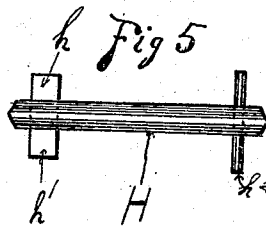
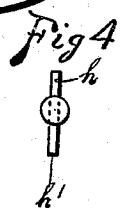
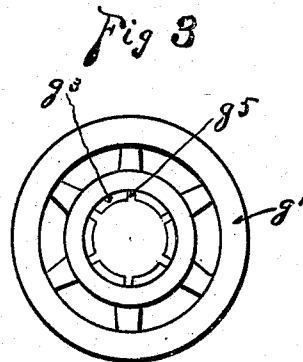
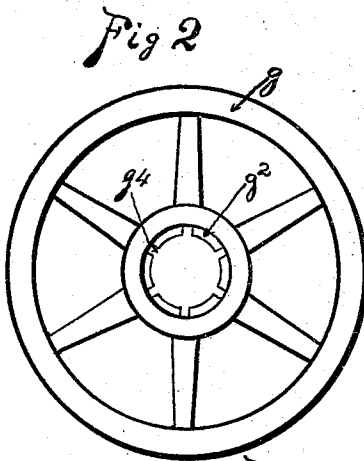
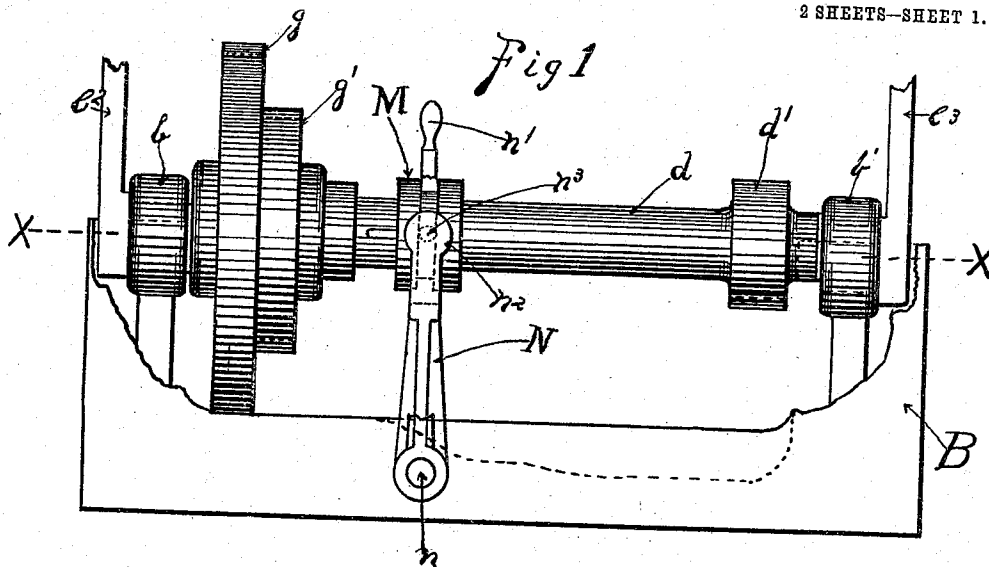


J. C. PFLANZER.
DOUBLE BACK GEARING.
APPLICATION FILED DEC. 16, 1908.

942,185.

Patented Dec. 7, 1909.

