A. GUEBHARD & A. P. TRONCHON.

Recording Apparatus for Vehicles.

No. 137,676. Patented April 8, 1873.

Fig. 1.

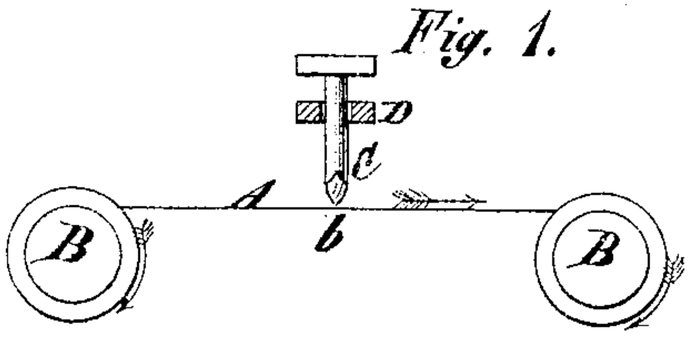


Fig. 5.

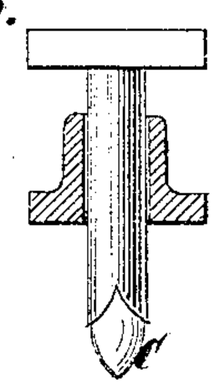


Fig: 4.

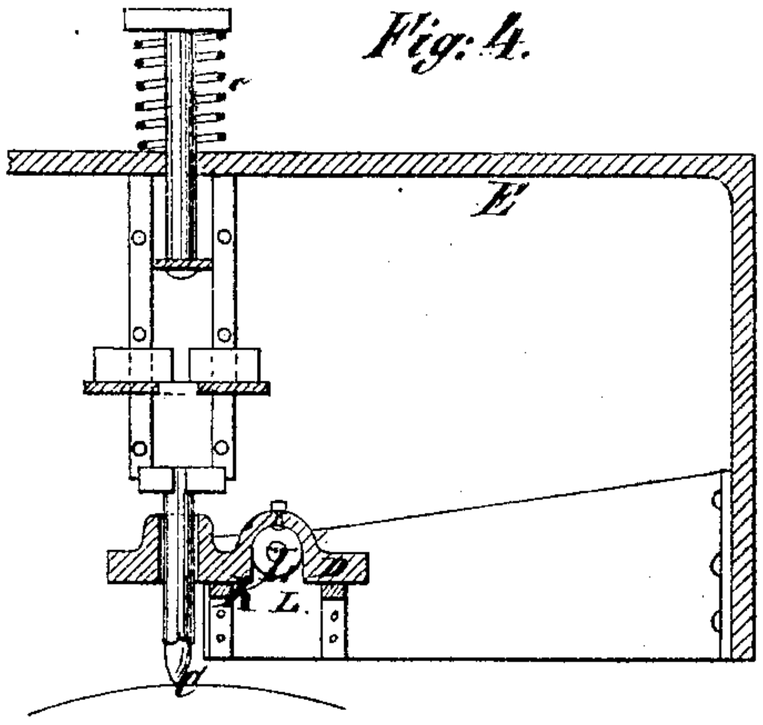


Fig: 3.

