H. F. SHAW.

LATHE HEAD.

No. 81,952. Patented Sept. 8, 1868.

Fig. 1

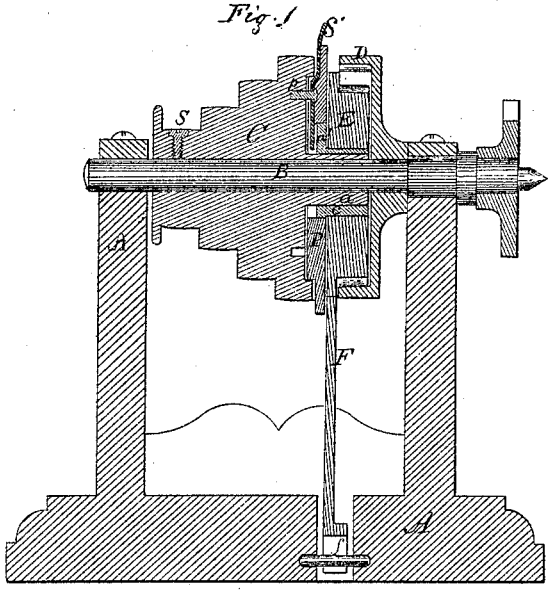


Fig. 2.

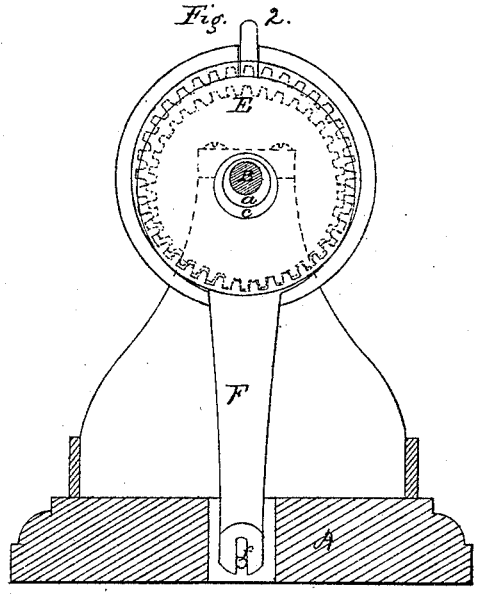


Fig. 4.

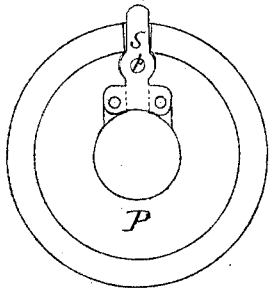


Fig. 3.

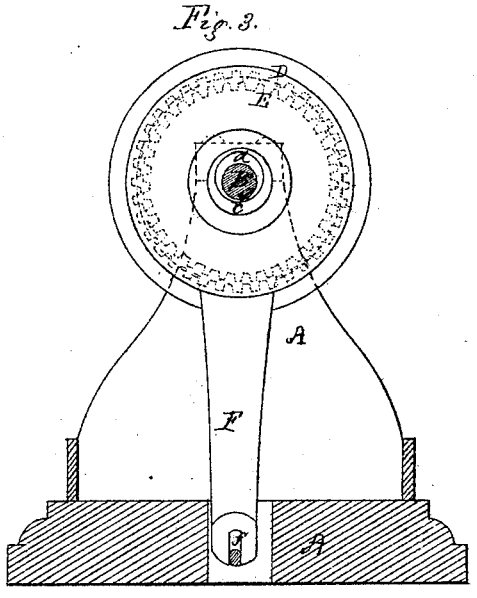


Fig. 5.

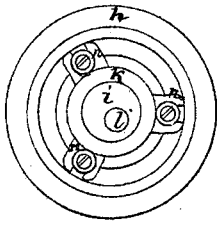
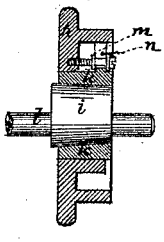


Fig. 6.



J. H. Adams
M. S. G. Wilde
} Witnesses.

Henry F. Shaw

United States Patent Office.

HENRY F. SHAW, OF WEST ROXBURY, ASSIGNOR TO JAMES A. WOODBURY AND SOLOMON S. GRAY, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 81,952, *dated September* 8, 1868.

IMPROVEMENT IN LATHE-HEADS.

