

No. 746,865.

PATENTED DEC. 15, 1903.

T. A. MEYERS.
SPEED RECORDER.

APPLICATION FILED APR. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

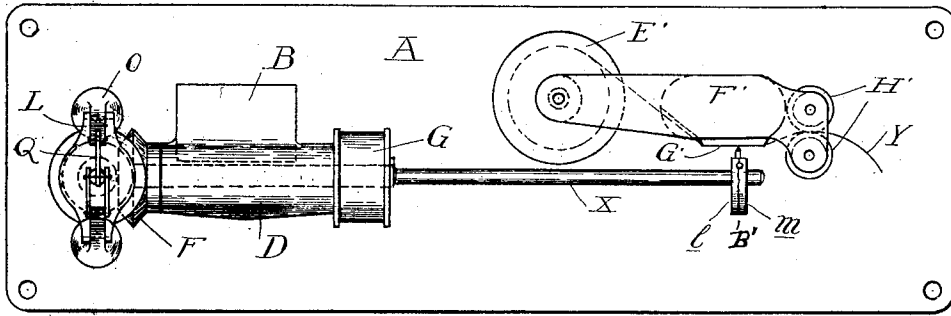


FIG. 1.

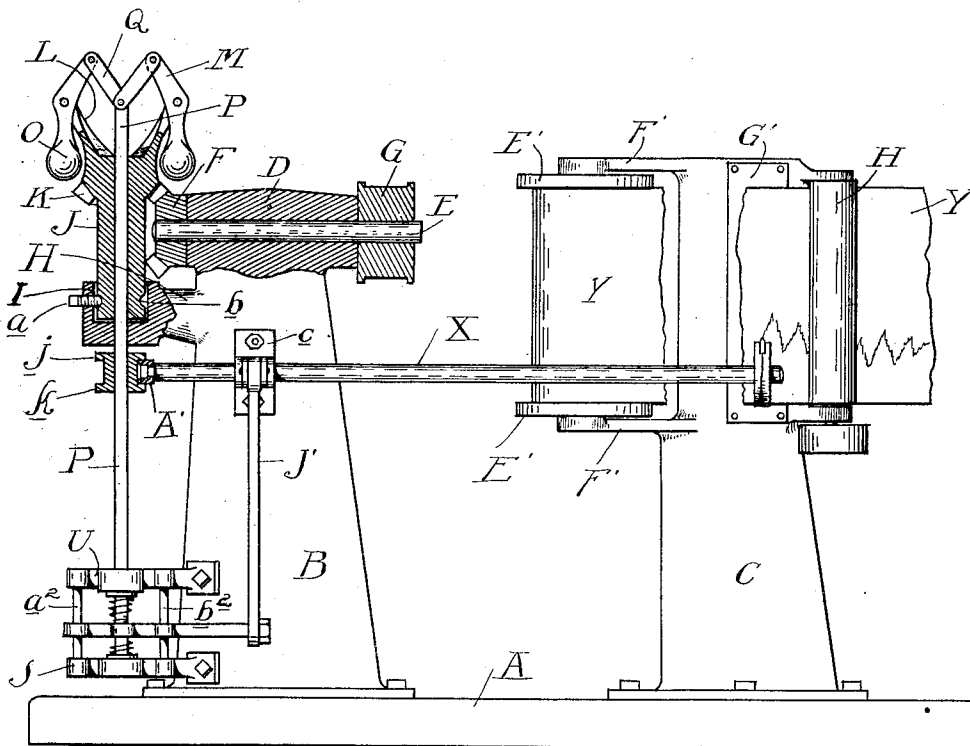


FIG. 2.

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2 SHEETS—SHEET 2.

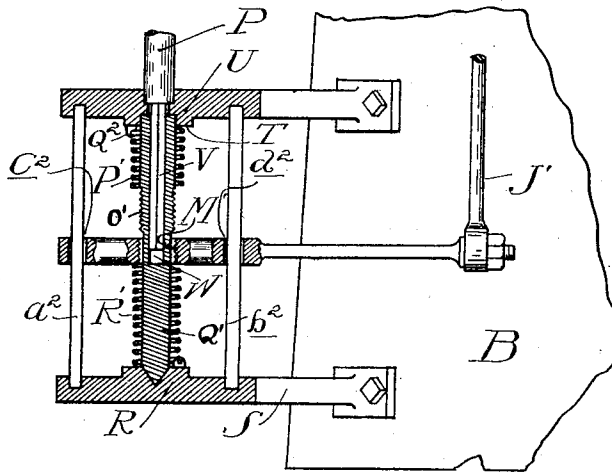


FIG. 3.

