(No Model.) 2 Sheets—Sheet 1.

L. B. WOODRUFF.

OPERATING DEVICE FOR ODOMETERS.

No. 248,380. Patented Oct. 18, 1881.

Fig. 1.

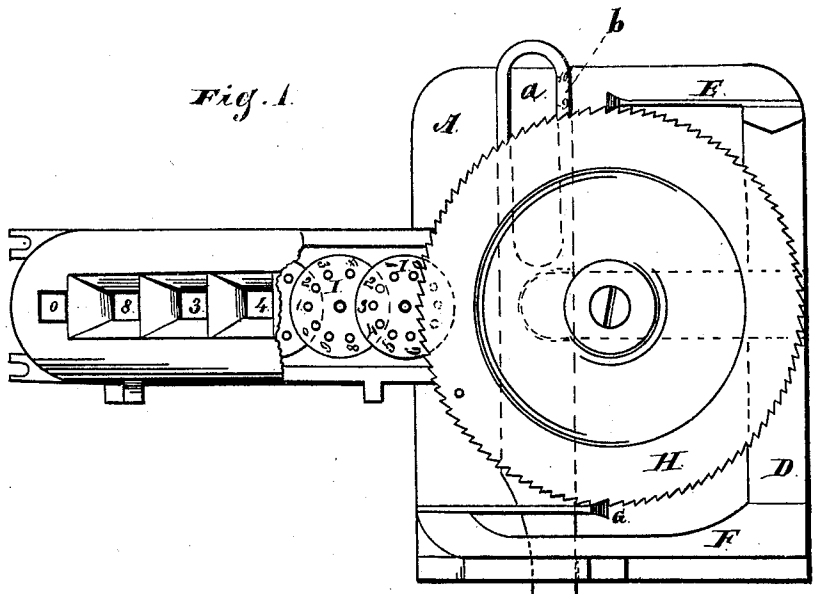


Fig. 3.

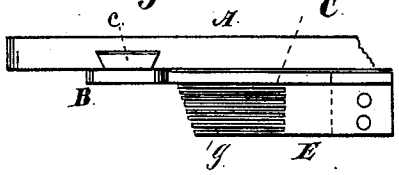


Fig. 3a

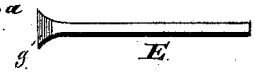


Fig. 4.

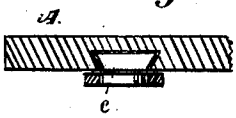


Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

L. B. WOODRUFF.

OPERATING DEVICE FOR ODOMETERS.

No. 248,380. Patented Oct. 18, 1881.

Fig. 5.

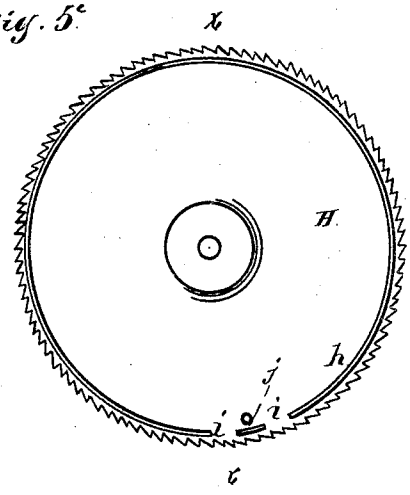


Fig. 6.

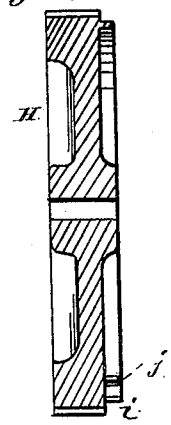


Fig. 7.

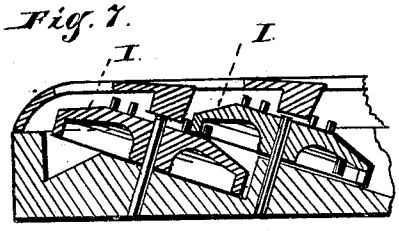
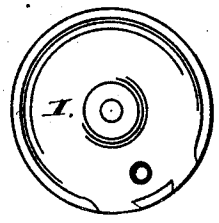


Fig. 8.



