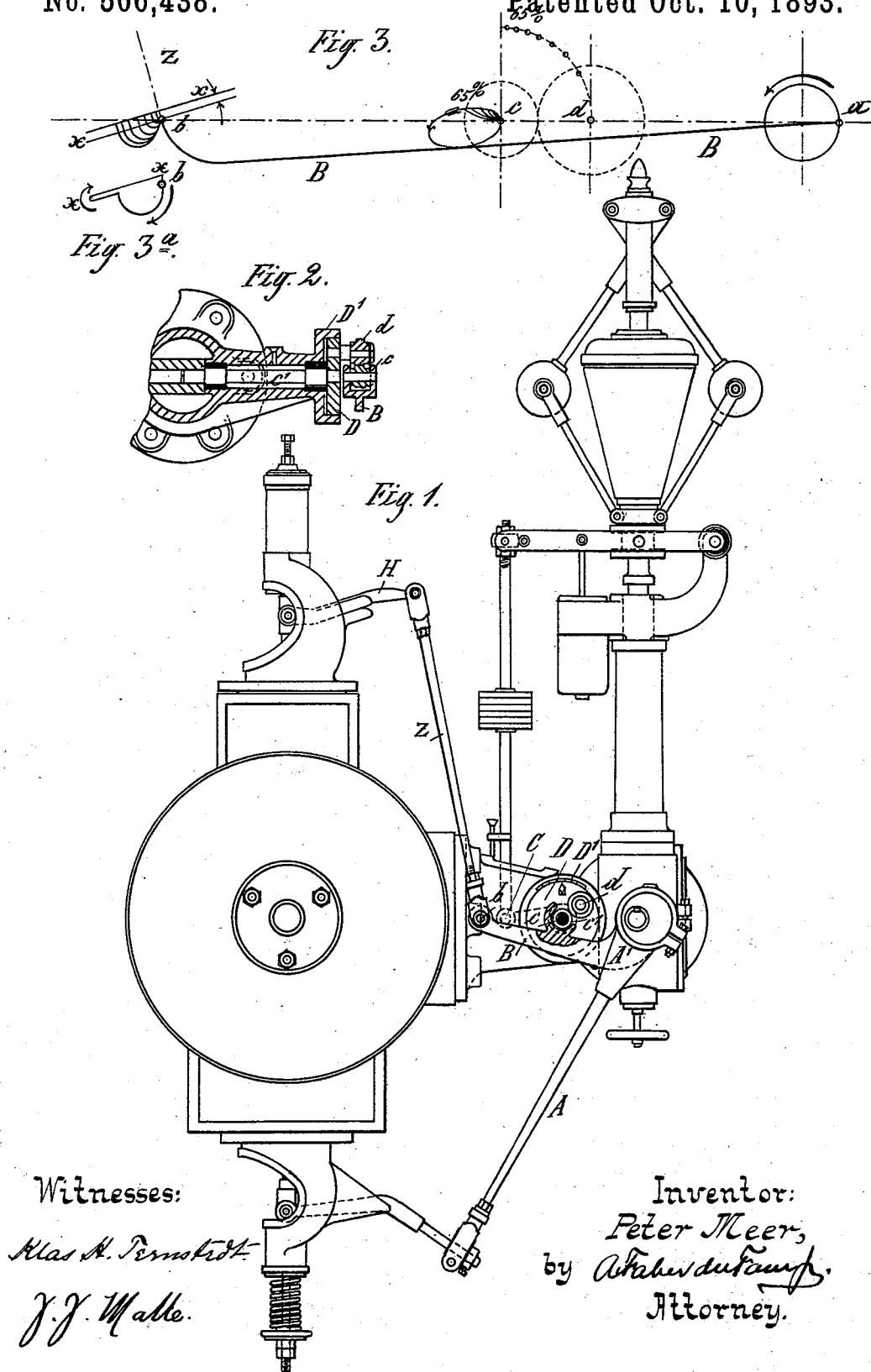


(No Model.)

P. MEER.
VALVE GEAR.

No. 506,438.

Patented Oct. 10, 1893.



UNITED STATES PATENT OFFICE.

PETER MEER, OF MÜNCHEN-GLADBACH, GERMANY.

VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 506,438, dated October 10, 1893.

Application filed April 1, 1893. Serial No. 468,715. (No model.)

To all whom it may concern:

Be it known that I, PETER MEER, a subject of the King of Prussia, residing at München-Gladbach, in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in or Relating to Valve-Gear, of which the following is a specification.

