

No. 710,327.

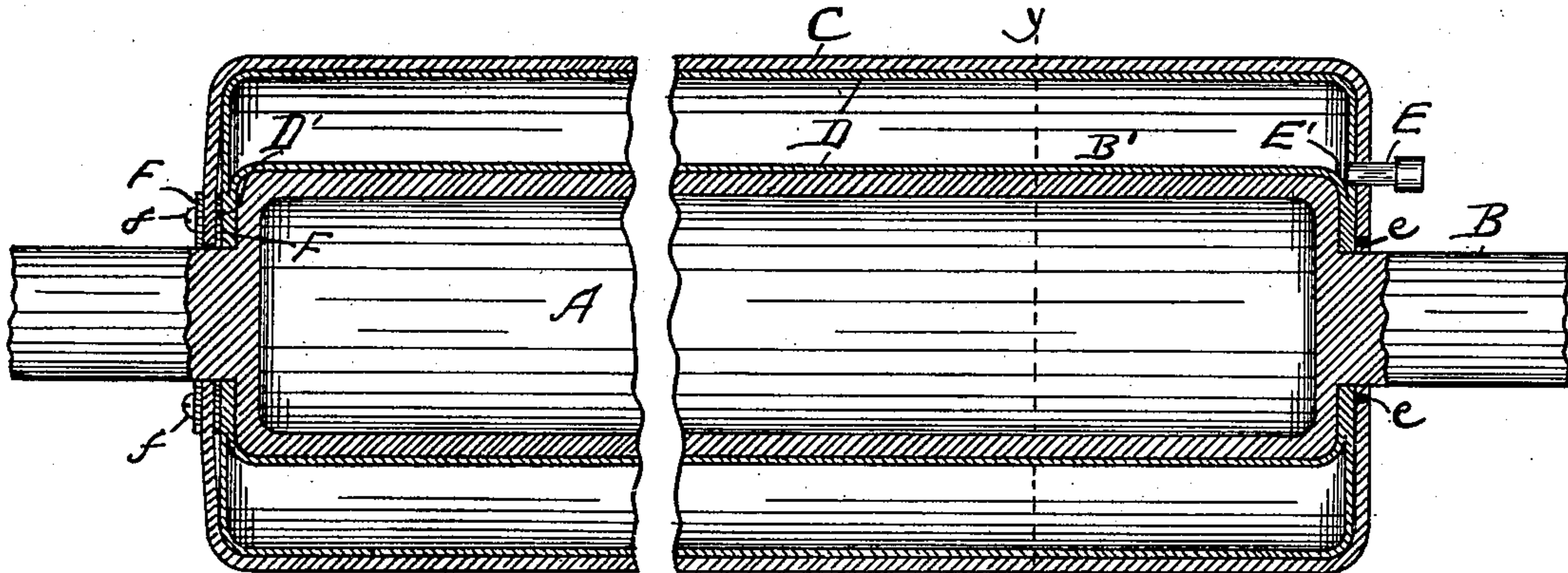
Patented Sept. 30, 1902.

