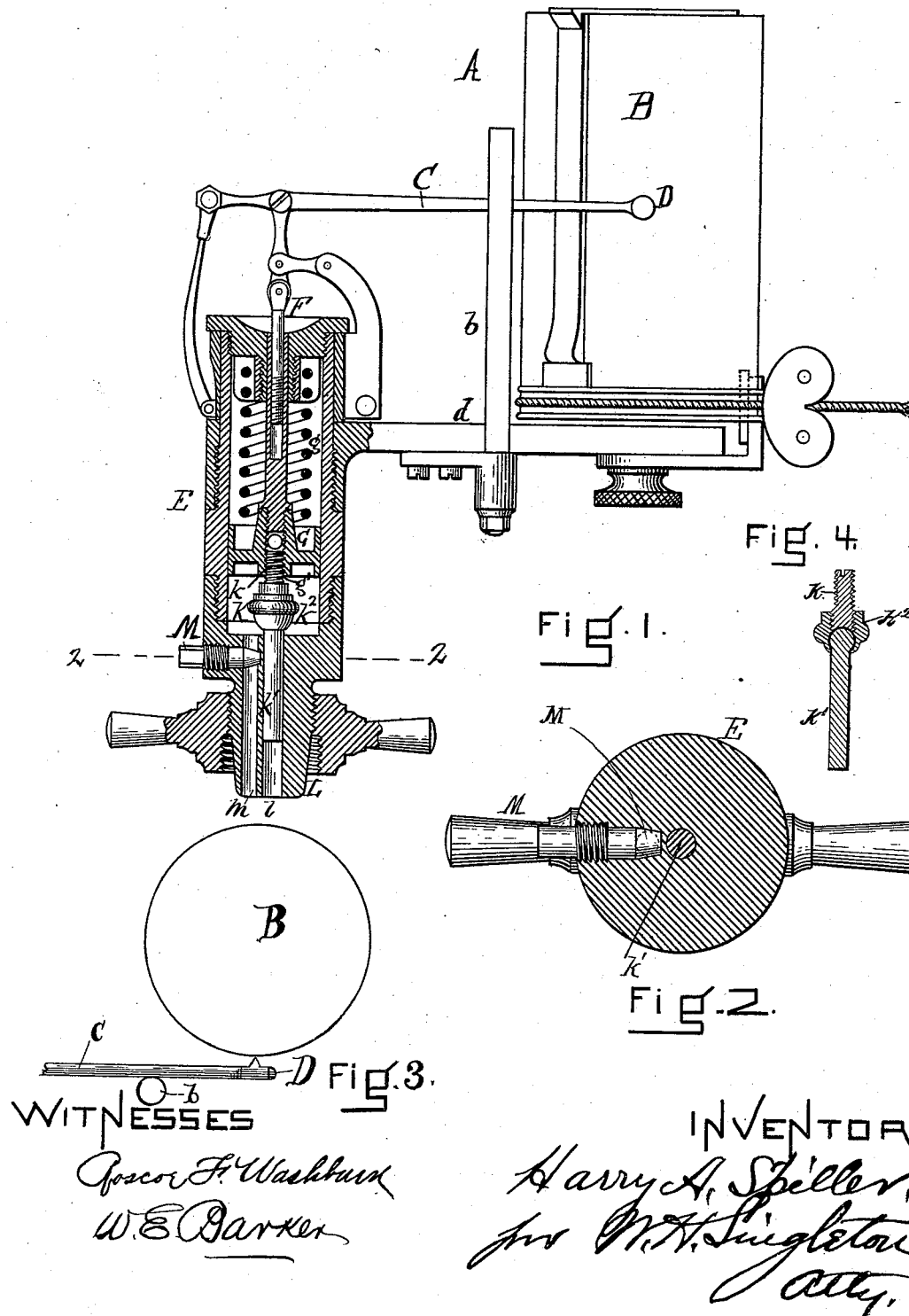


(No Model.)

H. A. SPILLER.
STEAM ENGINE INDICATOR.

No. 523,417.

Patented July 24, 1894.



UNITED STATES PATENT OFFICE.

HARRY ALLEN SPILLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE CROSBY STEAM GAGE AND VALVE COMPANY, OF SAME PLACE.

STEAM-ENGINE INDICATOR.

SPECIFICATION forming part of Letters Patent No. 523,417, dated July 24, 1894.

Application filed November 4, 1892. Serial No. 450,968. (No model.)

To all whom it may concern:

Be it known that I, HARRY ALLEN SPILLER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Steam-Engine Indicators; and I do 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 drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention is an improvement upon the steam engine indicator used for recording pressure, such, for example, as the Crosby indicator.

The improvement consists in adding to the lower cylinder and piston an additional cylinder and piston of different size, in order that an increased pressure can be used upon this new piston, at the same time employing the same spring which is adjusted to the other piston. It also has a communication alongside of this new cylinder and piston between the chamber upon which the indicator is attached and the upper cylinder, which may be closed by a valve.

Figure 1 represents a view partly side and partly in vertical section of an indicator provided with the improvement. Fig. 2 is a section on line 2—2, of Fig. 1. Fig. 3 is a top view of enough of the device to show the cylinder, pencil-lever, and bracket for guiding the latter. Fig. 4 is a sectional view of the ball joint.

In the annexed drawings: the letter A indicates the indicator having the recording cylinder, B. The pencil-lever, C, carrying the pencil, D, is guided by the bracket, b, fastened to the indicator-barrel frame, d, so as to prevent the pencil from springing away from the paper in case of shocks. The pencil-lever, C, is hinged to the side of the cylinder, E, and is jointed to the top of the rod, F, which, passing down within the cylinder, E, is screwed into the stem of the piston, G, which fits the interior of the cylinder, E.

Within this cylinder, E, and the stem and above the piston, G, is the coil spring, g. In the under side of the piston, G, is the centrally threaded hole, g', in which is screwed the upper end, k, of a smaller piston, K. The lower end, k', of this piston, K, passes down into a bore, l, in the lower part of the cylinder, E. This piston, K, is preferably made in two parts connected by the ball joint, k². Along-side of the bore, l, is a passage, m, distinct from the bore, both leading outside of the cylinder, E, and into the inside below the piston, G. A transverse plug or valve, M, controls the passage, m.

A device thus constructed furnishes an indicator for both high and low pressure.

The cylinder, E is secured at the nipple, L, to the chamber, the pressure in which is to be recorded. If it be low pressure, the plug, M, is turned so as to open the passage, m, and the pressure is taken by the larger piston, G. If it be high pressure, the passage, m, is closed and the pressure is taken only by the smaller piston, K. The ball joint, k², allows of freedom of movement of this piston and prevents any twisting.

With a device of this kind the change from low to high pressure can be quickly made without change of instrument, but only by changing the instrument itself.

Having thus described my invention, what I claim is—

1. An indicator provided with two pistons having different areas, as set forth.

2. An indicator provided with two pistons connected together and having different areas, with a cylinder having bores to fit such pistons and connected together, and with an independent passage connected with the larger bore, as set forth.

3. An indicator provided with two pistons jointed together and having different areas, as set forth.

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

HARRY ALLEN SPILLER.

Witnesses:

J. H. MILLETT,

RALPH W. FOSTER.