

No. 725,971.

PATENTED APR. 21, 1903.

A. W. KLING.
LITHOGRAPHING AND PRINTING ROLLER.

APPLICATION FILED DEC. 29, 1902.

NO MODEL.

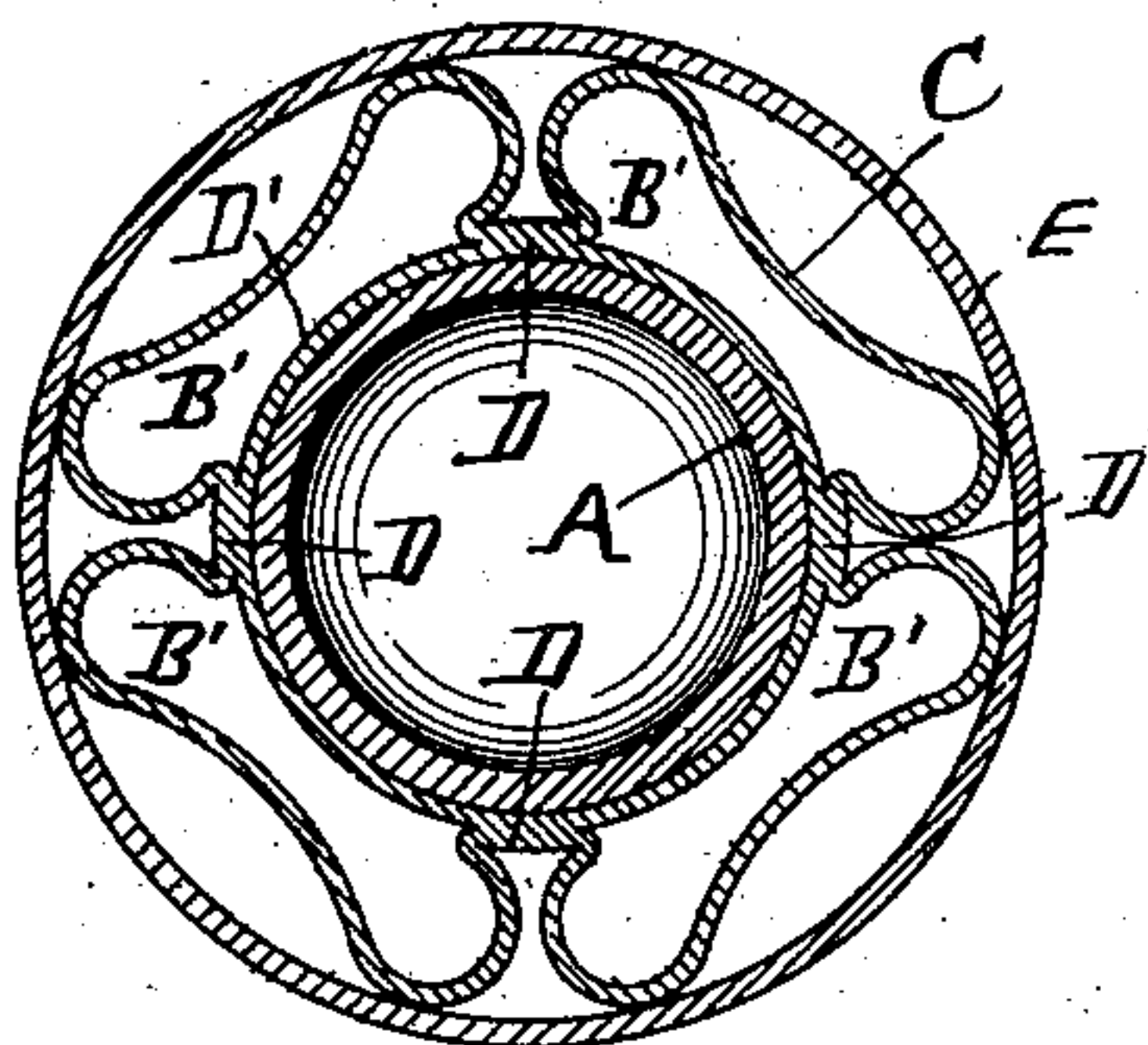
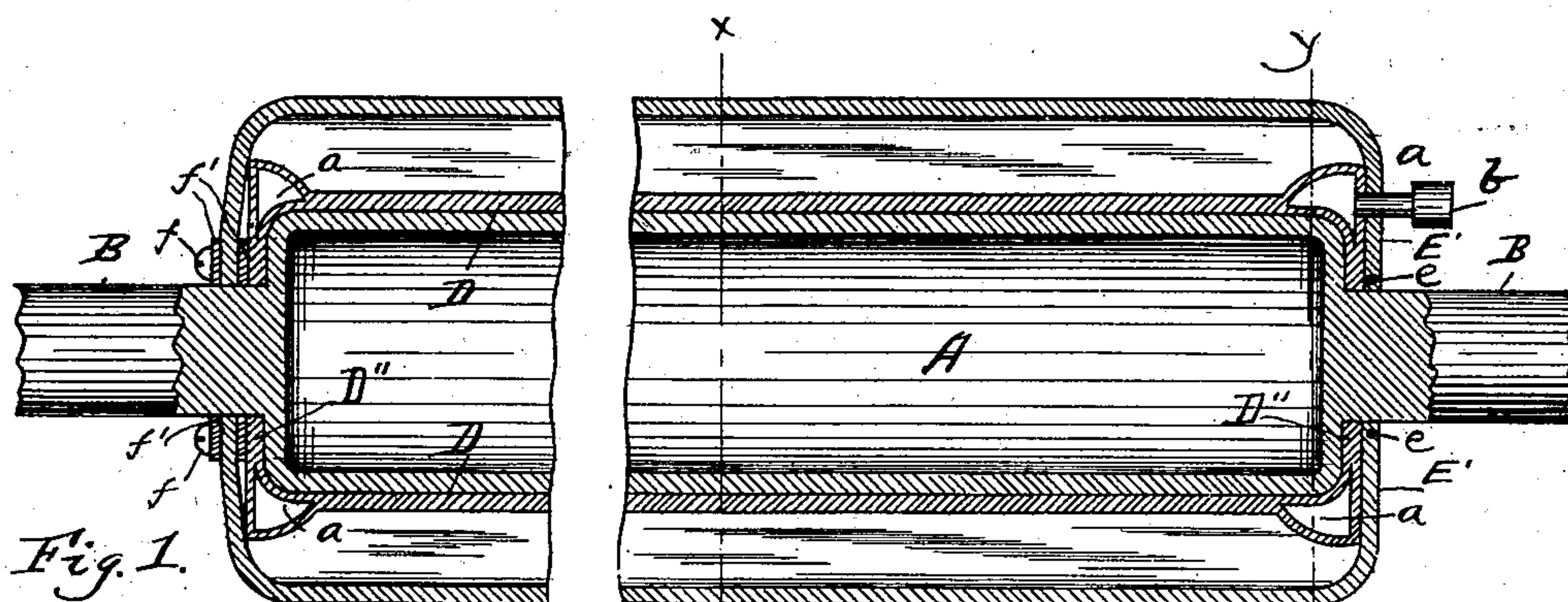


