2 Sheets—Sheet 1.

O. PLUMMER.

UNIVERSAL CHUCKS FOR LATHES.

No. 194,311. Patented Aug. 21, 1877.

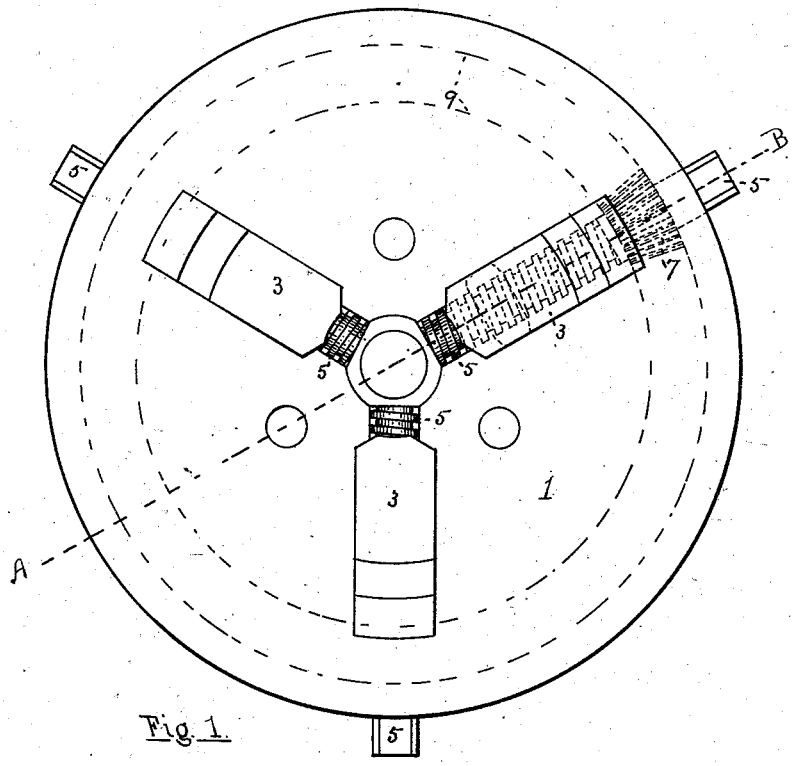

Fig. 1.

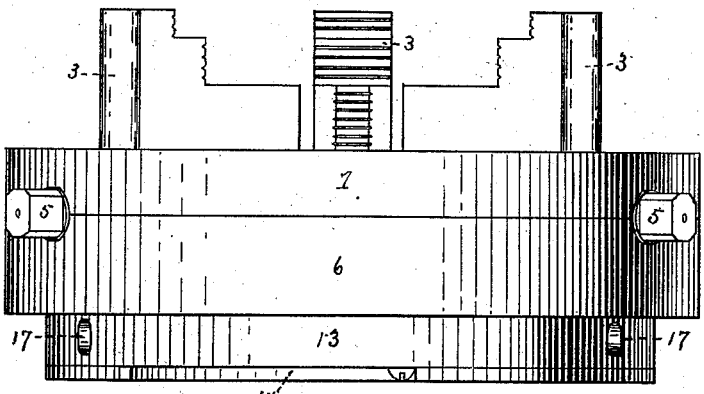

Fig. 2.

WITNESSES

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2 Sheets—Sheet 2.

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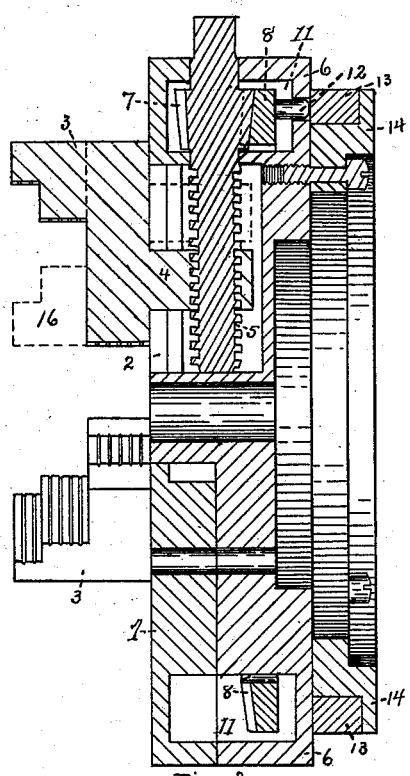

Fig. 3.

