(No Model.) 2 Sheets—Sheet 1.

E. VERSTRAETE.

SPEED RECORDER AND REGISTER.

No. 454,391. Patented June 16, 1891.

Fig. I.

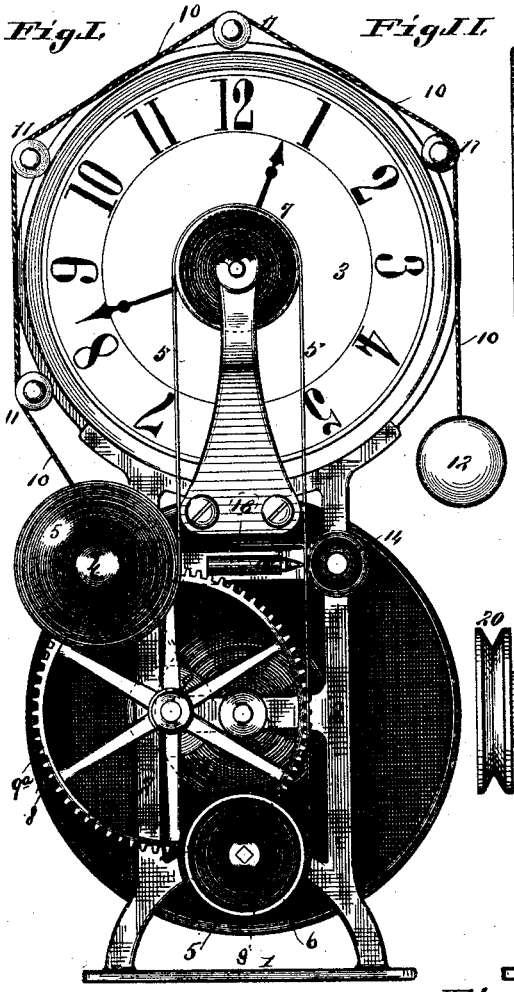


Fig. II.

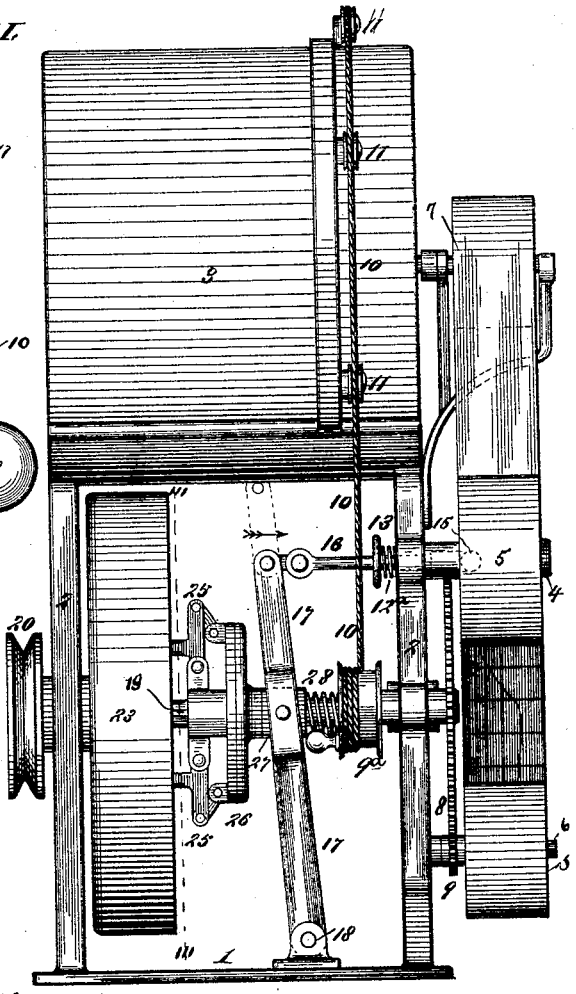


Fig. IV.

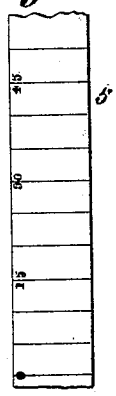


Fig. III.

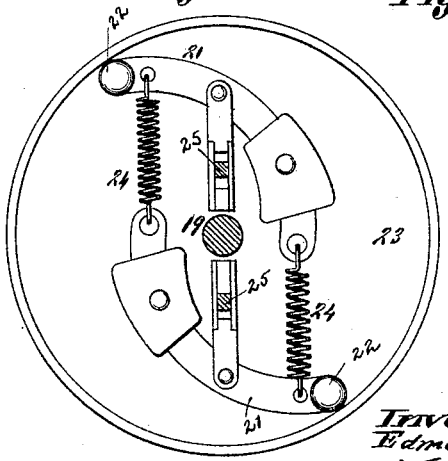
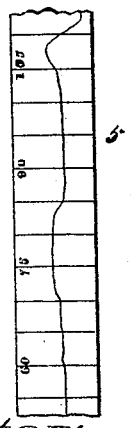


Fig. V.



