G. F. Case,

Stone Drill.

No. 59,963. Patented Nov. 27, 1866.

Fig. 2.

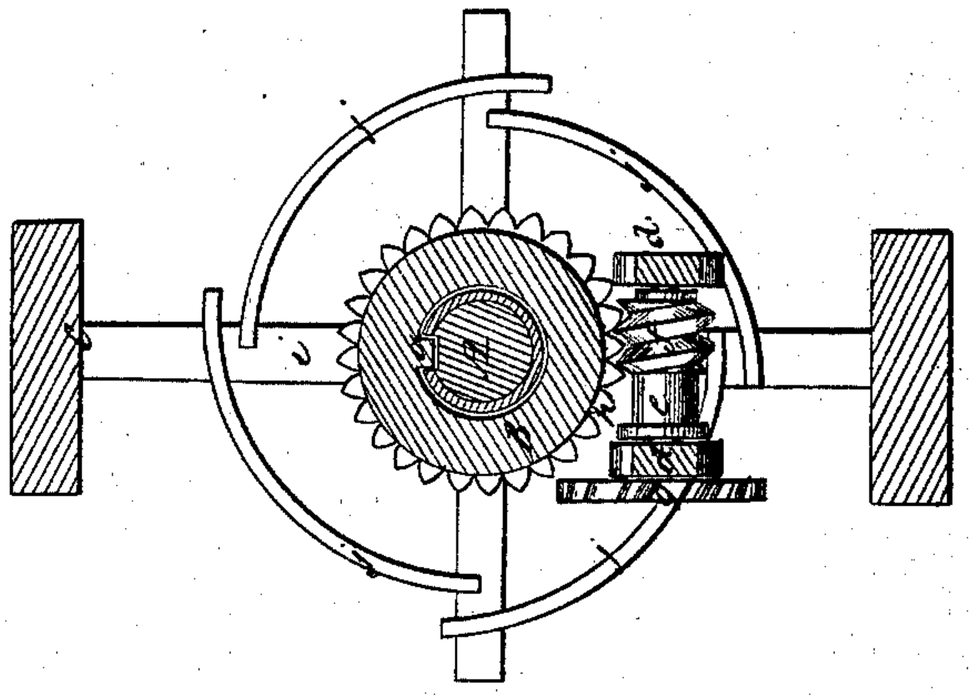
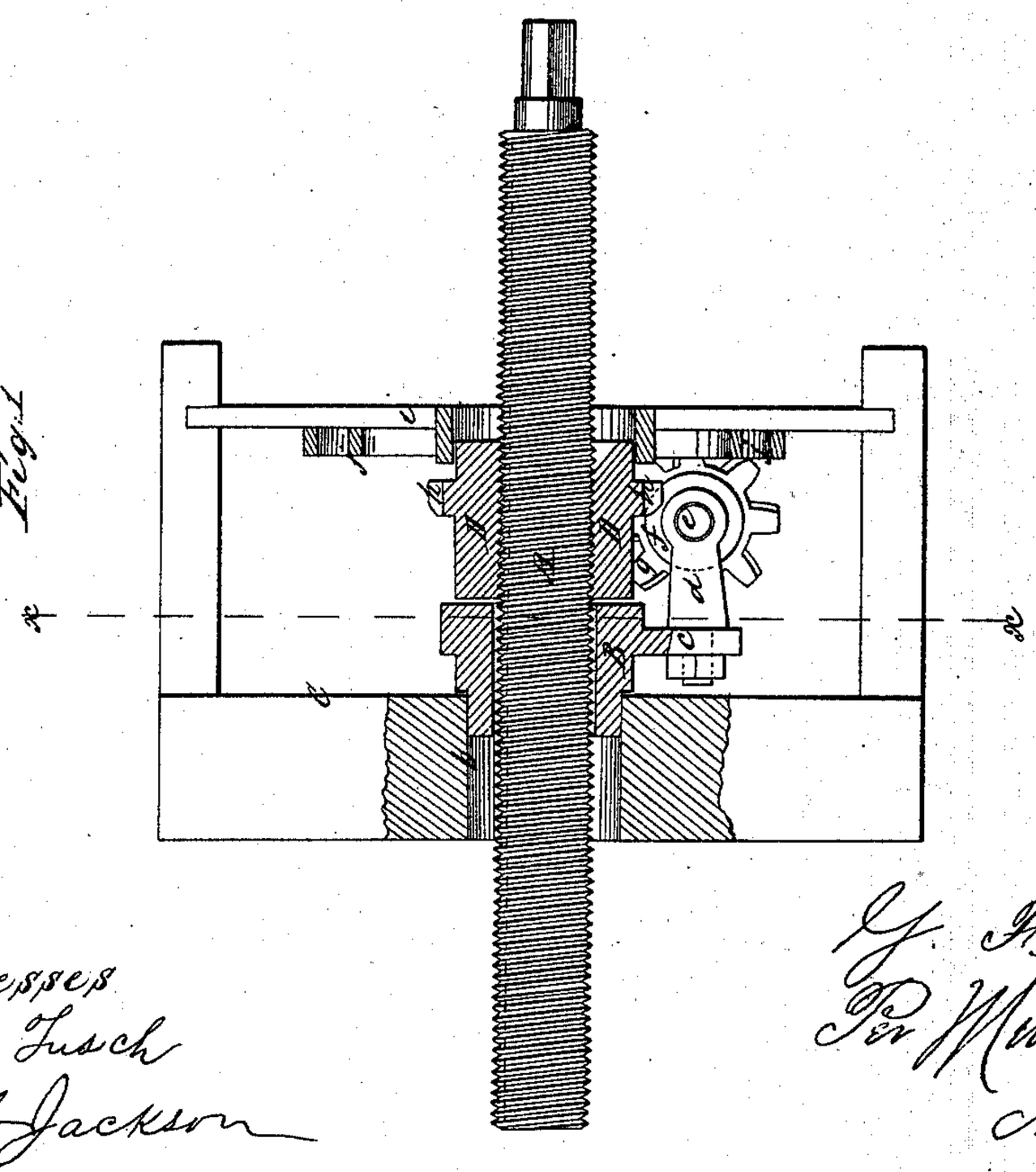


