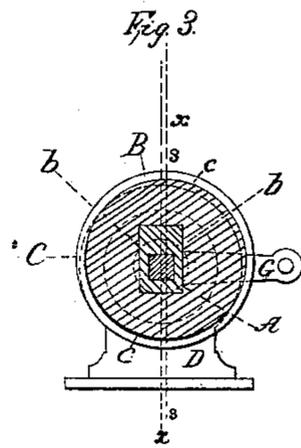
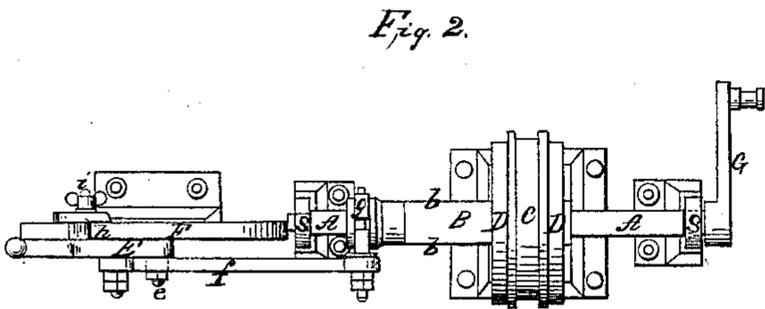
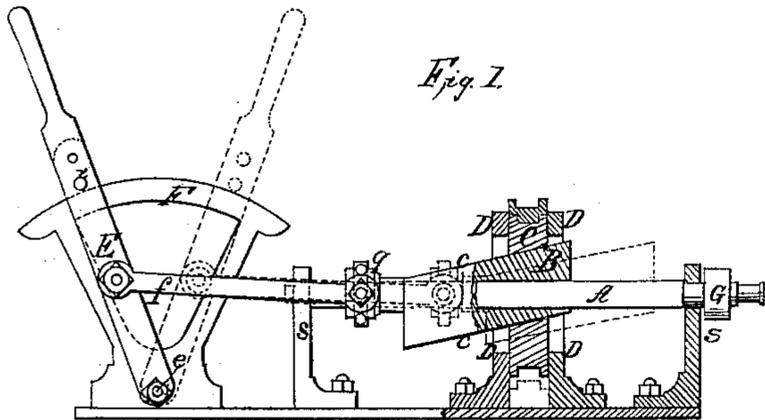


S. L. WIEGAND.
ADJUSTABLE ECCENTRIC.

No. 18,311.

Patented Sept. 29, 1857.



UNITED STATES PATENT OFFICE.

S. L. WIEGAND, OF PHILADELPHIA, PENNSYLVANIA.

VARIABLE ECCENTRIC FOR OPERATING THE VALVES OF STEAM-ENGINES.

Specification of Letters Patent No. 18,311, dated September 29, 1857.

To all whom it may concern:

Be it known that I, S. LLOYD WIEGAND, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Variable Eccentrics for Operating the Valves of Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1, is a front view, partly in section, of a shaft fitted according to my invention with a variable eccentric. Fig. 2, is a plan view of the same. Fig. 3, is a transverse section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

My improvement consists in the arrangement of a double oblique slide upon the shaft which carries the eccentric, said slide passing through said eccentric in the manner and for the purposes hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is a shaft which carries the eccentric C, and which, to illustrate the application of the invention to a steam engine, is represented with a crank G, at one end. This shaft is made square for a considerable portion of its length, but provided with journals to rotate in two fixed standards S, S.

B, is a block of metal having a square hole made longitudinally through it to fit and enable it to slide on the square portion of the shaft A. This block which I call a double oblique slide has two of its sides *b, b*, straight and parallel longitudinally with the sides of its square hole, and its other two sides *c, c*, straight and parallel with each other, but at an angle of about 15°, to the longitudinal profile of the square hole, as is illustrated in Fig. 1. The eccentric C, has a slot cut obliquely through it to fit the exterior of the double oblique slide B; the obliquity of the said slot being at the same angle relatively to the axis of the eccentric C, as the obliquity of the two sides *c, c*, of the slide B, is to the interior of the hole in the said slide, so that the axis of the eccentric, when it is placed on the said slide and the said slide placed on the shaft, will be parallel with the axis of the shaft.

D, D, are two standards with circular

heads secured on opposite sides of the eccentric C, and serving to prevent it moving lengthwise of the shaft, but not preventing the rotary motion of the eccentric with the shaft. These standards have open circular heads which are concentric to the shaft, and through which the slide B is capable of working.

E, is a lever for moving the double oblique slide longitudinally upon the shaft, having its fulcrum at *e*, and being connected with the slide by means of a rod *f*, and a loose collar *g*, in which the slide is permitted to turn with the shaft.

F is a fixed sector-shaped frame to which the lever E is capable of being clamped by a clamp *h*, and set screw *i*, to hold the slide B, in various positions.

The eccentric C rotates with the shaft in the same manner as if it were keyed thereon, as the square on the shaft causes the double oblique slide B to rotate with it, and the said slide B carries around the eccentric, the throw of which may be varied or entirely reversed either while the shaft is at rest or in motion, by moving the lever E, by hand, which causes the slide B to move along the shaft, and its oblique sides *c, c*, to act as wedges against the corresponding sides of the slot in the eccentric C, and thus to move the eccentric transversely to the shaft. The obliquity of the slot in the eccentric is in such a direction as to cause the adjustment of the eccentric produced by the double oblique slide B, to be exactly at right angles to the crank.

The manner in which the lead of the valve is provided for, is illustrated in Fig. 3, in which figure the red line *x, x*, is drawn through the center of the shaft in a plane parallel with the adjustment of the eccentric by the double oblique slide, and *s, s*, is another line parallel with *x, x*, passing through the center of the eccentric. In this line *s, s*, the center of the eccentric moves as the eccentric is adjusted by the double, oblique slide. It will be understood by a comparison of these lines that the eccentric has a permanent and unvarying eccentricity, to the shaft A, equal to the distance between the lines *x, x*, and *s, s*, in a direction at right angles to the adjustment of the eccentric by the double oblique slide. This eccentricity, combined with the eccentricity in the direction of the adjustment, it will be apparent to any one conversant with the

steam engine, will give a lead to the valve and this lead will be in the proper direction whether the eccentric is set for going ahead or reversed.

5 The permanent eccentricity is produced, in the example of my invention represented in the drawing, by making the slot in the eccentric which receives the double oblique slide, out of the center of the eccentric, as
10 will be seen by reference to Fig. 3; but the same eccentricity may be obtained by making the said slot in the center and making the double oblique slide eccentric, in the proper direction, to the shaft.

15 I do not claim broadly the invention of variable eccentrics. An example of such a device is seen in B. H. Wright's patent, Oct. 26, 1854. In this device, the throw of the eccentric is varied by means of a pair of
20 angular arms which pass through the eccentric. This method does not allow the stroke

of the eccentric to be reversed. But in my improvement, the eccentricity is at all times permanent in consequence of placing the whole eccentric at right angles to the direction of the motion of adjustment; and the eccentricity is thus rendered unvarying while the length and "lead" of the throw can at all times be changed by the simple movement of a lever, without stopping the
25 engine. 30

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

The arrangement of the double oblique slide B, upon the shaft A, said slide passing through the eccentric C, and otherwise operating substantially as herein set forth. 35

S. LLOYD WIEGAND.

Witnesses:

JOS. J. MOLLOY,
JOSHUA M. MILLER.