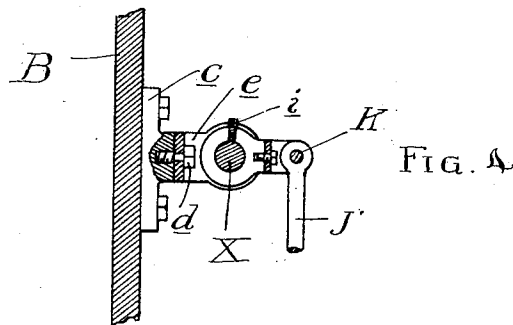


FIG. 4.

FIG. 6.

FIG. 5.

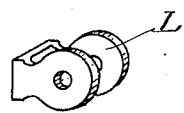
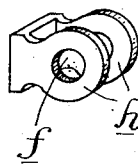


FIG. 7.

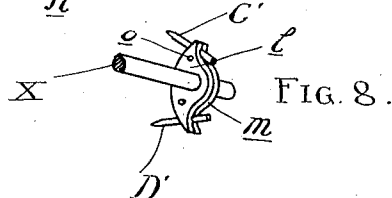


FIG. 8.

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UNITED STATES PATENT OFFICE.

THEODORE A. MEYERS, OF BUFFALO, NEW YORK.

SPEED-RECORDER.

SPECIFICATION forming part of Letters Patent No. 746,865, dated December 15, 1903.

Application filed April 21, 1903. Serial No. 153,607. (No model.)

To all whom it may concern:

Be it known that I, THEODORE A. MEYERS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Speed-Recorders, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to speed-recording apparatus adapted to register graphically the speed of engines of various constructions, more especially marine engines; and the invention consists in the novel construction of the apparatus and in the peculiar arrangement and combination of its parts, whereby the rate of speed of the engine or other revolving part will be indicated when moving in a forward or reverse direction in a manner hereinafter more fully set forth.

In the drawings illustrating my invention, Figure 1 is a plan view of the apparatus. Fig. 2 is a view in elevation of the apparatus. Fig. 3 is an enlarged detail view in section of a portion of the revolving member controlling the operation of the recording means. Fig. 4 is a sectional elevation of a part of the apparatus, illustrating the connections of the tracer-bar and of the member for rocking the bar. Figs. 5, 6, and 7 are detached perspective views of the parts of the connecting means, and Fig. 8 is a perspective of the tracer-bar.

In the drawings thus briefly described the reference-letter A designates a support of any suitable type, upon which are mounted the standards B and C.

D is a tubular bearing upon the upright B, in which is journaled a shaft E, carrying a bevel-gear F at one end and a band-pulley G at the other.

H represents a bracket connected to the standard B, having a socket-section I, in which is mounted a head J, held from independent longitudinal movement within a socket by a pin *a*, engaging a groove *b* in the head. The head is provided at its upper end with bevel-gear teeth K, which engage the gear F upon the shaft E, and carries arms L, to which the governor M is attached.

The governor may be of any desired form, consisting in this case of the weighted arms

O, the free ends of which are connected to a rod P by pivoted links Q.

The rod P constitutes the revoluble member of the apparatus controlling the operation of the recording devices, hereinafter set forth, and is mounted for rotary movement and vertical reciprocation in the manner presently to be described.

In the drawings I have shown the rod as extending through the head J and the bracket I and terminating at its lower end in the complementary section Q', which is free to rotate, but is held against vertical movement. Preferably the member Q is stepped within a bearing R upon a bracket S, connected to the standard B, and engages within a bearing T at its upper end upon a suitable bracket-arm U. The member or rod P terminates at its lower end in a reduced section V of polygonal cross-section, which extends within a vertical opening W within the member Q', corresponding to the reduced section in form.

From the description of the mechanism as thus far described it will be obvious that motion being communicated to the governor through the agency of the band-pulley G the vertical rod P will be reciprocated independently of the section Q', the amount of movement being controlled by the governor.