Fig. 1.



Witnesses
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AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS).

United States Patent Office.

IMPROVED FEED-MOTION FOR DRILLS.

GEORGE F. CASE, OF NEW YORK.

Letters Patent No. 59,963, *dated November* 27, 1866.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, G. F. CASE, of the city and county of New York, have invented new and useful Improved Feed-Motion for Drills, etc.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention.

Figure 2 is a transverse section of the same, the line *x x*, fig. 1, indicating the plane of section.

Similar letters of reference indicate like parts.

This invention relates to an automatic feed-motion for drills, boring-bars, etc., and particularly for what is known as Case's expanding drill for enlarging the diameter of oil wells. It consists of a feed-screw provided with a nut and worm-wheel, to which a slow revolving motion is imparted by a worm, which revolves with the feed-screw, and which is caused to turn on its own axis by a suitable cam and corresponding cam-wheel, in such a manner that the screw is caused to advance slowly and continually, and a uniform and automatic feed for the boring-bar or other mechanism is obtained.

A represents the feed-screw of a boring-bar or of any other mechanism for boring or other purposes. On this feed-screw is fitted a sleeve, B, so that said screw slides freely through the same in a longitudinal direction, but a feather key, *a*, which catches in a groove in the screw, compels the sleeve to revolve with the screw. Said sleeve turns in a socket, *b*, in a suitable frame, C, and from it extends an arm, *c*, which supports two standards, *d*. These standards form the bearings for an arbor, *e*, on which is mounted the worm, *f*, and the cam-wheel, *g*. The worm *f* gears in a worm-wheel *h*, screwed to a nut D, which screws on the feed-screw A, and which is confused between the sleeve B, and the cross-bar *i*, of the frame C, so that it is prevented from moving in a longitudinal direction, but entirely free to revolve. The cam-wheel *g*, meshes in a set of cams, *j*, which are rigidly attached to the cross-bar *i*, and which are so shaped that each of them propels the cam-wheel *g*, one tooth, so that when four cams are used, and cam-wheel has eight cogs, for each revolution of the feed-screw the cam-wheel is caused to make half a turn round its own axis. It is obvious, however, that this proportion can be changed in many different ways, and I do not wish to confine myself to any particular number and shape of the cams, neither to any particular number of cogs in the cam-wheel. As the cam-wheel, *g*, revolves, a slow rotary motion is imparted to the arbor *e*, and worm *f*, and this motion is transmitted to the nut D, on the feed-screw, so that said feed-screw is caused to advance slowly but continually, and a uniform feed motion is obtained. It will be readily understood that this feed motion can be increased or diminished, by changing the shape of the cams *j*, the number of cogs in the cam-wheel, and also by increasing or diminishing the number of cogs in the worm-wheel, but if these parts are properly adjusted, a uniform and automatic feed motion is obtained, which is applicable to drills of any suitable description, and also to devices for boring out cylinders, and to other similar mechanism.

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

The sleeve B, which carries the worm *f*, and cam-wheel *g*, in combination with the feed-screw A, nut D, and worm-wheel *h*, all constructed and operating substantially as and for the purpose described.

GEORGE F. CASE.

Witnesses:

WM. F. MCNAMARA,

ALEX. F. ROBERTS.