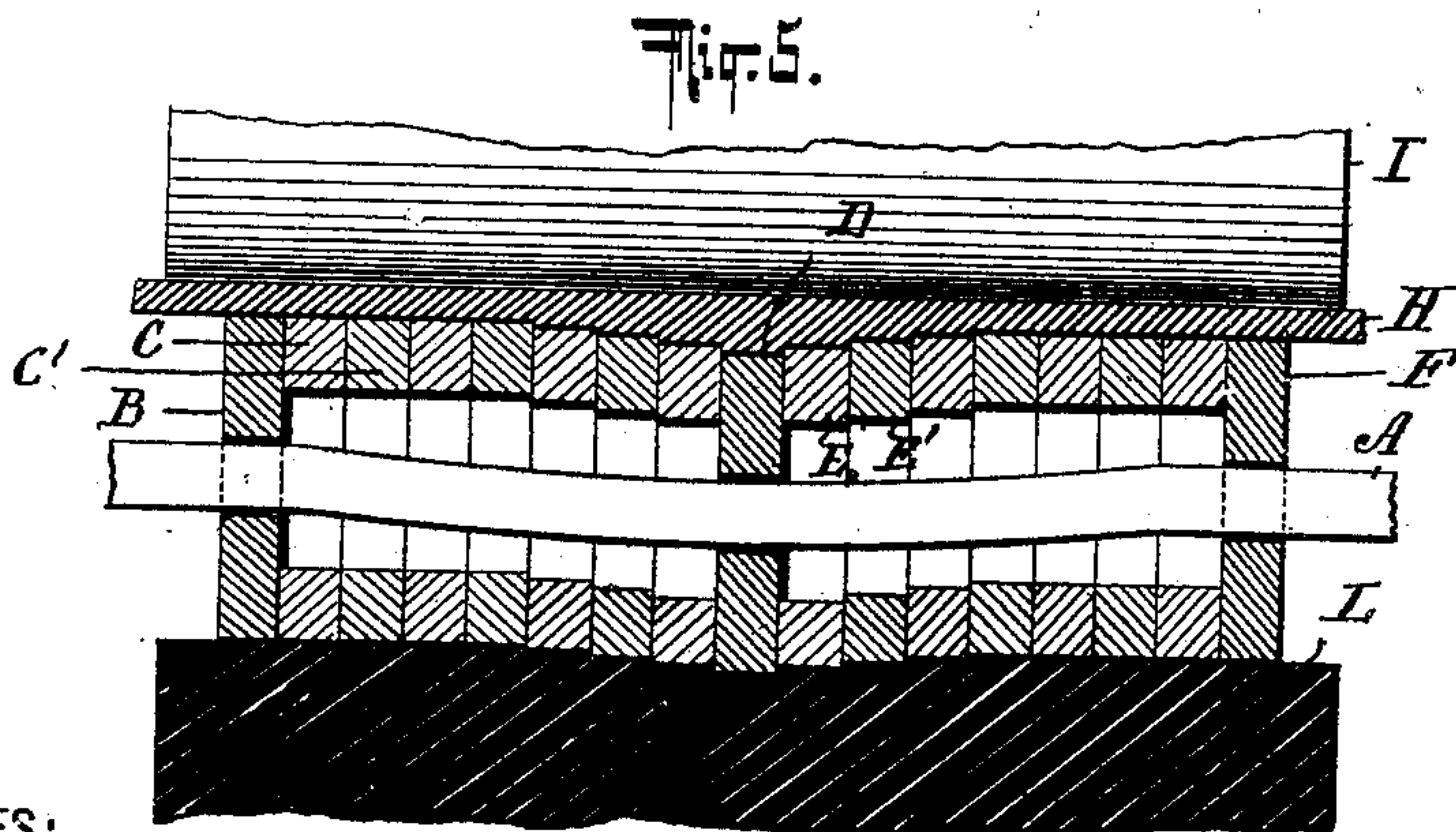
