

No. 606,765.

Patented July 5, 1898.

J. S. OGDEN.

MANUFACTURE OF RUBBER FACED TYPE WHEELS.

(No Model.)

(Application filed June 25, 1897.)

2 Sheets—Sheet 1.

Fig. 1

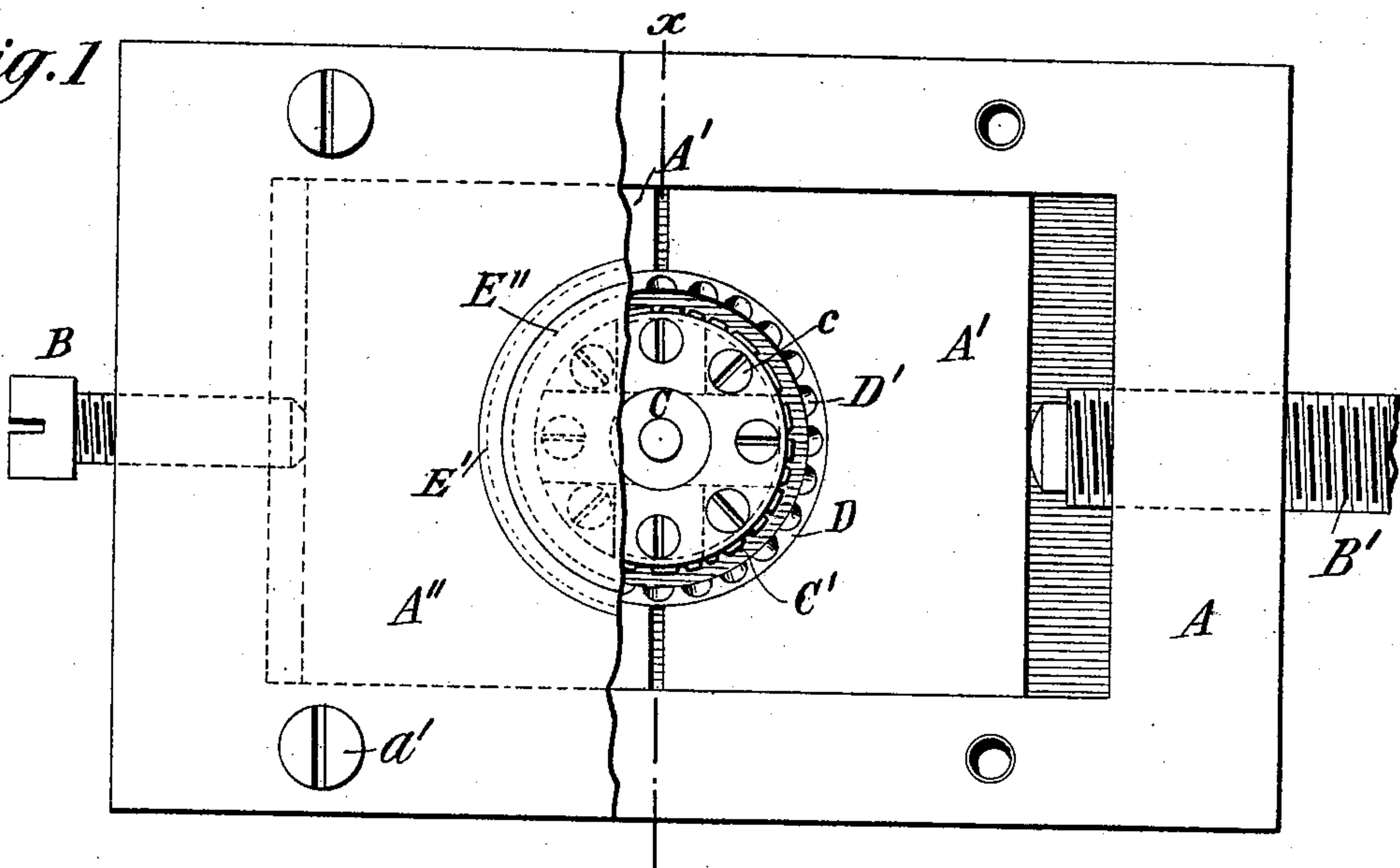


Fig. 2