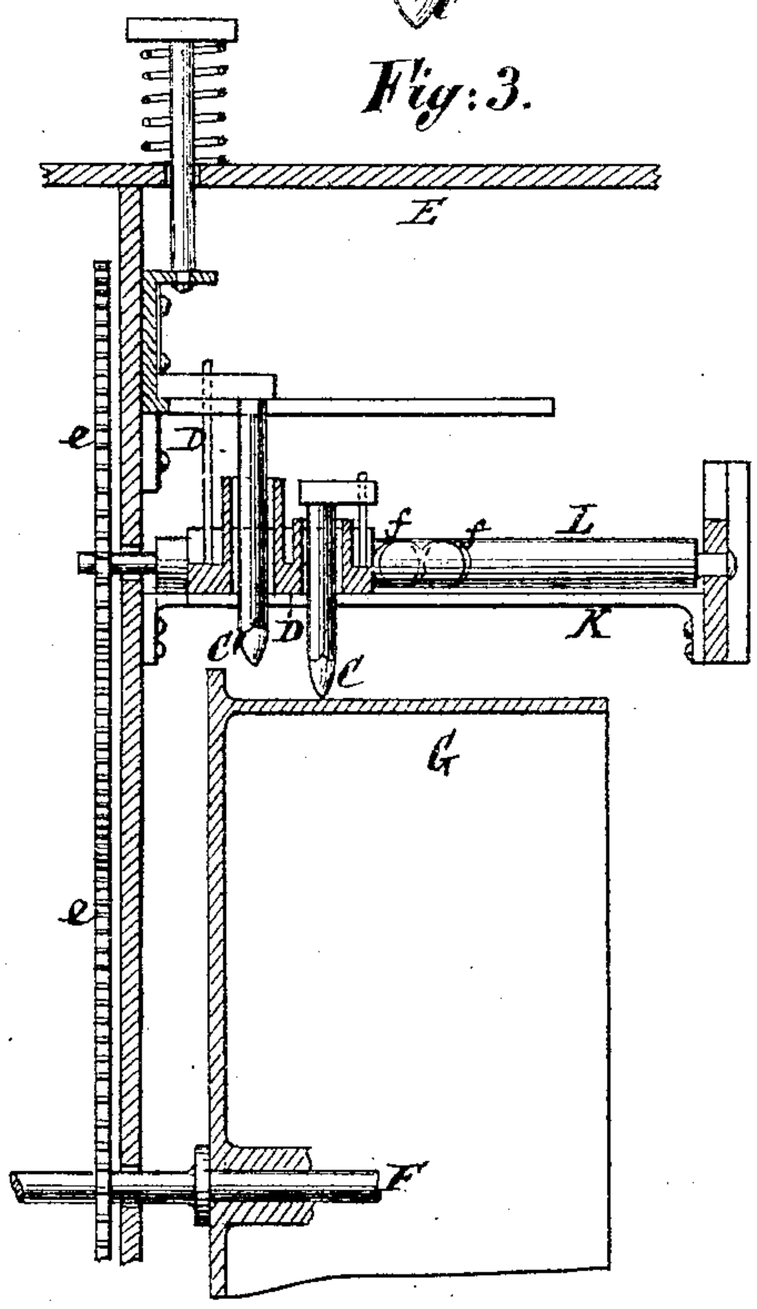


Fig: 2.

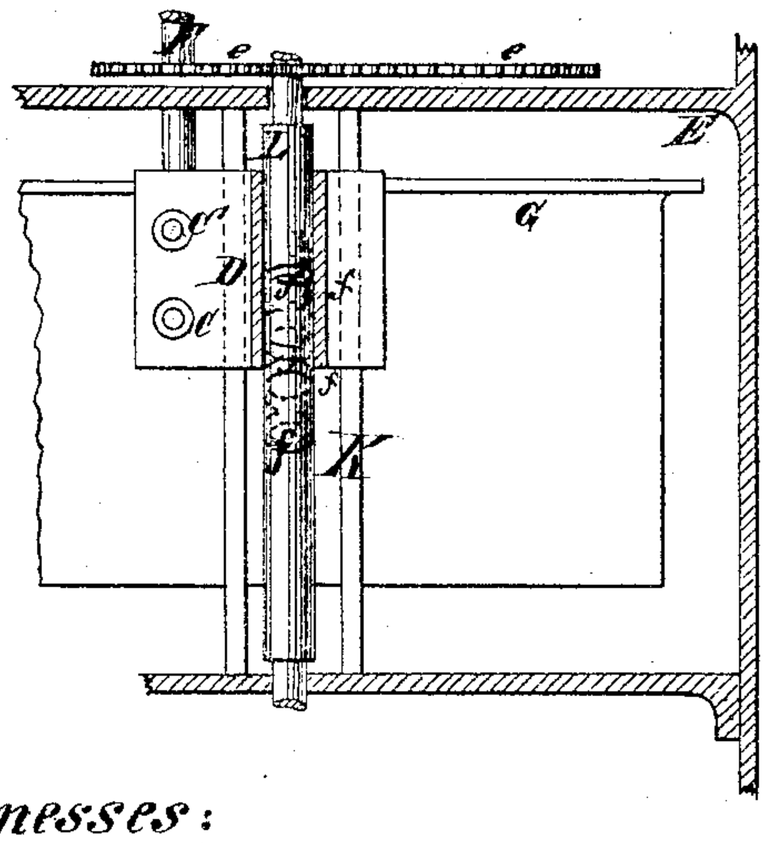
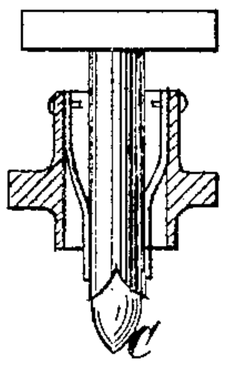