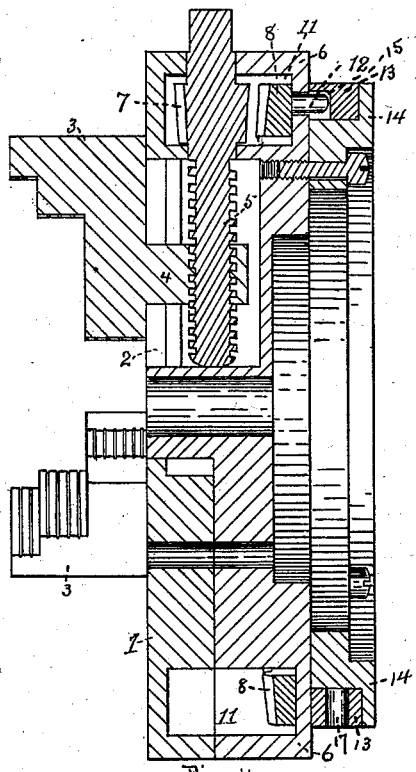

Fig. 4.

Fig. 6.

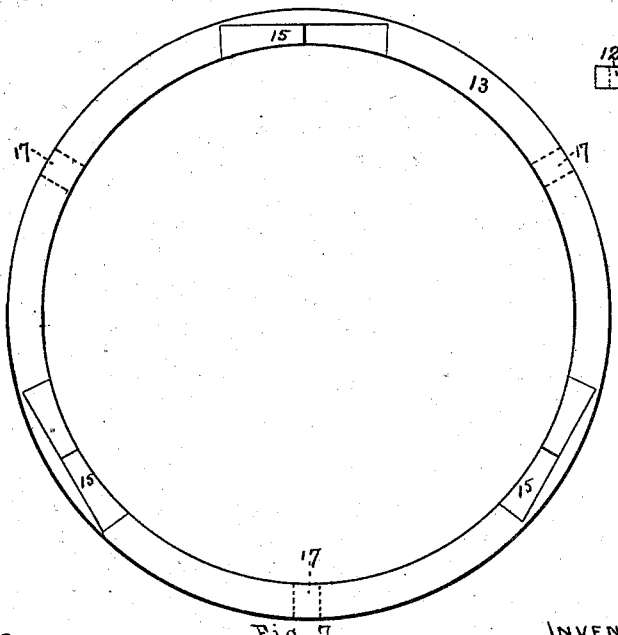

Fig. 7.

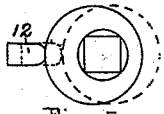

Fig. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

OSGOOD PLUMMER, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN UNIVERSAL CHUCKS FOR LATHES.

Specification forming part of Letters Patent No. **194,311**, dated August 21, 1877; application filed November 23, 1876.

To all whom it may concern:

Be it known that I, OSGOOD PLUMMER, of the city and county of Worcester, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Chucks for Lathes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a face view. Fig. 2 represents a side or edge view. Fig. 3 represents a sectional side view on line A B in Fig. 1, showing the parts in position as a universal chuck. Fig. 4 represents a sectional side view on line A B, showing the parts as an independent chuck. Fig. 5 represents a form of cam that may be used, as hereinafter referred to; and Figs. 6 and 7 represent detached parts.

This invention is an improvement on what is known as the "Horton Universal Chuck," patented November 13, 1855, No. 13,787, and by a simple arrangement of the parts I produce an independent and universal chuck, combined in one and the same tool.