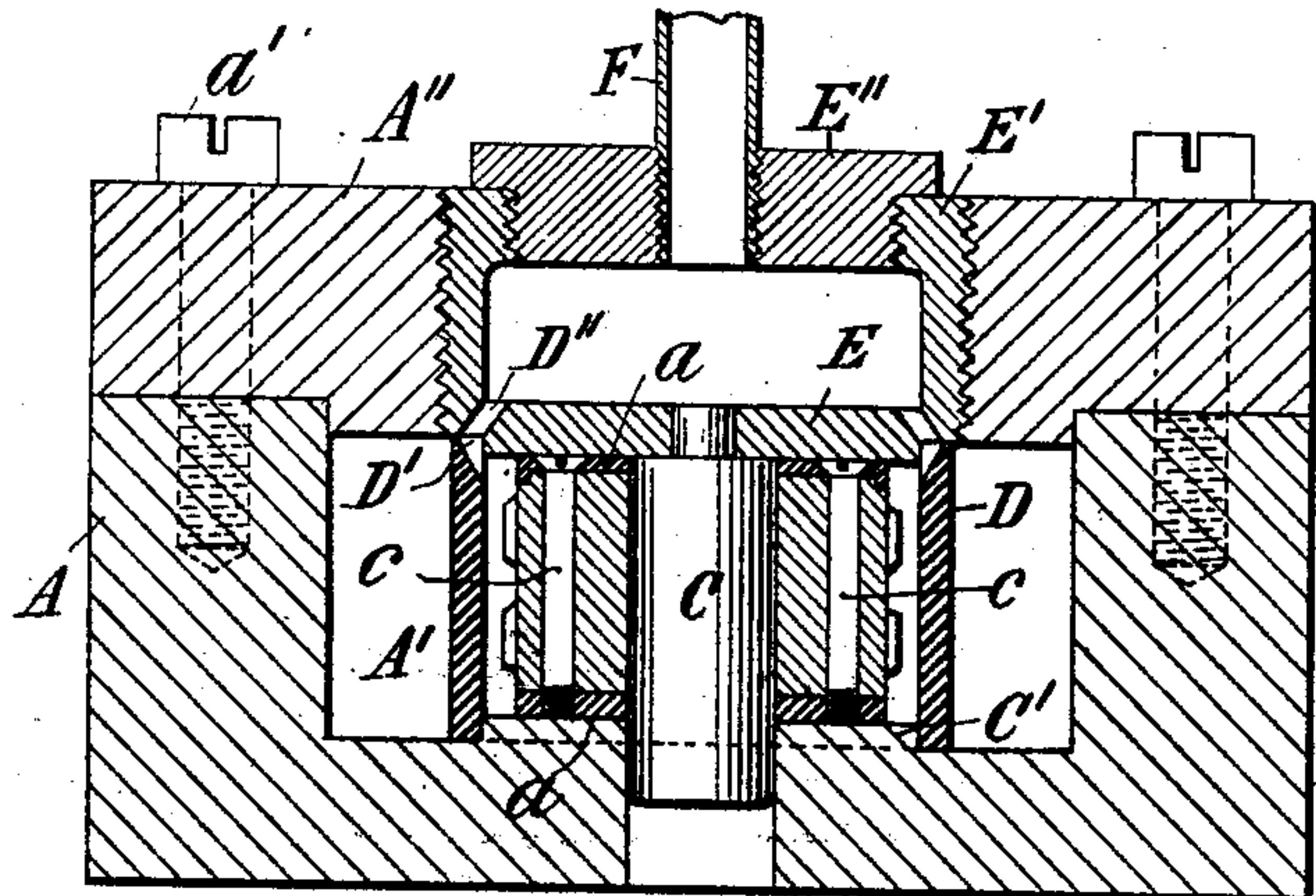


Fig. 3

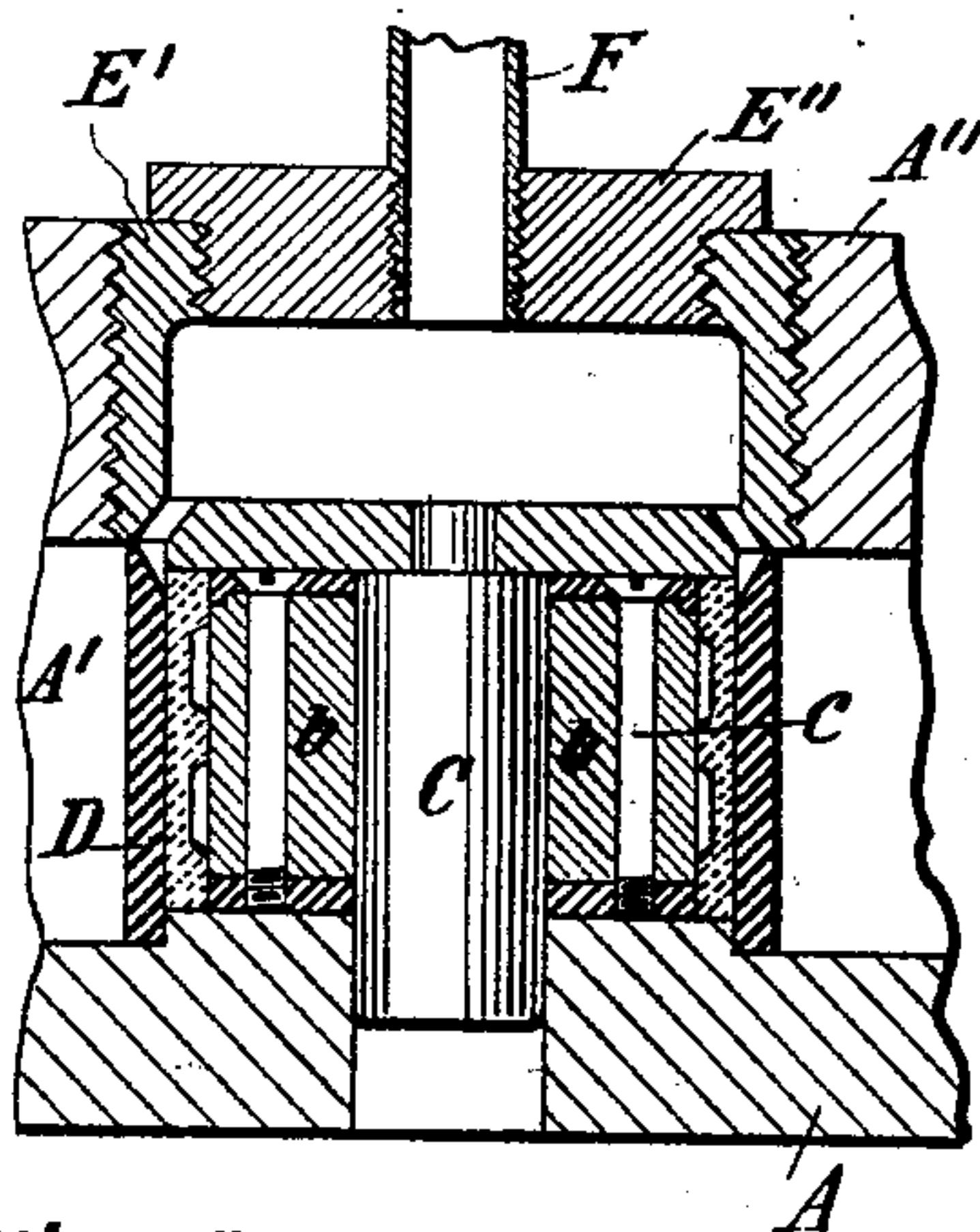


Fig. 4

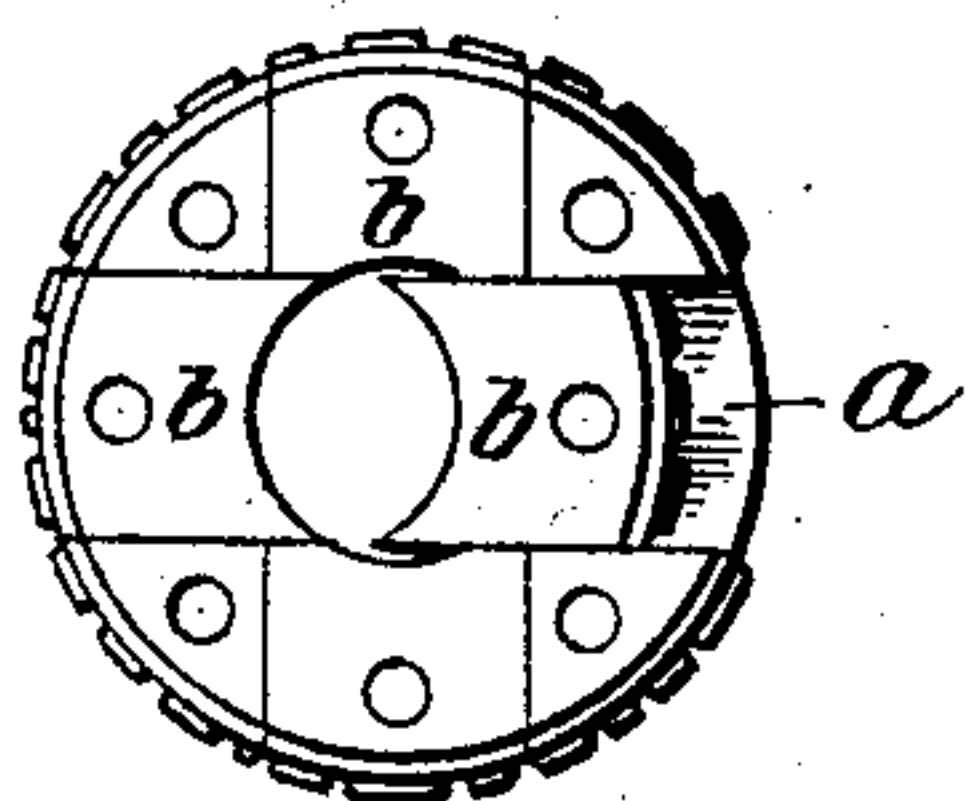
