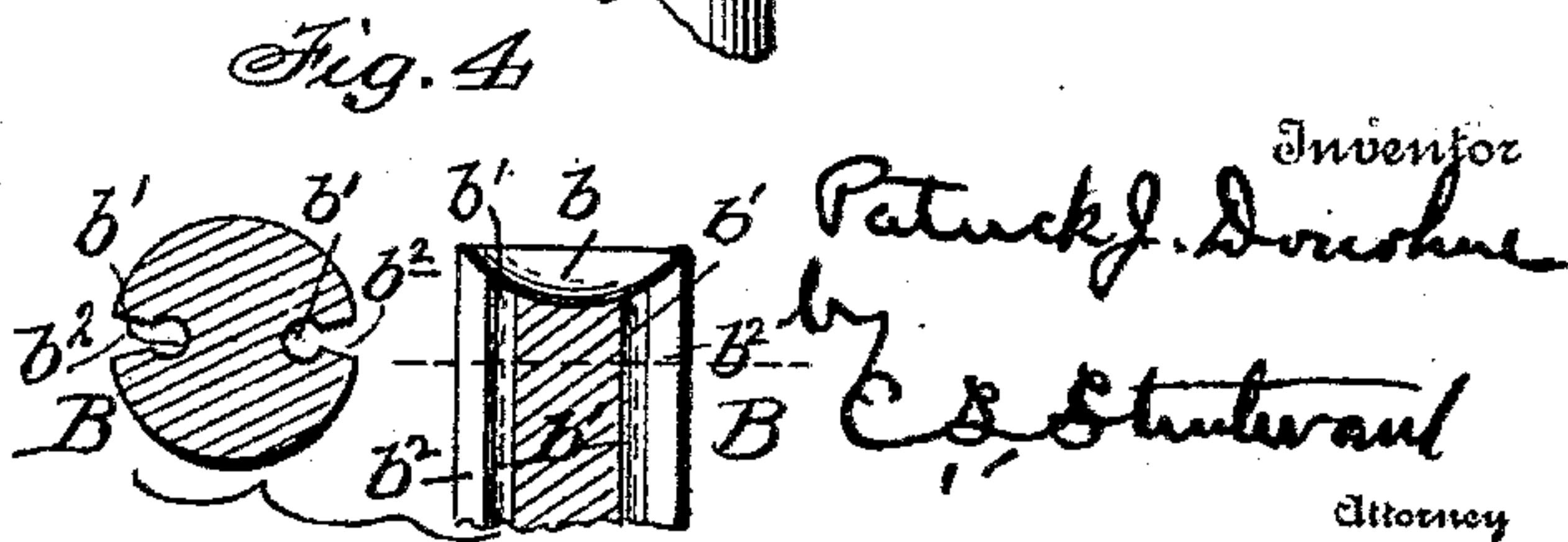