In Fig. 3, 1 represents the face or upper half of casing for chuck, through which are cut slots or openings 2. Upon the surface of plate 1 rest jaws 3, each having a projection, 4, through which is drilled and tapped a hole parallel to surface of plate 1, said projection extending down and through said plate sufficient to hold screw 5, which is fitted into a bearing in which it freely revolves without having end or lateral motion. One-half of said bearing is formed in plate 1, and the remainder in lower plate 6, said plates being held together and in place by screws. Screw 5 is provided with a bevel-pinion, 7, having teeth that mesh into ring-gear 8, which extends entirely around the inner surface of the chuck, as shown by dotted lines 9 in Fig. 1. Ring-gear 8 is loosely fitted into recess 11 in lower plate, and is kept in contact with pinions 7 by resting on ends of pins 12 that extend through holes in plate 6. The lower ends of said pins are flush with surface of plate 6, and rest on the straight surface of ring-cam 13, which revolves easily on its bearings, and is kept in place by rim 14.

The rim and bearing in this case are in one piece, but may be separated, and the bearing made solid to and a part of plate 6. The holes 17, in ring-cam 13, are made to receive a lever for turning from one position to the other.

The outer and projecting ends of screws 5, which may be of any desired form, are squared to receive a wrench. They may also have a mark or cut on their squares to correspond with a similiar mark upon the edge of either plate to accurately set them in a given position when the ring-gear is thrown into contact with its several pinions, as hereinafter described.

The drawing represents three jaws with screws and pinions; but a greater or less number may be used. By revolving screw 5 motion is communicated to all corresponding screws and pinions through ring-gear 8, and all the jaws are moved simultaneously toward each other and the center, or in the opposite direction, as the case may be, for the purpose of grasping and holding drills, reamers, or work that may be bored or turned. A chuck working in this manner is termed "universal," and were the pins and cams omitted, and the bottom of recess 11, in plate 6, only sufficiently deep to admit ring-gear 8 in mesh with pinion 7, it would essentially represent the Horton chuck. 13, in Fig. 4, represents ring-cam in a position that brings the depressions 15 on its surface directly back of pins 12, allowing them a direct end motion sufficient for the ring-gear 8 to move out of mesh from pinions 7, thereby allowing each screw to freely revolve and independent of each other. In this position each jaw may, by revolving the screw, be made to approach or recede from the center and hold regular or other shaped pieces in desired position for work, and thus covers the ordinary features of an independent chuck.

By the foregoing description it may be understood that, having an independent chuck and desiring a universal in its stead, it is only necessary to turn the pinions into a desired position, then revolve the ring-cam with a lever in hole, 17 till its straight surface bears on ends of direct moving pins, which throws the circular ring-gear into mesh with the several pinions, and the desired object is attained.

The pins 12, or their equivalents, form an important feature of my invention, inasmuch

as they have direct end motion, and carry the ring-gear 8 forward without moving it on its axis, as would be the case with screws or cams coming in direct contact with it, and revolving when giving a forward motion to said ring-gear. The pins, or their equivalent, may be moved forward by screws, or by cams of a different form from the one shown, and revolving on axes parallel to the square-ended screws, as shown in Fig. 5, or otherwise; but they would be essentially the same in result, but more expensive; therefore I prefer the form adopted.

The plate 1 and 6 may be constructed so that the jaws can be withdrawn and reversed, which is sometimes desirable, as shown by dotted lines 16, Fig. 3.

Ring-gear 8 may be moved forward by direct contact of its back with cam shown in Fig. 5 without intervening pin 12; but it would be an objectionable combination.

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

In combination with pinion 7 and ring-gear 8, pins 12, or their equivalent, and ring-cam 13, substantially as and for the purposes hereinbefore set forth.

OSGOOD PLUMMER.

Witnesses:
JONA. LUTHER,
J. E. BURBANK.