A. W. KLING.

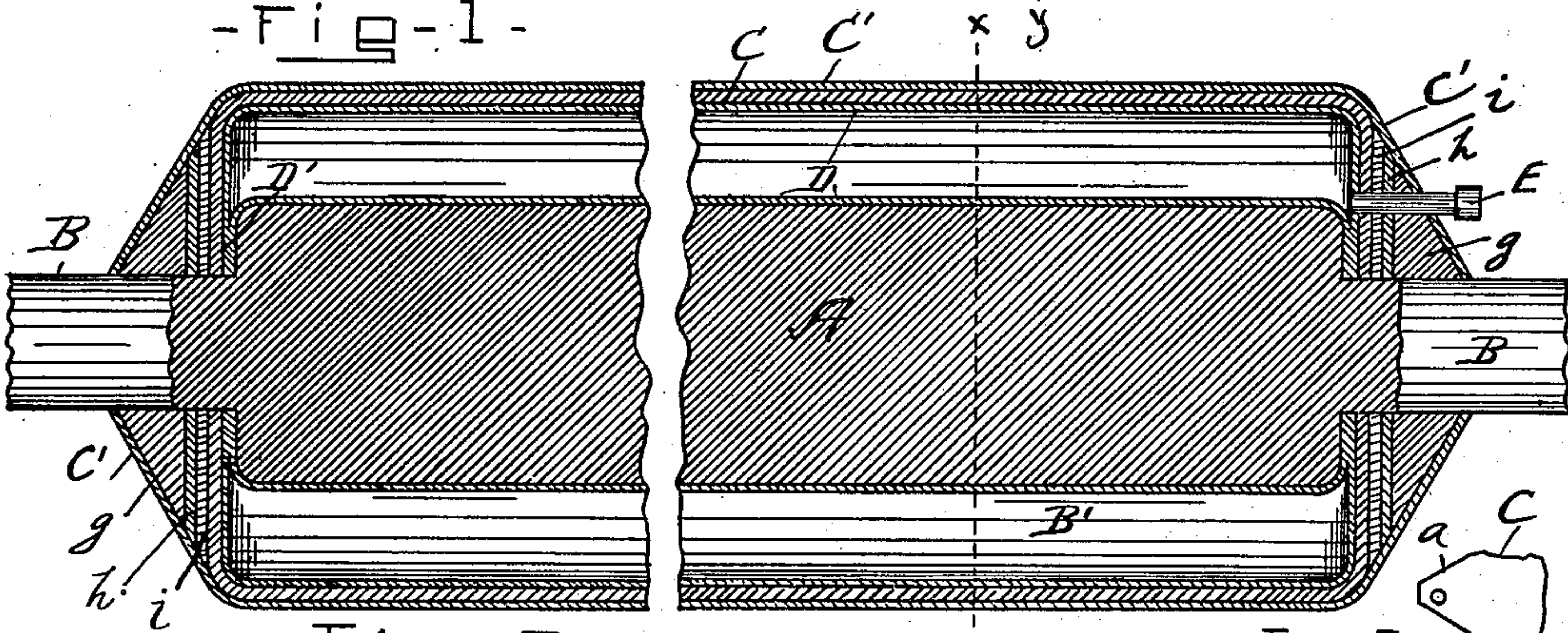
LITHOGRAPHING OR PRINTING PRESS ROLLER.

(Application filed July 31, 1902.)