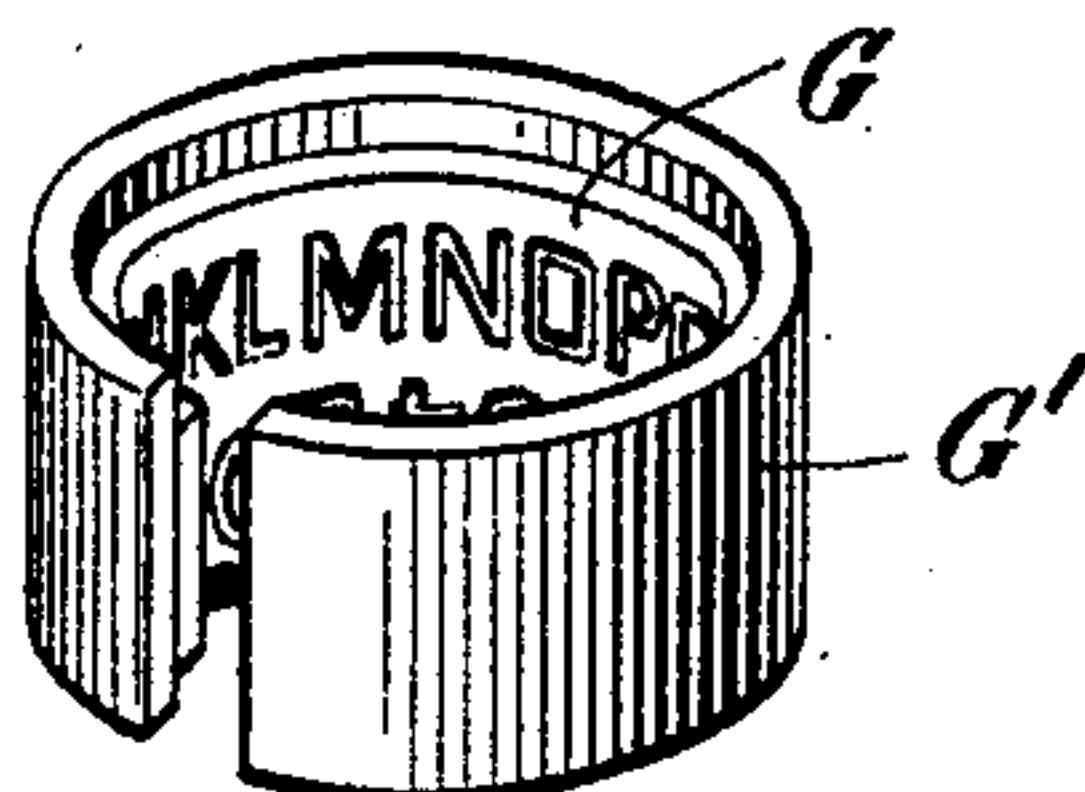


Fig. 5



Witnesses:  
Raphaël Ketter  
Benjamin Miller.

