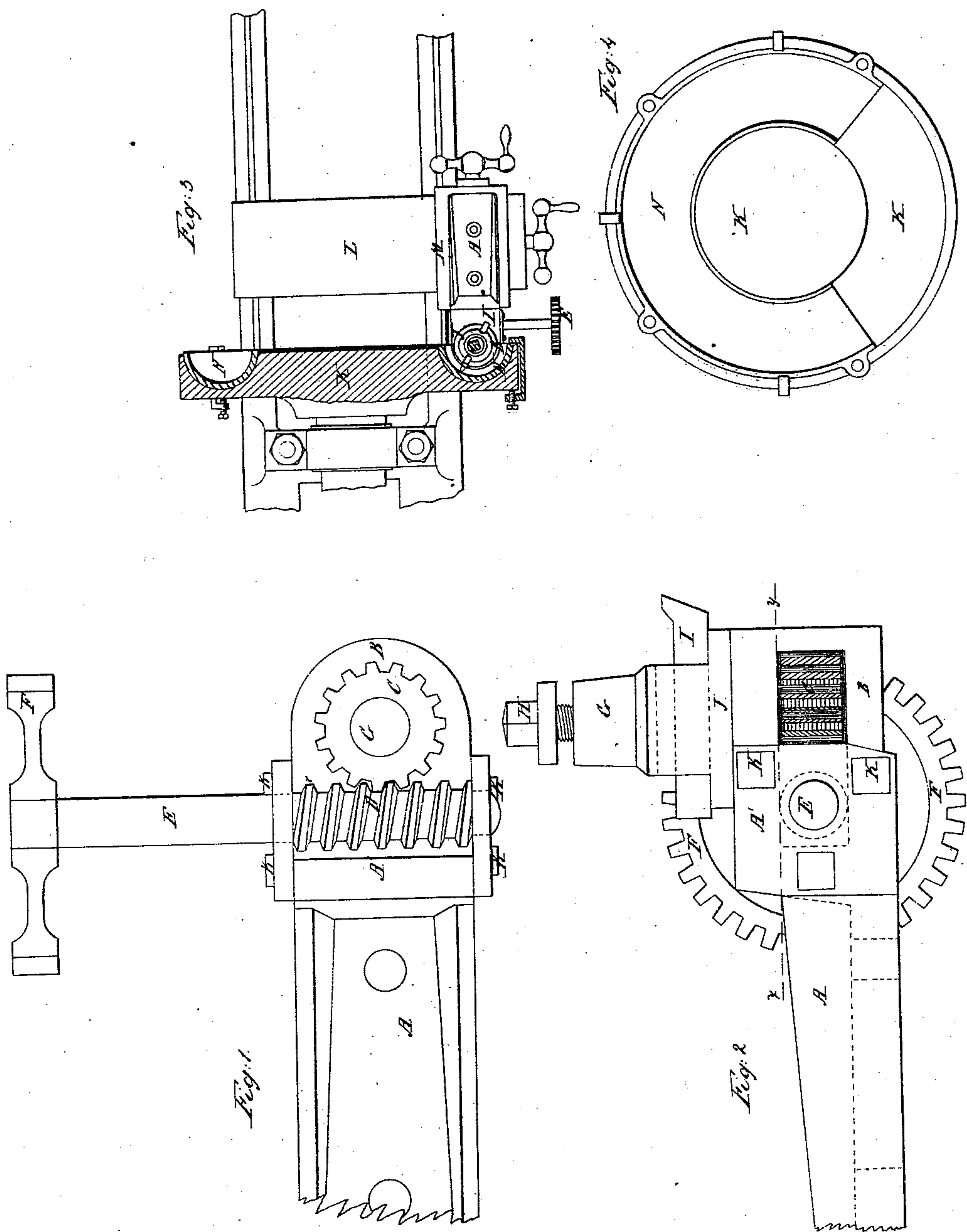


J. O. Joyce.

Turning Lathe.

N^o 84,697.

Patented Dec. 8, 1868.



Witnesses

*L. L. Bond
& Attest*

*Inventor
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United States Patent Office.

