(No Model.)

L. STANĚK.

STEAM ENGINE INDICATOR.

No. 280,256. Patented June 26, 1883.

Fig. 1.

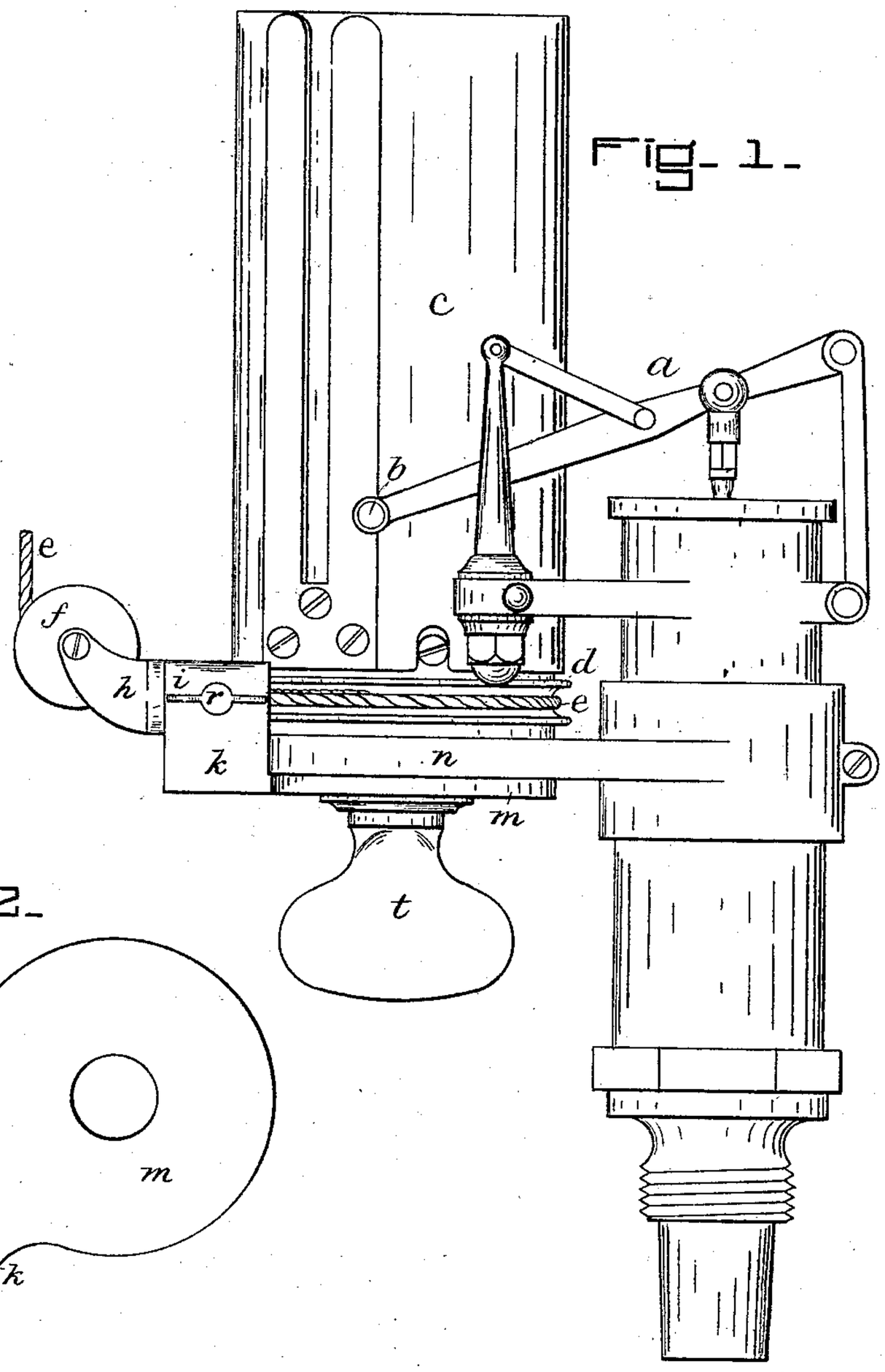


Fig. 2.

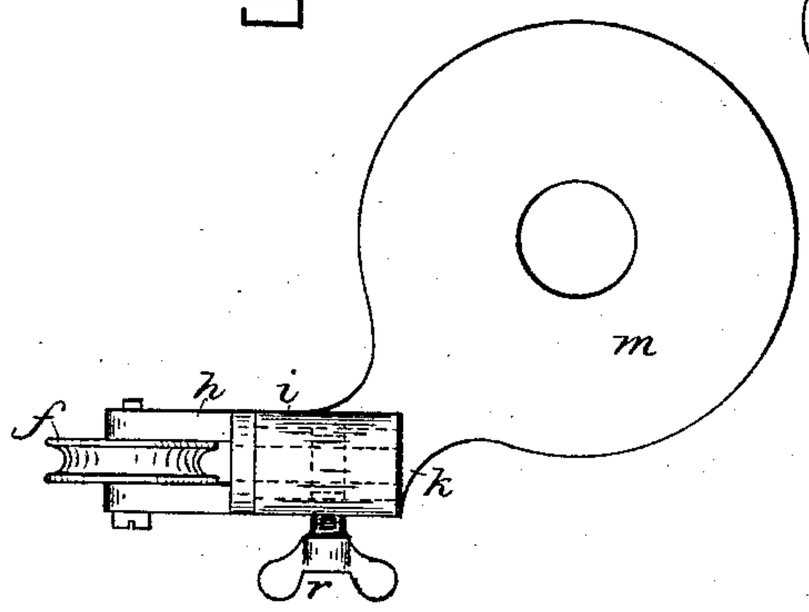
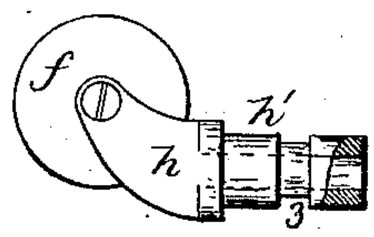


Fig. 3.