2 SHEETS—SHEET 1.



Witnesses

C. W. Miles

A. McLeomack

Inventor

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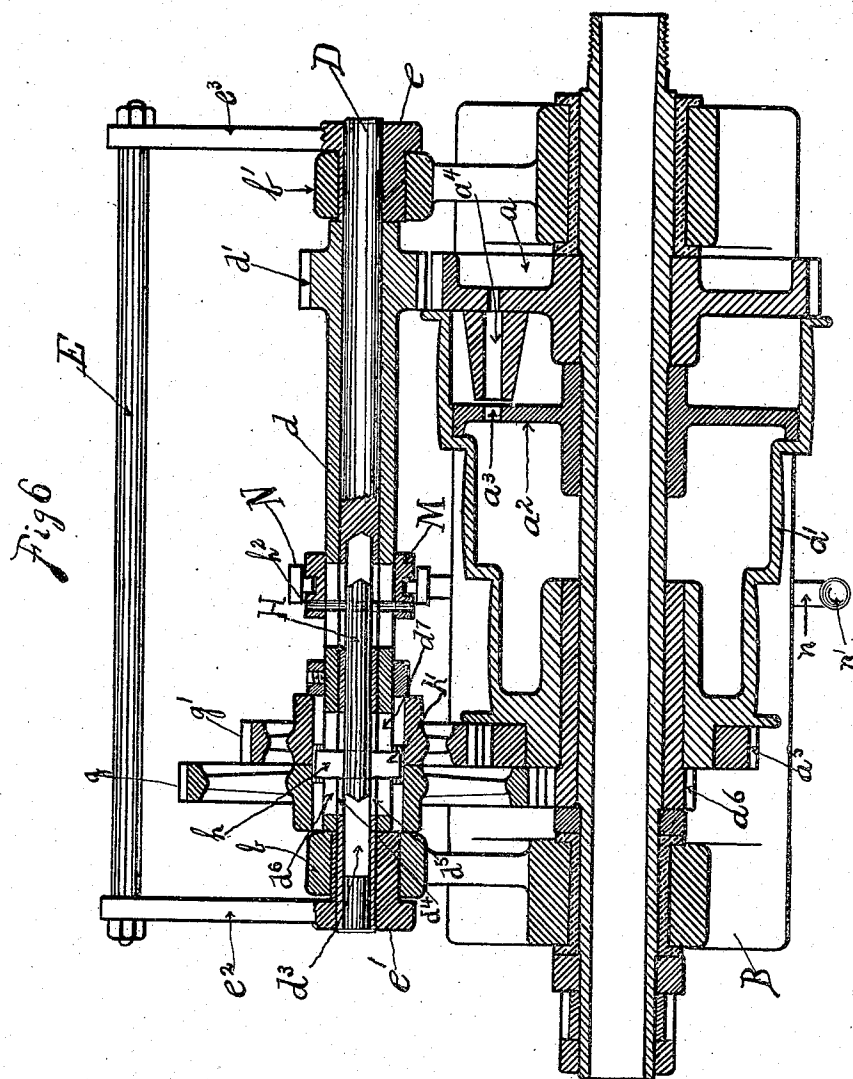
By Walter E. Murray

Attorney

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UNITED STATES PATENT OFFICE.

JOHN C. PFLANZER, OF CINCINNATI, OHIO, ASSIGNOR TO THE CHAMPION TOOL WORKS COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

DOUBLE BACK GEARING.

942,185.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed December 16, 1908. Serial No. 467,840½.

To all whom it may concern:

Be it known that I, JOHN C. PFLANZER, a citizen of the United States of America, and resident of Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Double Back Gearing, of which the following is a specification.

The object of my invention is a back gearing construction for lathes and similar tools by means of which the speed of the live spindle may be changed readily, without stopping the machine. This object is attained by the means described in the specification and illustrated in the accompanying drawings, in which,

Figure 1 is a side elevation of the back gearing embodying my invention, the live spindle with its gear wheels and cone pulley being removed from its bearings so as to expose the parts which stand in the rear thereof, and the handle for reciprocating the key being shown broken away. Figs. 2 and 3 are detail views of the change gears which are mounted loosely upon the shaft of the back gearing. Figs. 4 and 5 are respectively the end and a side elevation of the sliding key for securing either one of the aforesaid gears upon the shaft. Fig. 6 is a sectional view taken upon line *x-x* of Fig. 1.

