

D. P. DAVIS.

Steam-Gage Recorder.

No. 66,307.

Patented July 2, 1867.

Fig. 1

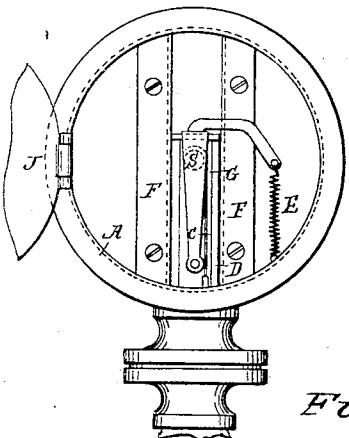


Fig. 2

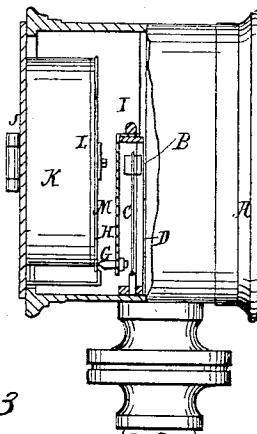
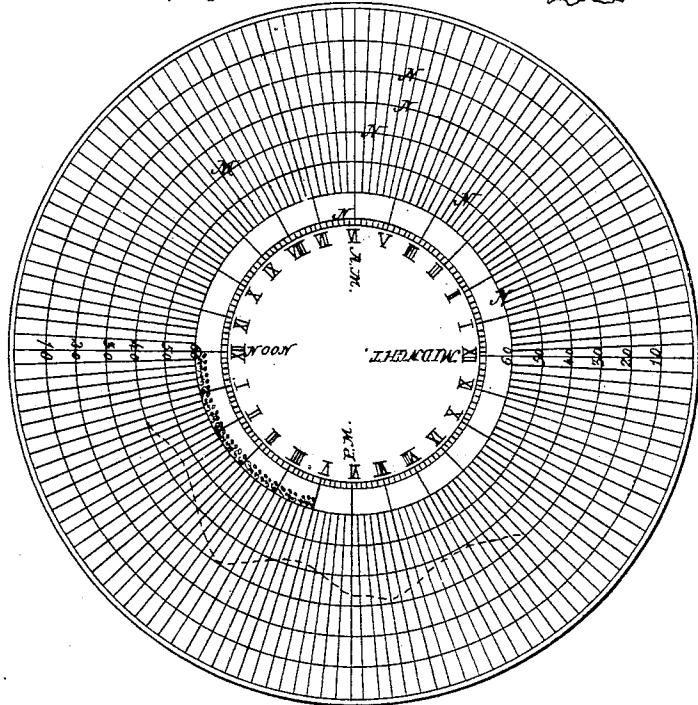


Fig. 3



Witnesses:

*John Tusake*  
*J. A. Servio.*

Inventor:

*D. P. Davis*  
*Per M. Gatty*

# United States Patent Office.

DAVID P. DAVIS, OF JERSEY CITY, NEW JERSEY.

*Letters Patent No. 66,307, dated July 2, 1867.*

## IMPROVED REGISTERING STEAM GAUGE.

*The Schedule referred to in these Letters Patent and making part of the same.*

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAVID P. DAVIS, of Jersey City, in the county of Hudson, and State of New Jersey, have invented a new and improved "Indicator;" and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim, and desire to have secured to me by Letters Patent.

The present invention relates to an indicator more particularly intended for use in connection with steam boilers, although it can be applied to other purposes; and the invention consists in the application to or the combination with any ordinarily constructed or other suitable pressure-gauge of a dial or disk of any suitable material for receiving and retaining marks or indentations, which disk is arranged to revolve with a regular and continuous motion, and in such a manner as to be marked by a pencil or any other suitable marking device, arranged to operate in connection with the said pressure-gauge, and to be thus moved according to the pressure thereon over the surface of the said disk, either in a straight or in a curved line, as may be found necessary. With a combination and arrangement of parts such as above described, if the dial or disk be properly graduated or marked off, as, for instance, divided from its centre outward in radial line, into twelve parts, to indicate the twelve hours of the day from 12 m. to 12 midnight, and in a series of concentric circles at equal distances apart, and marked off from the outer to the inner, commencing with 10 and ending at 60, in the order of tens, and then such disk be arranged to revolve once in twelve hours, and in such manner and connection with the marking device that said marking device, as the pressure of steam within the boiler increases or decreases, will move over the said revolving graduated disk in a radial line or direction thereto from its outer edge to its centre, it is plain that if the graduations of the disk and its movement in connection with that of the marker are properly adjusted, a complete diagram or record as it were of the steam pressure upon the boiler at every portion of the twelve hours will be marked upon the graduated disk or dial; which by its graduations can be freely read and interpreted, as they act as guides thereto. In the accompanying plate of drawings my improved "indicator" is illustrated—

Figure 1 being an interior view of a pressure-gauge upon its rear side or back of the ordinary dial face thereto, to show arrangement of marker.

