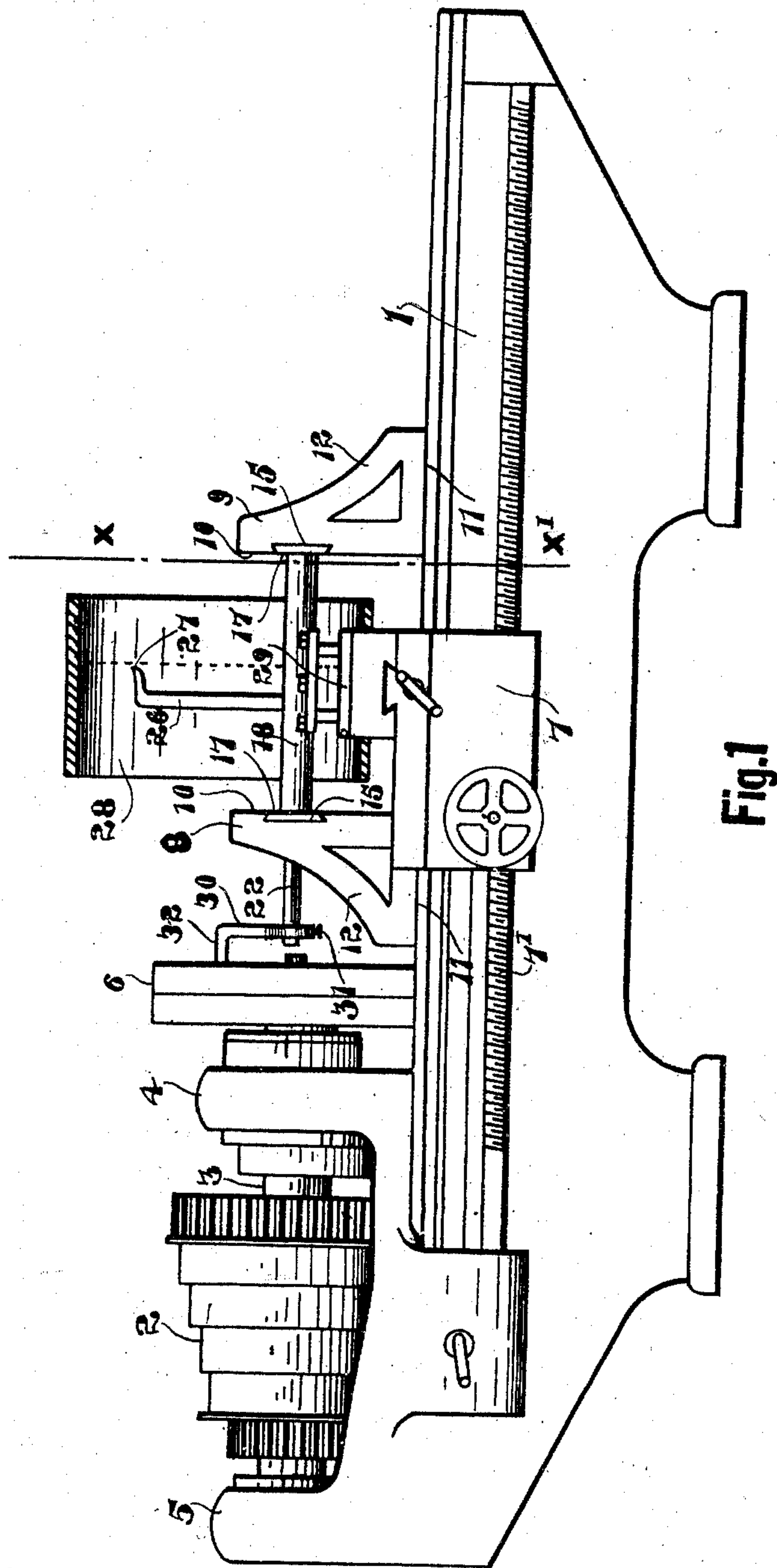


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ATTACHMENT TO LATHES FOR BORING ELLIPTICAL OPENINGS.  
APPLICATION FILED JULY 24, 1907.

928,404.

Patented July 20, 1909.  
2 SHEETS—SHEET 1.



Witnesses.