Fig. 3.

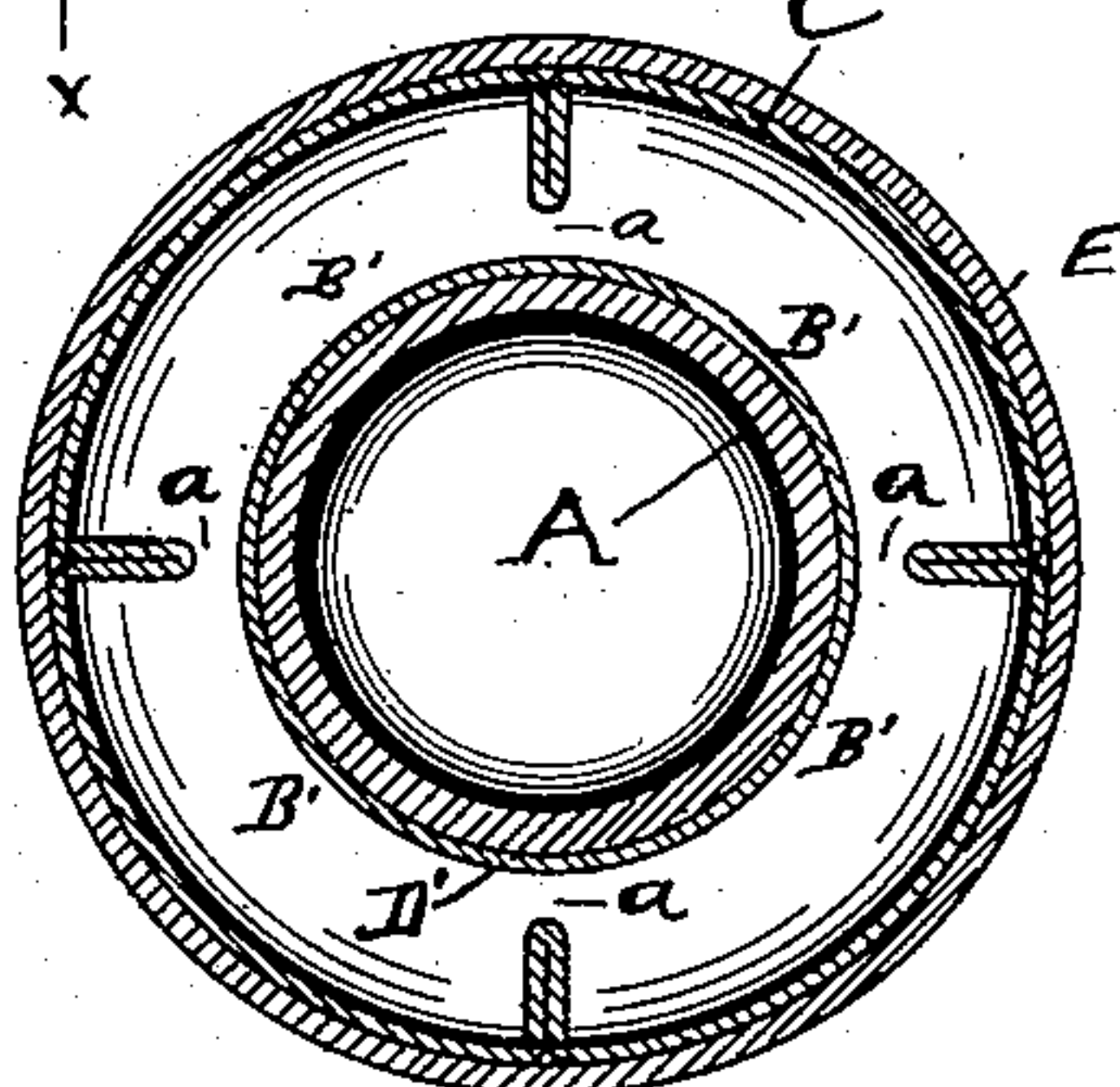


Fig. 4.

