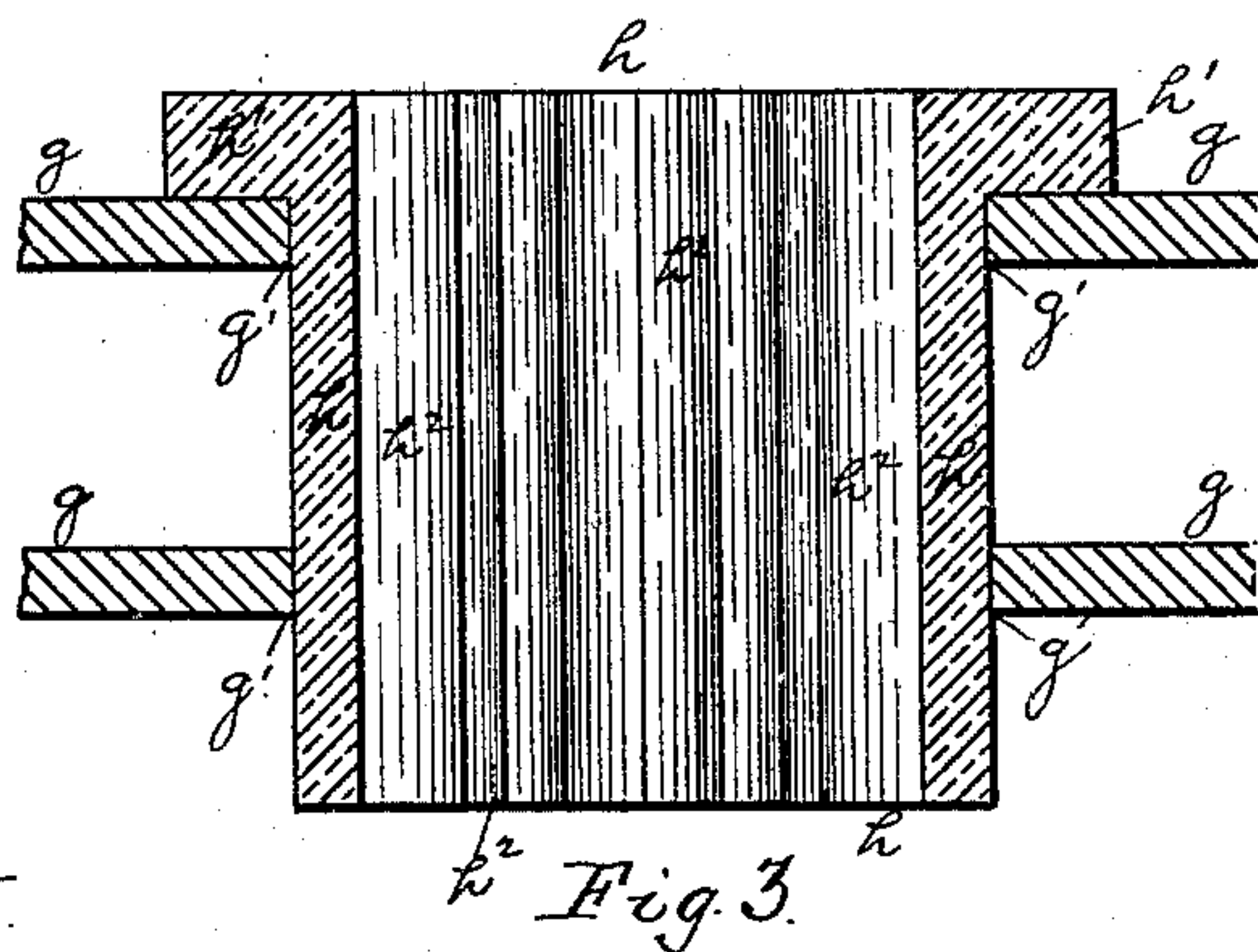
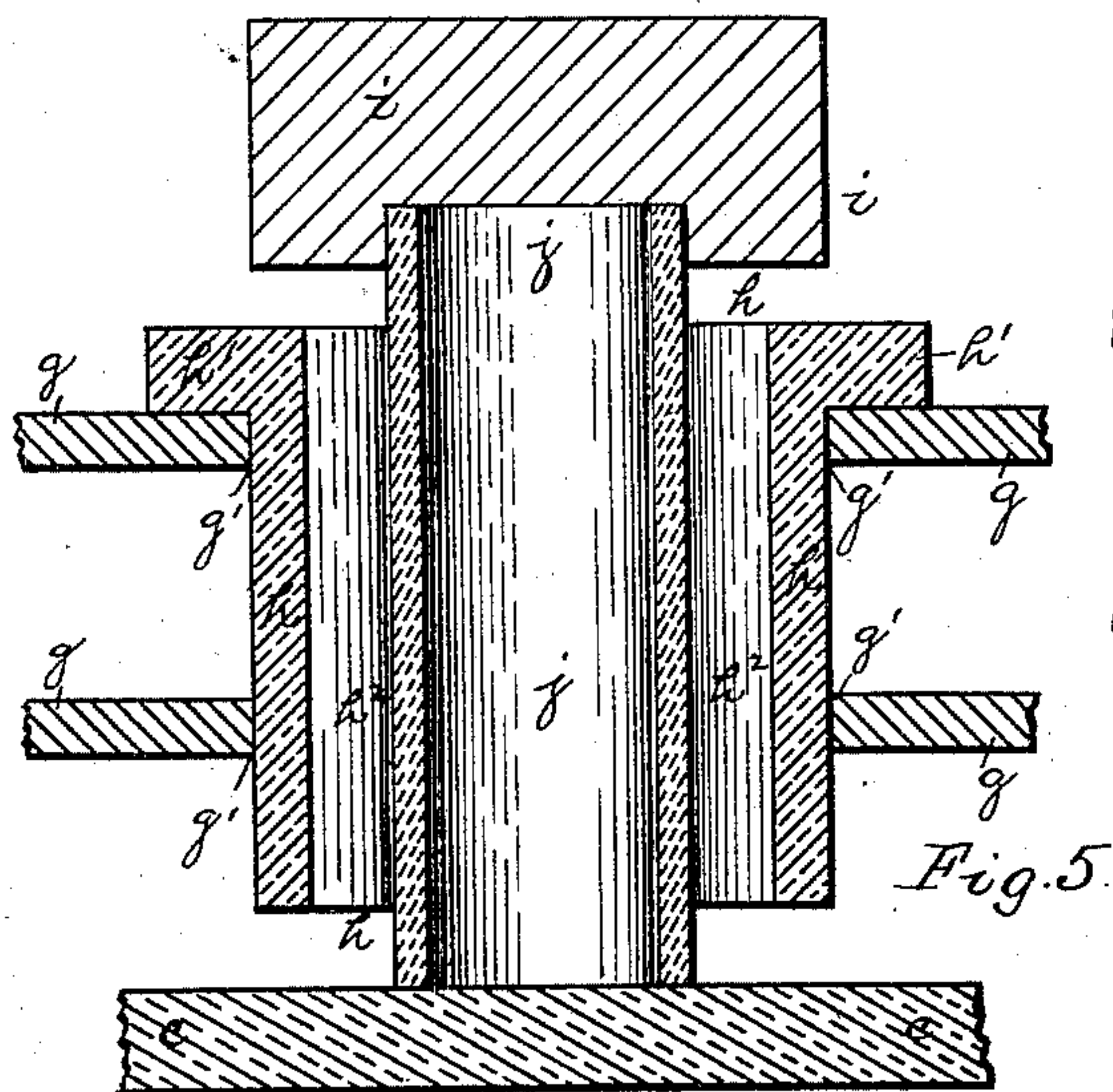