Jas. M. Tappan  
 Gerald S. Roxburgh

Inventor

Jas. Shaw

By

Frank H. Lusk, Atty.

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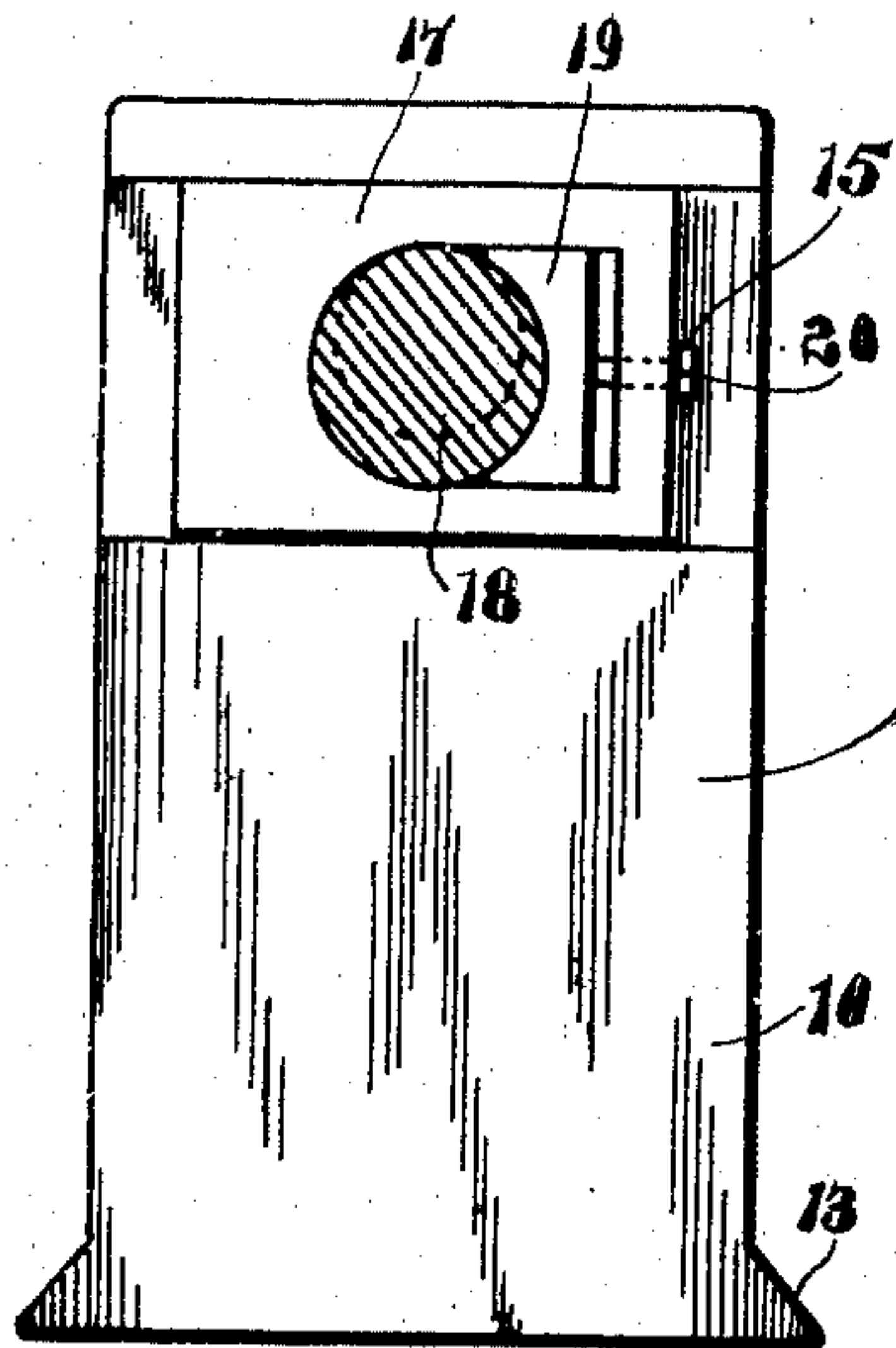