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UNITED STATES PATENT OFFICE.

LESLIE B. WOODRUFF, OF AURORA, ILLINOIS, ASSIGNOR TO HIMSELF AND JAMES SHAW AND ALBERT J. HOPKINS, BOTH OF SAME PLACE.

OPERATING DEVICE FOR ODOMETERS.

SPECIFICATION forming part of Letters Patent No. 248,380, dated October 18, 1881.

Application filed March 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, LESLIE B. WOODRUFF, residing at Aurora, in the county of Kane and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Devices for Operating Registering-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a similar view, some of the parts being removed. Fig. 3 is an enlarged detail, showing one of the ratchets. Fig. 3ª is also an enlarged detail, showing one of the pawls in the position shown in Figs. 1 and 2; Fig. 4, a detail, showing the adjustable fulcrum. Fig. 5 shows the under side of the operating-wheel. Fig. 6 is a section at line *x* of Fig. 5. Fig. 7 is a section at line *y* of Fig. 1; Fig. 8, an under side of one of the registering-wheels I.

The leading object of the invention is to provide improved devices adapted to automatically operate suitable registering devices for registering the number of miles traveled.

It consists in providing an adjustable fulcrum for the lever which operates the registering devices, combined with such lever in such manner that the throw of the lever and the movement of the unit or operating wheel may be regulated; in providing a ratchet to act upon the operating-wheel, composed of a series of springs, the ends of which are not in a vertical line, but are in an inclined line, the end of the shortest spring being placed back of the end of the longest spring a distance equal to the distance between two ratchet-teeth of the operating-wheel; in combining the lever and adjustable fulcrum with operating-pawls, bars, and wheel; and in providing the operating-lever with a graduated scale to be used in connection with the adjustable fulcrum, all as hereinafter fully described.

The devices which I now proceed to describe are especially adapted to be attached to and used in connection with a railroad-car, but may be used in other places.

A represents a plate, secured to and depending from the under side of the body of a car or car-truck.

B is a lever, having, as shown, a slot, *a*, in the upper end, with the graduated scale *b*. Upon one side of such slot *c* is an adjustable block, located, as shown, in a dovetailed groove in the plate A, which block is held in any desired position in said groove by means of a screw or other suitable device. The front portion of this block, as shown, is round, and extends out into the slot in the upper end of the lever B, and is the fulcrum of such lever.

C is a short bar, one end of which is pivoted at *d* to the lever B. This bar has a long slot, *e*, through which passes a screw or bolt, *f*, which screw enters the plate A, holding the bar C in position, but not preventing its longitudinal movement.

D is a vertical bar, to which the outer end of the bar C is secured.

E is a pawl, secured to the upper end of the bar D. This pawl consists of a series of springs or leaves, *g*, having a little space between them, the outer ends of the springs being on an inclined line, as shown in Fig. 3. Eight of these springs are shown, but a greater or less number may be used. These springs may be made entirely independent of each other, and be bolted or riveted together; but, as shown in Fig. 3, they are represented as being made from a solid piece. The distance which the shortest spring is placed back of the longest is equal to the distance between two of the ratchet-teeth on the operating-wheel. At the other end of the bar D is a bar or arm, F, to the free end of which is secured another pawl, G, which is made in the same manner as the pawl E. These two pawls E and G stand in opposite directions; but both of them are arranged so as to engage with the teeth on the periphery of the operating-wheel.

H is the operating-wheel. Its periphery is provided with a series of ratchet-teeth, the number of which equals the number of feet which the car travels while the wheel H makes one revolution, provided it is intended to register the number of feet which the car travels. Of course some other distance may be registered by a suitable construction of the parts. It is pivoted to the plate A. Its under side is provided with a rim, *h*, concentric with the periphery, in which rim are two openings, *i*, and just inside of the rim is a pin or stud, *j*. This wheel H is a registering as well as an operating wheel.

I are registering-wheels, located in a suitable case, overlapping each other, as shown in Fig.

I, which have pins on their upper surfaces, and the under side of each is substantially the same as the under side of the wheel H. The operating-wheel H overlaps the first of the registering-wheels I, and the rim upon the under side of H passes in between the pins upon the upper surface of this wheel I. These registering-wheels and the case are fully described in another application for a patent made by me, and therefore are not more fully described here.