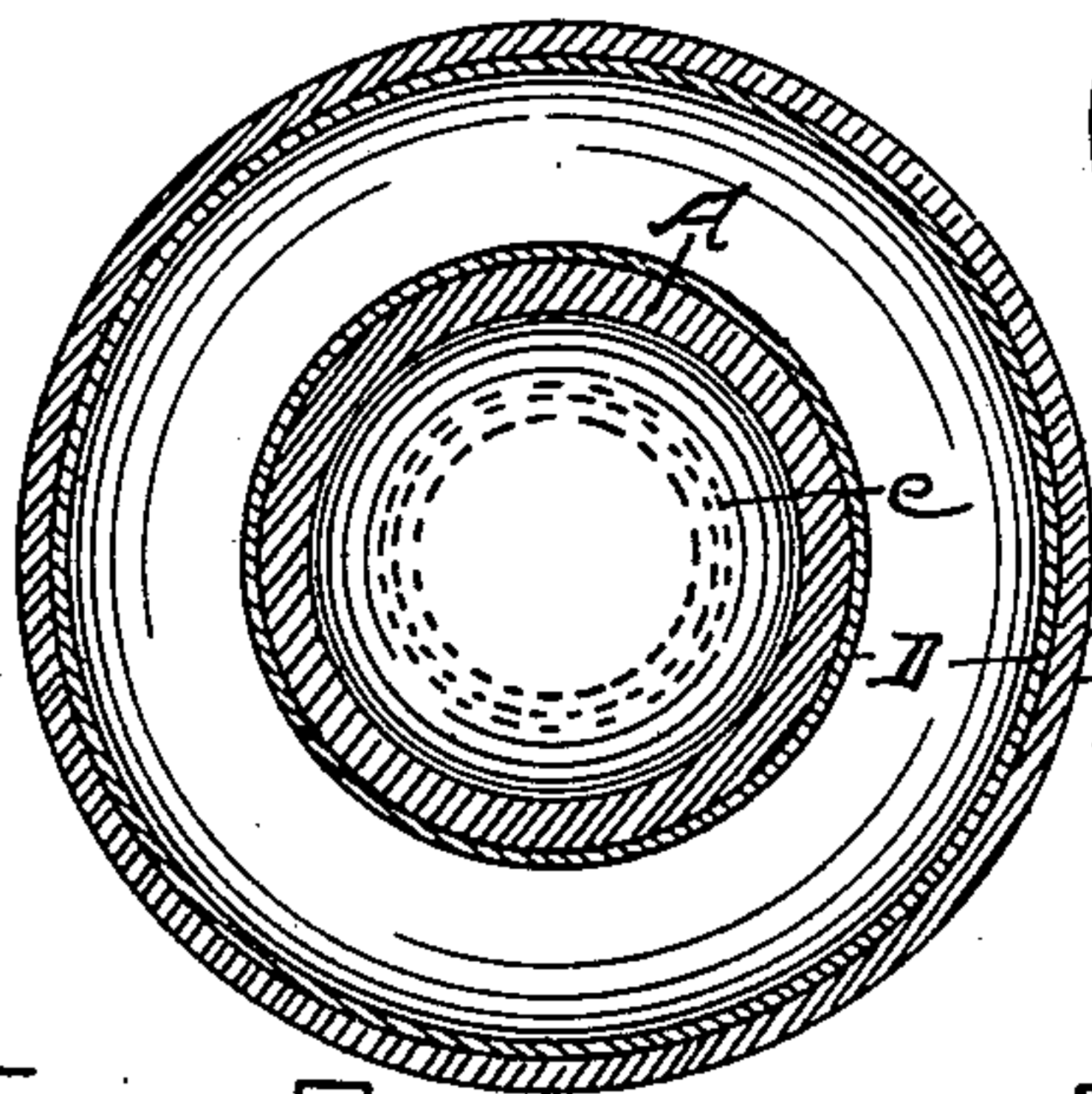
(No Model.)