Fig. 2

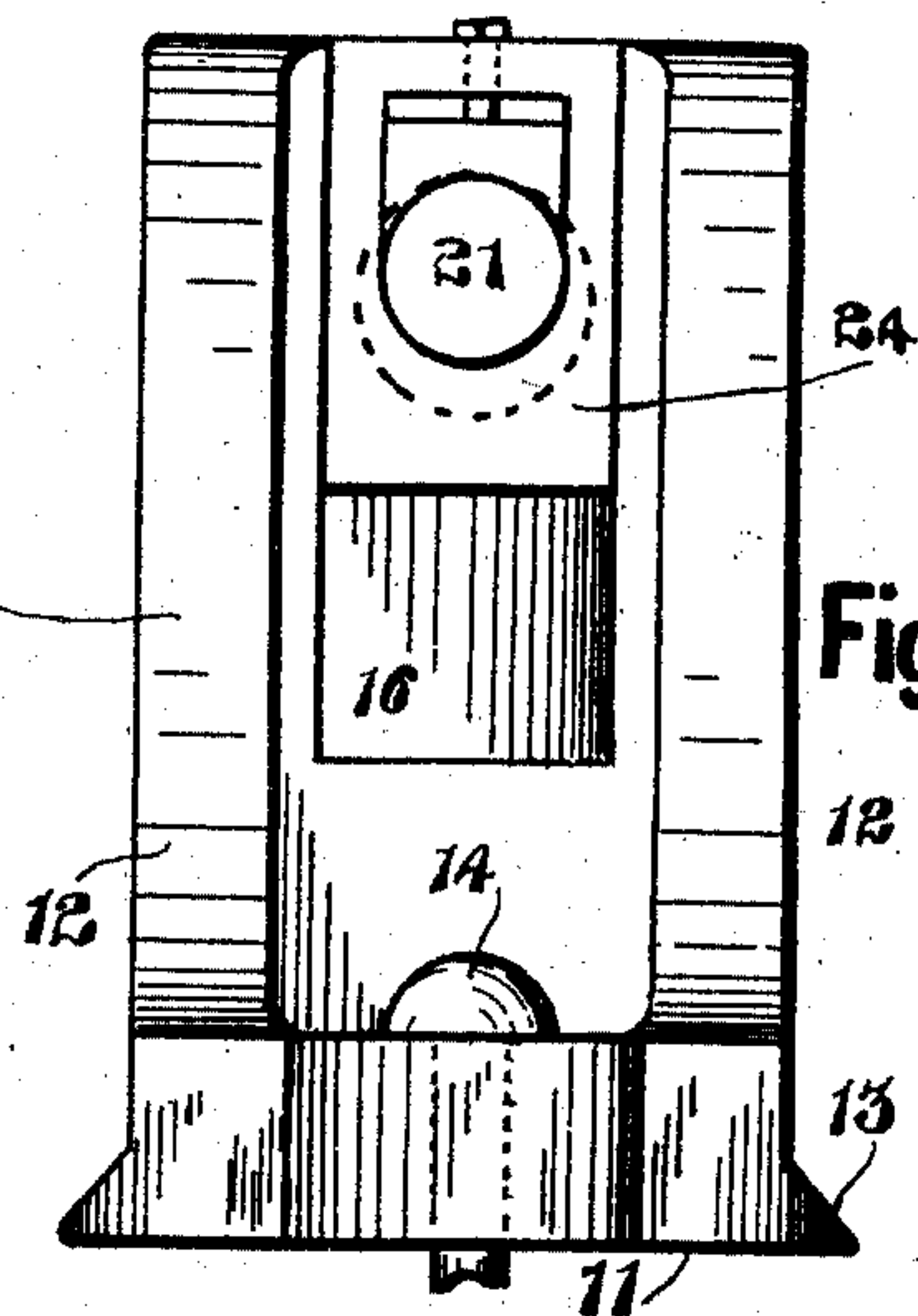


Fig. 3

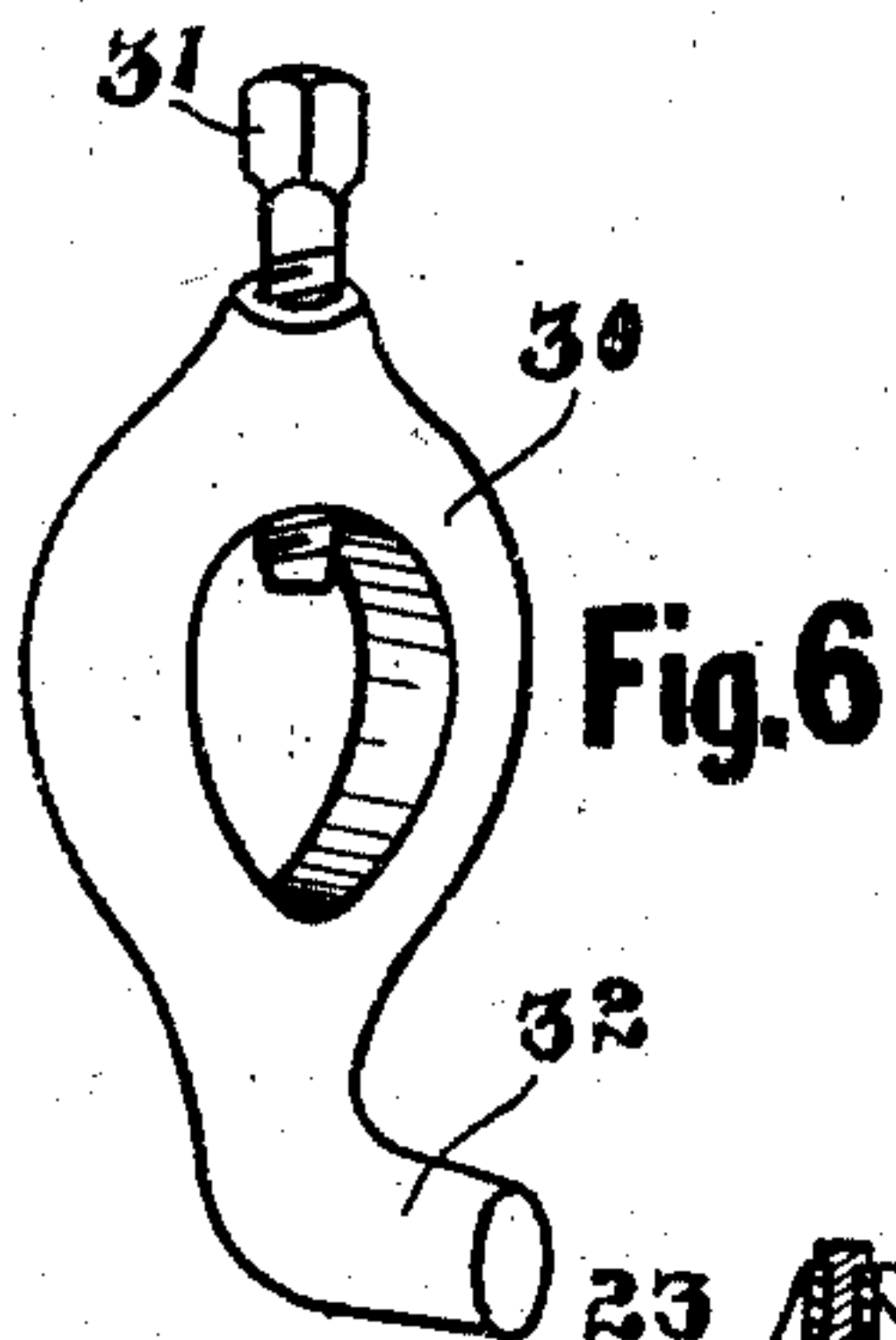


Fig. 6

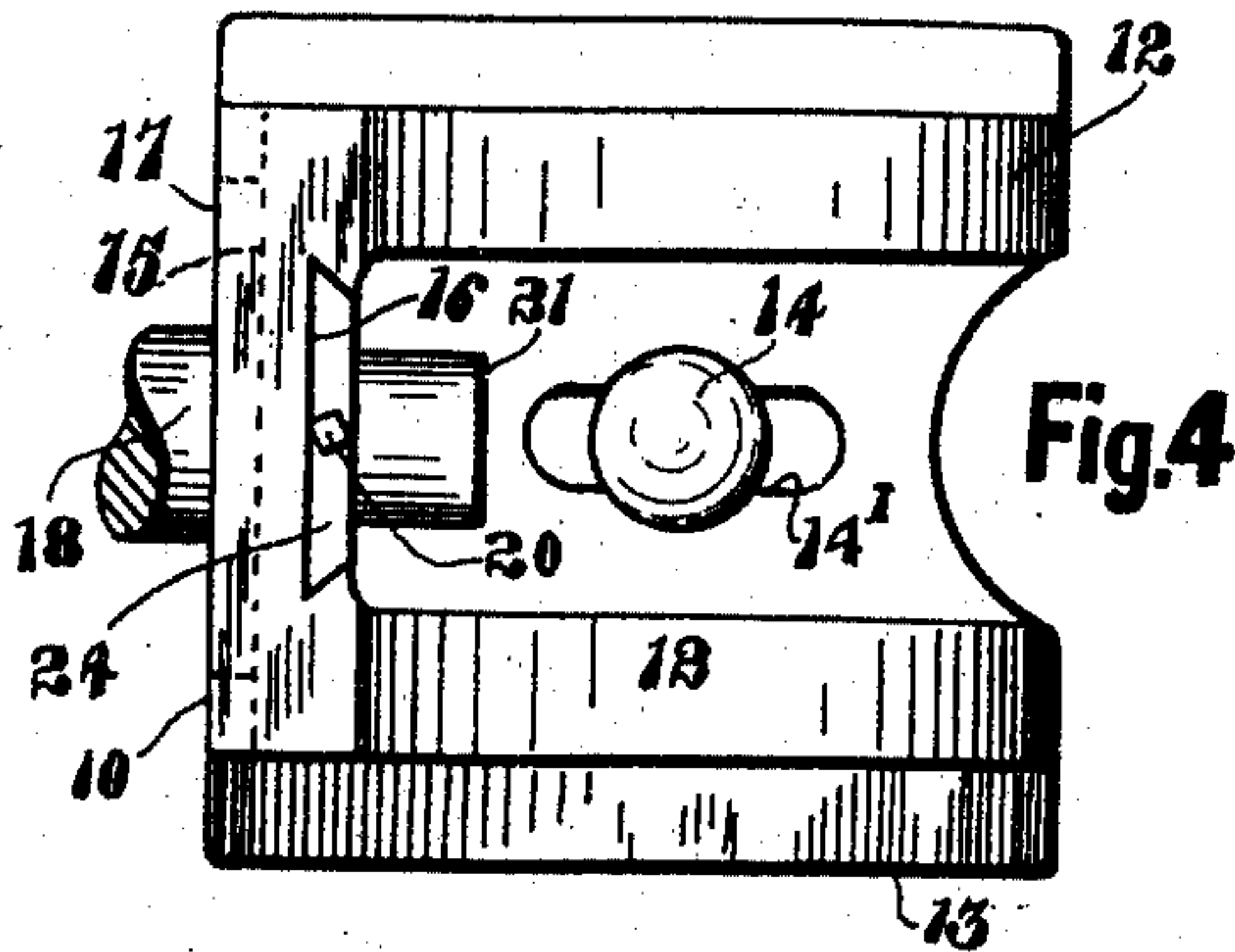


Fig. 4

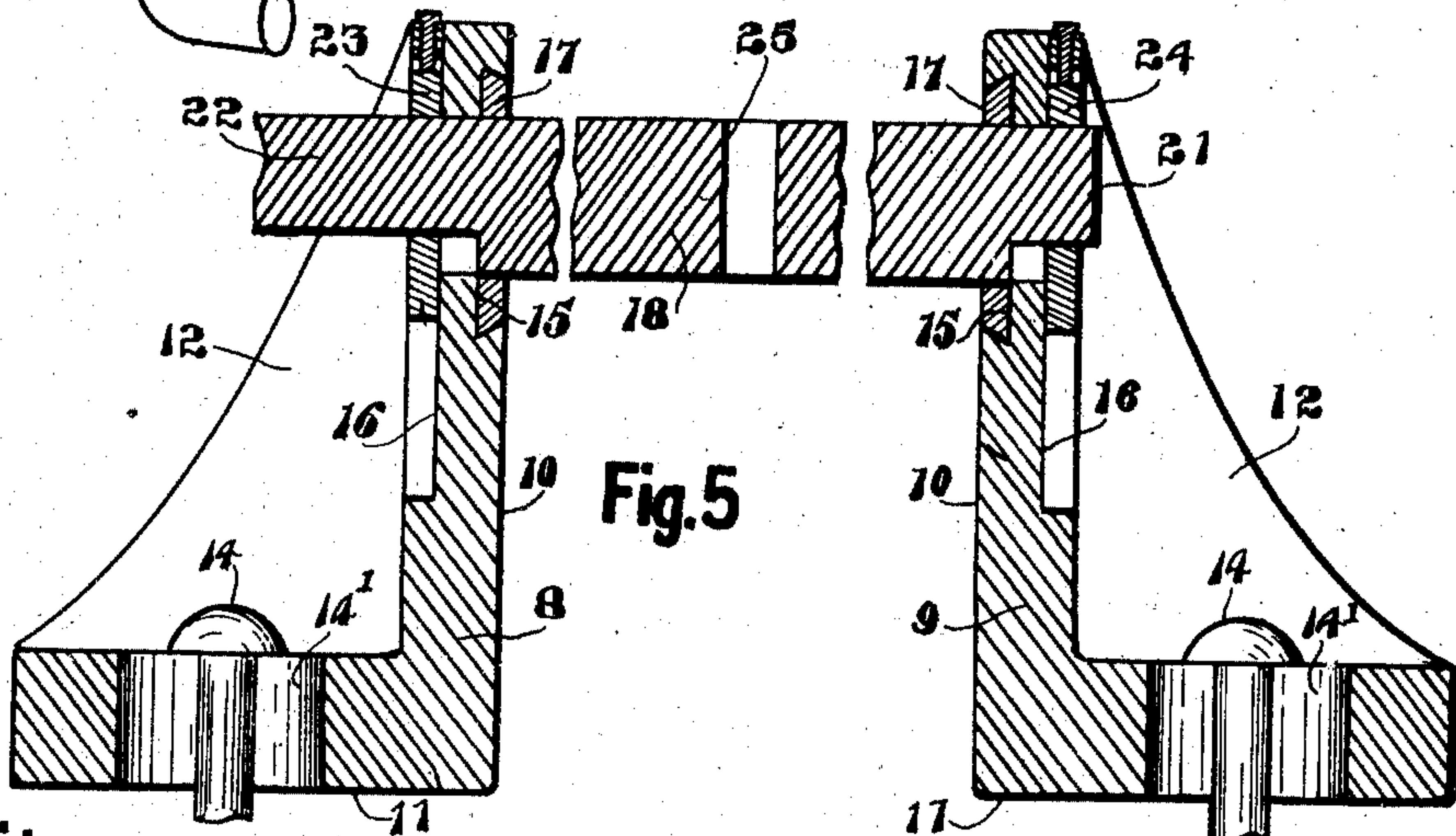


Fig. 5

Witnesses.

Jas. M. Tapley  
Charles D. Rouben

Inventor

By *J. Shaw*  
*Attorney*



# UNITED STATES PATENT OFFICE.

JAMES SHAW, OF DAUPHIN, MANITOBA, CANADA.

## ATTACHMENT TO LATHES FOR BORING ELLIPTICAL OPENINGS.

No. 928,404.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed July 24, 1907. Serial No. 385,372.

*To all whom it may concern:*

Be it known that I, JAMES SHAW, of the town of Dauphin, in the Province of Manitoba, Canada, lumber merchant, have invented certain new and useful Improvements in Attachments to Lathes for Boring Elliptical Openings, of which the following is the specification.

My invention relates to an attachment which may be applied to any form of lathe, to round out or cut elliptical openings, and the object of the invention is to provide a simple, strong and cheap attachment which will cut an exact ellipse, and further to make it applicable to a lathe, and it consists essentially of an opposing set of movable supports having outer and inner vertical and horizontal guideways, means for holding the supports to the bed of the lathe, a horizontal shaft having its ends fitted with similar eccentric stub shafts, slidable bearings in the guideways carrying the shaft and a tool extending from the shaft, the parts being arranged and constructed as herein-after more particularly described.

