T. W. Purcell,

Boring Wood.

No. 106,077. Patented Aug. 2. 1870.

Fig. 1.

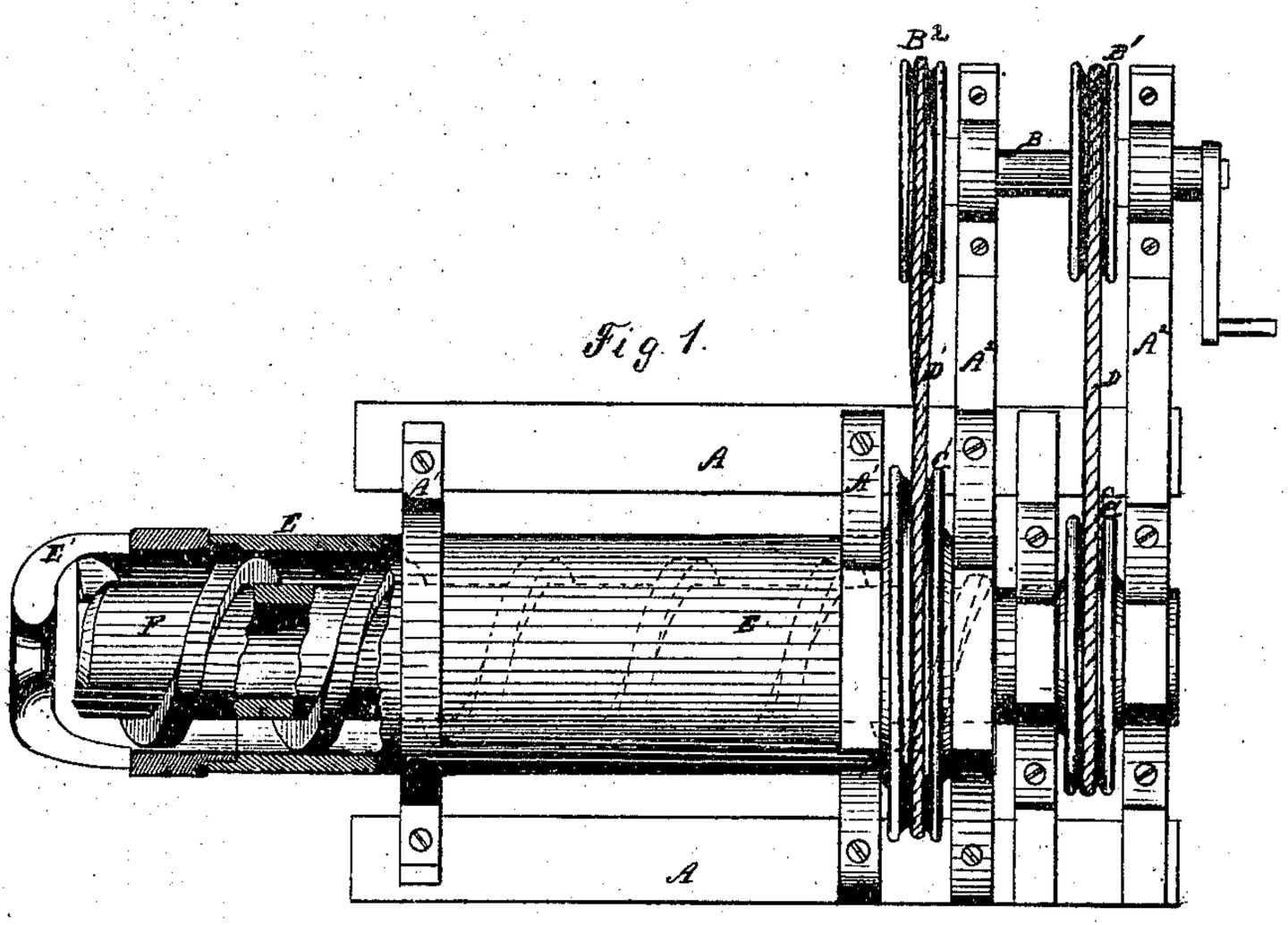


Fig. 2.

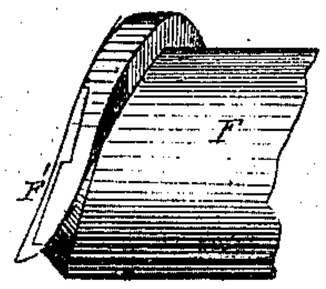


Fig 3

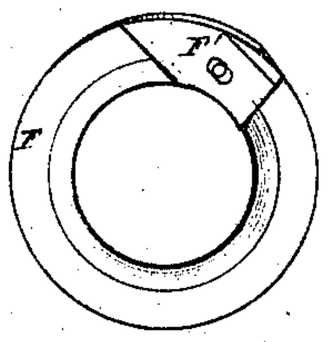
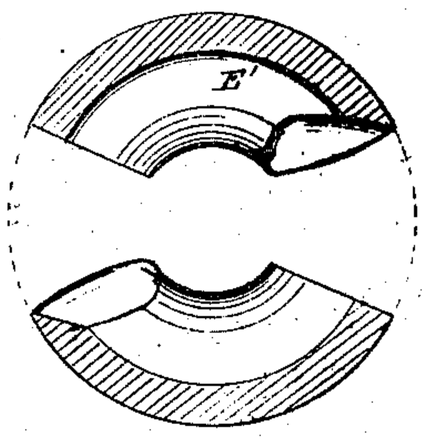


Fig. 4.

