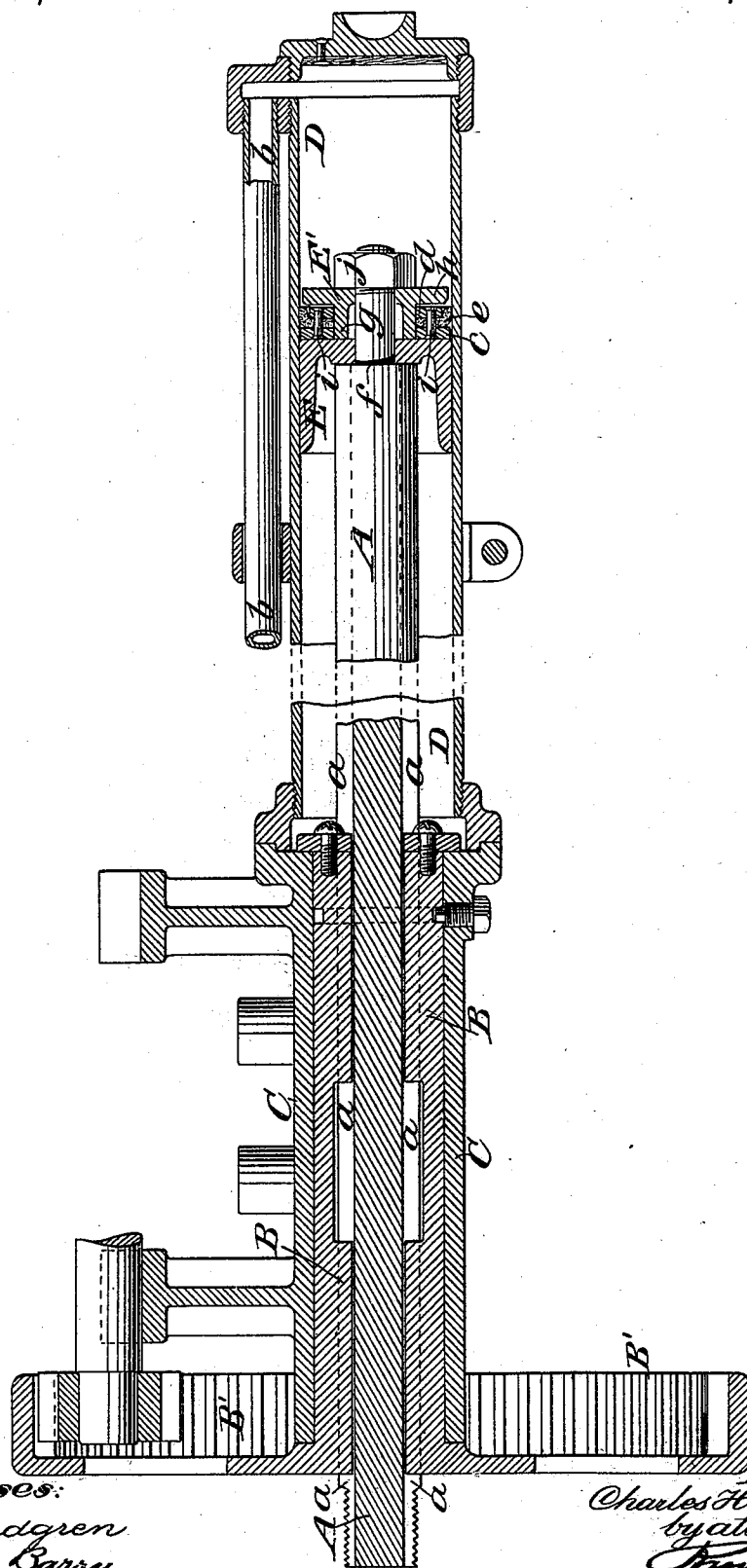


(No Model.)

C. H. SERGEANT.
POWER AUGER FOR MINING PURPOSES.

No. 511,467.

Patented Dec. 26, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES H. SERGEANT, OF NEW YORK, N. Y.

POWER-AUGER FOR MINING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 511,467, dated December 26, 1893.