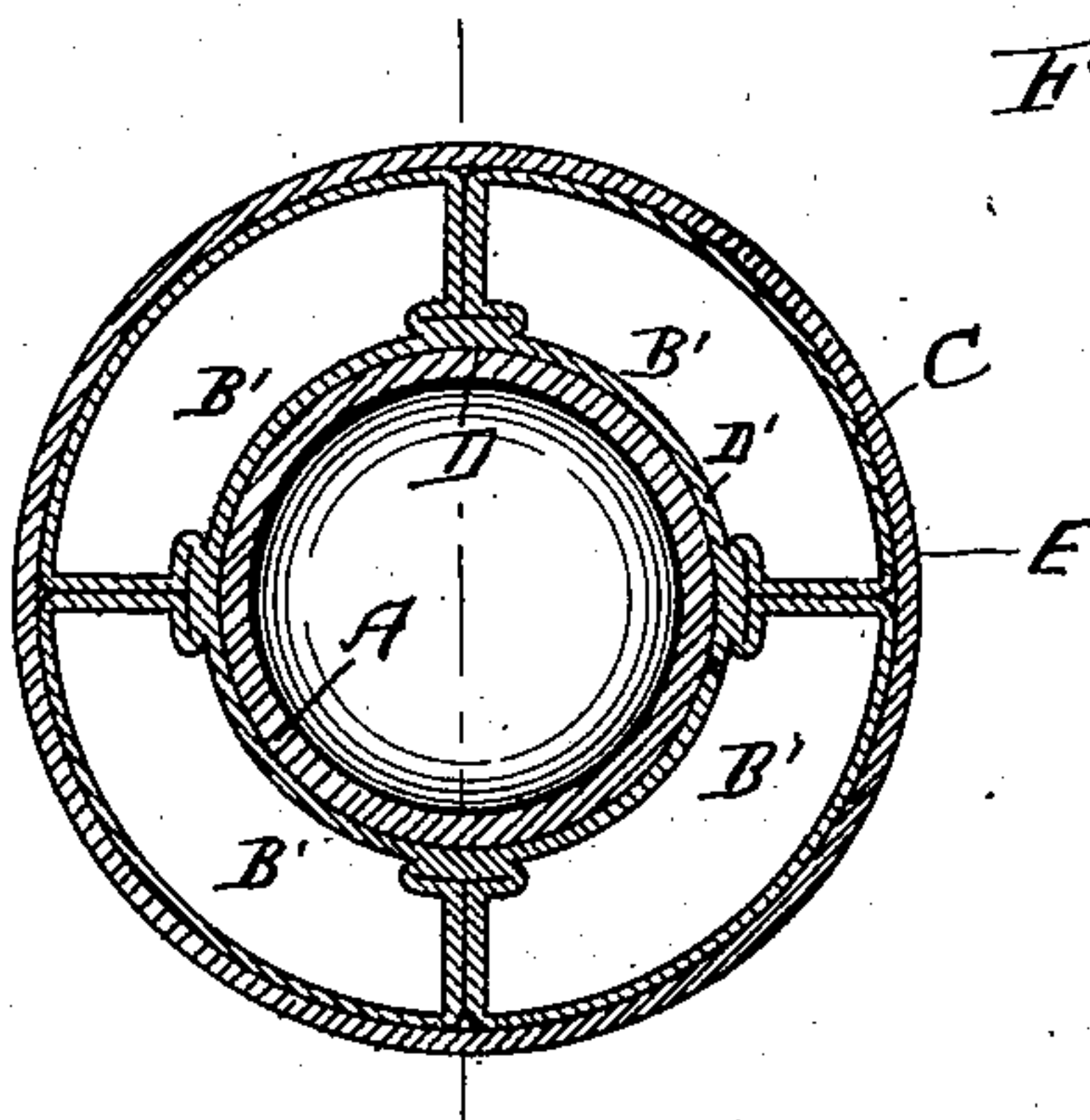


Fig. 2.

WITNESSES.

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LITHOGRAPHING AND PRINTING ROLLER.

SPECIFICATION forming part of Letters Patent No. 725,971, dated April 21, 1903.

Application filed December 29, 1902. Serial No. 136,899. (No model.)

To all whom it may concern:

Be it known that I, ALOYS W. KLING, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Lithographing and Printing Rollers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in pneumatic rollers for lithographing and printing presses and possesses the novel features hereinafter described.

The invention is an improvement of the roller shown and described in Letters Patent No. 710,327, issued to myself September 30, 1902.

The present improvements relate solely to the interior construction; and the object is to so construct the interior inflatable member that when pressure is exerted on any particular portion thereof the air will not be driven or forced out of that particular part and crowded into other portions, but will be resisted by the surface of the core A in the line of such pressure. It is obvious when the inner inflatable member consists of one annular chamber encompassing the circumference of the body or core of the roller that any pressure exerted on any particular portion of the roller will crowd the air into other portions of said roller, and will thereby render said roller impracticable for printing or lithographing purposes. A pneumatic roller has long been desired for these purposes; but owing to certain defects due to the aforesaid causes such a roller has not been within the reach of practicable usage.

The difficulties thus briefly outlined above are overcome by constructing the interior inflatable member in the form of a series of independent air-cells extending longitudinally throughout the length of the core or body of the roller, as will be hereinafter more fully described, reference being made to the accompanying drawings, of which—

Figure 1 is a longitudinal sectional eleva-

tion of my improved pneumatic roller on the line *yy* of Fig. 2. Fig. 2 is a section on the line *xx* of Fig. 1, showing the inner member inflated. Fig. 3 is a similar view showing the inner member collapsed or partially collapsed. Fig. 4 is a section on the line *yy* of Fig. 1, showing the inner member inflated.