The lever B is to be provided with some suitable device at its lower end, by means of which, together with some device upon one of the axles of the car, the lever will be operated. This can be done by means of a roller upon the lever, arranged to run in a groove in a sleeve upon the axle. These parts are to be so adjusted and arranged that the lever will be moved with each revolution of the axle. The scale upon the lever B is graduated to correspond with the varying movement of the wheel H when rotated by the lever and pawls, which variation depends upon the adjustment of the fulcrum, and the scale represents a sufficient number of feet to permit adjustment for wheels of any size. The fulcrum *c* is to be adjusted to correspond with the circumference of the car-wheel—that is to say, if the circumference of the car-wheel be eight feet, the fulcrum *c* must be placed opposite the figure 8 on the lever. The figures of the scale indicate the circumference of car-wheels of different sizes, and the scale is to be graduated to correspond with the movement of the pawls. For example, if the car-wheels be seven feet in circumference, the pawls should engage with every seventh tooth of the wheel H. If the wheels be eight feet in circumference, the pawls should engage with every eighth tooth. The distance which the wheel H moves with each action of a pawl will be such part of a full revolution as the circumference of the car-wheels is of the distance the car travels while the wheel H makes such full revolution.

The operation is as follows: Suppose the operating-wheel H to make one revolution while the car is traveling five hundred and twenty-eight feet, or one-tenth of a mile. Suppose, also, that the car-wheels are eight feet in circumference, and the lever B and other parts are so arranged and adjusted that with each revolution of the axle the lever B will be operated. The movement of the lever will cause one of the pawls, E or G, to give to the wheel H, partial revolution, and if the wheel H be graduated into five hundred and twenty-eight parts, each movement will be equal to eight of such parts, the number of feet the car-wheel has traveled in making one revolution. When the car has traveled one-tenth of a mile the stud *j* upon the under side of the wheel H will be brought in contact with one of the pins upon the upper side of the first registering-wheel I, and when this wheel H has made ten revolutions this first wheel I will have made one revolution. The operation of the remainder of the series of registering-wheels will be readily understood. All of the registering-wheels are to be provided upon their faces with figures which will be brought successively beneath the proper openings in the case.

The construction of the pawls E G is important. By making them from a series of springs, receding as described, some part of the pawl will be sure to engage with and operate the wheel H, and it is not necessary that the teeth upon the periphery of the wheel H and the pawls E G should be adjusted to each other with such accuracy as would be required if the ends of the pawls did not have an incline, and the adjustment of the fulcrum of the lever will not interfere with the proper operation of the pawls.

I do not herein make any claim for the special construction of the registering-wheels, or the operating-wheel, or the case, because they are claimed in another application.

By means of the graduated scale and movable fulcrum the throw of the lever B and movement of the unit-registering wheel is accurately regulated, and the distance which each pawl moves with each movement of the lever is also regulated, and the operating-wheel, which, as shown, is also a registering-wheel, can be made to move with each action of a pawl such fractional part of a complete revolution as the circumference of the car-wheel bears to the whole number of feet traveled by the car while the operating-wheel of the registering device performs one revolution. All the parts are to be inclosed in a suitable case.

The devices herein claimed, though shown in connection with registering-wheels of peculiar construction, are adapted to be used with other registering devices. It is, however, desirable that the operating-wheel be graduated to indicate feet.

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

1. In a device for operating one or more registering-wheels, an adjustable fulcrum, *c*, in combination with a swinging operating-lever arranged on said fulcrum, substantially as described, whereby the throw of the lever and the movement of the unit-registering wheel can be regulated, as set forth.

2. A pawl for operating a registering-wheel, consisting of a series of superposed parallel springs, *g*, secured upon each other, and having their outer free ends arranged on an inclined line or gradually receding, substantially as described and shown.

3. The combination of a graduated lever, B, adjustable fulcrum *c*, and pawls E G, arranged to engage with an operating-wheel, substantially as and for the purposes specified.

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Witnesses:
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B. A. PRICE.