

(No Model.)

T. B. POWERS & T. W. GREVERT.
ATTACHMENT FOR STEAM OR OTHER ENGINES.

No. 469,303.

Patented Feb. 23, 1892.

Fig. 1.

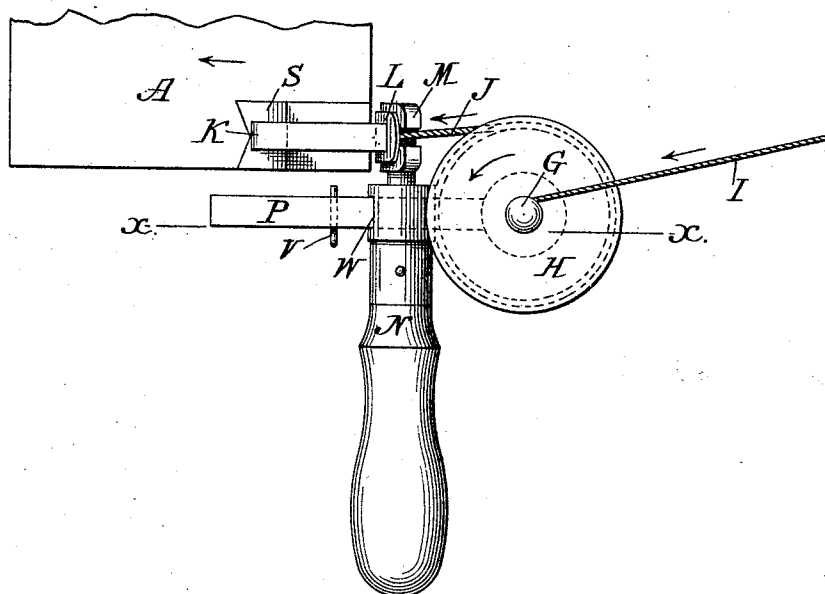
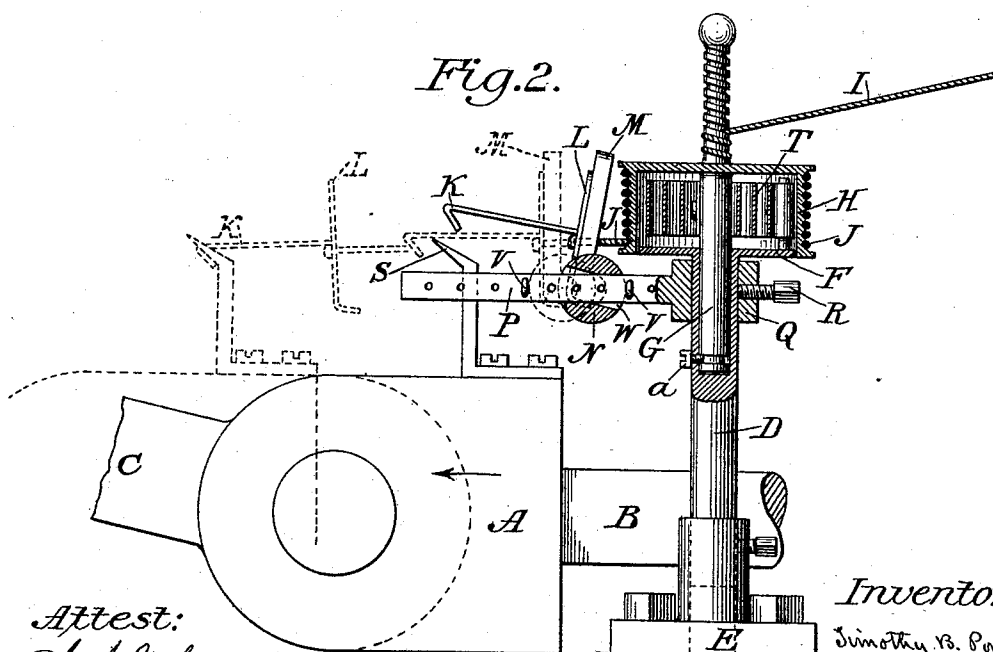


Fig. 2.