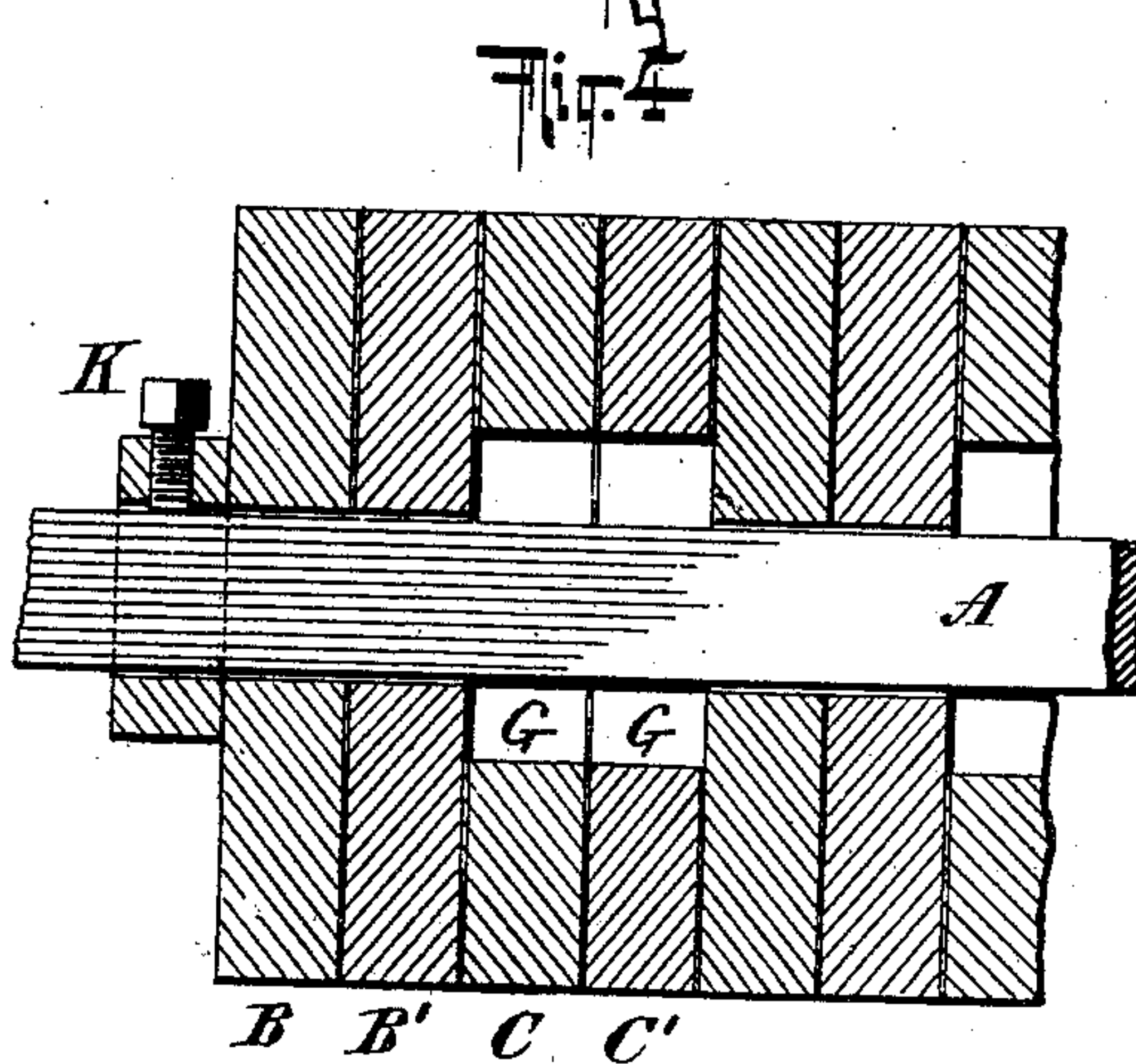
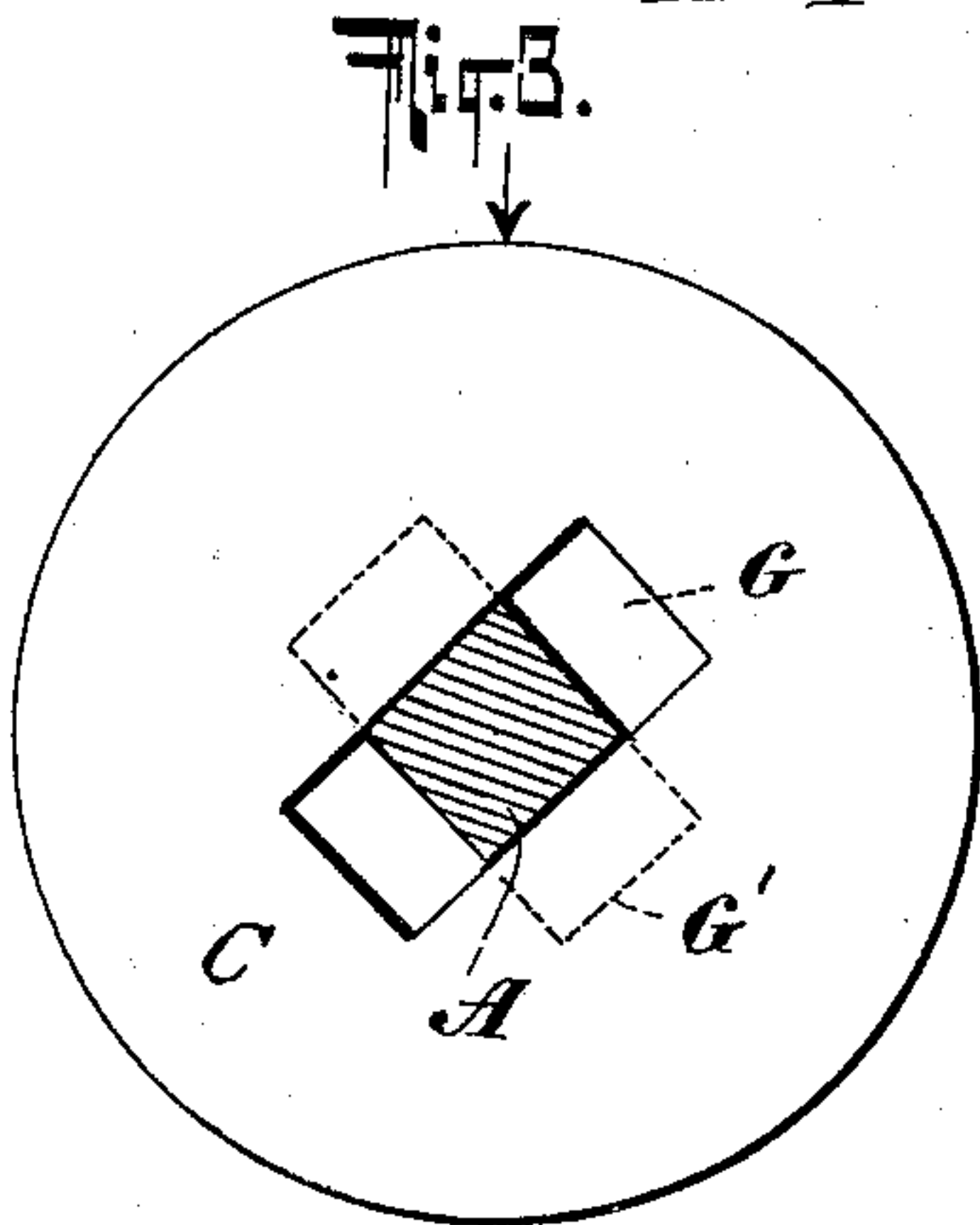