WITNESSES

A. O. Orne.

Fred A. Powell.

INVENTOR

Ladislav Staněk

by Crosby & Gregory

Attys.

UNITED STATES PATENT OFFICE.

LADISLAV STANĚK, OF PRAGUE, BOHEMIA, AUSTRIA-HUNGARY, ASSIGNOR TO THE AMERICAN STEAM GAUGE COMPANY, OF BOSTON, MASS.

STEAM-ENGINE INDICATOR.

SPECIFICATION forming part of Letters Patent No. 280,256, dated June 26, 1883.

Application filed March 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, LADISLAV STANĚK, of Prague, in Bohemia, in the Empire of Austria, have invented an Improvement in Steam-Engine Indicators, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention, relating to steam-engine indicators, is intended as an improvement on the well-known indicators in which a pencil moved by the pressure of steam in the engine-cylinder marks a diagram on a paper wrapped around a drum having an oscillating rotary movement, caused by a cord wrapped around and attached to a pulley or guide connected with the said drum, the other end of the said cord being connected with some reciprocating part of the engine, so that the movement of the drum, or travel of the paper beneath the pencil, is proportional to the reciprocating movement of the engine-piston, the said drum being acted upon by a spring tending to turn it in one direction, and thus always keeping the actuating-cord tight.

The present invention relates, especially, to the guiding device or "leading-off" pulley for the said cord, by which it, passing tangentially from the pulley upon the drum, may be led in any desired direction for convenient attachment to the reciprocating part of the engine. The said pulley is mounted on a bearing-piece or swivel, itself pivoted in an arm upon a plate mounted concentrically with the paper-carrying drum, the said plate being adjustable angularly to place the leading-off pulley in any desired position relative to the drum, after which the said pulley may be turned with its swiveled bearing-piece to any desired plane of rotation, it always retaining the cord tangent to the pulley on the paper-carrying drum. The said cord is coincident with the axis of rotation of the swiveled bearing-piece of the leading-off pulley, the said bearing-piece being made tubular to permit the cord to pass through it.

Figure 1 is a front elevation of an indicator provided with guiding mechanism for leading off the actuating-cord embodying this invention; Fig. 2, a plan view of the cord-guiding mechanism detached, and Fig. 3 a side elevation.

The actuating mechanism (shown at *a*) for the pencil or marking device *b*, and the drum *c*, adapted to hold the sheet of paper upon which the diagram is to be marked, are of any well-known construction, they forming no part of the present invention. The said paper-holding drum *c* is mounted on and rotated by the drum-actuating pulley *d*, having connected with it and wound once around it the actuating-cord *e*, which, when the instrument is in use, is connected at its other end with some reciprocating part of the engine to be tested. In order to insure that the said cord shall run properly onto and off from the actuating-pulley *d*, it is carried over the leading-off pulley *f*, mounted on a bearing-piece or swivel, *h*, adapted to turn in a socket, *i*, within an arm, *k*, projecting from a plate, *m*, adapted to be fastened in adjusted position upon the bracket or bed-plate *n* of the apparatus that sustains the drum *c*. The shank or stem *h'* of the swivel *h* is made tubular, as shown in dotted lines, Figs. 2 and 3, for the passage of the cord, and the pulley *f* is so mounted that, in whatever position it may be placed, the cord between it and the pulley *d* will be tangent to both pulleys, so that it will run smoothly thereon. By the rotary movement of the plate *m* upon the bracket *n*, and by the rotation of the swivel *h* in its socket *i* on the arm *k*, the cord *e* may be led in any desired direction from the instrument to the reciprocating part of the engine to which it is to be attached. The shank *h'* of the swivel is provided with an annular groove, 3, co-operating with a thumb-screw, *r*, to prevent it from being withdrawn from its socket, and by turning the said screw in hard the swivel and pulley may be prevented from moving after it is once set in the proper position. The plate *m* is fastened in the proper position by the thumb-screw *t*, and it will be seen that the axis of rotation of the swivel *h* is coincident with the axis of the cord *e* when tangent to the pulley *d*, while the axis of rotation of the plate *m* is coincident with that of the drum *c*, so that by the movement of the said plate and swivel

a universal adjustment is afforded for the cord-guiding pulley, thus greatly increasing the convenience of attaching it to the engine.

I claim—

1. In a steam-engine indicator, the paper-carrying drum and its actuating-pulley, and the supporting-bracket therefor, combined with the guiding-pulley and its swiveled bearing-piece, having a tubular shank connected with the said bracket, to operate substantially as described.

2. The combination of the leading-off pulley and its swiveled bearing-piece with the supporting-plate for the said bearing-piece, adapted to be fastened in adjusted position on the paper-drum-holding bracket of a steam-engine indicator, substantially as and for the purpose set forth.

3. The leading-off pulley and its swiveled bearing-piece, having a tubular shank provided with an annular groove, combined with the supporting-plate, having an arm socketed to receive the said shank, and the thumb-screw entering the groove thereof, the said plate being adapted to be fastened in adjusted position on the supporting frame-work for the paper-carrying drum of a steam-engine indicator, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LADISLAV STANĚK.

Witnesses:
SOBĚSLAV PINKAS,
LADISLAV HAJNIS.