

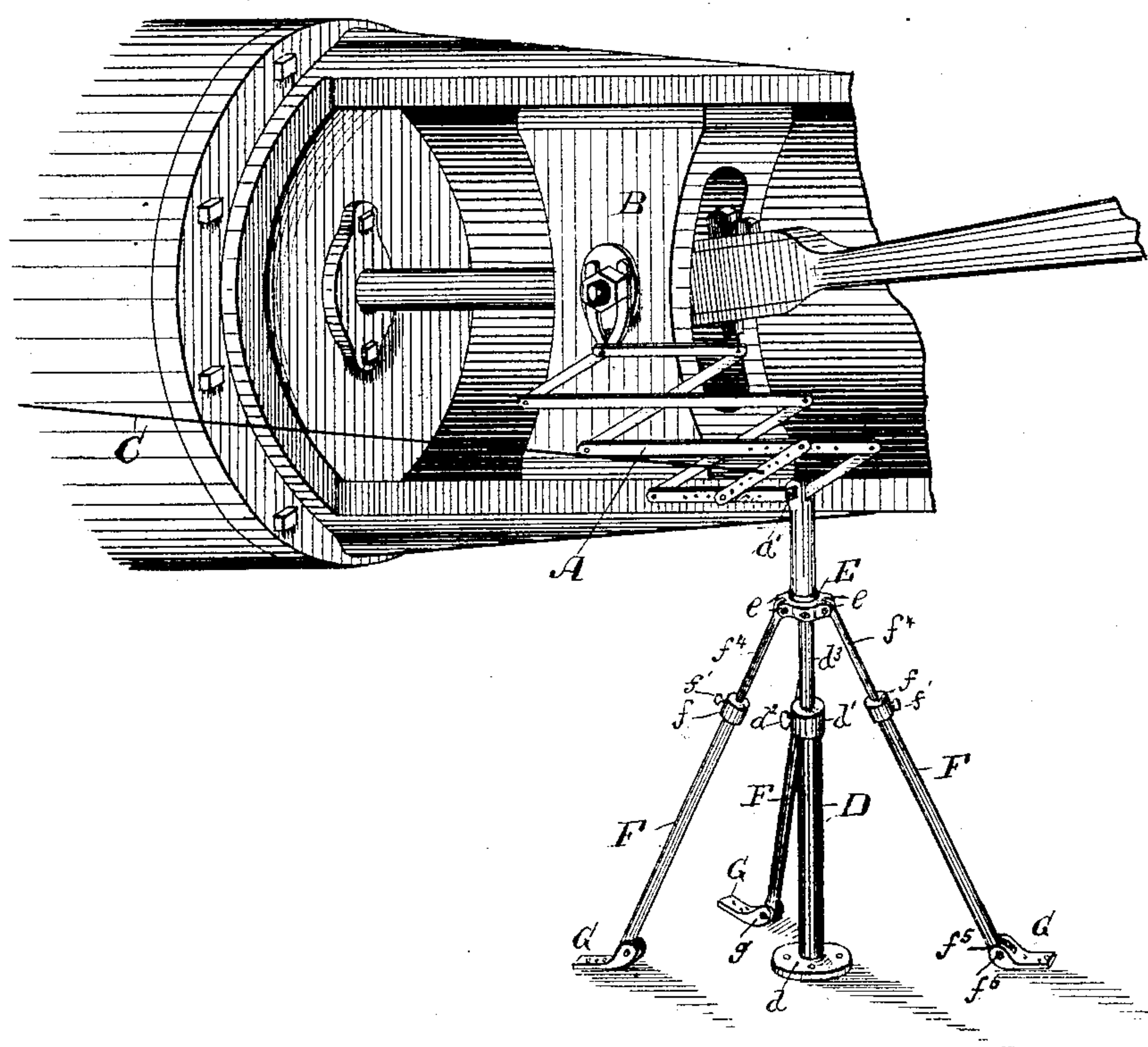
(No Model.)

J. R. GODDARD.

# DEVICE FOR OPERATING STEAM ENGINE INDICATORS.

No. 337,147.

Patented Mar. 2, 1886..



Witnesses:

C. J. Bell

H. W. Jenner.

Inventor

James R. Goddard,

By Faint Land,

Atty's.



# UNITED STATES PATENT OFFICE.

JAMES R. GODDARD, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR OF  
ONE-HALF TO WILLIAM GODDARD, OF SAME PLACE.

## DEVICE FOR OPERATING STEAM-ENGINE INDICATORS.

SPECIFICATION forming part of Letters Patent No. 337,147, dated March 2, 1886.