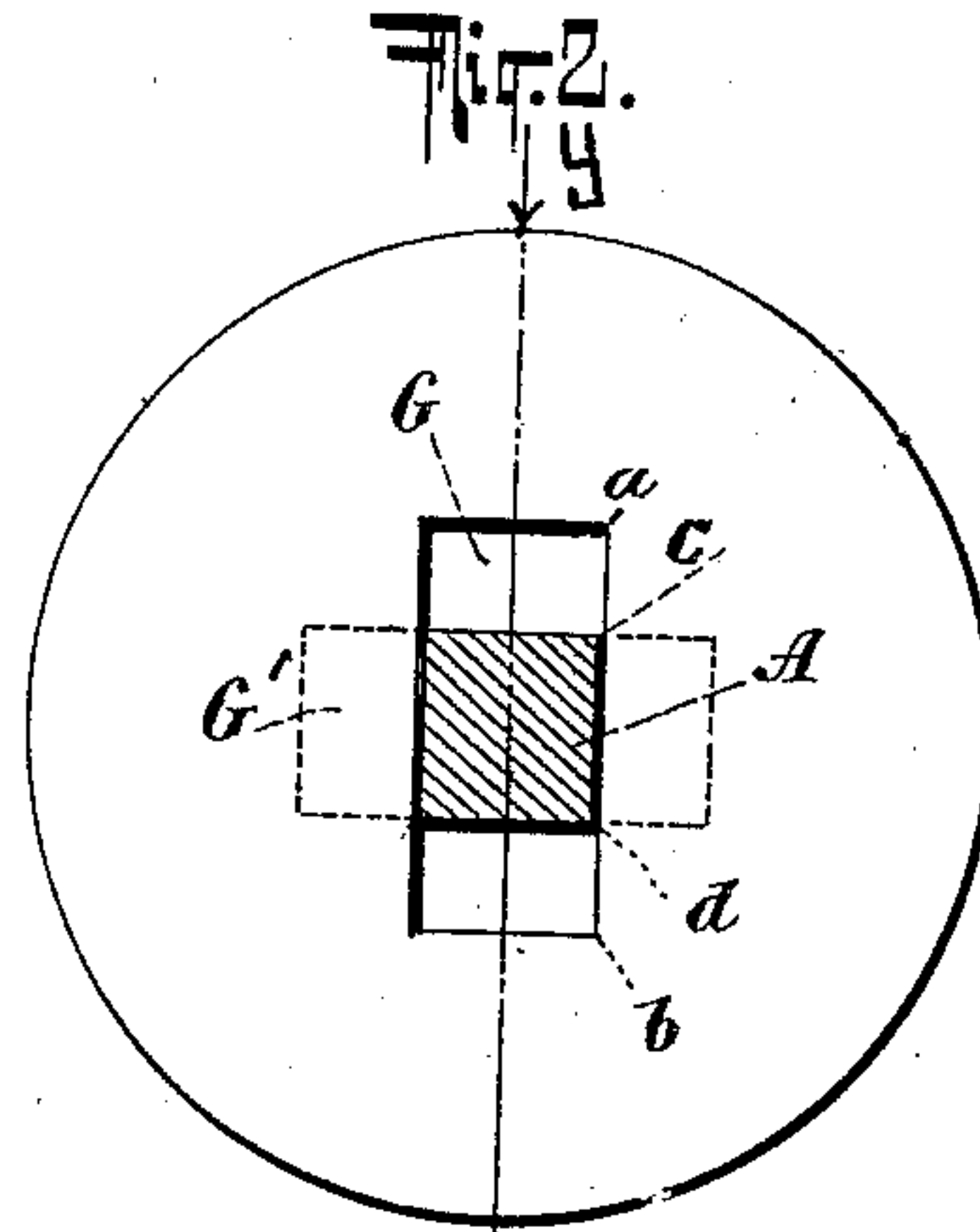