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

Be it known that I, HENRY F. SHAW, of West Roxbury, in the county of Norfolk, and State of Massachusetts, have invented a new and useful Improvement in Engine-Lathe Head, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of an engine-lathe head embodying my invention.

Figure 2 is a transverse vertical section, showing the toothed cylinders in gear.

Figure 3 is a view of the same, showing the cylinders out of gear with each other.

Figure 4 is a view of the device used for changing the relative position of the gear-cylinders.

Figures 5 and 6 are views of a device, which may be applied for taking up the wear of the eccentric-sleeve or the collar.

The nature of my invention consists in the application to an engine-lathe head of a differential gear, in which the internal and external gears are so arranged and connected that the smaller or external gear may have a movement in reference to a nominally fixed point, and is so combined and arranged with respect to other parts as not to admit of a rotary movement, but so, nevertheless, as to cause a rotary motion of the larger or internal gear-cylinder on its axis; and by means of a simple adjustment of an eccentric-sleeve, on which the smaller gear-cylinder works, the latter may be thrown into a position eccentric to and in gear with the larger gear-cylinder, and also out of connection with the same, thus allowing the larger or internal gear-cylinder a free rotating motion, while the external gear-cylinder remains stationary.

The velocity of the larger gear-cylinder is regulated by the relative number of teeth on the same to those on the smaller or external gear.

Referring to the drawings—

A represents the frame, in which is properly journalled the shaft B. Upon the shaft B is placed the cone-pulley C, on the face of which, and forming a part of the same, is an eccentric-cylinder or sleeve, *d*. Upon the fixed eccentric-cylinder *d* works a movable eccentric-sleeve or collar, *c*, provided on the end towards the cone-pulley C, with a flat projecting piece, *c'*, which fits within a corresponding recess in one side of a circular disk or plate P. The disk P is of a larger diameter than the face of the cone-pulley C, and on the side towards the said pulley is attached a flat spring, S, provided with a pin, *p*, which is made to engage in one of two holes placed on opposite sides of the centre of the inner face of the cone-pulley C, for a purpose hereinafter described. The spring S projects above the edge of the disk P, so as to allow it to be easily operated.

E represents the smaller or internal gear-cylinder, and is fitted snugly upon the collar *c*, but so as to allow the latter to rotate freely in the said cylinder. To the gear-cylinder E is attached an arm, F, which extends downwards, and, at its lower end, is provided with a slot that fits over a pin, *f*, by which the cylinder-gear is prevented from having a rotary motion, but is allowed an oscillating motion corresponding to the united eccentricity of the sleeves *c* and *d*.

D represents the larger or internal gear-cylinder, which is made fast to the shaft B, and rotates with it.

The sleeves *c* and *d* are so arranged that, when their eccentric or thicker portions will both be on the same side, they will operate on the gear-cylinder E to throw the latter into connection with the cylinder-gear D, as will appear in figs. 1 and 2, when the shaft B is rotated.

When it is desired to throw the external out of connection with the internal gear, the pin *p* is withdrawn from one of the holes by moving the spring S, and the cone-pulley is moved half way round until the pin drops into the hole there provided, which brings the eccentric portions of the sleeves *c* and *d* opposite each other on the shaft B, as shown in fig. 3, thus making the gears D and E concentric with each other, and disconnecting the gears.

The cylinder-gear E will then remain stationary, and also the gear D, while the pulley C revolves loosely on shaft B.

The sleeve *d* and collar *c* may both be bevelled, in order to allow for wear of the same.

Figs. 5 and 6 represent a device which may be applied to compensate for the wear of the sleeves.

To the sleeve *k* are attached three slotted arms, *n*, through which pass screws, *m*, into the sides of the cylinder *h*, the latter representing the external gear-cylinder E of fig. 1. On the screw *m* is a shoulder, between which and the head is held the arm *n*, so that by turning the screws the sleeve *k* will be moved in or out evenly, as required.

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

1. The combination of the gears D and E, the disk P, having the spring-pin *p* and eccentric-sleeve *c* attached thereto, and the pulley-block C, provided with the eccentric-sleeve *d*, all arranged substantially in the manner and for the purpose specified.

2. The combination of the pulley-block C, provided with the cam-sleeve *d*, disk P, and eccentric-collar *c*, catch S, and gear-wheel E, substantially as and for the purpose set forth.

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

HENRY F. SHAW.

Witnesses:

J. H. ADAMS,

E. L. DYER.