The reference-letter X represents a tracer-bar pivoted near one end to the standard B and having its opposite end in operative relation to the traveling blank Y. The connection that I preferably employ for the bar comprises a block *c*, to which is pivoted by a bolt *d* a yoke member *e*, the parallel arms of which are apertured, as at *f*, to permit the bar X to pass therethrough. To prevent longitudinal movement of the bar within the bearing, an apertured block *g* is inserted between the arms *h* of the yoke member and is secured to the tracer-bar by a set-screw or bolt *i*.

A' represents a roller upon the end of the tracer-bar adjacent to the bar or rod P, which extends, as shown, between two flanges or collars *j* and *k* upon the rod. At its opposite end the tracer-bar carries a recording device B', provided with tracers C' and D'. I have preferably shown the recording means as consisting of a clamping-head comprising two

plates *l* and *m*, adapted to be connected by suitable screws or bolts *o*. The tracers in this instance may be in the form of pencils, which are clamped between the plates, as shown, in angular relation one to the other. The clamping-head is rigidly connected to the tracer-bar in any suitable manner, so that upon the rotary movement of the bar the pencils or tracers will be caused to alternately engage the blank.

Any form of traveling blank may be employed in connection with my apparatus, operated by any suitable mechanism. In this instance I have shown the blank as consisting of a strip or roll of paper, (heretofore designated by the reference-letter *Y*.) The paper may be arranged upon a suitable roller *E*, pivoted between the arms *F*' on the standard or support *C*. It is adapted to pass over the plate *G*' upon the standard and between a pair of rollers *H*', one of which may be rotated, as before stated, by any suitable mechanism, so as to cause the paper or blank to travel continuously across the plate *G*'. The blank in turn may be marked or sealed in any suitable manner, as customary in devices of this kind, so that the markings on the blank will indicate the rate of speed.

The parts having thus been described, the operation of the mechanism is as follows: In case the speed of an engine is to be determined the band-pulley *G* will be of the same diameter as the engine-shaft and may be suitably belted thereto. Motion will thus be communicated to the governor, and as the weighted arms of the latter rise and fall a reciprocating movement will be imparted to the rod *P* in addition to its rotary movement. As the rod reciprocates the tracer-bar *X* will be tilted in a vertical plane and one of the pencils—as, for instance, *D*'—will record on the traveling blank. In this manner the rate of speed of the moving member, or, in this instance, the engine, will be indicated when moving in a forward direction. To obtain the rate of speed when moving in the reversed direction, means are employed for automatically rocking the tracer-bar *X* in a manner to bring the marker or pencil *C*' into contact with the traveling blank, and the marker in turn is adapted to record in a different color than that of the pencil *D*', so that not only the rate of speed of the reverse movement of the engine will be shown, but said change in direction will be clearly indicated by the difference in color. To accomplish these results, the following mechanism is employed: *J*' represents a lever, angle-shaped in form, the free ends of which are apertured, one to receive the section *Q*' of the vertical revolving member and the other to receive a pivot-pin *K*', which connects that lever end with the yoke member *L*' pivoted for rocking-movement to the block *g*. The end engaging the section *Q*' is internally screw-threaded, as at *M*', and the member *Q*' has a thread *O*' formed externally thereon,

adapted to be engaged by the threaded end of the lever at certain periods. *P*' represents a coil-spring encircling the member *Q*' above the lever, extending in proximity to the thread *O*' and held in such position by a suitable support *Q*². *R*' represents a similar spring encircling the lower portion of the member *Q* and having a bearing against the step *R*. The parts are so arranged and proportioned that when the apparatus is driven by an engine moving in a forward direction the lever *J*' will remain out of engagement with the thread *O*'. Upon the reversal of the engine and its travel in the opposite direction the threaded end of the lever *J*' will be caused by the spring *R*' to engage the thread *O*' and the lever will move upwardly until out of engagement with the thread. The upward movement of the lever causes the tracer-bar *X* to rock, throwing the pencil or marker *D*' out of contact with the traveling blank and a differently-colored marker *C*' in contact therewith. As the speed varies while the engine is reversing, it will be indicated in the same manner as previously set forth upon the traveling blank, with the exception that it will be in a different color than that indicated by the marker when the engine is proceeding in a forward direction. As the engine again moves forwardly the spring *P*' causes the lever *J*' to engage the thread *O*' and the parts are restored to their initial position.