Fig: 6



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AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

ALFRED GUEBHARD AND ALFRED PIERRE TRONCHON, OF PARIS, FRANCE.

IMPROVEMENT IN RECORDING APPARATUS FOR VEHICLES.

Specification forming part of Letters Patent No. **137,676**, dated April 8, 1873; application filed July 9, 1872.

To all whom it may concern:

Be it known that we, ALFRED GUEBHARD and ALFRED PIERRE TRONCHON, both of Paris, France, have invented some new and useful improvements in the construction of automatic controlling and registering instruments or apparatus; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheets of drawing making a part of the same.

Apparatus constructed according to our invention count, register, control, or indicate, in a continuous and self-acting manner, the state of rest or motion, or the duration of the rest or motion, of a body or object. The purposes for which such apparatus may be employed are numerous, the construction of them is simple, and they are not liable to get out of order. They work as regularly as a pendulum, and register faithfully.

The following are some of the principal purposes to which they may be applied, namely: For controlling or registering the work performed by various hired and other vehicles, including cabs, carriages, carts, omnibuses, &c., also railway trains, and sundry vehicles of locomotion.

The principle upon which the invention operates is very simple, and may be understood by reference to Figure 1, in which A is a strip of paper, put in uniform motion from or by rollers B B. At a point, *b*, of the paper there is a pencil or other marking instrument, C, which passes through a supporting-guide, D, and acts by means of its own light weight, or by means of a spring. It is evident that the pencil, being in contact with the moving paper, will produce a line on it, which, accordingly as the whole apparatus, pencil and all, is in motion or at rest—as, for instance, by its connection with or support by a traveling vehicle—will present a different appearance, owing to vibration produced by the vehicle when in motion. When the whole apparatus is at rest, however, and the strip A is moved regularly and free from shake, the pencil will produce a fine regular line, whereas when the whole apparatus is in motion, the pencil, owing to the attendant vibrations, will produce a thicker or more definite line. If now, the speed of the paper per hour be known, it is easy to ascertain therefrom the duration of repose or motion, because they are marked distinctly different.

Figs. 2, 3, and 4 represent, respectively, plan and sectional elevations, at right angles to each other, of an apparatus constructed in accordance with our invention.

In this apparatus E is a box containing clock-work of any suitable description, and which serves to drive a spindle, F, that has secured to it a drum, G, having a paper card wrapped around it. This card is printed and divided off into spaces denoting hours, half-hours, quarters, and minutes, or being otherwise suitably divided, according to the measurements to be recorded. D is the pencil-holder, and C the pencil or pencils, arranged to rest freely on the card-mounted drum, and kept vertical by means of the pencil holder. Such apparatus may be used to count or indicate the hour of departure of the vehicle, the number of fares or hours traveled, the number of times the vehicle has been stationary or moving about empty, and various other particulars or conditions.