The live spindle, A, is mounted in the head, B, in the usual way, and has fixed upon it a gear wheel, *a*, and has mounted loosely upon it adjacent to the gear wheel, *a*, a cone pulley, *a'*, which carries a disk, *a²*, perforated at *a³*, to receive the usual pin, not shown, which is carried in the boss, *a⁴*, which is secured to the gear wheel, *a*, for coupling and uncoupling the loose pulley, *a'*, to the fixed gear wheel, *a*, in the usual manner. Cone pulley, *a'*, has secured to it gear wheels, *a⁵* and *a⁶*, respectively. The shaft, D, of the back gear is mounted in eccentric sleeves, *e*, *e'*, which are journaled in bearings, *b*, *b'*, of the head, B. The sleeves, *e*, *e'*, have outwardly projecting arms, *e²*, *e³*, with a handle, E, by means of which the back gear may be thrown in and out of engagement with the gear wheels upon the cone pulley and upon the live spindle, respectively. Between the sleeves, *e*, *e'*, an elongated sleeve, *d*, is mounted upon the shaft, D. At one end the sleeve, *d*, has formed integral or secured to it a pinion, *d'*, which is adapted to mesh with the gear wheel, *a*, upon the

live spindle. At the opposite end of the sleeve, *d*, gear wheels, *g*, *g'*, are mounted loosely and are adapted to engage the gear wheels, *a⁵*, *a⁶*, which are secured upon the cone pulley, *a'*.

The following means are utilized for locking one or the other of the gear wheels, *g*, *g'*, upon the sleeve, *d*. Shaft, D, has an internal bore, *d³*, in which a sliding key, H, is located. Key, H, has at one end pins, *h*, *h'*, which project through the registering slots, *d⁴*, *d⁵*, and *d⁶*, *d⁷*, in the shaft, D, and the sleeve, *d*, respectively. At the opposite end of the key, rod, *h²*, projects through registering slots in the shaft, D, and the sleeve, *d*, and engages a sliding collar, M, which is mounted on the sleeve, *d*. The gear wheels, *g*, *g'*, have recesses, *g²*, *g³*, in their adjacent faces, which are adapted to house the pins, *h*, *h'*, of the key. Adjacent to the recess, *g²*, the wheel, *g*, has radial notches to receive the pins, *h*, *h'*, when the key is moved toward that gear wheel. Similarly wheel, *g'*, has adjacent to recess, *g³*, notches, *g⁵*, for receiving the pins, *h*, *h'*. The movement of the collar, M, to effect the locking and unlocking of the wheels, *g*, *g'*, upon the sleeve, *d*, is accomplished by means of a fork, N, which is secured upon a horizontal shaft, *n*, which is journaled in the head, B, and carries at its opposite end a handle, *n'*. Fork, N, has a jaw, *n²*, for embracing the collar, M, and has teeth, *n³*, for engaging the groove in said collar.

The operation of the device is as follows: To throw in the back gear, the gear wheel, *a*, is disengaged from the disk, *a²*, of the cone pulley by withdrawing the pin, which is located in the boss, *a⁴*, for the perforation, *a³*. Then by means of the handle, E, the shaft, D, is thrown toward the cone pulley, thereby bringing the pinion, *d'*, into mesh with the gear wheel, *a*, and the pinions, *g*, *g'*, into mesh with the pinions, *a⁵*, *a⁶*. If it be desired to have the speed of the spindle which is obtained through the gear, *g*, handle, *n'*, is thrown by the operator so as to bring the wings, *h*, *h'*, of the key, H, into engagement with the notches, *g⁴*. The back gearing may be thrown out simply by reciprocating the key, H, to a position such that its wings, *h*, *h'*, stand in the recess between the hubs of the gears, *g*, *g'*. Should it be desired to throw in either of the gears, *g*, *g'*, while the pulley is rotating, this may

be done by the reciprocation of the key either to the left or to the right, depending upon which of the gears, g , or g' , it is desired to utilize.

5 What I claim is:

In a double back gearing for lathes the combination of a sleeve, two gears of different size mounted loosely side by side upon the sleeve, a shaft within the gears, a pin
10 mounted in said bore, a key secured to the

pin and adapted to stand between the gears out of engagement therewith or to engage one or the other of said gears, and a collar mounted to slide upon the sleeve and secured to the pin.

JOHN C. PFLANZER.

Witnesses:

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