JACOB O. JOYCE, OF DAYTON, OHIO.

Letters Patent No. 84,697, dated December 8, 1868.

IMPROVED DEVICE FOR CUTTING OUT SECTIONS OF ANNULAR CYLINDERS.

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, JACOB O. JOYCE, of the city of Dayton, in the county of Montgomery, and State of Ohio, have invented a certain Improved Tool or Machine for Turning the Interior Surfaces of Annular Semi-Cylinders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a horizontal section on red line xy ;

Figure 2, a side elevation or view;

Figure 3 shows an ordinary mode of attaching my improved tool to a lathe; and

Figure 4 represents a mandrel-head or facing, fitted to receive and hold a section of a semi-cylinder for turning.

Like letters refer to the same parts in all of the figures.

The nature and object of my invention consist in providing a tool to be used, in connection with a lathe, for turning iron, which will occupy a fixed position on the lathe, and rotate from a common centre with the centre of the circle described by a section of the cylinder to be turned or planed out, and so arranged or geared that it will be automatically operated to turn or plane out the interior of an annular semi-cylinder, as different sections of the latter are presented to it.

To enable others skilled in the art to make and use my new and improved tool, I will describe its construction and operation.

It is made entirely of iron, and the bed-plate A extends out at one side sufficiently far to enable me to attach the tool to the cutter-rest M of an ordinary engine or iron-turning lathe.

The outer end of the bed B is curved, so that the tool can be set in the cavity of the semi-cylinder, and in the curved or circular end I insert a post, G.

This post is provided with a bearing-collar or projection, J, and immediately above this collar there is a mortise or hole through it, into which is inserted the chisel or cutter I, which is adjusted and held in place by the set-screw H passing down through the centre of the post for that purpose.

In the head B of the bed this post or shaft is provided with a gear-wheel, C.

The post or shaft G is placed vertical.

In the head B there is located a horizontal shaft, E, just behind the shaft or post G, which is provided with a screw or worm, D, fitting the cog-wheel C of the vertical shaft G.

The shaft E is operated by any suitable device, and must be made to correspond with the construction of the lathe to which it is to be attached, as it is designed to use it in connection with any iron-turning lathe.

The device for operating this shaft, in connection with the usual construction of lathes, will be a spur or gear-wheel, F, operated by a screw or worm, similar to D. In some constructions of lathes, however, it will be found necessary to operate it with a belt, or with a bevel-gear.

In operation, the semi-cylinder N which is to be turned is placed in a form, like K, which is attached to the mandrel-head, and centred in any of the usual or well-known methods. The tool is then attached to the rest in front of the mandrel, and placed in position shown at fig. 3.

When the cylinder to be turned or planed out commences to revolve, the worm or screw imparts a slow motion to shaft or post G, which, being located in the centre of the circle upon which the cylinder is to be turned, rotates the cutter I slowly around, so that, when it has passed in at one side, and out at the other, the annular semi-cylinder will be found perfectly planed or turned out.

It will be obvious that cylinders, to be turned by this tool, must be made in halves, as anything much more than one-half cannot well be turned. Anything less than half, and any portion of a curved cylinder less than a complete circle, can be advantageously turned by its use.

I have found, by experiments, that circular pumps, like those shown and described by me in a patent dated March 23, 1853, can be turned so perfectly, that the arms and plungers or pistons fit perfectly upon putting the halves, so turned, together.

As the motion of the shaft G is, necessarily, very slow, I have found it advantageous to reverse its motion, and turn, first from one side and then from the other, rather than to take the time for it to come around to place again. This is easily done with gearing, but with a belt it will be necessary to slip it, and cross the belt at each alternate operation, to reverse its movement.

It will be apparent that this tool can also be used in an iron-planing machine with advantage in planing the interior of straight semi-cylinders, boxes for journal-bearings, and similar articles which require an accurate curve.

Having thus fully described my improved tool,

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

The combination and arrangement of the bed-plate A, tool-post G, and cutter I, with the gear-wheel C, shaft E, and worm D, all substantially as and for the purposes specified.

J. O. JOYCE.

Witnesses:

L. L. BOND,
E. A. WEST.