Thus far it has been surmised that the drum G is driven by a spindle operated by clock-work. If, however, the spindle F belongs to an apparatus which counts the miles traveled by the vehicle, the principle remains the same, and the card on the drum is divided into miles, whereby the pencil counts or indicates the numbers of miles traveled by the vehicle, empty or occupied.

A leading object of the present improvement is to avoid increasing the dimensions of the recording apparatus, when the same is required to work for a lengthened period at a stretch, by causing the pencil-holder with pencil in it to move across the card on the revolving drum, such motion being communicated from the drum or clock-work which drives it. This is done in the present case by tracing screw-lines on the paper band or card, by means of grooves on or in a cylinder operated through mechanism from the axis of the drum or cylinder carrying the paper band.

K is a frame along which the pencil-holder D travels. L is the revolving grooved cylinder, provided with grooves *f f* for operating

the pencil-holder, and receiving its motion by means of spur-wheels *e e*, the cylinder L making one revolution for one of the spindle F. In Figs. 2 and 3, the pencil-holder D is represented not only as carrying a permanent, but also a transient pencil, C′. The cylinder L, in revolving, causes, by means of its double grooves *f f*, the pencil-holder to have a continuous to-and-fro movement, by or through an oscillating pin or gudgeon connected with the holder, and working in the groove of the traverse cylinder. The movement of the holder causes the pencil to describe screw-thread lines on the paper band of the drum. Of course a single-groove cylinder may be employed. By means of the grooves shown in Fig. 2 and 3, the pencils can trace two right-handed and two left-handed screw-threads, whereby we obtain distinct indications during four revolutions of the apparatus. It is evident by increasing the number of grooves the number of revolutions may be increased as desired. To adapt such an apparatus to railroad vehicles, it is only necessary to leave out the transient pencil C′.

As previously observed, the pencil, when the vehicle is in repose, traces only a very faint line, but when in motion a thick line is produced.

Fig. 5 shows a pencil, C, arranged to pass freely through a bush or holder, and marks by its vertical oscillations or movements.

If it is desired to increase the intensity of the mark, the arrangement shown in Fig. 6 may be adopted, and in which the pencil is held in a state of rest by means of four springs fixed at one end to the bush or holder, the diameter of which is somewhat larger than the pencil.

When the apparatus is in motion, said springs give the pencil horizontal oscillations, which increase the thickness of the line.

The pencils to be preferred are of course those which are least liable to break, and which mark well. As, however, the pencils have the slight inconvenience of wearing and occasionally breaking, the following precautions should be observed: First, use a paper band or card prepared with a chemical solution which colors when in contact with a metallic pencil, or by electric action; we use successfully a paper covered with zinc-white, and a point made of mixed lead. Second, on ordinary divided paper place another piece of paper covered on one side with coloring-matter, such as is used for tracing drawings; a metallic or other pencil, when in repose, gives a fine straight line, and when in motion a thick and distinct line. Third, very clean indications are obtained by means of a pointed pencil on black paper.

We are well aware that it has heretofore been proposed to construct counting or indicating apparatus for the purpose herein named in which a paper band, moved by clock-work or by the wheels of the vehicle, is made to receive line indications from a pencil or other marker, so that the latter produces a steady or oscillating line, according as the vehicle is at rest or in motion. We are also well aware that it has been proposed to connect carriage-seats in such a way to a pencil marking on a card as to produce lines at right angles to each other, and thereby to indicate the number of passengers carried, and the time they are carried. These, therefore, we do not claim; but

What we claim, and desire to secure by Letters Patent, is—

The mode of tracing screw-lines on the paper band by means of the grooves *f f* on the cylinder L, operated through mechanism from the axis of the cylinder G, as shown and described.

In testimony whereof we have hereunto set our names in presence of two subscribing witnesses.

A. GUEBHARD.
A. TRONCHON.

Witnesses:
A. LEBLOCIER,
E. JAULIN.