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Fig. 6

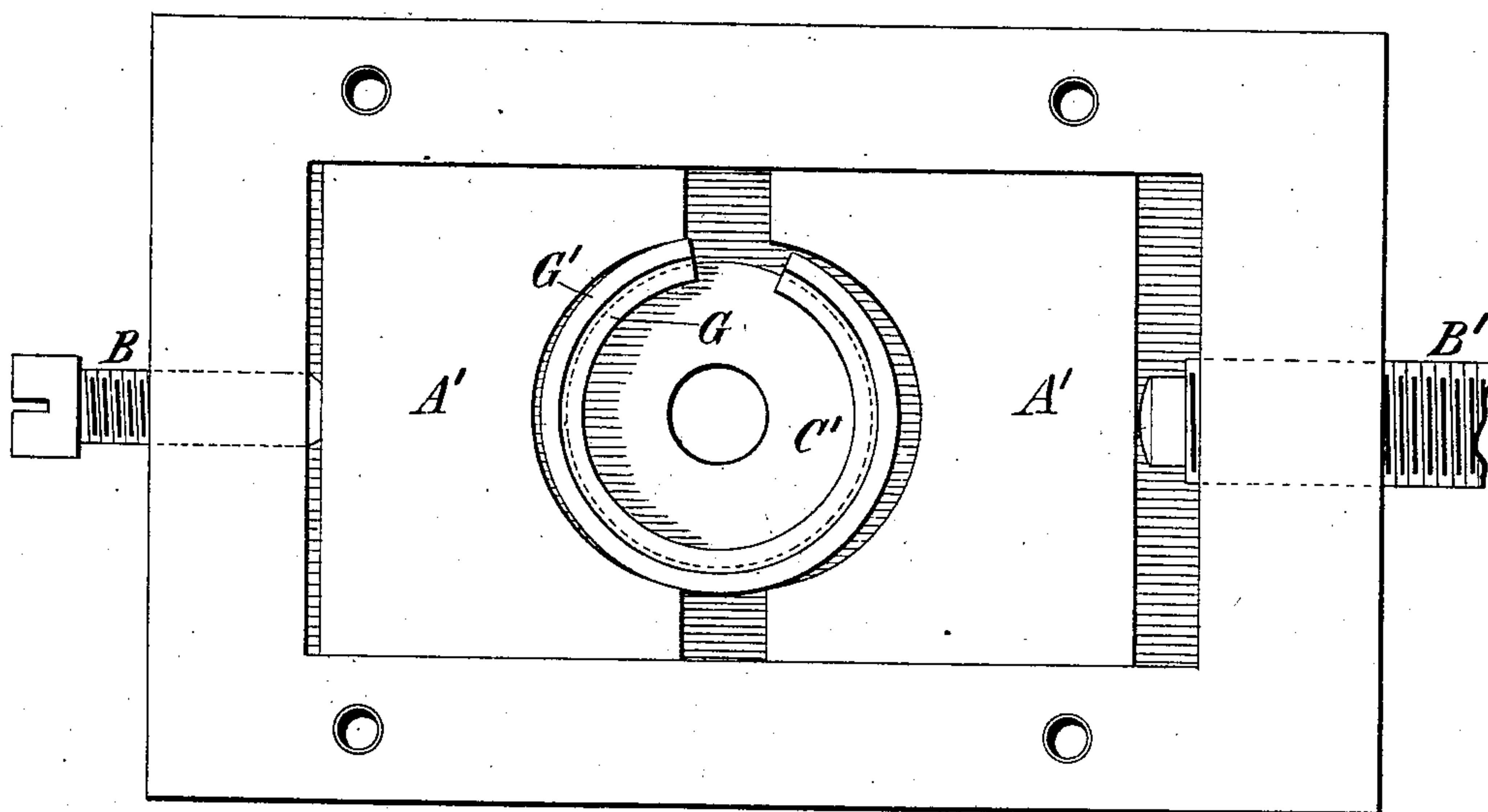


Fig. 7