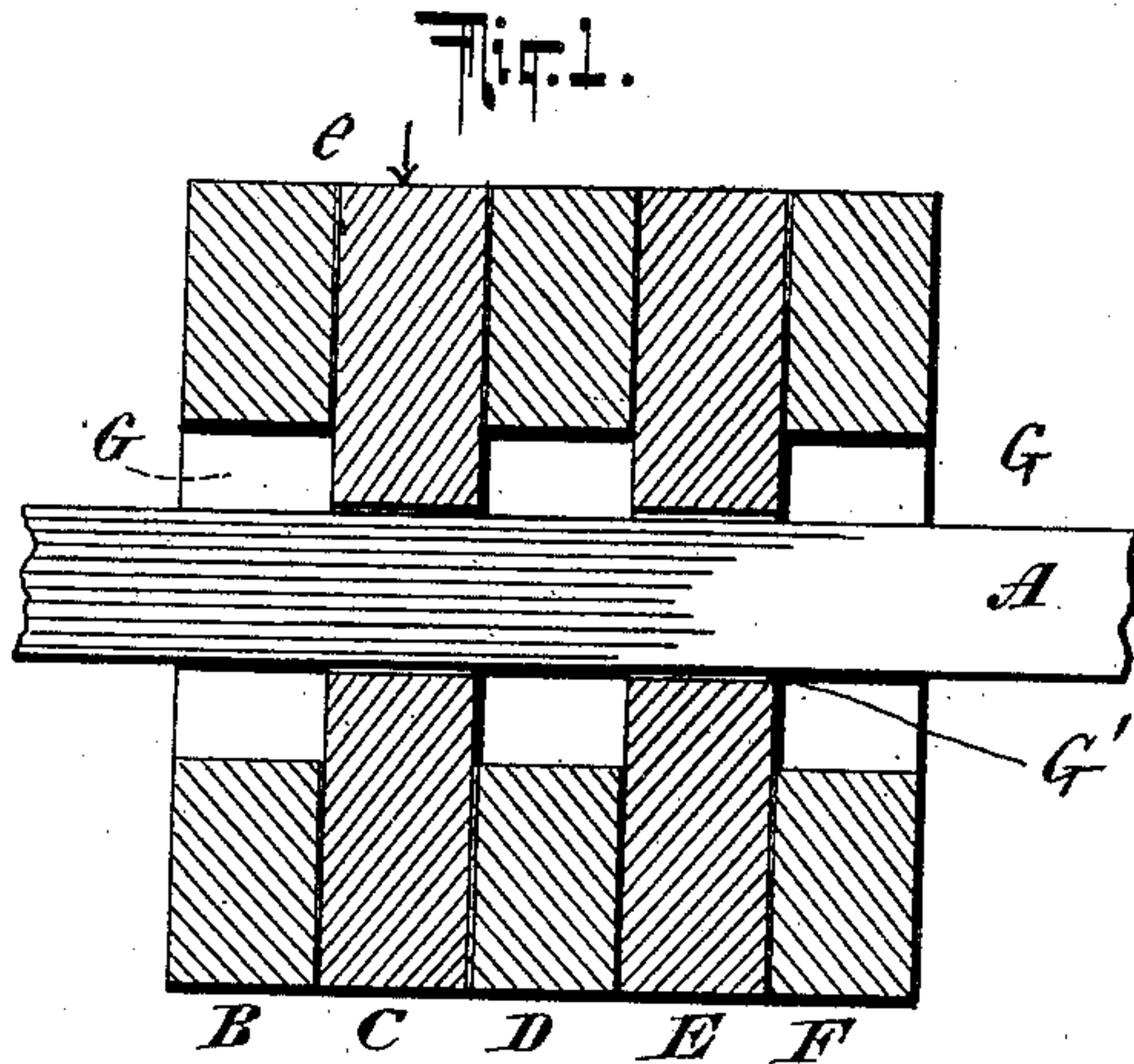


