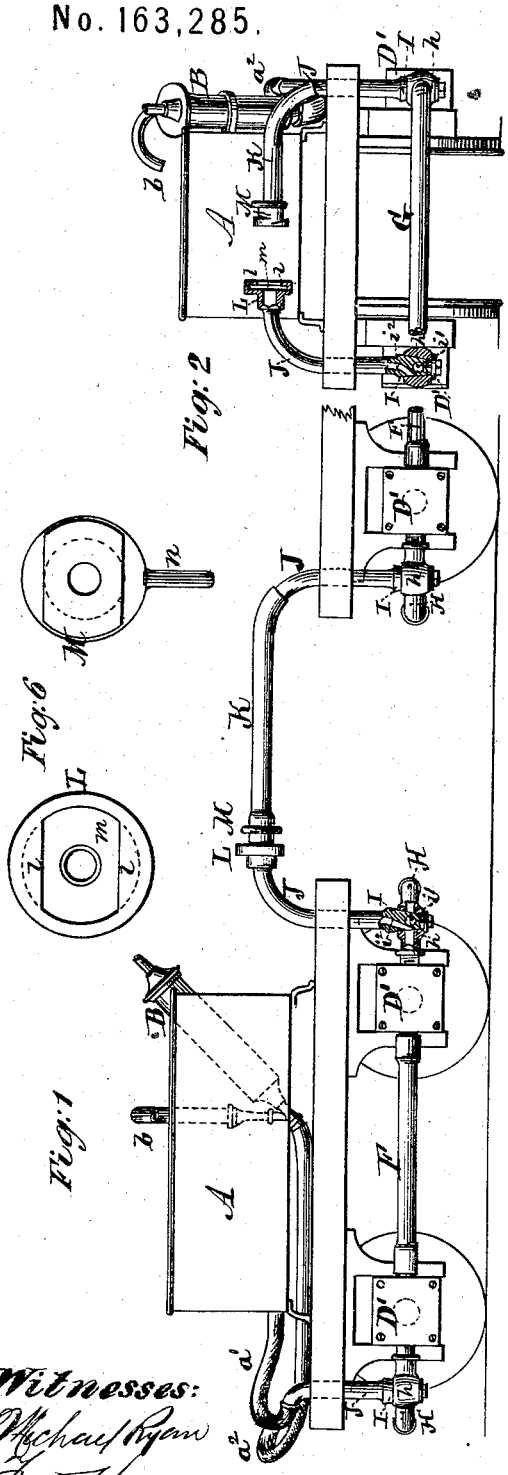

Fig. 2

Fig. 6

Fig. 1

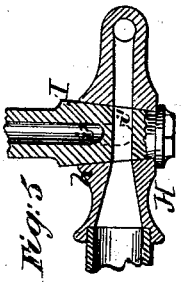

Fig. 5

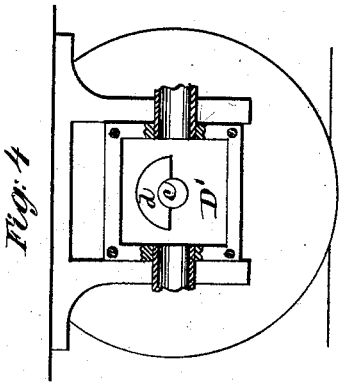

Fig. 4

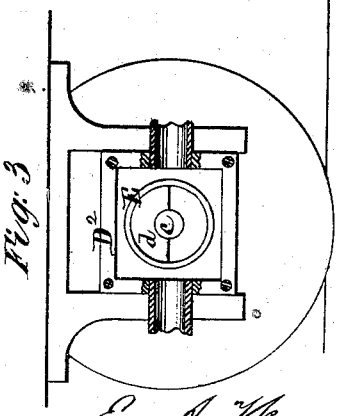

Fig. 3

Witnesses:
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UNITED STATES PATENT OFFICE.

EDMOND A. WARREN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN DEVICES FOR LUBRICATING AND PREVENTING THE HEATING OF CAR-AXLE BOXES.

Specification forming part of Letters Patent No. **163,285**, dated May 11, 1875; application filed March 27, 1875.

To all whom it may concern:

Be it known that I, EDMOND A. WARREN, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Means for Lubricating and Preventing the Heating of Railway Axle-Boxes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

My invention consists, mainly, in means for connecting all the axle-boxes of a railway car or train by means of pipes or tubes, with a pump, by which water or other liquid is caused to circulate continuously and repeatedly through all the boxes, so as to lubricate the boxes and journals and keep them cool. The invention also consists in certain details of construction and arrangement of the pipes and connections, as hereinafter specified.

In the accompanying drawing, Figure 1 is a side view, showing two cars coupled together, and provided with an apparatus constructed according to my invention. Fig. 2 is a rear-end view of one of the cars. Figs. 3, 4, 5, and 6 are detail views hereinafter particularly referred to.