Application filed January 26, 1893. Serial No. 459,765. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. SERGEANT, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Power-Augers for Mining Purposes, of which the following is a specification.

This invention relates to that class of machines known as power augers for mining coal and other minerals. In such machines the auger spindle to which rotary motion is given is furnished with a piston fitted to a cylinder to which compressed air or other fluid under pressure is admitted to act on said piston for producing the necessary thrust or feed of the auger. In such machines various expedients have been adopted for the purpose of permitting the free rotation of the auger spindle while keeping the piston tight in the cylinder.

The object of my invention is to provide in a more simple and effective manner for the accomplishment of that purpose.

The nature of the improvement will now be described with reference to the accompanying drawing and its novelty set forth in the claims.

The drawing represents a central longitudinal section of the principal parts of a power auger embodying my improvement.

A is the auger spindle having longitudinal grooves *a a* for the reception of splines provided in the elongated hub B of a large internally toothed spur gear B' through which rotary motion is imparted to the spindle while permitting its longitudinal movement for feeding the auger, the said hub B being confined longitudinally but free to turn within a cylindrical box C which is to be supported on any suitable base or framing.

To the rear end of the box C is secured the feed cylinder D into which the spindle A projects and to which is fitted the piston E E' attached to the rear end of the said spindle, the said cylinder D being closed at its rear end near which there is connected the pipe *b* for the admission of compressed air or other fluid to act upon the piston and spindle for feeding the auger.

So far as I have above described the ma-

chine it is all well known. I will now proceed to describe particularly my improvement.

The piston proper consists of a cylindrical head E and a follower E' between which is arranged a loose annular packing *c d e*. The said head and follower are firmly secured to the auger spindle so that all will turn together, the said head being so fitted to the bore of the cylinder that it will turn easily therein but being made of such length that the piston has a large bearing and wearing surface in the cylinder independently of the loose packing, leaving nothing for the latter to do but to make the piston air-tight. In the example described, to secure the head E and follower E' to the spindle A they are both fitted tightly to the rear part of the said spindle behind a shoulder *f* provided on the said spindle and clamped together between the said shoulder *f* and a nut *j* screwed on to a screw thread on the rear of the spindle. The follower E' is made with a hub *g* in rear of the head E to form an annular recess behind the said head for the reception of the loose packing *c d e* which consists of two metal rings *c d* and an interposed cup ring of leather or suitable flexible material. The three rings *c d e* of the packing are all fitted to move freely within the annular recess formed within the piston around the hub *g*. The front metal ring *c* is of an external circumference to just work freely in the cylinder bore and the exterior of the rear metal ring *d* is sufficiently smaller to allow the edges of the leather cup packing ring to turn over it. The three rings are secured firmly together in any suitable manner as by rivets *i i* passing through them, and their aggregate thickness is such that they will be loose between the flange *h* and the head E of the piston. The front of the ring *c* is faced to fit the portion of the piston body E in front of it so that when the packing is pressed forward by the air in rear of the piston and the cup ring *c* is forced out so tightly against the cylinder as to be prevented from turning and to make the piston air-tight, broad substantial bearing surfaces are presented between the front of the packing and the portion of the piston head in front of it and any such wobbling as might tend to clamp or bind the pack-

ing in the cylinder or to produce its undue wear is prevented, the packing having nothing to do but to keep the piston air-tight.

What I claim as my invention is—

5 1. In a power auger, the combination with the cylinder and the auger spindle, of a piston head rigidly secured to said spindle fitting the cylinder to turn therein and having in it an annular recess for a packing, and an annular packing arranged loosely within said
10 recess but fitted tightly to the cylinder, substantially as herein set forth.

2. In a power auger, the combination with the cylinder and the auger spindle, of a pis-

ton rigidly secured to said spindle and fitted easily to the cylinder, and a packing composed of two metal rings and an interposed cup ring of flexible material fitted and placed loosely in an annular recess in the piston, the said cup-ring fitting tightly to the cylinder and one of the said metal rings coming face to face with the front of said recess, substantially as and for the purpose herein set forth.

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Witnesses:

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