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Patented June 15, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

*Gustave Dietrich*  
*Edwin H. Dietrich*

INVENTORS

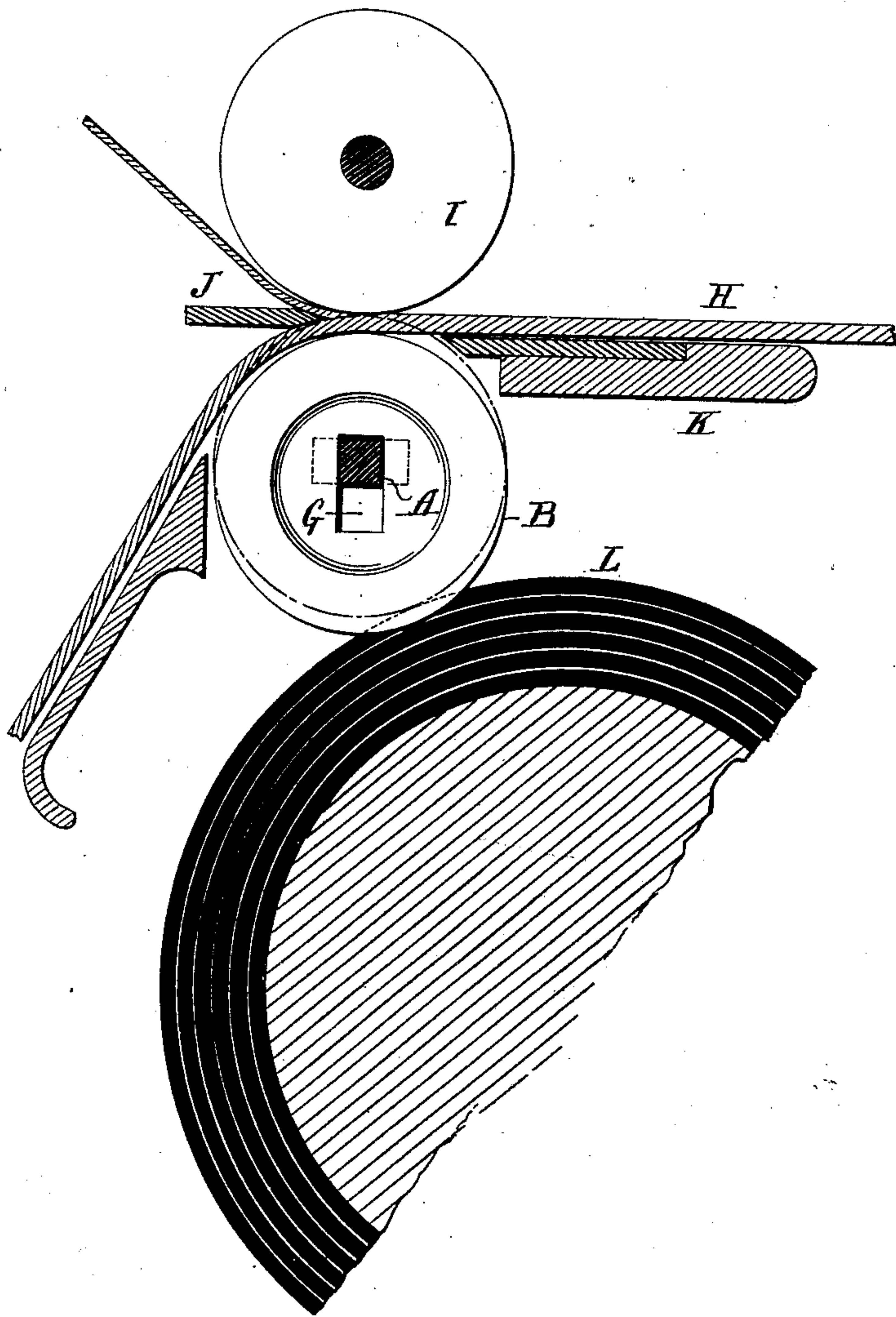
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*William D. Quigley*  
 BY  
*Barth Perryman*  
 THEIR ATTORNEY