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(No Model.) 2 Sheets—Sheet 2.

E. VERSTRAETE.

SPEED RECORDER AND REGISTER.

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Fig. VI.

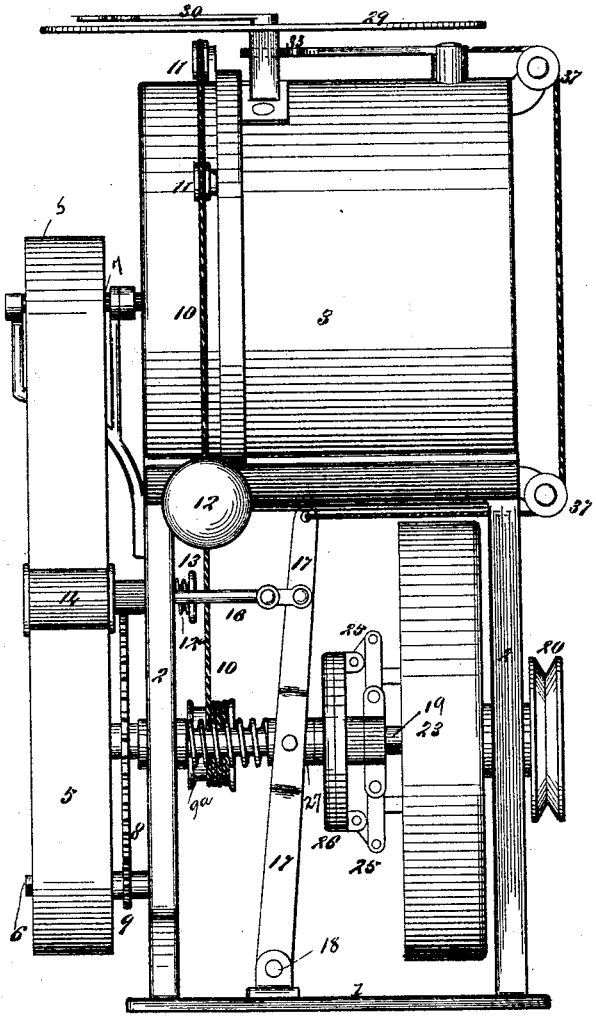
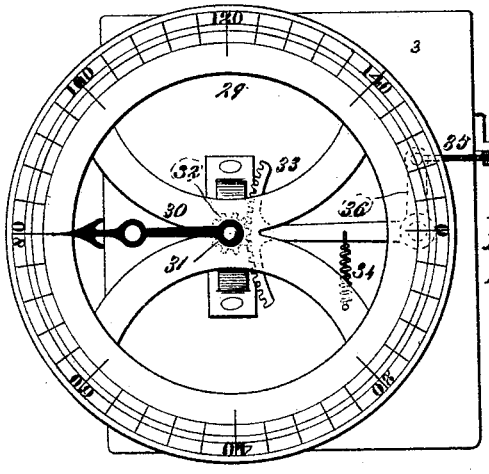


Fig. VII.



Attest,
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Atty's

UNITED STATES PATENT OFFICE.

EDMOND VERSTRAETE, OF ST. LOUIS, MISSOURI.

SPEED RECORDER AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 454,391, dated June 16, 1891.

Application filed July 7, 1890. Serial No. 357,945. (No model.)

To all whom it may concern:

Be it known that I, EDMOND VERSTRAETE, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Speed Indicators and Registers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improved device for registering and indicating the speed of a motor; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is an elevation illustrative of my invention, the face-plate of the housing of the gearing being omitted. Fig. II is a side elevation. Fig. III is a section taken on line III III, Fig. II. Fig. IV is a view showing part of the recording or registering tape or ribbon; and Fig. V is a similar view showing a record-mark on the tape or ribbon. Fig. VI is a side elevation illustrating an indicator in connection with the register, and Fig. VII is a top view of same.

Referring to the drawings, 1 represents a suitable base supporting a frame 2. On the frame 2 is mounted a clock 3 of any ordinary construction or make.

4 represents a spool upon which the tape or ribbon 5 is wound and from which the tape or ribbon is unwound as it is used.

