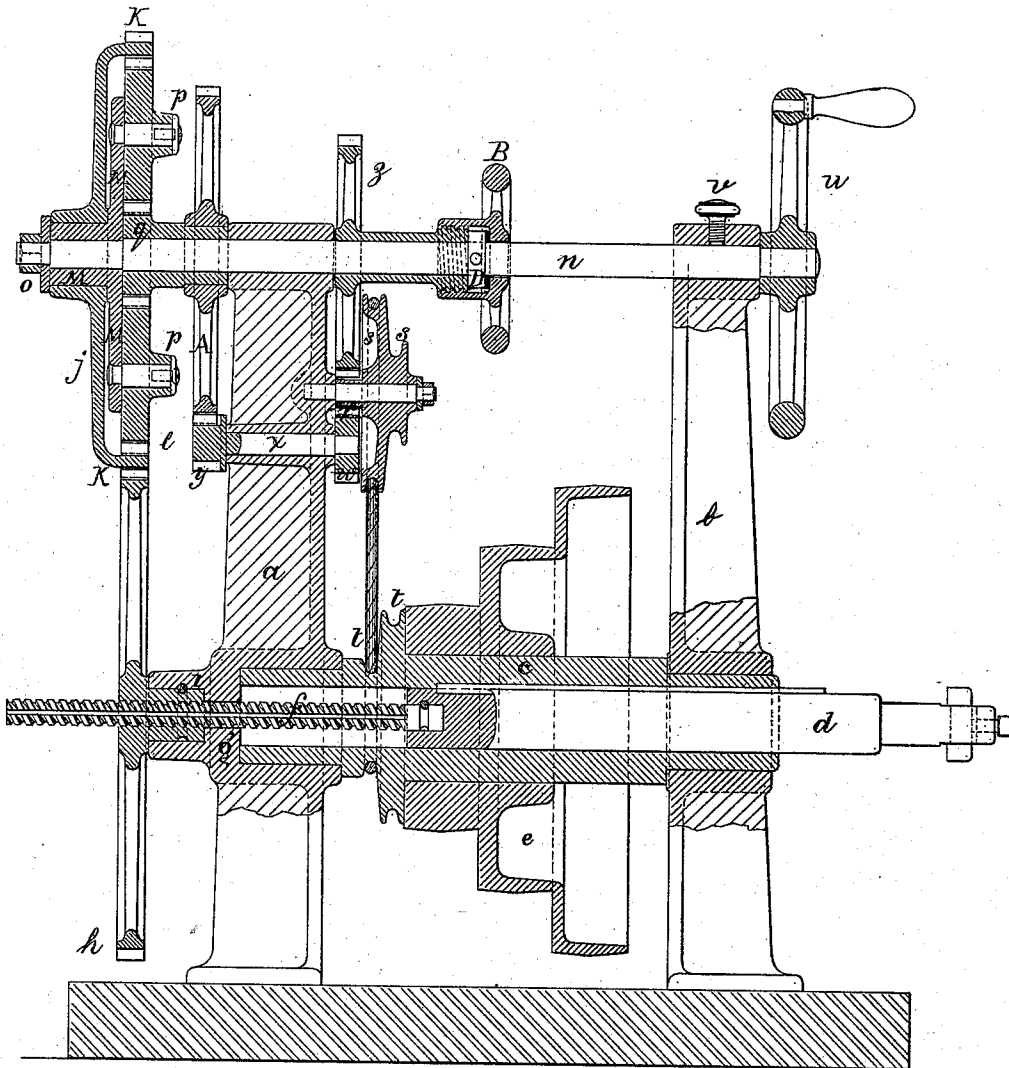


C. SELLERS.

FEED-MOTION FOR DRILLING AND BORING MACHINES.

No. 174.014.

Patented Feb. 22, 1876.



Witnesses:

Coleman Sellers
Harry A. Stewart

Inventor:

Coleman Sellers

UNITED STATES PATENT OFFICE.