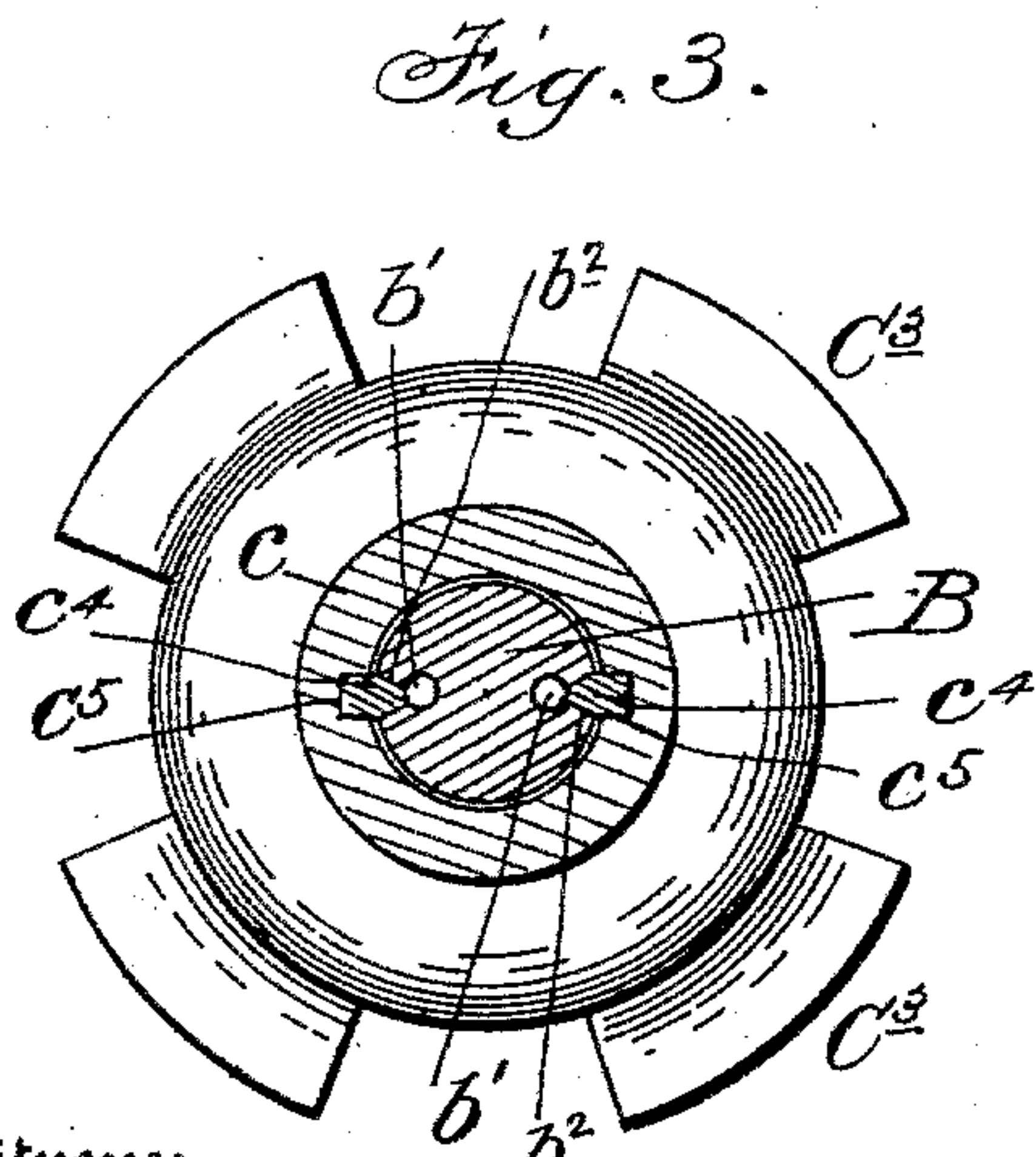
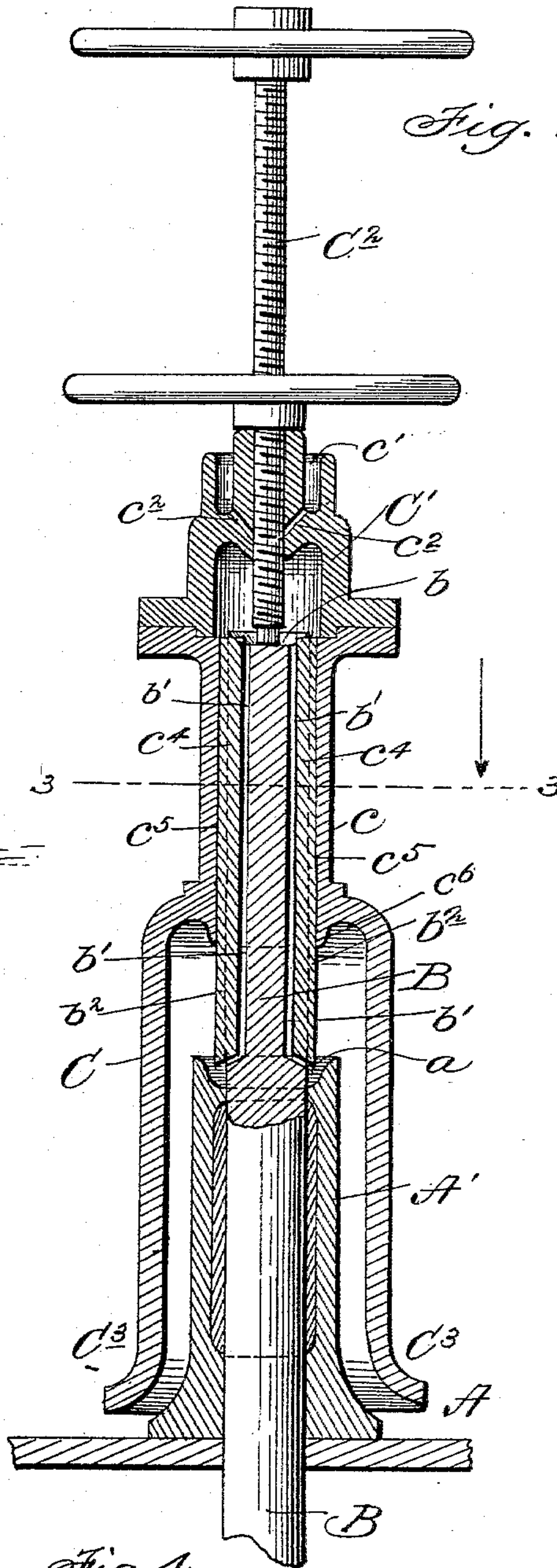