Fig. 5.



Witnesses.
Edw. J. Bills
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United States Patent Office.

THOMAS W. PURCELL, OF FOND DU LAC, WISCONSIN.

Letters Patent No. 106,077, *dated August* 2, 1870.

IMPROVEMENT IN PIPE-BORING MACHINE.

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

To all whom it may concern:

Be it known that I, THOMAS W. PURCELL, of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented an Improved Pipe-boring Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

Drawing.

Figure 1 is a plan or top view of my improved machine, showing the frame-work upon which the parts rest, the mechanism for driving the auger or boring-cylinders, a portion of the outer one being cut away, to show the construction of the interior auger;

Figure 2 is a longitudinal elevation of a portion of the interior auger, showing the adjustable cutter upon its outer end;

Figure 3 is an end view of the interior auger, showing the means of securing and adjusting the cutter, and of securing it in position;

Figure 4 is an elevation of the adjustable cutter; and

Figure 5 is an end view of the outer auger or boring-cylinder.

Corresponding letters refer to corresponding parts in the several figures.

This invention relates to that class of machines which is used for boring pipes, pump-logs, and for other similar purposes; and

It consists in the construction, combination, and arrangement of the parts of which it is composed, as will be more fully explained hereinafter.

A in the drawing refers to the frame-work of the machine, which may be constructed as shown in fig. 1, or in any other convenient manner, it being provided with a bearing, A′, near its outer end, for the outer auger or boring-cylinder to revolve in, and near its inner end with one or more, for the same purpose, as shown at A^1 A^2. These bearings A^1 A^2 extend from one of the side pieces of the frame to the other, and serve to keep them in position.

A^2 A^2 also refer to bearings, in which the rear ends of the outer and inner portions of the augers revolve, and they also extend to the rear of the machine for a distance sufficient to enable them to form the bearings for the countershaft which drives the machine.

B refers to the countershaft, which has upon it two pulleys, B^1 and B^2, from which belts pass to the pulleys upon the rear ends of the augers.

Motion may be imparted to the shaft in any of the known methods, and from any prime mover. One of the pulleys upon this shaft should be of greater diameter than the other, so as to give to the interior auger or cutter a more rapid movement than is given to the outer one, or this difference of speed may be regulated by the pulleys upon the rear ends of the augers.

It will be apparent that motion may be imparted to the augers by means of gearing, and the difference of motion be given at the same time.

C C′ refer to pulleys upon the rear ends of the augers or cutters, they being so arranged as to receive their motion from the pulleys upon the countershaft.

D D′ refer to belts, which communicate the motion of the countershaft to the augers or cutters, one of them being crossed, (when belts are used,) in order that one of the cutters shall be caused to rotate in a direction opposite to that in which the other is moving, in order that the chips may be carried through between them, without being allowed to clog or choke the passage.

E refers to a cylinder of metal, the outer surface of which should be turned off to the diameter of the hole, which it is intended to bore, or a little less, in order that it may pass freely through the hole formed by the cutter upon its outer end.

This cylinder is mounted in the bearings A^1 A^1 and A^2, its rear end being provided with a pulley or gear-wheel, for giving motion to the same. The interior surface of this cylinder is to be bored out, to receive the interior cutter or auger.

E′ refers to a cutter-head, which is to be secured to the outer end of cylinder E, by being screwed thereon, or in any other suitable manner. This head has a portion of its outer end cut away, as shown in figs. 1 and 5. It also has an aperture through its front or outer end, for the passage of the core, which it leaves in the center of the pipe or log in boring the same.

That portion of the end surface upon which the cutting-edge is formed, is made to project beyond the other portions, to the extent of the thickness of the chip that it is desired to cut, which will vary according to the kind of wood to be bored.

Separate cutter-heads may be provided for the various kinds of material or wood to be used, and such heads may have their cutting-edges projecting more or less, according to circumstances.

F refers to a tube or cylinder, which is placed within the outer one, and is driven in an opposite direction from it by means of pulleys on its rear end.

The aperture in the center of this cylinder is of any size that it may be desirable to have the core which passes through it in boring the pipe or log.

Upon the outer surface of this cylinder there is formed a worm or thread, of coarse pitch, for the purpose of carrying the chips or cuttings of the outer cutter to the rear end of the same, and discharging them there, said inner cylinder being made to revolve at a greater speed than the outer one, for the purpose of facilitating such operation.

F′ refers to an adjustable cutter, which is attached to the outer end of the interior cylinder, and is so arranged that its inner cutting-point may be extended inward beyond the inner surface of such cylinder, in order that the core may be reduced to such a diameter that it will pass freely through it, and not be retarded by frictional contact with its surface.

Figs. 2, 3, and 4 show the construction and arrangement of the cutter, and the means for attaching it to the end of the cylinder, and fig. 1, its arrangement within the outer cylinder and its cutting-head, said arrangement being such that, as the chips or cuttings pass backward from the outer head, they are taken hold of by the cutter on the inner cylinder, and at once reduced in size to such an extent that they will freely pass through the space between the inner cylinder, the worm or thread thereon, and the outer cylinder.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent of the United States, is—

The combination of the outer cylinder E, cutter E′ thereon, inner worm-cylinder F, and adjustable cutter F′ thereon, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name to this specification in the presence of two attesting witnesses, this 23d day of May, 1870, at Fond du Lac, Wisconsin.

THOMAS W. PURCELL.

Witnesses:

A. N. WHITE,

SOLON W. EDSON.