In a detail description of my invention similar reference characters indicate corresponding parts.

A designates the body or core of the roller, which may be hollow or solid and which terminates at each end in journals B B. Over this core and throughout the length thereof there is slipped a rubber sleeve D', and around the core A exterior to the sleeve D' is arranged a series of independent air-cells B'. These cells B' may consist of a series of independent elastic tubes suitably united longitudinally to the sleeve D', or the said air-cells may be constructed from a single sheet C, of suitable rubber, as shown in the drawings, the primary object being to provide a desirable number of independent air-cells, each of which confines within it a suitable quantity of air which cannot be forced therefrom when pressure is applied to the roller; but, on the contrary, such pressure will be resisted by the core A adjacent to the particular air-cell affected by such pressure. In constructing the interior inflatable member from the single sheet of rubber C longitudinal portions of said sheet are vulcanized or otherwise suitably secured at D to the sleeve D', which surrounds the core A throughout its length, and thereby the series of independent air-cells B' are formed. This is at present found to be the most desirable way to construct these independent air-cells; but I do not wish to limit myself to any particular way of constructing such cells. In vulcanizing or otherwise securing the sheet C of rubber to the sleeve D' the portions of said rubber sheet adjacent to the ends are not united to said sleeve D'. This construction is necessary in order to provide passages *a*, through which the air-cells B' are uniformly supplied with air from a single air-valve *b*, located at one end of the roller. It is important that the air-cells B' be supplied through a single air-valve *b* in order that a uniform amount of air may be fed

to said cells, and thereby the air be equally distributed throughout the surface of the roller. The ends D'' of the inner inflatable member extend around the ends of the body or core A in proximity to the journals B and are made secure between said ends of said core and the ends E' of the outer casing E. The outer casing E consists of an elastic material, or, in the case of a lithographing-roller, the said casing may be leather or any other suitable material. One end of said outer casing is secured in position by means of screws *f*, which pass through that end of the casing and through washers *f'* and unite said end to the core. The other end of said outer casing is maintained in position by means of a circular wire *e* of suitable thickness, which is embedded in the surrounding edge of said outer casing and passes around the journal B at that end of the core.

I do not wish to limit myself to this specific manner of uniting the ends of the outer and inner casings, as it is obvious a variety of ways may be found practicable for this purpose; nor do I wish, as before stated, to limit myself to the identical construction of the air-cells B'.

Having described my invention, I claim—
1. In a pneumatic roller of the type specified, a roller consisting of a core or body portion terminating in journals, a series of independent air-cells extending around said core parallel therewith and throughout the length thereof and providing a series of uniformly compressible and expandible air-cushions around said core, the ends of said air-cells extending over the ends of the core and having passages for air to be introduced thereto through a single air-valve, and an outer cas-

ing having its ends extending over the ends of the core of the roller and suitably united to said ends, substantially as set forth.

2. In a pneumatic roller for the purposes specified, a roller consisting of a core terminating in journals, a series of independent air-cells parallel with and extending around said core, air-passages through which air is uniformly supplied to said cells, a valve located at one end of the roller through which said cells are fed, an outer casing inclosing said air-cells, the ends of said outer casing being carried around the ends of the body or core of the roller, and means for uniting the ends of the outer casing and the ends of the air-cells casing to said body or core, substantially as set forth.

3. In a pneumatic roller for the purposes specified, an enlarged body or core terminating in journals, an inner elastic casing having portions thereof united longitudinally to said core to provide a series of independent air-cells, passages between said air-cells by means of which said cells are uniformly supplied with air, the ends of said casing being extended around the ends of said core, a valve located at one of said ends, an outer casing inclosing said inner casing and having its ends extending around the ends of the core, and means for securing the ends of said inner and outer casings to the ends of said core, substantially as set forth.

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

ALOYS W. KLING.

Witnesses:

R. J. MCCARTY,
C. M. THEOBALD.