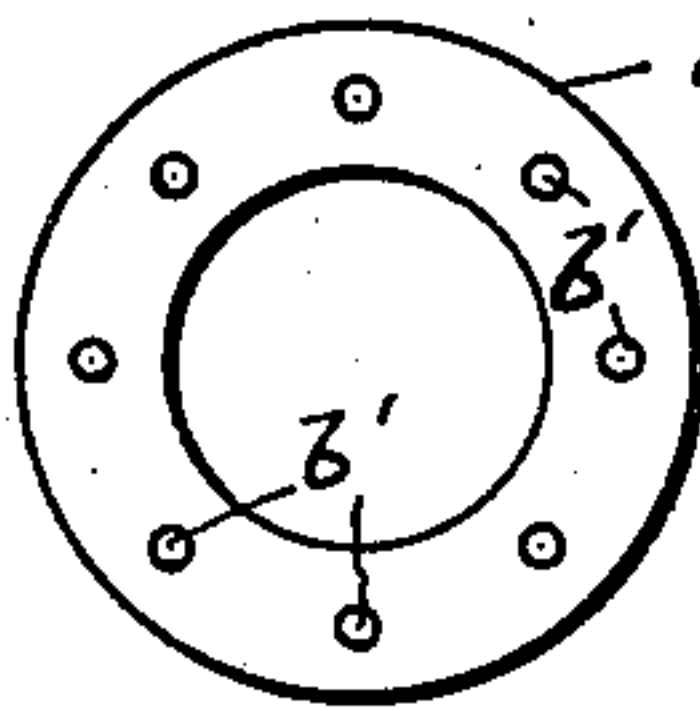
-Fig-1-



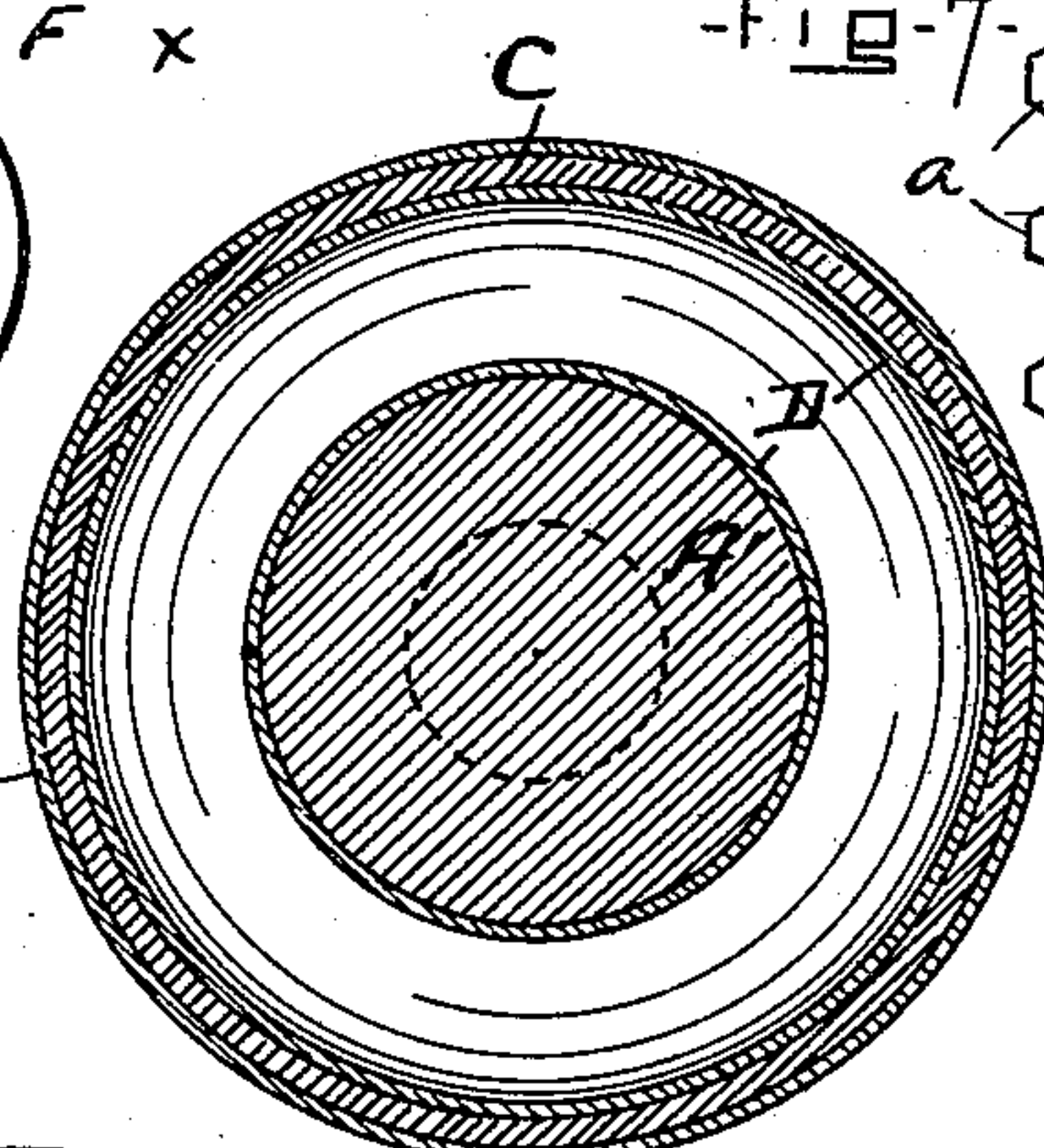
-Fig-2-