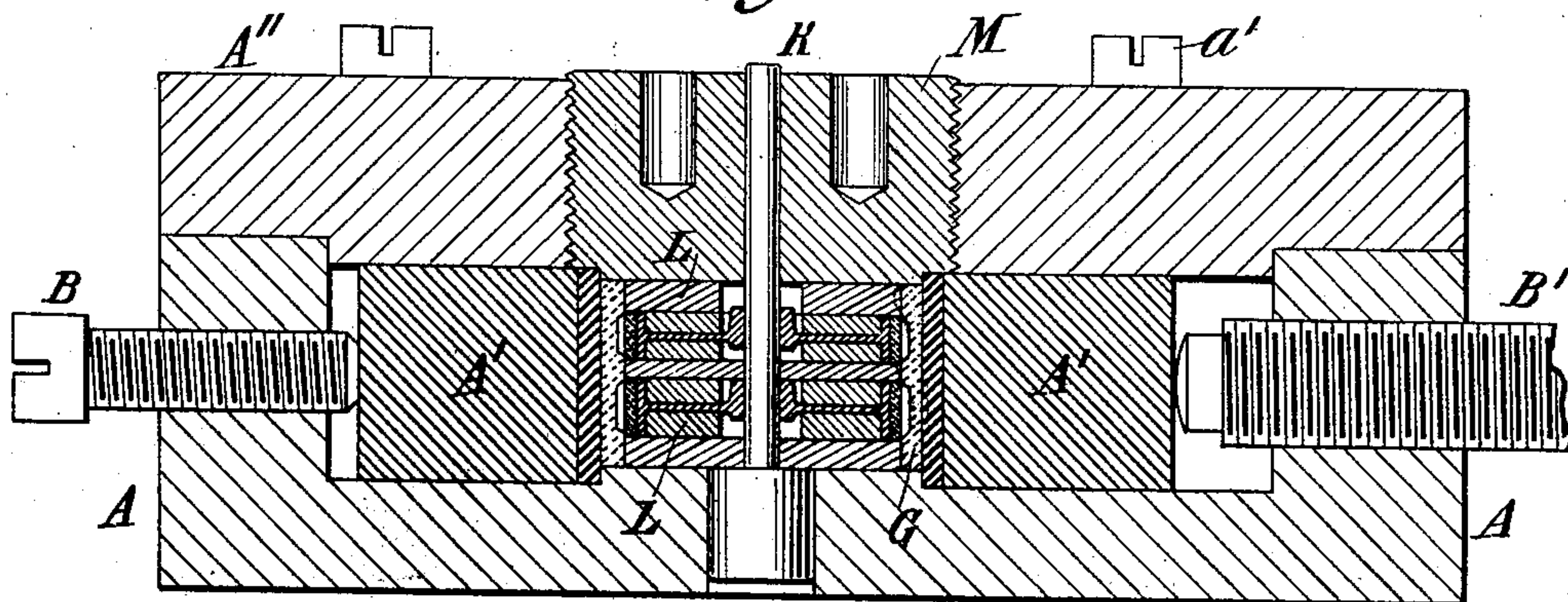


Fig. 8

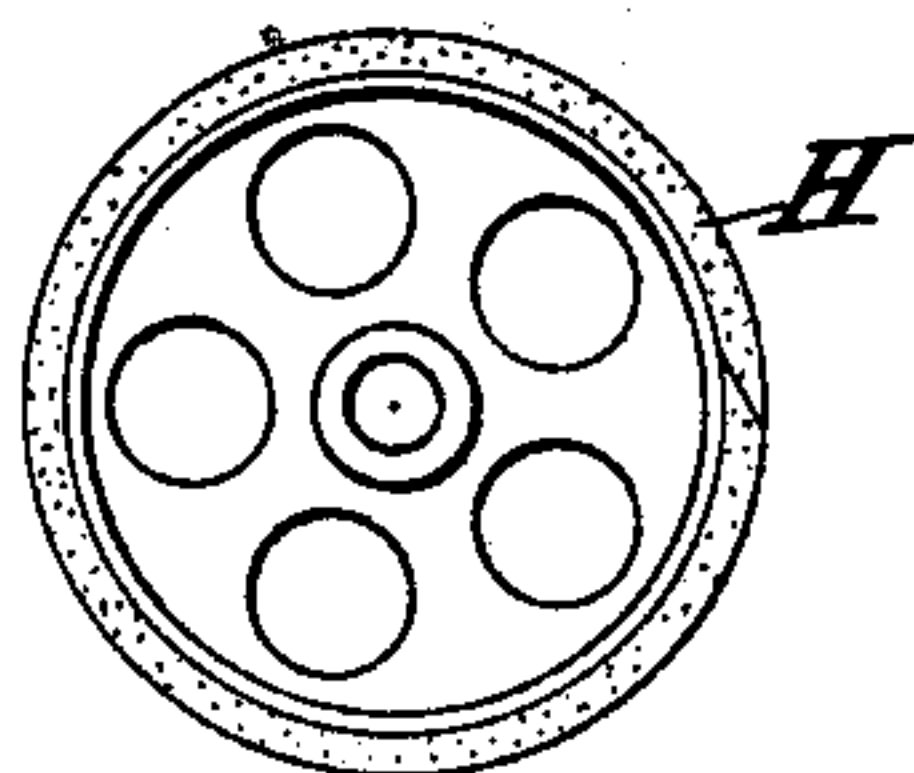
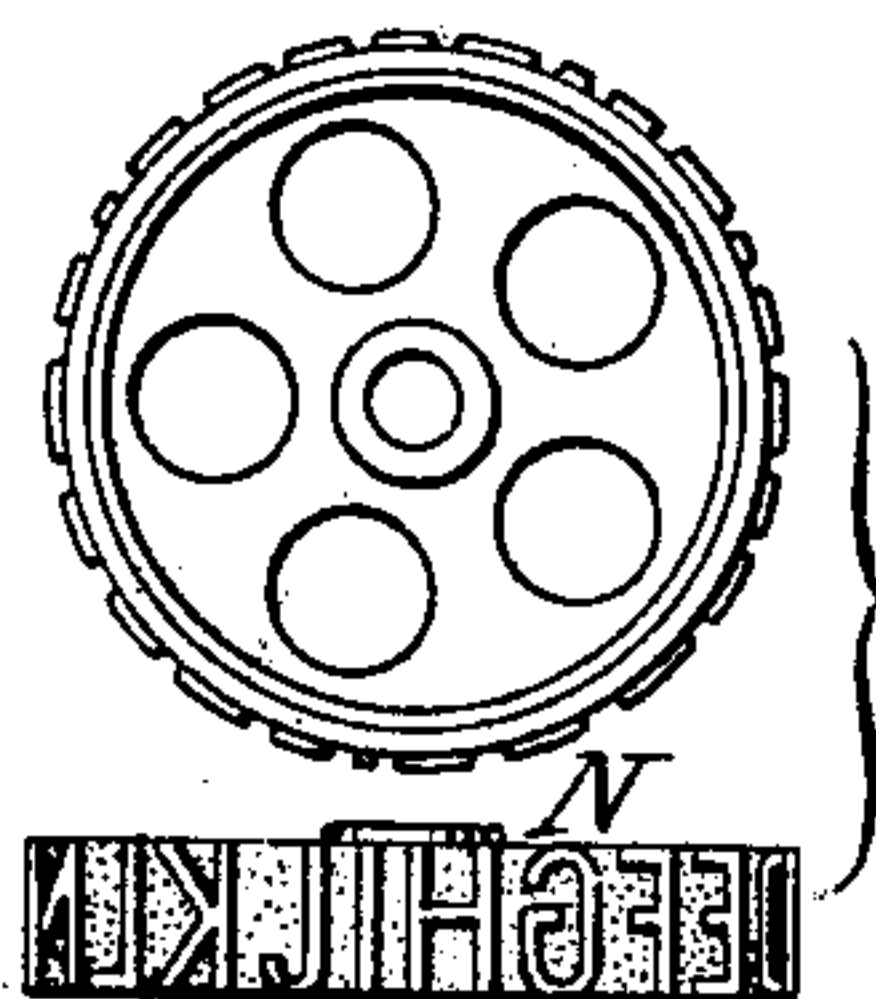