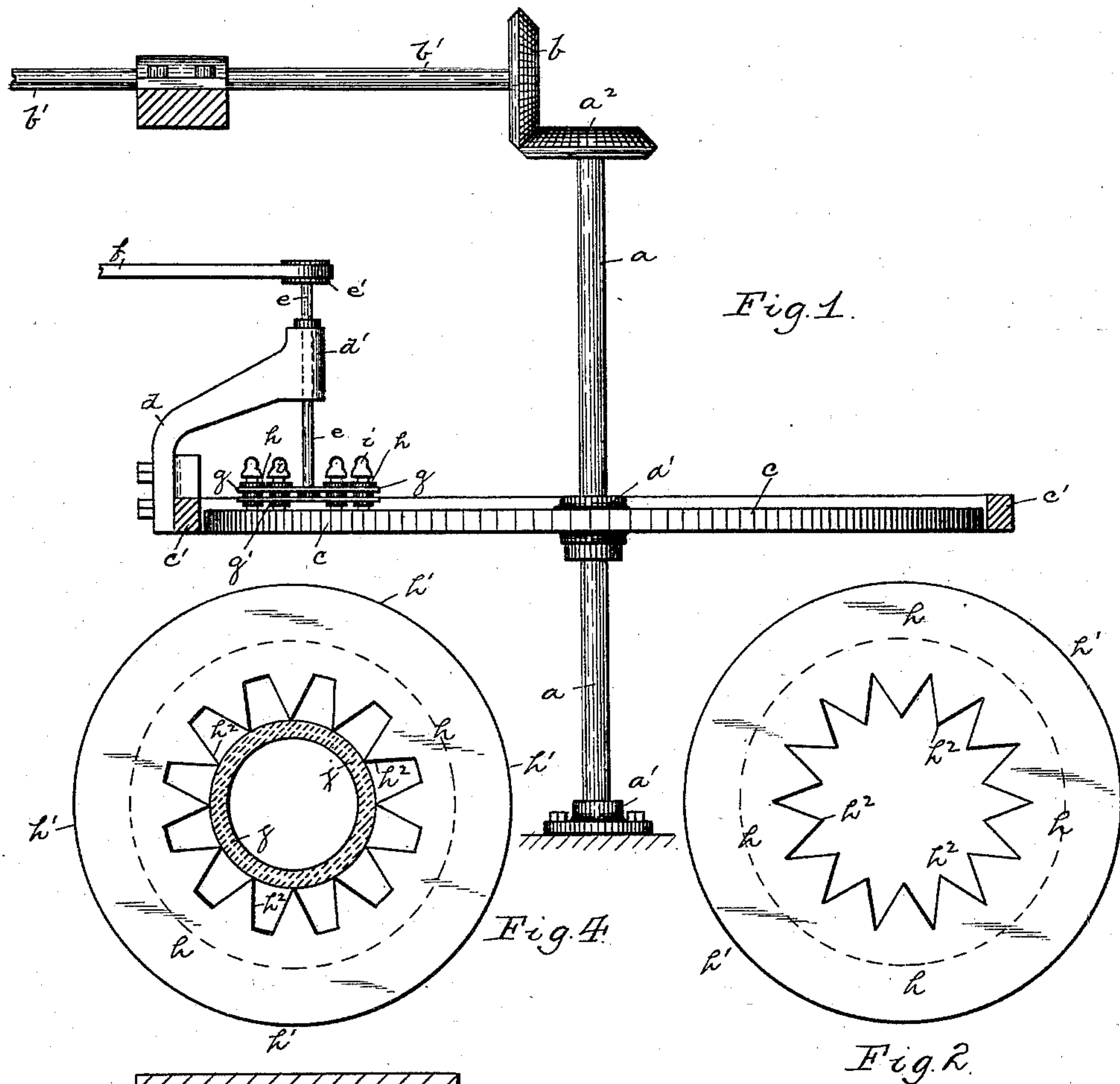