Figure 2, a partial vertical section through case to pressure-gauge and also side elevation of same; and

Figure 3, a face view of the graduated dial or disk or what might be termed the indicator card for the pressure-gauge, but on a somewhat enlarged scale.

A, in the drawings, represents the case or box to a steam-pressure gauge, which may be of any of the ordinary forms or constructions and arrangements of parts suitable for indicating the pressure of steam per square inch upon the boiler, through and by the means of a suitable dial-face and index-hand or pointer, as in the common steam gauges. B the centre or arbor for index-hand or pointer to the pressure-gauge, and C a cord secured to inner or rear end of such arbor, around or from which, as it turns by the action of the steam pressure, the cord winds or unwinds as the case may be, thus causing a frame or slide, D, to raise or lower accordingly. To this frame D the said cord C is fastened, and to withdraw it as the cord unwinds, a spring, E, is suitably arranged and connected with the same therefor. This frame D moves in and between suitable guide-stops F, applied to the back of the pressure-gauge, and by it is carried a marker or pointer, G, that is hung or attached thereto through a spring-arm, H. This marker G projects in a direction backward from the rear side of the dial-face. I, a chamber in boxing A to gauge, back of the dial-face, in which chamber, and attached to the hinged rear side or plate J, is a watch-movement, K. L, a disk or plate connected in any proper manner by gear-wheels to the watch-movement, so as to be turned or revolved thereby in and during the space of twelve, twenty-four, or any other number of hours, or other division of time, according as may be desired. To this plate or disk L another disk or card M is attached, so as to revolve therewith, and in such a manner as to be attached and detached when so desired. This disk or card M is shown in fig. 3, and upon its face is marked off with a series of concentric circular lines N from its outer edge towards its centre, and at regular and equal distances apart with each circle from the outer edge of the disk to its centre, marked in the order of tens

regularly from 10 to 60 inclusive, and with a series of radial lines at equal and regular distances apart, dividing the said disk-face into twenty-four equal parts, bounded by the said radial lines and the arc of the outer edge or circle to the disk, and the arc of the inner concentric circular line O embraced between said radial lines. These radial lines on the face of the disk L are marked at their inner ends around the inner circular line O; in a similar manner to the dial-face of a watch, that is with Roman figures from I to XII inclusive, in two series, one after the other, representing the twenty-four hours of the day, and suitably marked for noon, midnight, etc. The radial division lines of the disk or card M represent the hours of the day, and the concentric circular lines the steam pressure, the spaces between the several radial lines being subdivided so as to enable the fractional parts of an hour to be the better read or indicated. With a disk or card M, marked off or graduated in the manner above described, and attached to the holder L, revolved by the running of the watch-movement K, and a marker, G, connected with the pressure-gauge so as to move therewith as the steam pressure increases or decreases, by so locating the said card and the said marker that the latter will always bear upon the former as it revolves, and so that the said marker moves over the disk, its point of location thereon will always be at such a marked graduation as corresponds in number to the steam pressure within the boiler, and as indicated by the pressure-gauge. It is plainly obvious that by the marker the said graduated card M as it revolves will be marked in a continuous line, but either more or less crooked according as the marker is moved mere or less across the face of the card by the variation of the steam pressure within the boiler, a diagram or line of such a character being represented in red in fig. 3, as an illustration thereof. By means of a diagram card and marker arranged together as above described, a complete and perfect record of the steam pressure within a boiler will be made, and one which enables the pressure at any moment during the time allotted to be ascertained, as for instance or illustration, (see fig. 3,) where the card by its red line shows that at one o'clock, p. m., the pressure was forty pounds; at two o'clock, p. m., between forty and fifty pounds; at three o'clock, forty pounds, and so on from hour to hour.

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

The combination, with a pressure-gauge or any equivalent therefor, of a marker of any suitable form, and revolving diaphragm disk or its equivalent, when all combined and arranged together, substantially as and for the purpose described.

The above specification of my invention signed by me this 30th day of March, 1867.

DAVID P. DAVIS.

Witnesses:

J. A. SERVICE,  
ALBERT W. BROWN.