To facilitate the operation of the lever *J*', a guide mechanism may be employed of the type illustrated, consisting of the vertical guide-rods *a*² and *b*² between the bracket-arms *U* and *S* and the bearings *c*² and *d*² upon the lever end through which the guides pass. While this is the preferable construction, it will be observed that the same is not essential to the operation of the mechanism, and I therefore do not wish to be limited thereto nor to the particular construction of the other parts of the apparatus, as various modifications may be made that will be within the scope of my invention.

What I claim as my invention is—

1. In a speed-recorder, the combination with a revoluble member mounted for forward and reverse rotation, and mechanism controlled by the revoluble member for recording in different colors respectively upon the forward and reverse movement of said member.

2. In a speed-recorder, the combination of a shaft mounted for forward and reverse rotation, and means controlled by the shaft for recording in different colors respectively upon the forward and reverse rotation of said shaft.

3. In a speed-recorder, the combination with a revoluble member mounted for forward and reverse rotation, of a multicolor-recording device, and mechanism intermediate of said recording device and rotary member compelling the former to register upon

the blank in different colors respectively upon the forward and reverse movement of the rotary member.

4. In a speed-recorder, the combination with a revoluble member mounted for forward and reverse rotation, of a recording member provided with markers of different colors, and mechanism between the recording means and revoluble member, compelling the markers to alternately register upon the forward and reverse movement respectively of the revoluble member.

5. In a speed-recorder, the combination with a rotary member mounted upon the shaft for forward and reverse rotation, of a recording device mounted upon said rotary member, a plurality of markers on said recorder and means controlled by the shaft whereby said recording device will indicate in different colors respectively upon the forward and reverse movement of said rotary member.

6. In a speed-recorder, the combination with a rotary member mounted for forward and reverse rotation, of a recording device mounted upon said rotary member, and means whereby said recording device will automatically indicate in different colors respectively upon the forward and reverse movement of said rotary member.

7. In a speed-recorder, the combination with a rotary member mounted for forward and reverse rotation, of a pivoted recording device mounted upon said rotary member, and means whereby said recording device will rotate and indicate in different colors respectively upon the forward and reverse movement of said member.

8. In a speed-recorder the combination with a rotary member, mounted for forward and reverse rotation, of a pivoted recording device mounted upon said rotary member and having its free end in operative relation to a traveling blank, and means whereby said recording device will rotate and indicate on the blank in different colors respectively, upon the forward and reverse movement of said member.

9. In a speed-recorder, the combination with a rotary member, mounted for forward and reverse rotation, of a pivoted recording device mounted upon said rotary member and having its free end in operative relation

to a traveling blank, and markers of different colors on said free end of the recording device.

10. In a speed-recorder, the combination with a rotary member, mounted for forward and reverse rotation, of a pivoted recording device mounted upon said rotary member and having its free end in operative relation to a traveling blank, and markers of different colors on said free end of the recording device for indicating on the blank in different colors respectively upon the forward and reverse movement of said rotatable member in the speed thereof.

11. In a speed-recorder, the combination with a rotary member, of a recording device mounted upon said rotary member, and means whereby said recording device will indicate on a blank in different colors, said means being controlled by the movement of the rotary member.

12. In a speed-recorder, the combination with a rotary member mounted for forward and reverse rotation, of a pivoted recording device mounted upon said rotary member and means whereby said recording device will move to indicate on a blank in different colors, said means being controlled by the movement of said rotary member.

13. In a speed-recorder, the combination with a rotary member, of a pivoted recording device mounted upon said rotary member, markers of different colors on the free end of said recording device, and means whereby said recording device will rotate and indicate on a blank in the different colors of the markers.

14. In a speed-recorder, the combination with a rotary member, mounted for forward and reverse rotation, of a recording device mounted upon said rotary member and movable therewith, and means controllable by said rotary member whereby said recording device will indicate in different colors respectively upon the forward and reverse movement of said rotary member.

In testimony whereof I affix my signature in presence of two witnesses.

THEODORE A. MEYERS.

Witnesses:

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F. T. MCCORMICK.