6 represents a spool upon which the tape or ribbon is wound after it has been used. The ribbon passes from the spool 4 to the spool 6 over a pulley 7, secured to the hand-spindle of the clock. The pulley is permanently secured to the extended spindle of the clock, so as to turn therewith in front of the face, and as it turns the friction between it and the tape or ribbon is sufficient to unwind the latter from the spool 4, and as it is unwound from the spool 4 it is wound upon the spool 6. The spool 6 is turned to wind the tape or ribbon thereon by means of a gear-wheel 8, meshing into a pinion 9 on the shaft or spindle which supports the spool 6. The shaft of the wheel 8 is provided with a flanged drum 9^a, to which is secured a cord 10. The cord extends from the drum in an upwardly direction and is passed over rollers 11, secured to the clock, and has upon its free end a weight 12. It will thus be seen that the falling of the weight will turn the gearing mentioned, and through the gearing will turn the spool 6 to wind up the tape as it is used. The weight is only of sufficient gravity to turn the spool when and as the ribbon or tape is paid out by the turning of the pulley 7 on the spindle of the clock. The spool 4 is prevented from turning too freely by means of a spring 12^a, located between a head 13 on the inner end of the shaft that supports the spool and the frame 2, the end of the shaft extending inward beyond the frame being reduced in size, as shown in Fig. II. Any other suitable means might be used for applying friction to the spool 4 to keep it from turning too freely. It is only necessary to have some means which will prevent the spool from unwinding the tape more rapidly than it is used or more rapidly than it is unwound by the turning of the pulley 7 on the spindle of the clock.

14 represents a roller or platen journaled in the frame 2, and between which and the pencil 15 the ribbon or tape passes. This platen serves as a surface upon which the paper is pressed by the pencil which produces the mark. The pencil 15 is secured to the end of a rod 16, made fast to the upper end of a lever 17, pivoted at 18 to the bed-plate or base 1. The rod 16 passes through a cross-piece of the frame 2, as shown by dotted lines in Fig. I, and as it is forced back and forth by the lever it carries the pencil 15 with it across the ribbon, as will be plainly understood.

19 represents a shaft provided with a belt-pulley 20, and which is also provided with a governor connected to the lever 17. As the speed increases, the governor, in acting, moves the upper end of the lever in the direction indicated by the arrow in Fig. II, and moves the pencil across the tape or ribbon, thus marking or registering the speed, and by moving the tape or ribbon by a clock mechanism and having the tape or ribbon graduated into minutes or other periods of time the speed at any particular time may be ascertained and is recorded.

The form of governor which I have shown, but which need not necessarily be used, as any other suitable form might be employed,

consists of arms 21, pivoted at 22 to a housing 23, the inner end of one arm being connected to the outer end of the other by means of a spiral spring 24. The arms are connected by means of levers and links 25 to a sliding disk or collar 26, loosely mounted on the shaft 19, and beyond which on the shaft 19 is a ring 27, to which the lever 17 is secured.

28 represents a spring holding the ring 27 against the disk 26 and holding the disk 26, when not acted on by the arms, in its inner position. This housing carrying the pivoted arms revolves with the shaft 19, and as the speed increases they have a tendency to open out, and in doing so move the disk 26, and through the disk move the lever 17, thus operating the pencil, as described. In this manner I make a very cheap and effective recorder and indicator, and one which has the advantage of giving a record of the speed at any particular time or period of time.

In Figs. VI and VII, I have shown a dial for indicating to the eye the speed without an examination of the ribbon or tape. The dial is marked 29 and has a hand or indicating-finger 30, mounted on a shaft or spindle 31, provided with a pinion 32, engaged by a rack or segment 33, moved in one direction by a spring 34 and in the other direction by a cord 35, secured to an extension 36 on the stem of the segment, and passing over or around pulleys 37 to the upper end of the lever 17, to which it is made fast, as shown in Fig. VI. It will thus be observed that the movement of the lever 17, which, as stated, is effected by the changes of speed, will be indicated on the dial.

I claim as my invention—

1. In a speed-recorder, the combination of a receiving-spool, a weight-actuated gearing for turning the spool, a delivery-spool, a clock mechanism, a pulley on the spindle of the clock mechanism, over which a tape or ribbon passes from and to said spools, a pencil, and a governor mechanism for operating said pencil, substantially as and for the purpose set forth.

2. A speed recorder and indicator, consisting of a pencil, a suitable governor for operating the pencil, a clock mechanism provided with a pulley on its hand-spindle, a delivery and receiving spool, a belt passing from and to said spools, respectively, a dial having a hand, a segment for moving the dial-hand, and a connection between the segment and said governor mechanism, substantially as and for the purpose set forth.

3. The combination of a frame, a clock mounted on the frame, having an extended hand-spindle outside the face thereof, a horizontal delivery-spool, a pulley mounted on the hand-spindle in front of the face, a horizontal receiving-spool, means for imparting rotation to the receiving-spool, corresponding to the rotation of the pulley, a lever, a rod carried by the lever, provided with a pencil, a shaft, and a governor mechanism mounted on the shaft and operating the lever, substantially as set forth.

EDMOND VERSTRAETE.

In presence of—
A. M. EBERSOLE,
J. M. MAROT.