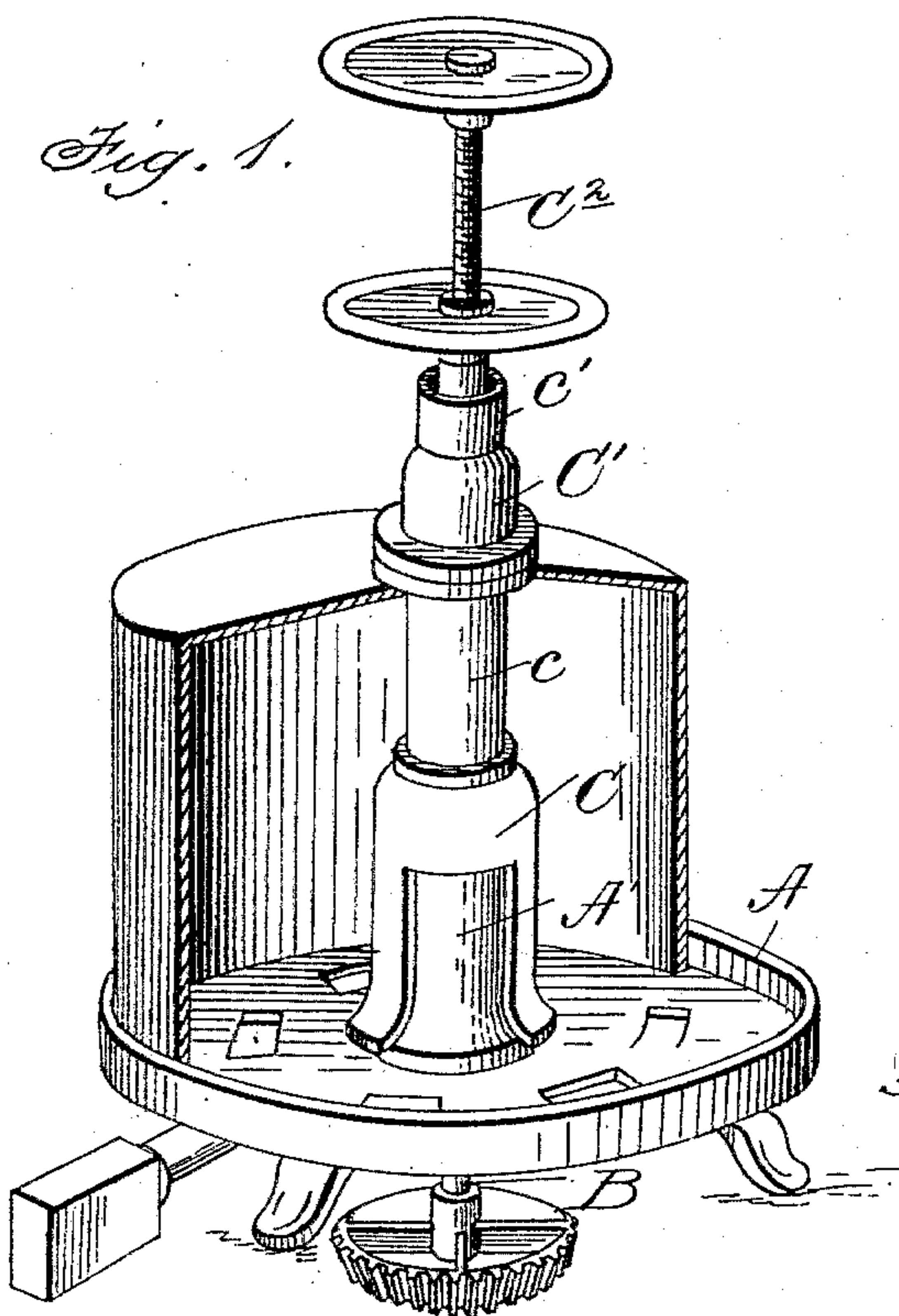