Figure 1. is the side elevation of my attachment as applied to a lathe. Fig. 2. is an enlarged vertical sectional view, the section being denoted by the line X X' Fig. 1., and looking toward the face of the outer support. Fig. 3. is an enlarged end elevation of one of the sliding supports. Fig. 4. is a top plan view of the support as shown in Fig. 3. Fig. 5. is a vertical sectional view longitudinally through the center of the shaft, and the opposing slidable supports. Fig. 6 is an enlarged perspective view of a lathe dog.

In the drawings like characters of reference indicate corresponding parts in each figure.

1 is the bed of the lathe and 2 is the ordinary cone on which the drive belt operates.

3 is the main shaft carried in the bearings 4 and 5 of the head stock, and 6 is the face plate at the inner end of the shaft.

7 is the apron and 7' the threaded shaft controlling the movement of the apron, and these parts are of the ordinary form employed, needing no further description here.

In the drawings I have removed the tail stock as with my attachment it is unnecessary to use it.

8 and 9 are two similar sliding supports of an angular form, having each a vertical and horizontal face 10 and 11 reinforced and

strengthened by ribs 12. The lower face of the support is cut at 13 to operate in V-shaped runways, carried by the bed of the lathe. However the form of the bottom will depend entirely upon the style of the lathe in each particular case. The uprights when in position have the vertical faces 10 facing each other, and the inner one is close to the face plate and the other at some distance.

14 are rods with enlarged heads being supplied with nuts and are used for holding the uprights in any adjusted position. This is done by simply passing them through an opening 14' in the face 11 and bolting to a cross plate carried in or below the bed of the lathe. The uprights have each a horizontal and a vertical guideway 15 and 16 respectively the one being horizontal and on the inner face and the other being vertical and on the rear face of the upright portion 10 of the standards. These guideways are the form of a dove-tail and are relatively in each upright at right angles to each other, and crossing each other.

17 are inner bearings fitted within the horizontal guideways and slidable therealong, and are adapted to receive the main shaft 18 which is journaled therein at either end.

19 are plates to take up loose play of the shaft occasioned by wear or such like, and are adjustable horizontally by means of set screws 20.

The main shaft 18 is fitted at its ends with two stub shafts 21 and 22, which are eccentric to the main shaft and in alinement longitudinally the one with the other. The stub shafts are each carried by bearings 23 and 24 similar to those 17, such bearings operating vertically in the guideways 16 in the rear face of the uprights. The latter bearings are provided with adjustable plates and set screws similar to those 19 and 20. As a matter of convenience I have found it better to place the set screws which adjust the plates on the upper and front ends of the bearings, thus allowing of easy access for adjusting. The main shaft 18 has a central opening in which is secured the cutting bar or tool 26, which has a sharpened outer end 27.

28 is a broken piece of the work carried on a table 29 to which it is firmly secured. In actual operation the top of cutting edge of the tool outlines an ellipse which is caused by the peculiar manner in which the main and stub shafts are carried in the bearings.



It will be seen in reference to Figs. 2 and 3 that the bearings 17 are in their central position of travel when the axes of the stub shafts and the main shaft lie in a vertical plane, and that the bearings 23 and 24 are in their central position of travel when the axes of the stub axles and the main shaft lie in a horizontal plane. The face plate 6 has the ordinary openings provided therein and I rotate the shaft by attaching a lathe dog 30 to the inner stub shaft, by means of a set screw 31. The free or turned end 32 of the dog passes into one of the openings in the face plate and fits loosely, thus allowing for the deviations due to the eccentric axle. The rotation of the face plate turns the shaft by virtue of the dog, and the tool operates on the work, it being fed to the tool by the motion of the table.

What I claim as my invention is:

In a device of the class described the combination with the supporting base of a set of opposing uprights, a main shaft adapted to support a tool and having eccentric stub shafts at its ends, said main shaft operating in slidable bearings carried by the respective uprights and the stub shafts operating in slidable bearings, the sets of bearings carrying the shaft and the stub shafts being slidable at right angles to each other, and means for rotating the main shaft, as and for the purpose specified.

Signed at Dauphin this 10th day of June, 1907.

JAMES SHAW.

In the presence of—

H. J. W. STEVENS,  
J. G. HARVEY.