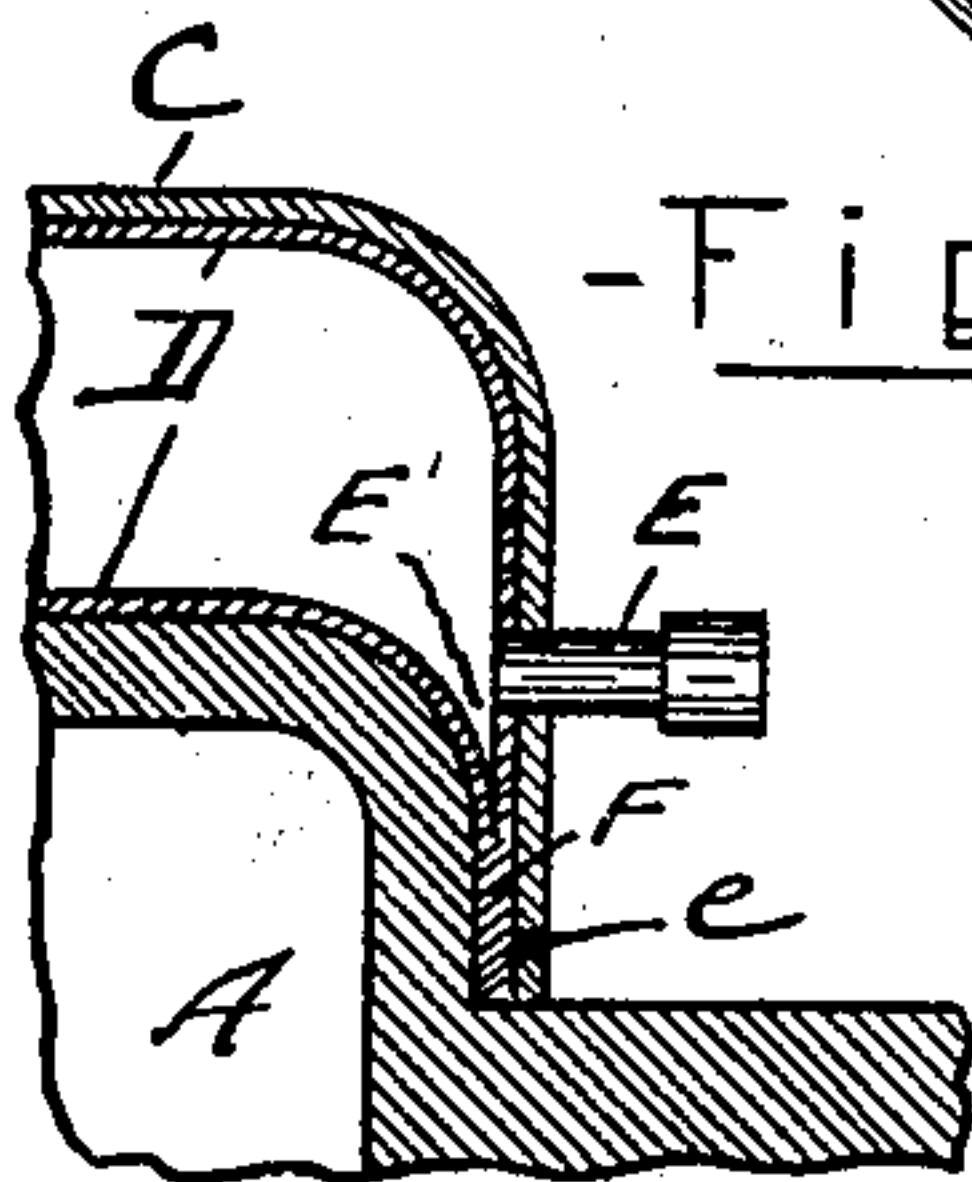
-Fig-3-



-Fig-6-



-Fig-7-



-Fig-4-

-Fig-5-

WITNESSES.
Matthew Sibley,
B. H. Theobald.