In carrying out my invention, I provide a tank or reservoir, A, for holding water or other liquid, which tank may be carried by the tender, or may be placed at one end of the baggage-car, or any other suitable position on the train. On one side of the tank, near the bottom, is a tube, a^1, leading from the tank, for conducting the water to the axle-boxes, and on the other side is a tube, a^2, attached to a pipe, b, for conducting the water back into the tank. The pipe b is connected with a pump, B, which may be of any suitable description, and may be driven from the locomotive, or may be a special steam-pump. The axle-boxes are made perfectly tight, or as nearly so as possible, in order to prevent the escape of the water or other liquid. The boxes on each side of each car are connected by rubber or other elastic tubes F attached to nozzles on the boxes, and running longitudinally of the car, and by similar tubes or pipes G running transversely at the ends of the car. The transverse tubes G connect with the boxes by means of pipes H, in each of which is a three-way cock, the pipe being provided with a valve-seat, h, in which works a plug, I, attached to the lower end of a pipe, J, which rises vertically a suitable distance above the car-platform, and is then turned or bent in a nearly horizontal position, and has its end provided with an elastic tube, K, furnished with a coupling device. The pipes J are, preferably, made to extend above the platform, in order to facilitate the coupling of the same from the platform. The tube a^1, which leads from the tank, is connected to the foremost box of the car, which carries the tank on one side of said car, and the tube a^2, which leads into the tank through the pipe b, is connected to the foremost box on the other side. When two or more cars are coupled together, the pipes J are turned in the directions shown in Fig. 1, or longitudinally of the car, and their ends are coupled together. When in this position the water passes from the pipe H through the port i^2 of the three-way valve I, and up into the pipe J, from which it passes through the tubes K to the corresponding pipe on the next car, and down and along through the boxes and connecting tubes to the end of the train. The pipes J at the rear end of the train are turned inward toward each other, as shown in Fig. 2, in which position the port i^2 of the valve I is thrown out of engagement with the pipe H, and the port i^1 is thrown into communication therewith, so that the water passes through the transverse tube G to the rear box on the opposite side of the car, and thence through the other boxes and connecting tubes on said opposite side to the front end of the train, and on reaching the foremost box on said opposite side it passes through the tube a^2 and pipe b to the tank, the circulation being facilitated by the pump B. By this means the water is kept in constant circulation, passing to the rear on one side of the train, and returning to the front on the opposite side. When only one car is used, or when the tender, or the car which carries the tank, has no car coupled to it, the pipes J are turned inward, as shown in Fig. 2, and the water passes from the rear box on one side to the rear box on the opposite side by means of the transverse tube G, and returns to the tank, as be-

fore described. Each car is provided with the transverse connection tubes G at both ends, connecting with the axle-boxes by means of the pipes H provided with the three-way valves I, so that either end of one car may be coupled to either end of any other car.

The boxes may be of such construction that the water may be used for lubricating the journals as well as cooling them, or they may be constructed with oil-chambers provided with jackets, around which the water may circulate for the purpose of preventing the heating of the journals. When the water is to be used for lubricating it circulates freely through the whole interior of the box D^1, which is made in the form shown in Fig. 3, so as to permit the water to surround the axle *c* and its bearing *d*, and lubricate it as well as prevent it from heating. When the water is to be used for cooling purposes only the journal and bearing are surrounded by a jacket or casing, E, as shown in Fig. 3, which jacket or casing forms a chamber for holding oil, or fibrous material saturated with oil, and the water circulates through the interior of the box D^2 around the jacket E, and prevents the journal and bearing from becoming heated.

The devices for coupling the elastic tubes may be of any suitable construction. As shown herein they consist of a socket, L, on one of the tubes, and a button, M, on the other. The socket is formed with an oval or oblong opening, corresponding in form with that of the button, with flanges *l* overhanging the edges of said opening for engagement with the ends of the button. The socket is also provided with a rubber or other suitable packing, *m*, to prevent leakage when the parts are coupled together and the water is in circulation. The button may be provided with a lever, *n*, to facilitate the operation of coupling. The two parts of the rubber coupling are attached to the tubes in such positions with relation to each other that when they are at rest the button is at right angles with the opening in the socket. The coupling is effected by turning the button about a quarter of a circle and inserting it in the opening, and then turning it the same distance in the opposite direction, so that the ends of the button will pass behind the overhanging edges *l*, and the parts are thus securely held in contact with each other. The coupling devices are so attached to the tubes that the socket at the rear end of one car is opposite the button at the front end of the next car, and vice versa. By this arrangement the two parts of the coupling are always in proper position for engagement with each other, and either end of one car may be coupled to either end of any other car.

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

1. The combination, with the axle-boxes of a railroad car or cars, of pipes or tubes connected and communicating with the axle-boxes and with a pump, whereby water or other liquid may be forced to circulate through all the axle-boxes, as and for the purpose specified.

2. The combination, with the axle-boxes of a railroad car, and a tank and pump, of longitudinal tubes at the sides of the cars, and communicating with all the axle-boxes and a transverse tube, G, connecting the side pipes or tubes, whereby a continuous supply of water from the tank may be forced through the axle-boxes, and conducted back to said tank for further use, as set forth.

3. The axle-boxes of a railroad-car having nozzles, in combination with tubes or pipes F connecting the axle-boxes, substantially as described.

4. The axle-boxes, provided with nozzles substantially for their connection by means of the circulating-pipes F.

5. The combination of the axle-boxes D^1 or D^2, and their connecting pipes F G, the three-way cocks or valves I, and the pipes J attached to said valves, and provided with flexible connections and couplings, substantially as herein described.

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Witnesses:

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