Application filed November 10, 1885. Serial No. 182,367. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES R. GODDARD, a citizen of the United States, residing at New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Devices for Operating Steam-Engine Indicators; and I do hereby declare the following to be 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, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which forms a part of this specification.

This invention relates to devices for operating steam-engine indicators; and it consists in an improved device, as hereinafter described and claimed, whereby a pantograph attachment for a steam-engine indicator can be easily and quickly made.

Prior to my invention motion has been communicated to the indicator by means of a cord attached to a pantograph. One end of this pantograph was attached to the cross-head or other similarly-moving part of the engine, and the other end was secured to a fixed post, so that the motion of the indicator-cord corresponded to the motion of the engine-piston, but moved through a much shorter space.

It has been found very inconvenient to have to make a special pantograph-post for each size and make of engine indicated, and an attempt has been made to overcome the difficulty by making an adjustable connection between the pantograph and the engine cross-head. This form of construction only partially overcomes the difficulty, as the range of adjustment is very limited, and in a vertical direction only, and it still necessitates the attachment of the other end of the pantograph to a fixed support, as before.

According to my present invention I make the pantograph-post itself adjustable both vertically and horizontally in any direction, and make it as light and handy as possible, so that it may be carried about with the pantograph attached to it, ready to be applied to any engine.

The accompanying drawing, shows in perspective the pantograph, its stand, and portions

of the engine to which the pantograph is attached.

A is the pantograph, of ordinary construction, attached to the cross-head B of the steam-engine, and with the pin *a'* at the other end of it pivoting it to the top of the pantograph-stand.

C is the indicator-cord attached to the bar across the lower part of the pantograph, and communicating its motion to the indicator, which is not shown in the drawing.

The pantograph-post consists of a central hollow tube, D, provided with a flange, *d*, at the bottom forming a base-plate, which is provided with holes, so that it can be screwed or nailed to the floor, and with a collar, *d'*, and thumb-screw *d''* at its upper end. A rod, *d'''*, slides within the tube D, and its vertical height can be adjusted by the said thumb-screw at any desired height. The lower end of the pantograph is pivoted to the upper end of the rod *d'''*.

E is a collar, which is fitted into a circular groove on the rod *d'''*, and is provided with the radial lugs *e*.

F are tubular rods, each of which is provided with a collar, *f*, and thumb-screw *f'* at its upper end, and with an eye, *f''*, and pin *f'''* at its lower end.

G are feet-plates hinged to the lower ends of the tubular rods F by means of double eyes *g*, and provided with screw or nail holes for attachment to the floor. A rod, *f''''*, slides within each of the tubes F, and its position can be fixed by means of its thumb-screw. Each rod *f''''* is hinged at the top to one of the radial lugs *e*. I prefer to use three of the tubes F; but that number may be increased or diminished, if required. If the base-flange of the central post should not come flat upon the floor, by reason of any horizontal adjustment of the lower end of the pantograph, a wedge can be placed under it before it is fastened down.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for operating a steam-engine indicator, the combination of a pantograph adapted to be pivoted at one end to an engine cross-head, with an adjustable stand pivotally



connected to the other end of the said pantograph and provided with feet for securing it to the floor, and with adjusting devices, so that the position of the pantograph may be fixed at any required adjustment, substantially as and for the purpose set forth.

2. In a device for operating a steam-engine indicator, the combination of a pantograph, with an adjustable pantograph-post adapted to be pivotally connected to one end of the said pantograph, and consisting of a central telescopic post, and lateral telescopic braces hinged to the post together with locking devices for the telescopic post and braces, substantially as and for the purpose set forth.

3. In a device for operating a steam-engine indicator, the combination of a pantograph, with a stand pivotally connected to the said pantograph, and consisting of a central tube, a rod sliding therein and provided with the collar E, the sliding rods  $f^1$ , pivotally connected to the said collar, the tubes F, having single

eyes and pins, the feet G, and thumb-screws for fixing the position of the said sliding rods, substantially as and for the purpose set forth. 25

4. In a device for operating a steam-engine indicator, the combination of the pantograph A with the adjustable pantograph-post consisting of the central tube, D, having the flange  $d$  and thumb-screw  $d^2$ , the sliding rod  $d^3$ , having a circular groove therein, in which the said screw  $d^2$  operates, the collar E, having lugs  $e$ , the tubes F, provided with thumb-screws  $f^1$ , and having single eyes and pins at their lower ends, the sliding rods  $f^1$ , hinged to the said collar, and the feet G, provided with double eyes, substantially as and for the purpose set forth. 35

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

JAMES R. GODDARD.

Witnesses:

CHARLES D. BURT,  
THOMAS NICKERSON.