A. W. Kling,
INVENTOR.
By R. J. McCarty,
his ATTORNEY.

UNITED STATES PATENT OFFICE.

ALOYS W. KLING, OF DAYTON, OHIO.

LITHOGRAPHING OR PRINTING PRESS ROLLER.

SPECIFICATION forming part of Letters Patent No. 710,327, dated September 30, 1902.

Application filed July 31, 1902. Serial No. 117,756. (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 or Printing Press 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 rollers for lithographing and printing presses, and comprises the novel and useful features hereinafter fully described.

The object of the invention is to provide means for obviating many difficulties and drawbacks attending the usual form of lithographing and printing rollers. Some of these disadvantages attending the old form of roller may be stated as follows: The usual form of roller for lithographic work has an interior covering of felt, which is a very expensive material and which usually takes about four hours to apply to the surface of the roller, it being necessary to sew said felt in position and to then draw over it the usual covering or casing of skin, which requires the physical strength of at least two men, and, further, it is impossible to have a standard size of roller. The diameters of the old forms of rollers vary in proportion to the extent of usage--that is to say, the nap of the felt becomes worn to such an extent as to reduce to a material degree the original diameter of each roller, and as a consequence additional layers of felt have to be applied. This is troublesome and expensive. By the use of my improved pneumatic roller this constant changing of the diameter of a roller is avoided and the expense incidental to the application of new layers of felt is obviated, and, further, the life of the roller is materially prolonged and a standard size of roller may be established.

Another disadvantage attending the use of the old form of lithographing-rollers is due to the fact that the felt and the outer casing of

skin are rarely ever sufficiently tight after being used for a comparatively short time. Therefore more or less unevenness of the surface of the roller is unavoidable, which is a decidedly objectionable feature.

The pneumatic roller hereinafter described when applied as a printing-roller overcomes one of the most difficult features in the printing art, as the present printing-roller is composed of various compositions which are more or less affected by the changes in temperature, while the pneumatic roller is not so affected and remains the same under all conditions of weather, and, furthermore, it can be regulated with ease to suit the various classes of work.

These disadvantages and several others that might be mentioned are entirely overcome in the use of my improved pneumatic roller, which I will now proceed to describe in detail.

Referring briefly to the accompanying drawings, Figure 1 is a longitudinal sectional elevation of my improved pneumatic roller adapted for printing-presses. Fig. 2 is a similar view of the roller adapted for lithographic work. Fig. 3 is a cross-section on the line *y y* of Fig. 1. Fig. 4 is a cross-section on the line *x x* of Fig. 2. Fig. 5 is an enlarged sectional view of a portion of one end of the roller as shown in Fig. 1. Fig. 6 is a detached view of one of the washers for securing the outer casing. Fig. 7 is a detail of a portion of the outer casing.

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

Referring to Fig. 1, A designates the body or core of a roller which terminates at each end in journals B B. Around this core there is arranged an air-chamber B', the outer confines of which consist of an elastic casing C of suitable thickness. The ends of this outer casing lap or extend around the ends of the body or core A and are maintained in position at one end by means of a circular wire *e*, which is embedded in the rubber casing C and is of suitable diameter to pass over one of the journals B. The other end of the outer casing is secured in similar position by providing the ends thereof with a series of tongues *a*, having perforations *b*. These