Fig. 9



Witnesses:

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Att'ys



# UNITED STATES PATENT OFFICE.

JOHN S. OGDEN, OF BROOKLYN, NEW YORK.

## MANUFACTURE OF RUBBER-FACED TYPE-WHEELS.

SPECIFICATION forming part of Letters Patent No. 606,765, dated July 5, 1898.

Application filed June 25, 1897. Serial No. 642,280. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN S. OGDEN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in the Manufacture of Rubber-Faced Type-Wheels, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

10 The invention which forms the subject of my present application for Letters Patent is an improvement in apparatus for the manufacture of rubber-faced type-wheels—such as are employed in printing-telegraph instru-  
15 ments, type-writers, and the like—or, in general, any article which possesses the essential characteristics of a type-wheel in being a circular or cylindrical body having a peripheral surface of vulcanized india-rubber  
20 with distinctive characters embossed thereon.

It has heretofore been a matter of considerable difficulty and expense to produce a rubber-faced type-wheel with the characters thereon alined, spaced, and faced in proper  
25 manner for printing a clear record. The apparatus employed for the purpose has usually been some form of sectional mold of a complicated and expensive character and the methods of manufacture slow and somewhat  
30 difficult. I have fully overcome the difficulties and complications heretofore encountered in such manufacture and have devised apparatus for producing these devices cheaply and accurately.

35 My improvement consists in an apparatus involving as its chief characteristic a flexible or resilient matrix-strip which is adapted to be applied to a type-wheel faced with crude india-rubber in such manner that the latter  
40 will be enfolded within the strip and the rubber forced into the depressions in the said strip, and the strip is of such character or composition that the rubber facing may be vulcanized while thus encircled by the strip  
45 and the latter then unfolded and detached. In conjunction with the strip I employ suitable means, preferably of the special character hereinafter more fully described, for compressing the strip around the rubber-faced  
50 wheel during the process of vulcanization.

I now refer to the drawings for a descrip-

tion of my improvement and of the manner of producing and applying the matrix.

Figure 1 is a plan view, with a portion of the cover removed, of the device which I employ for producing a matrix. Fig. 2 is a section of the same on line *xx* of Fig. 1. Fig. 3 is a portion of a similar section showing the type-metal run in. Fig. 4 is a plan view of the die. Fig. 5 is a perspective view of the matrix and support therefor. Fig. 6 is a plan view of the mold for the type-wheels. Fig. 7 is a central longitudinal vertical section of the same. Fig. 8 is a plan view of a type-wheel previous to the formation of the characters, and Fig. 9 shows the complete wheel.