(No Model.)

G. A. MACBETH.  
MACHINE FOR GRINDING GLASSWARE.

No. 426,671.

Patented Apr. 29, 1890.



Sicknesses.  
 J. H. Cooney  
 Robt. D. Lottin

Inventor  
George A. Macbeth  
By James S. May  
Attorney



# UNITED STATES PATENT OFFICE.

GEORGE A. MACBETH, OF PITTSBURG, PENNSYLVANIA.

## MACHINE FOR GRINDING GLASSWARE.

SPECIFICATION forming part of Letters Patent No. 426,671, dated April 29, 1890.

Application filed April 25, 1889. Serial No. 308,498. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. MACBETH, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Grinding Glassware; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to machines for grinding articles of glassware—such as for finishing the ends of glass tubes or lamp-chimneys, &c.—its special object being to provide a holder for supporting the article to be ground, which holder is adapted to receive and firmly support different sizes of the same article, and which also prevents the scratching and marring of the outer surface of the article during the grinding operation.

To these ends my invention consists, generally stated, in a machine for grinding glass, having a grinding-wheel, a disk above said grinding-wheel having seats therein to receive a number of holders, said holders being formed of rubber or other suitable elastic material, and the interior faces of said holders having a series of longitudinal projections or ribs extending inwardly therefrom, said ribs engaging with the tube or other article to be ground and properly supporting it and preventing the scratching of the surface of the tube in case of slight movement thereof, while they enable the holder to accommodate itself to different sizes of tubes.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 shows a side view, partly broken away, of a grinding-machine having my holders attached thereto. Fig. 2 shows a top view of my improved holder; Fig. 3, a cross-section of same. Fig. 4 is a top view showing the article to be ground inserted, and Fig. 5 is a cross-section of the same.

Like letters indicate like parts in each.

I will describe my invention in connection with a suitable form of grinding-machine, in which—

$a$  is the central upright shaft arranged to revolve in suitable bearings  $a'$  and having secured to its upper end the beveled gear-

wheel  $a^2$ , adapted to mesh with the gear-wheel  $b$ , mounted on the shaft  $b'$ , said shaft to be driven by any suitable power.

