(No Model.)

M. S. CABELL.

GEAR FOR STEAM ENGINE INDICATORS.

No. 458,530. Patented Aug. 25, 1891.

Fig. 1.

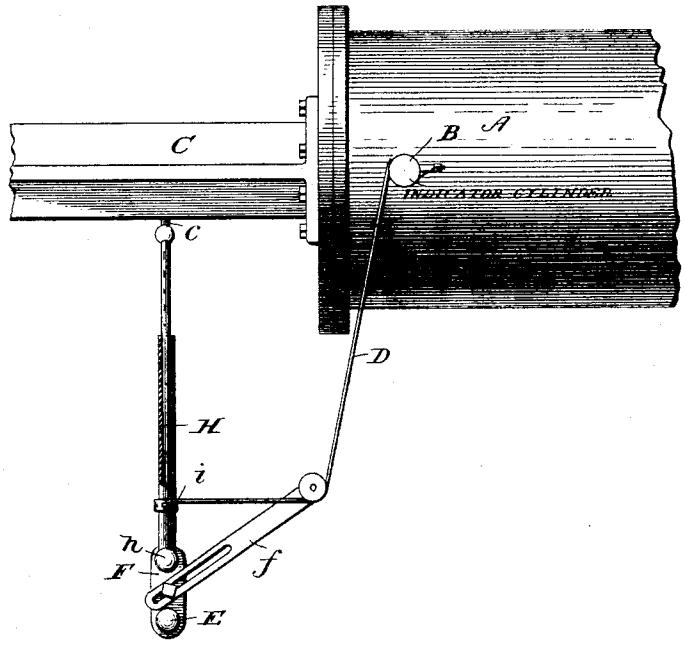


Fig. 2.

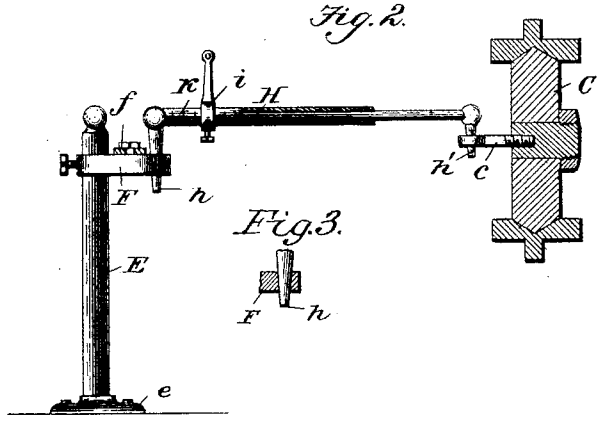


Fig. 3.

Witnesses:
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MILTON S. CABELL, OF QUINCY, ILLINOIS, ASSIGNOR OF ONE-HALF TO ALBERT B. FAUNCE, OF SAME PLACE.

GEAR FOR STEAM-ENGINE INDICATORS.

SPECIFICATION forming part of Letters Patent No. 458,530, dated August 25, 1891.

Application filed February 25, 1891. Serial No. 382,696. (No model.)

To all whom it may concern:

Be it known that I, MILTON S. CABELL, a citizen of the United States, residing at Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Engine-Indicator Gears; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pressure-engine indicator-gears; and it consists, essentially, in the combination of a reciprocating part of the engine, a telescopic vibrating arm operated by said reciprocating part, and connections for coupling the vibrating arm and an indicator.

The invention also consists in other combinations hereinafter described and claimed.

In the drawings, Figure 1 is a plan. Fig. 2 is an elevation of my attachment, the cross-head and guides being shown in section; and Fig. 3 is a sectional detail.

A is the cylinder of an engine; B, an indicator-cylinder; C, a cross-head, and D the cord for operating the indicator.

E is an upright or standard having a flange *e*, through which the standard may be secured to the floor or other suitable base. Mounted on this standard is a collar F, adapted to be adjusted by a set-screw or otherwise to a height to correspond with that of the cross-head of the engine. The collar is provided with a tapering or conical hole for the reception of a correspondingly-shaped pintle or pivot *h* on a vibrating bar H. An adjustable and extensible arm *f* is also connected with the collar for supporting a guide-pulley, around which is led the cord D for operating the indicator. This arm may be slotted, as shown, or may be extensible by being telescopic so as to provide for adjusting the leading pulley to any desired position.

Connected with the cross-head of the engine is a stud or bracket *c*, having a tapering or conical socket into which fits a similarly-shaped pintle *h'*, attached to one extremity of the bar H. The bar H is made up of two parts, telescopically fitted to each other, so that it may be extended and contracted as it is vibrated on its pintle *h* by the reciprocating cross-head C. Connected with the bar is an adjustable collar *i*, provided with an eye to which the operating-cord is connected; and for convenience of adjustment of said collar, so as to provide for the same length of draft on the indicator, whether the stroke of the engine be short or long, I have provided a graduated scale or gage K to indicate the point of adjustment for given lengths of stroke. By reason of the conical or tapering pintles and sockets all wear is automatically taken up, thereby preserving entire accuracy and silence in operation and producing absolutely correct cards on the indicator. This gear can be attached either horizontally or upright, but is most conveniently arranged horizontally, as shown. The standard E can, obviously, be connected to the floor, ceiling, or a wall, or to the frame of the engine. When in position to take cards, the standard should be arranged opposite the middle of the engine-slides, one end of the vibrating bar H being attached to the cross-head and the other end pivoted in the collar on the standard. This gear can be readily adjusted wherever desired, and so as to get the proper travel of the card-drum, whatever the stroke of the engine, and being made up of telescopic and folding parts is readily arranged in a small package for carriage in a grip-sack or bundle, and having no lost motion—such as in old-style pendulum or pantograph movements—the cards are always absolutely correct.

Having now described my invention, what I claim is—

1. In an indicator-gear, the combination of a reciprocating part of the engine, an indicator-drum, and a telescopic vibrating arm for operating the indicator-drum, as described.

2. In an indicator-gear, the combination of a reciprocating part of the engine and an extensible vibrating arm having conical pintles mounted in conical sockets, as described.

3. In an indicator-gear, the combination of a standard or support, an adjustable collar, an adjustable arm for supporting a guide-pulley, an indicator-drum, and a telescopic vibrating arm for operating the indicator-drum, substantially as described.

4. In an indicator-gear, the combination of

a reciprocating part of an engine, a standard or support, an adjustable collar, a telescopic vibrating arm, an indicator-drum, and means for operating the indicator-drum, substantially as described.

5. In an indicator-gear, the combination of a standard, an adjustable collar, and a telescopic vibrating arm pivoted to the collar, provided with means for connection with a reciprocating part of an engine and with the operating-cord, substantially as described.

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

MILTON S. CABELL.

Witnesses:
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