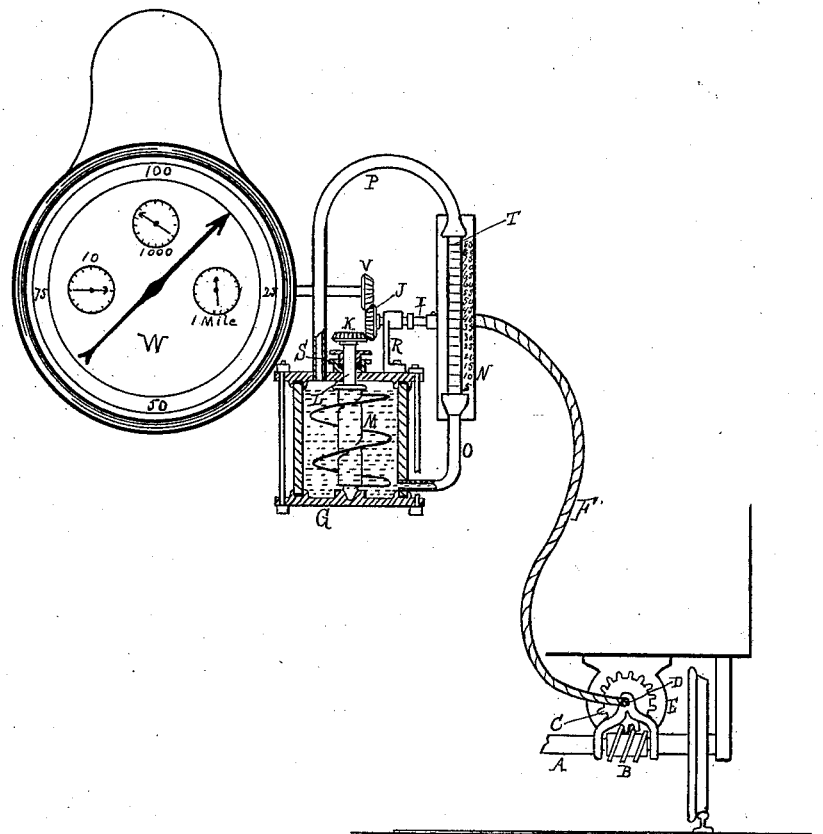


(No Model.)

E. R. E. COWELL.
SPEED GAGE.

No. 303,215.

Patented Aug. 5, 1884.



Attest.
E. Soule
E. Soule

Inventor:
Edward R. E. Cowell
By his Atty.
W. A. Sprague

UNITED STATES PATENT OFFICE.

EDWARD R. E. COWELL, OF DETROIT, MICHIGAN, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE LOCOMOTIVE SPEED GAGE AND MILEAGE INDICATOR COMPANY, OF JERSEY CITY, N. J.

SPEED-GAGE.

SPECIFICATION forming part of Letters Patent No. 303,215, dated August 5, 1884.

Application filed January 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD R. E. COWELL, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Speed-Gage and Mileage-Indicators; and I do hereby that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction of speed-gage and mileage-indicators; and the invention consists in the peculiar construction and arrangement of the means employed for equalizing the atmospheric pressure in the fluid-tube of the speed-gage, whereby a more positive action of the fluid is obtained under the centrifugal force of an Archimedean screw, and in the peculiar construction, arrangement, and combinations of the various parts, all as more fully hereinafter set forth.

In the accompanying drawing, which forms a part of this specification, my improved combined device is shown in sectional elevation, the speed-gage and mileage-indicator being adapted to be driven by the same power, and in which A represents the axle of the forward truck of a locomotive, which is provided with a worm, B, which drives a pinion, C, properly journaled upon a shaft, D, in the casing E, secured to the truck.

F is a flexible shafting, one end of which is secured to one end of the shaft D, while the opposite end is secured to one end of the shaft I, properly journaled in the head of a standard, R, rising from the top of the vessel or chamber G, which is designed to be located at any convenient point in the cab of the locomotive. Within this vessel there is properly stepped the vertical shaft L, carrying an Archimedean screw, M, the upper end of such shaft projecting through a stuffing-box, S, and receiving a bevel-pinion, K, which meshes with a similar pinion, J, upon the end of the shaft I.

Communicating with the interior of the vessel G, and near the bottom thereof, is a tube, O, and from the top of the vessel there rises a siphon-tube, P, a glass tube, T, being secured

between the free ends of the tubes P and O, as shown, affording a continuous passage or communication between the bottom and top of the vessel and outside thereof. Back of the glass tube T is secured a speed-board graduated into miles similar to a thermometer. The vessel G is designed to be filled or nearly so with glycerine or other suitable fluid. The action of the screw M, when the locomotive is in motion, is to drive the oil or fluid up the tubes O T, while at the same time the air in the tube P is drawn down or siphoned down into the vessel, relieving the atmospheric pressure in advance of the rising fluid, allowing the latter to act positively under the action of the screw, the fluid rising or falling in the tube according to the velocity of the screw, indicating to the engineer the rate of speed at which his engine is being driven.

V is a bevel-gear arranged to be driven by the pinion J, upon the shaft I, and is connected with a train of gear of the mileage-indicator dial W, which is provided with a mile-hand, a ten-mile hand, a hundred-mile hand, and so on, as may be desired. If the axle A makes seven hundred revolutions in a mile, the Archimedean screw is arranged to travel at the same rate, while the mile-hand of the mileage-indicator is so geared that it will make one circuit of its dial during the same time. By this arrangement of devices the engineer can at a glance see how far he has traveled from a starting-point, and at what rate per hour.

I am aware that various speed-gages and mileage-indicators have been invented and patented, wherein a fluid is caused to rise in a tube under the centrifugal force of a screw or flutter-wheel; but in all these the tubes have been open or closed at the top and not provided with a continuous passage or communication between the top and bottom of the fluid-chamber. Hence they have been very unsatisfactory in their operation, being compelled to overcome atmospheric pressure in one case and to compress the air in the other, the devices therefore being practically inoperative, while in my construction these

objections are obviated, in that the air is siphoned out of the tube in advance of the rising fluid, equalizing the atmospheric pressure within the vessel and tube, and allowing the fluid to rise and fall positively and sensitively under the action of the screw.

What I claim as my invention is—

1. A speed-gage consisting of a vessel, G, provided with an index-tube, T, the ends of which are provided with the tubes O P, communicating, respectively, with the bottom and top of the vessel G, within which an Archimedean screw or other suitable wheel is arranged to

operate substantially in the manner and for the purposes described.

2. In a speed-gage, the combination of the vessel G, provided with a proper screw or wheel, M, and a tube, O, carrying an index-tube, T, with the return-bend tube P, affording communication between the upper end of the tube T and the top of the vessel G, substantially as and for the purposes specified.

EDWARD R. E. COWELL.

Witnesses:

E. SCULLY,

H. S. SPRAGUE.