The improvement herein described is based upon the employment, in connection with valve gearing, of an eccentric lever adapted to swing freely on the terminal of the rod or link connection with the valve lifting lever, and to be compulsorily deflected from its course to an extent corresponding to the quantity of steam to be admitted for each stroke by coming into contact with a temporarily stationary bearing point. The position of this bearing point, determined by the governor, can be adjusted so as to vary the cut-off within reasonable limits. The frictional resistance being reduced to a minimum, the admission of steam can be more nicely controlled than with other valve gears now in use.

The improved valve gear may be constructed in several ways, a preferred form of the apparatus being that hereinafter described and shown in the accompanying drawings, in which—

Figure 1 shows an end elevation of a steam cylinder provided with the improved valve gear. Fig. 2 is a longitudinal section of the arrangement of the disk and the rollers, and Fig. 3 is the valve diagram.

Similar letters of reference designate corresponding parts throughout the several views of the drawings.

The admission and exhaust valves are operated by separate eccentrics, the admission eccentric being keyed to the shaft in such a manner that it begins its stroke when the crank is on the dead center. The transmission of motion for regulating the admission valve takes place by means of a lever B, the terminal *b* of which is pivoted to one end of a connecting link Z which has its other end in pivotal connection with the lifting lever H of the valve. The lever B is provided with a recess in which is placed a roller stud *c* of hardened steel. In the valve casing of the governor is supported, besides the valve spindle, a second spindle *c'*, of less diameter,

adapted to be operated by the governor through a crank arm C. Upon the end of this spindle is mounted the adjusting or controlling disk D, provided on its front side with a crank pin upon which turns freely a hardened steel roller *d*. The disk is inclosed in a casing D' which, while permitting it to turn freely therein, reduces to a minimum the shocks produced by the action of the governor. The disk D is provided with a pointer and the casing D' on its upper edge with a scale to indicate the volume of steam admitted to the cylinder. There are two admission valves one for each end of the cylinder but only one is shown here.

The governor turns the disk D through an arc of a circle so as to vary the position of the roller stud *d* from a horizontal to a nearly vertical position with respect to the center of the disk, thereby giving the cut-off a range of from zero up to sixty-five and even seventy per cent. of the stroke.

If, with the crank on the dead center, the cut-off indicated be zero, the centers of the admission eccentric and the rollers *c* and *d* will all be in a straight line, while the terminal *b* of the lever B projects above this line to an extent corresponding to the lead of the valve. The lead is effected on the way from *a* to *b* (Fig. 3) by the influence of the lever H interposed between the valve and the rod Z. In this position the eccentric will impart to the lever only a horizontal motion and swing the connecting rod about its upper pivot without lifting the valve. But whatever other position the roller stud *d* may assume, between the limits above mentioned, the other stud *c* must, during the revolving of the eccentric, come into contact with it, describe an arc of a circle around it and in so doing open and close the valve. From this it will be understood that the time during which the roller studs are in contact will be the period during which the valve remains open, and also that both the opening and closing are compulsory. The lead will under all circumstances remain equal because, with the crank on the dead point, the center of the roller stud *c* is always in line with the center of rotation of the adjusting or controlling disk D.

The closing of the valve takes place very

rapidly as a consequence of one roller stud running off the other, and under the influence of the spring loaded valve stem.

5 The lift of the valve when stud *d* is in its vertical position, is determined by the sum of the radii of the two studs—*i. e.*, the lift varies with the variation of the diameter of one or both studs.

10 What I claim as new, and desire to secure by Letters Patent, is—

1. In a valve gear, the combination of an eccentric, an eccentric lever in connection with the admission valve, a stud actuated from the governor in an arc of a circle, and a second stud disposed on the eccentric lever and adapted to engage with the stud controlled by the governor, substantially as described.

2. In a valve gear, the combination of an eccentric, an eccentric lever B having mounted thereon a roller stud *c*, a valve lever H, a connecting rod Z coupled to the eccentric lever and to the valve lever, a disk D, a roller stud *d* mounted eccentrically on said disk and operated from the governor to turn in an arc of a circle, substantially as described.

3. In a valve gear of the character specified, the combination of an eccentric lever B having a roller stud *c* mounted thereon, a disk D having a second roller stud *d* mounted eccentrically thereon and provided with a pointer, and a casing D' encompassing said disk D and provided with a scale, substantially as and for the purpose set forth.

4. In a valve gear of the character specified, two roller studs *c d* whose combined radii determine the lift of the valve, the one operated from the eccentric and the other from the governor, a connection between the roller stud *c* and the valve, the roller stud *d* being set to vibrate in an arc about the roller stud *c* and in peripheral contact with the same, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PETER MEER.

Witnesses:

ED. ROBENTIN,
K. DOECKEL.