The first step necessary in carrying out the invention is to produce a die or what is usually termed an "original" wheel, with characters on its periphery corresponding to those which are to be ultimately formed on the rubber facing of the type-wheels. This die I make as shown in Figs. 1 to 4. It is composed of metal with top and bottom plates *a* and eight intermediate sections with a hole through the center equal in diameter to the width of the four sliding or radial sections *b*  
75 *b*. The die is held together by screws *c* and forms a practically solid ring with the raised characters cut on its periphery. From this die I form a matrix as the next step in the following manner:

A is a metal box containing two sliding blocks *A'*, recessed at their ends and adjustable by means of a set-screw *B* and a clamping-screw *B'*. In the bottom of the box is a hole through which is passed a centering and steadying pin *C*. Over this is passed the sectional die, which rests upon a boss or circular elevated portion *C'*, which serves as a centering-support for the matrix-mold. This latter is a metal ring *D*, which is fitted over the boss *C'* around the die. Around its upper edge notches *D'* are cut to form passages for the metal into the mold. A cover *E* is then placed over the mold, having notches *D''* in its edge registering with notches *D'*. The box *A* is then closed by a cover *A''*, fastened by screws *a'* and having an opening with a threaded bushing *E'*, the beveled end of which abuts against the correspondingly-beveled



edge of the cover E and centers and clamps firmly in position the die and the mold. The opening in the cover A'' is then closed by a cover E'', having a tube F passing through it  
 5 and extending upward for perhaps two or three feet in order that when the molten metal is poured down through it into the mold there may be sufficient pressure to force the said metal into all parts of the mold and prevent  
 10 air-holes.

The metal used for the matrix may be type-metal or any other suitable for the purpose which has a certain amount of resiliency or flexibility. When it has been poured into  
 15 the space above the cover E, it runs down through the passages provided therefor into the annular space between the die and the mold, filling such space, as shown in Fig. 3.

After the metal has cooled, the casting or  
 20 matrix, with the sectional die, is removed from the mold, the end plates of the die detached by loosening the screws c, and the die then taken out by sections, which may be accomplished by first pushing out the center  
 25 plug C and then sliding the radial sections b toward the center, as shown in Fig. 4. The matrix G will then be in the form of a ring. This is split, as shown in Fig. 5, and secured to the inside of a split metal ring or backing  
 30 G', which has sufficient resilience to open slightly when not under pressure.

The next step is to mold the characters on the rubber facing of the type-wheels. For this purpose I use the same box A or one  
 35 similar to it. The type-wheel or type-wheels N have a strip of unvulcanized rubber II wound around their peripheries, as indicated in Fig. 8, and are placed over a centering-spindle K. In order to prevent movement or  
 40 displacement of the wheels, they are strung on the spindle K, together with a number of metal washers L, and the enlarged lower end of the spindle inserted in the hole in the bottom of box A. The split ring G', with the  
 45 matrix attached thereto, is then placed around the type-wheels and the blocks A' adjusted by the screws B B' so as to compress the ring G' until its edges closely abut. The diameter of the boss C' should be just equal to the in-  
 50 ternal diameter of the ring G' when closed, so as to center the latter and distribute the pressure upon the rubber-faced wheels evenly. A screw-plug M, through which passes the centering-spindle K, is then in

serted in the opening in the cover A'' and  
 55 screwed down upon and into the ring G'. By this means a heavy and even pressure is applied to the soft and crude rubber, which forces it into the recesses in the matrix. After this has been done and as the final step the box  
 60 A and all its contents are subjected to a temperature sufficient to vulcanize the rubber facings of the type-wheels, after which the parts of the mold are detached. As soon as the pressure of the blocks A' upon the split  
 65 ring G' is relieved the latter opens and the rubber facing of the type-wheels strips off from the matrix. The finished wheels, as shown in Fig. 9, may thus be readily detached  
 70 from their matrices.

Type-wheels prepared in this way are remarkably exact and print a clear record. The cost of manufacture is very greatly reduced and the difficulty experienced in the use of sectional molds entirely avoided.

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

1. A resilient or flexible matrix for making rubber-faced type-wheels adapted to be folded or wrapped around the rubber-faced wheel  
 80 and to compress the crude rubber when completely encircling the same, as set forth.

2. A resilient or flexible matrix for making rubber-faced type-wheels, adapted to be folded or wrapped around the rubber-faced wheel  
 85 and to compress the crude rubber when completely encircling the same, in combination with means for holding the matrix in position on the wheel while the rubber is undergoing vulcanization, as set forth.

3. A matrix for rubber-faced type-wheels in the form of a resilient split ring adapted to encircle the rubber-faced wheel, as set forth.

4. The apparatus for making rubber-faced  
 95 type-wheels comprising in combination, a box A, blocks A' adjustable therein, and a split-ring matrix, adapted to encircle a rubber-faced wheel and to be compressed thereon by the blocks A', as set forth.

5. The combination of the box A, the adjustable blocks A', the split-ring matrix, the centering-spindle K and the screw-plug M, as set forth.

JOHN S. OGDEN.

Witnesses:

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 B. MILLER.