tongues *a* are inclosed between two washers *F*, which have openings *b'*, that coincide in position with the openings *b* and are secured in position by a series of screws *f*, which penetrate 5 said washers and openings *b* in the end of the outer casing *C*, thus securing the end of the casing between the washers. Arranged on the interior of the said outer casing is an inflatable casing *D* of a suitable thickness of 10 rubber. The ends *D'* of this inner tubing or casing extend around the ends of the body or core *A* inwardly in proximity to the journals *B*. The air-chamber as thus extended around the ends of the core or body *A* serves to hold 15 the ends of the inner casing in position. Therefore there is always insured a uniform air-cushion throughout the length of the roller. This manner of extending the air-chamber a sufficient distance around the ends of the 20 body of the roller is a very essential feature in the construction and arrangement of the roller. This portion of the air-chamber is indicated at *E'*. Such extension of the air-chamber also enables the valve *E* to be located a desirable distance away from the surface of the roller. The roller is also adapted 25 for lithographic work when containing the modifications shown in Fig. 2, consisting of an outer leather casing *C'*, which incloses the elastic casing *C* and protects said inner casing *C* from the action of the chemicals used in lithographic work. The ends of the outer 30 leather casing *C'* are carried around the outer sides of washers each consisting of inner disks *i* and outer conical-shaped disks *g*, both of which are constructed of felt and between which there is inclosed a metallic disk *h*, all of which are united to form a single disk at 40 each end, the outer surfaces of which are of tapered form from the journals *B B* to the periphery of the roller. The object of these washers is to prevent any of the liquids used in lithographing from finding their way to the interior casings of the roller. The outer 45 casing *C'*, which, as before stated, consists of leather, is carried around the outer surfaces of the washers and is united in any suitable manner. The air-valve *E* penetrates the washer at one end of the roller and admits air to the inner tube *D*. The manner 50 of securing the ends of the elastic casing *C* may be the same as that shown in Fig. 1.

Having described my invention, I claim—

55 1. In a pneumatic roller of the type specified, a roller consisting of an enlarged body or core terminating in journals, an outer elastic casing inclosing the sides and ends of said roller-body, one end of said outer casing hav-

ing an annular wire band which surrounds a 60 journal of the roller, and the other end of said outer casing being secured between washers which surround the other journal of said roller, an inner tubing having its ends extending around the ends of the body of said 65 roller and confined within the ends of the outer casing, the chamber within said inner tubing extending around the ends of the core or body of the roller, and an air-valve located adjacent to one of said journals, substantially as specified. 70

2. In a pneumatic roller of the type specified, the combination of a roller having an enlarged body terminating in journals, an outer elastic casing inclosing the circumference of the ends of said body, an annular metallic 75 band inclosed in one end of said outer casing, said band surrounding one of the journals of the roller, the other end of said outer casing terminating in a series of tongues with perforations therein, said tongues being adapted 80 to fit around the other end of the body of said roller, washers inclosing said end and surrounding the other journal of the roller, screws penetrating said washers and the openings in the end of the outer casing whereby 85 that end of the outer casing is secured in position, an inner pneumatic tube or casing extending around the ends of the body of the roller, and providing an extended chamber which lies around the ends of said body and 90 approaches the journals of the roller, and an air-valve located in proximity to one of said journals, substantially as set forth.

3. In a roller of the type specified, a roller having an enlarged body terminating in journals, an elastic casing having its ends carried 95 around the ends of said body, washers inclosing the ends of said elastic casing and serving to prevent liquids from coming in contact with said casing, an outer leather casing inclosing said elastic casing and said washers, 100 and an inner pneumatic casing the ends of which extend around the ends of the body of the roller, said inner pneumatic casing providing an air-chamber which extends on each 105 end of the body of the roller in proximity to the journals of the roller, and an air-valve arranged adjacent to said roller-journal, substantially as specified.

In testimony whereof I affix my signature 110 in presence of two witnesses.

ALOYS W. KLING.

Witnesses:

R. J. MCCARTY,
W. G. POWELL.