(No Model.)

P. J. DONOHUE.  
LUBRICATOR.

No. 597,371.

Patented Jan. 11, 1898.



Witnesses  
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# UNITED STATES PATENT OFFICE.

PATRICK J. DONOHUE, OF ROBINSON, UTAH.

## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 597,371, dated January 11, 1898.

Application filed August 20, 1896. Serial No. 603,283. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK J. DONOHUE, a citizen of the United States, residing at Robinson, in the county of Juab, State of Utah, have invented certain new and useful Improvements in Lubricators, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to lubricators for upright shafts or shafts not in a horizontal plane, and is herein shown as applied to a shaft of a pan or settle used in milling ores.

My object is to provide a construction in which the lubricating material can be fed to the interior of the machine from the outside and also to generally improve the construction of these devices.

To these ends the invention consists in the various matters hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective, partly in section, of an amalgamating-pan with my present invention applied. Fig. 2 is an enlarged central vertical sectional view; and Fig. 3 is an enlarged transverse sectional view on line 3 3, Fig. 2. Fig. 4 shows the shaft in transverse and vertical section with the keys removed.

A is the fixed base of an amalgamating-pan, and A' is the vertical shaft-bearing secured thereon and through which passes the rotary shaft B of the machine. The upper end of the bearing A' is hollowed to form an oil-cup *a*, as clearly shown in Fig. 2, and the interior of the bearing has the usual Babbitt-metal lining, as is also shown in said figure.

The upper end of the shaft B is hollowed or concaved to form an oil-cup *b*, and from this cup the shaft is provided with a plurality of channels *b*<sup>2</sup>, which extend down to a point adjacent to the cup *a* in the bearing A'.

The rotary part C of the machine which works in the pan to act upon the contents thereof is shown in the form of a tube or sleeve *c*, fixedly secured upon the channeled or grooved end of the shaft B and formed at its lower end with depending arms C<sup>3</sup>, extending parallel with and surrounding the bearing A'.

These arms C<sup>3</sup> are intended to carry the stirrers or other devices which act upon the contents of the pan. The interior of the tube or

sleeve is provided with longitudinal grooves *c*<sup>5</sup>, which register with the grooves or channels *b*<sup>2</sup>, and into these registering grooves or channels *b*<sup>2</sup> *c*<sup>5</sup> the keys *c*<sup>4</sup> are placed which secure the rotary part C to the shaft B. The grooves or channels *b*<sup>2</sup> are of greater depth than the portions of the keys which enter them, so that between the keys and the bases of the channels *b*<sup>2</sup> will be formed the oil-passages *b'*, as best shown in Fig. 3. This is best effected by making the grooves or channels *b*<sup>2</sup> in the form of a keyhole-slot in cross-section and providing the keys with beveled edges to fit the outer wider portions of the channels *b*<sup>2</sup>, as is also shown in Fig. 3. Thus the same channels or grooves *b*<sup>2</sup> which receive the keys will also serve to form oil passages or conduits, thereby lessening the number of grooves required in the shaft.