Attest:

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ATTACHMENT FOR STEAM OR OTHER ENGINES.

SPECIFICATION forming part of Letters Patent No. 469,303, dated February 23, 1892.

Application filed May 4, 1891. Serial No. 391,454. (No model.)

To all whom it may concern:

Be it known that we, TIMOTHY B. POWERS and TJARCK W. GREVERT, both of the city, county, and State of New York, have invented certain new and useful Improvements in Indicator Attachments for Steam or other Engines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

Our invention relates to devices for connecting an indicator to an engine, and has for its object to facilitate the connection and disconnection of the indicator while the engine is in motion and to obtain by simple means, on a greatly-reduced scale, a reproduction at the indicator of the reciprocating movements of the piston.

It consists in a spring-actuated drum of comparatively large diameter mounted to revolve back and forth upon an upright standard in synchronism with the reciprocating movement of the cross-head of an engine, to which it is connected by means of a cord, and which carries with it a spindle of small diameter, upon which is wound a second cord, connecting it with an indicator, and in the combination therewith of a novel device for readily connecting or disconnecting the traction-cord from the cross-head, all substantially as is hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a top or plan view of our improved indicator attachment as applied to the cross-head on the piston of a steam-engine, the cross-head being shown in part only; and Fig. 2 is a side elevation thereof, partly in section.

A represents the cross-head, B, Fig. 2, the piston-rod, and C the pitman, of the engine.

D is a standard, which may be adjusted to the proper height in a suitable base-plate E, adapted to be secured upon the frame-work of the engine or otherwise in proximity to the cross-head when it is at the inner end of its stroke. The upper end of this standard terminates in a wide circular disk F, forming an encircling flange. An upright spindle G is mounted to rotate freely in a cylindrical recess, which is formed in the center of the disk and extends longitudinally within the upper end of the standard D to afford a long

bearing for the spindle. This rotating spindle extends centrally through a hollow drum H, secured thereon in an inverted position. This drum is of a diameter somewhat greater than that of the disk F, and the periphery of the disk is inclosed within its lower edge. The spindle is prevented from moving longitudinally out of its bearings by means of a pin or screw *a*, whose inner end projects through the side of the standard into an annular groove in the spindle. It is prolonged beyond the top of the drum, and its projecting end is spirally grooved to form a seat along its length adapted to receive the indicator-cord I. The periphery of the drum H is also spirally grooved to receive a traction-cord J, which terminates in a hook K, by means of which it is attached to the cross-head A of the engine, as hereinafter described.

A spring T is coiled about the spindle G within the drum H and is attached at one end to the disk F and at the other to the spindle, so as to operate automatically to produce a revolution of the drum in a direction to wind up the traction-cord J, the movement of the drum being reversed and the spring wound up by the tension of the cross-head upon said cord. Hence in the working of the engine the drum H and spindle G are made to revolve in one direction and to wind up the spring by the tension upon the cord J, produced by the movement of the cross-head outward from the drum, the spring operating to reverse the movement of the drum and to wind up the cord as the cross-head makes its return stroke.

The revolution of the drum in the outward movement of the cross-head operates to wind up the indicator-cord I upon the spindle G, while the reverse movement of the drum unwinds the indicator-cord, so that the reciprocating movement of the cross-head is thereby reproduced at the indicator, but on a greatly reduced scale, because of the difference in diameter of the drum and spindle.

The connecting-hook K, by means of which the traction-cord J is coupled to the cross-head A, is fitted to a plate L, which, when the cord J is wound up on the drum H, is carried against a stop-plate M, slotted to permit the free passage of the cord through it, and which is attached to the end of a handle N, sup-

ported upon a bar P, extending from a collar Q, fitted upon the standard and confined by a set-screw R. The bar P passes through an aperture W (see Fig. 2) in the end of the handle next to the plate M, the aperture being large enough to permit a slight oscillation of the handle and stop-plate upon the longitudinal axis of the handle as a pivot, which, when the hook-plate L is resting against the stop-plate, will suffice to cause the hook to swing up out of engagement with the counterpart hook or catch-plate S on the cross-head or allow it to drop into engagement therewith.