Secured to the central shaft  $a$  and adapted to revolve therewith is the grinding-wheel  $c$ , constructed of suitable material and surrounded by the wall  $c'$ . Arranged at one side of the grinding-wheel  $c$  and secured to a suitable support is the arm  $d$ , said arm extending over and above the grinding-wheel  $c$ , while bearing in suitable bearings  $d'$  on the end of said arm  $d$  is the upright shaft  $e$ , said shaft being arranged to be driven by the pulley  $e'$ , secured thereto, and the belt  $f$ , driven by suitable power. Secured to the lower end of said shaft  $e$  is the disk  $g$  and adapted to revolve therewith.

Arranged at intervals around disk  $g$  are the seats  $g'$ , said seats adapted to receive the holders  $h$ , the flanges  $h'$ , formed on said holders, resting upon the surface of the disk to hold said holders in position. These holders  $h$  are preferably cylindrical in form, and are constructed of rubber or other suitable elastic material which will not act to scratch or mar the surface of the glass when placed therein. The interiors of the said holders  $h$  are formed with the longitudinal projections  $h^2$ , which extend out from the inner faces of the holders, forming thereby a serrated face upon the interior of the holder. These projections may be formed with sharp edges, or may be rounded off, as desired.

Weights  $i$ , of suitable size and shape, are placed upon the upper ends of the articles  $j$  to be ground, in order to press and hold the said articles against the grinding-wheel.

As my improved holder is especially applicable for grinding cylindrical articles of glassware, I will illustrate its operation in connection with grinding or finishing the ends of glass tubes. The tubes to be ground are inserted in the holders  $h$ , while the serrated interior of said holders formed of the ribs or projections  $h^2$  act to grasp and clutch the outer surface of the tubes  $j$  and prevents the canting of the same. The holders are then placed in their respective seats  $g'$ , with their flanges  $h'$  resting on the disk  $g$  and the weights  $i$  placed on the upper ends of the tubes  $j$ . By means of suitable power applied



to the shafts *a* and *e* the grinding-wheel *c* and disk *g* are caused to revolve, a proper amount of sand and water having been placed therein when the grinding operation begins.

5 As long as the weights *i* rest upon the tubes *j* the grinding operation will continue; but as soon as they are removed there is nothing to force the tubes into contact with the grinding-wheel, and the holders support the tubes,

10 their elastic ribs pressing thereon with sufficient force to prevent their further descent, and consequently the further grinding of the tubes ceases. They may then be removed and others inserted without the necessity of stopping the grinding-wheel. Although the serrated interior of the holders tends to grasp and hold the tube free from canting or rotation, yet even if the tube, acted upon by the friction caused by its contact with the grinding-wheel, does cant slightly within the holder

20 there is no danger of the outer surface of the tube being scratched or marred, owing to the rubber or other elastic material of which the holders are formed, and as the projections *h*<sup>2</sup> adhere closely to the surface of the glass no sand can find its way between the edges of said projections, which would act to scratch the glass; but any sand that does find its way into the holders will be confined

30 to the spaces between the projections, where it can do no harm; and, further, these projections within the holder being elastic and pliable, tubes of different sizes may be inserted in the same, for tubes of larger diameter being forced into the holders will displace the edges of said projections and render the space correspondingly larger. The use of this form of holder has been found especially advantageous in finishing the ends of short

35 tubes, to be used as oil-cups, and where it is necessary that the edges be very evenly and accurately finished, and in grinding them I find it convenient, having cut the tubes to a length approximate to that of the finished

45 tubes, to insert them into the holders and rest the weights thereon, when the grinding op-

eration is begun and allowed to continue until that end of the tube is finished, when the tube is reversed and the other end subjected to the grinding operation until the weights rest upon the upper surface of the disk, when no further grinding of the tube is possible. In this way the seats of the disk may be filled with the holders, one end of which has been ground, and the grinding operation goes on without the necessity of any one watching the progress of the grinding to see that it is not carried too far.

I find that by the use of my improved holder I am enabled to produce true and even surfaces, as the rubber gives a firm support, and at the same time I obtain a surface on the article ground free from scratches and scores.

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

1. In a machine for grinding or finishing glass tubes and like articles, having a suitable grinding-wheel, the combination, with the revolving disk having a seat therein, of a holder adapted to rest in said seat, said holder being formed of elastic material and adapted to grasp the article throughout the length of the holder and support it within the disk, substantially as and for the purposes set forth.

2. In a machine for grinding or finishing glass tubes and like articles, having a suitable grinding-wheel, the combination, with the disk having a seat therein, of a holder adapted to rest in said seat, said holder being formed of elastic material, and the interior face of said holder having a series of longitudinal projections extending inwardly therefrom to come in contact with and grasp the article to be ground, substantially as and for the purposes set forth.

In testimony whereof I, the said GEORGE A. MACBETH, have hereunto set my hand.

GEO. A. MACBETH.

Witnesses:

J. N. COOKE,  
ROBT. D. TOTTEN.