COLEMAN SELLERS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN FEED-MOTIONS FOR DRILLING AND BORING MACHINES.

Specification forming part of Letters Patent No. **174,014**, dated February 22, 1876; application filed January 27, 1876.

To all whom it may concern :

Be it known that I, COLEMAN SELLERS, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Feed-Motion for Drilling and Boring Machines; and I do hereby declare the following to be a full and exact description thereof, reference being made to the accompanying drawing, forming part of this specification.

My present improvement relates to that class of feed-motions where an epicyclic or sun-and-planet train of gears is used to transmit the feed-motion from the driving-power to the cutting tool. An arrangement of this kind is shown and described in Letters Patent of the United States, dated March 1, 1864, granted to Wm. Sellers & Co., where a slow power-feed and quick hand-feed are obtained from the same set of wheels constantly in gear, the change from one feed to the other being made by clamping or releasing the feed-shaft *n* by means of the clamping-screw *v*, as shown in the accompanying drawing.

The object of my present improvement is to provide, in addition to the above feeds, a quick power-feed, which can be thrown into and out of gear without interfering with the working of the other parts.

The accompanying drawing shows a sectional side elevation of a machine embodying my improvement, in which—

s s is a cone-pulley, driven from the cone *t t*, and having the pinion *r* on its hub, driving the wheels *z* and *w*. *w* is fastened on the shaft *x*, having the pinion *y* driving the wheel *A*, secured to the hub of the sun-pinion *g*, which is the central pinion of the epicyclic train, and *p p* are the planet-wheels carried by the plate *M*, which is secured to the feed-shaft *n*. The wheel *z* turns freely on the feed-shaft *n*, and has on the end of its hub a screw-thread engaging with a corresponding screw-thread in the nut *B*, which also turns freely on the feed-shaft *n*. The collar *D* is secured firmly to the feed-shaft *n*. By means of the nut *B* the wheel *z* and the collar *D* can be clamped firmly together, and so drive the shaft *n* by the wheel *z*.

The operation of the machine is as follows: If the screw *v* and nut *B* are both unscrewed, the feed-shaft *n* will revolve slowly, and will impart no feed to the drilling or boring spindle *d*. If the shaft *n* be retarded in its

motion, as by friction on the hand-wheel *u*, or in any other way, feed will be given to the boring-spindle *d* by the amount of such retardation. If the shaft *n* be clamped fast by the screw *v* the full amount of feed that can be produced by the feed-motion, as described in the before-mentioned former patent, will be given to the spindle *d*. If the feed-shaft *n* be clamped to the gear-wheel *z*, (the clamp-screw *v* being released,) the shaft *n* will be made to revolve, and with it the planet-wheels *p p*, in a direction contrary to that which would be produced by the epicyclic train when the clamp-screw *v* is released, and a new feed will be produced, which will be in addition to that given by the sun-wheel alone of the epicyclic train, so that the feed given to the cutting-tool will be the sum of the two feeds.

As the variation of speed of the driving-pinion *r*, obtained by the shifting the belt on the cone-pulleys *s s* and *t t*, affects both feeds, it is evident that a great range can be obtained.

This feed is especially adapted for finishing cuts in boring, as the holes produced by a wide feed or a quick traverse through the work are much more uniform in size, and the cutters last much longer without sensible wear, than is the case when a fine feed is used for that purpose.

The advantage of coarse feeds for finishing has long been recognized, and to some extent used, but I am not aware that any special device has been employed to accomplish it.

The time required to change ordinary gearing, as well as the limit of feed in cone-pulleys, or the like, has hitherto prevented the use of such finishing feeds, except in large work or on long cuts, and the special merit of my present invention is that it not only provides such quick feed with certainty, but also without loss of time.

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

In drilling or boring machines, an epicyclic train when both the sun and planet wheels are geared to the drilling or boring spindle, substantially as and for the purposes set forth.

COLEMAN SELLERS.

Witnesses:

COLEMAN SELLERS, Jr.,
HARVEY G. STEWART.