The handle is confined, so as to prevent its longitudinal movement along the bar P, by means of transverse pins V V, and a series of apertures are provided for said pins, so as to permit of an adjustment of the position of the handle upon the bar with reference to the position of the catch-plate S on the cross-head.

In the operation of our devices the reciprocating movement of the cross-head A will, so long as the hook K is in engagement with the catch S, cause the drum H to revolve back and forth in opposite directions in synchronism therewith. This movement of the drum H will produce a corresponding movement of the spindle G, and the winding and unwinding of the indicator-cord I thereon will cause a movement of the indicator in unison with that of the cross-head. The hook K in its engagement with the catch S on the cross-head will be made to partake of its reciprocating movement, the tension-cord J working freely through the slot in the stop-plate M, which is moved far enough back to prevent the hook-plate L from striking it in its reciprocating movement. When it is desired to disengage the hook from the catch, the stop-plate M is moved forward by means of its handle until the hook-plate will strike it, whereupon, by reason of the angle of inclination of the stop-plate, the hook-plate will be automatically tilted by contact therewith, and thereby disengage the hook from the catch S on the cross-head. By sliding the stop-plate up into contact with the hook-plate when the hook is free and moving them both forward until the hook is in position to engage the catch S, the hook may, by rocking the handle at the moment the hook is in register with the catch, be made to engage it without arresting or retarding the movement of the engine.

It is evident that the handled device for operating the hook may be arranged to operate in a vertical plane or at an inclination therefrom, as well as in a horizontal plane, and that the drum and spindle may also be arranged in any convenient position.

We claim as our invention—

1. The combination, with the reciprocating member of an engine and with the actuat-

ing-cord of an indicator to be operated thereby, of an interposed revoluble drum of large diameter, a cord wound upon the periphery of the drum and connected with said reciprocating member, a spring within the drum operating to revolve it in opposition to the tension of the cord, and a spindle of small diameter carried by the drum to partake of its movement and upon which the indicator-cord is wound, substantially in the manner and for the purpose herein set forth.

2. The combination, in an indicator attachment for engines, of a revoluble drum mounted upon a fixed standard, a cord wound about the periphery of the drum, a spring operating to revolve the drum and cause it to wind up the cord, a hook upon the outer end of the cord, a slotted rocking frame or stop plate interposed in a fixed bearing between the hook and drum, a plate carried by the hook to rest against the stop-plate when the cord is wound upon the drum and partake of its rocking movement, and a handle by which to oscillate the stop-plate, substantially in the manner and for the purpose herein set forth.

3. The combination, in an indicator attachment, of an indicator-cord, a spindle upon which the cord is wound revolving back and forth to wind and unwind the cord, a revoluble drum actuating the spindle, a cord wound upon the periphery of the drum to produce by a tension thereon a revolution of the drum in the opposite direction, a hook upon the outer end of the cord, and means, substantially as described, for oscillating the hook, whereby to cause its engagement and disengagement with or from the reciprocating member of an engine, substantially in the manner and for the purpose herein set forth.

4. The combination, in an indicator attachment of the traction-cord, its connecting-hook, a plate to which the hook is attached, a stop frame or plate oscillating in a stationary bearing and through which the traction-cord passes and with which the hook-plate is brought into contact, a revoluble drum upon which the traction-cord is wound, a spring actuating the drum to wind up the cord and itself wound up by the tension upon the cord, a supporting-handle mounted in fixed bearings and operating the stop-plate, and a spindle of small diameter rotating with the drum and upon which an indicator-cord is to be wound, substantially in the manner and for the purpose herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

TIMOTHY B. POWERS.
TJARCK W. GREVERT.

Witnesses:

A. N. JESBERA,
A. WIDDER.