The upper end of the rotary part C of the machine is formed as a cap or housing C' on the upper end of the sleeve *c*. This cap or housing has a vertical threaded opening, down through which extends the usual screw C<sup>2</sup>, which rests at its lower end on the upper end of the shaft B, so as to adjust the rotary part C up and down on the shaft. In the upper end of this cap or housing, forming the top or upper end of the part C, is formed an annular oil cup or receptacle *c'*, and from the bottom of this cup or receptacle *c'* lead the inclined passages *c*<sup>2</sup>, the inner ends of which open into the opening through which the screw C<sup>2</sup> passes. It will be seen, therefore, that the oil will pass from cup *c'* to the screw, thence to the cup *b* in the upper end of the shaft B, and down through the longitudinal channels or passages *b'* to the cup *a*, from which it will pass into the bearing A' and lubricate the shaft B, which is the object sought to be attained.

In order that no oil may find its way outwardly from the lower end of sleeve *c* along the arms C<sup>3</sup> into the contents of the pan, I form a depending annular flange C<sup>6</sup> at the lower end of the sleeve *c* and within the upper ends of the arms C<sup>3</sup>, so that any oil escaping below the sleeve will flow from the said flange down the shaft or drop into the cup *a*.

What I claim is—

1. The combination with the vertical bear-



ing and a shaft turning therein and provided above the bearing with longitudinal oil-channels leading down from its upper end to the upper end of said bearing, of a part rotated by the shaft and having a sleeve fitting the upper end thereof and secured thereto, a cap or housing secured on the upper end of said sleeve and provided with a vertical threaded opening, an annular oil cup or receptacle communicating with said opening and the screw extending down through said opening to the upper end of the shaft and along which the oil flows from said cup to the upper end of the shaft and the oil-channels therein, substantially as described.

2. The combination with the vertical bearing and a shaft turning therein and provided with longitudinal grooves or channels leading from its upper end down to the upper end of said bearing, of a part rotated by the said shaft and having a sleeve fitting the upper end of the shaft and provided with longitudinal grooves or channels registering with those in the shaft, keys entering said registering grooves or channels to key the parts together, said keys however only closing the outer sides of the shaft and thereby forming oil-passages between the keys and bases of said grooves or channels, and means for supplying oil to the upper ends of said passages, substantially as described.

3. The combination with the vertical bearing having a cup in its upper end, and the shaft turning in said bearing, provided in its upper end with a cup or concavity and having longitudinal channels leading down from said cup to a point above the said bearing, of a part rotated by said shaft and having a sleeve fitting the channeled end thereof, and provided with channels registering with the shaft-channels, keys entering said channels to connect the parts; said keys however only partially filling the shaft-channels and thereby forming oil-passages between the bases of the channels and the keys, a cap secured on the upper end of the sleeve and provided with an oil-cup in its upper side and means for conducting the oil from said cup to the cup in the upper end of the shaft, substantially as described.

4. The combination with a longitudinally-channeled shaft, of a part having channels registering with those of the shaft, keys entering said registering channels but not ex-

tending to the base of the shaft-channels whereby said part is secured to the shaft for rotation thereby and whereby also passages are formed for conducting oil along the shaft and past the part secured to it for rotation, substantially as described.

5. The combination with the shaft having longitudinal channels shaped in cross-section like a keyhole-slot, of a part fitting the shaft and having channels registering with those of the shaft and keys closely fitting the channels in said rotated part and having beveled edges fitting the outer portions of the shaft-channels whereby said part is secured to the shaft for rotation thereby and whereby also the inner circular portions of said shaft-channels form oil-passages past the part carried by the shaft for rotation thereby, substantially as described.

6. The combination of the vertical bearing having a cup in its upper end, and a shaft extending up through and rotating in said bearing; said shaft having an oil channel or passage leading from its upper end down to a point adjacent to the upper end of said bearing, with the part secured to the upper end of the shaft for rotation thereby and having a cap or housing at its upper end above the upper end of the shaft; the said housing being provided with an oil cup or receptacle adapted to supply the upper end of the shaft channel or passage with oil, substantially as described.

7. The combination with the vertical bearing having an oil cup or concavity in its upper end and the shaft extending through and turning in said bearing and provided with longitudinal oil-channels leading from its upper end down to a point adjacent to said oil-cup, of the rotary part comprising a sleeve secured on the upper portion of the shaft, and having means at the upper end for supplying said channels with oil; the lower end of said sleeve being provided with offset depending arms and a depending annular flange at its lower extremity within the upper ends of said arms; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

PATRICK J. DONOHUE.

Witnesses:

GERTRUDE E. CORKER,  
BENJ. W. JENNENS.