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Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOSEPH H. GAY AND WILLIAM D. QUIGLEY, OF NEWARK, NEW JERSEY.

## SPRING-ROLL FOR LEATHER-SPLITTING MACHINES.

No. 924,900.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed December 11, 1907. Serial No. 406,052.

*To all whom it may concern:*

Be it known that we, JOSEPH H. GAY and WILLIAM D. QUIGLEY, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Spring-Rolls for Leather-Splitting Machines, of which the following is a specification.

10 The invention relates to spring rolls for leather splitting machines. The roll is formed of a plurality of individual separable cylinders, disposed end to end in juxtaposition upon the driving shaft.

15 The object of the invention is to enable the roll to adjust itself to varying thicknesses of hide or to obstacles passing between it and the gage roll. To this end, the driving shaft is made rectangular in cross section and is 20 received in rectangular axial openings in said cylinders. These cylinder openings have one dimension, at right angles to the shaft axis, longer than the corresponding dimension of the shaft, and the cylinders may be so dis- 25 posed successively on the shaft that the longer sides of their axial openings alternate at right angles, or so that the coinciding axial openings of a group of said cylinders may stand at right angles to the coinciding 30 openings in another group of cylinders, or so that the coinciding openings in an intermediate group of cylinders may stand at right angles to the openings in two cylinders disposed respectively on each side of said group, 35 and in various other ways for accomplishing the before-mentioned object.

In the accompanying drawings—Figure 1 is a longitudinal section of our spring roll on the line *y. y.* of Fig. 2. Fig. 2 is an end view 40 of one of the roll cylinders showing the driving shaft in cross section. Fig. 3 is a view similar to Fig. 2, but showing the cylinder and shaft rotated to a position 45 degrees from that of Fig. 2. Fig. 4 shows a modification in which a plurality of cylinders have 45 their central openings at right angles to openings of an adjacent plurality of cylinders. Fig. 5 shows two groups of juxtaposed cylinders having their openings coinciding and 50 at right angles to the openings in three other cylinders disposed one between said groups, and the others at the ends, and illustrates the action of said cylinders and shaft. Fig. 6 shows the ordinary disposition of gage roll 55 and spring roll with respect to the hide in a leather splitting machine, and the positions

taken by a cylinder having its opening at right angles to the opening in the adjacent cylinder when said first named cylinder is vertically depressed by the hide passing 60 over it.

Similar letters of reference indicate like parts.

The driving shaft A is rectangular and preferably square in cross section. Upon said 65 shaft are placed the metal cylinders or disks B, C, D, E, F. Said cylinders are preferably formed integrally of metal and are of equal diameter, so that when placed together on the shaft A, and secured in place thereon in 70 any suitable way, as by a collar and clamping screw K, they unitedly form a smooth surfaced roll. As many cylinders may be assembled on the shaft as is required to make a roll of desired length. 75

In each cylinder is a rectangular axial opening G, in which the shaft A is received and which in cross-sectional area has one dimension longer than the corresponding dimension of the shaft. Thus the dimension 80 *a. b.* of the cylinder opening is longer than the corresponding dimension *c. d.* of the shaft. The cross-section of the shaft may be square, while that of the cylinder opening may be in the form of a parallelogram. It 85 follows, therefore, that each cylinder has transverse play upon the shaft.

In the construction shown in Fig. 1 the cylinders are placed upon the shaft so that the longer sides of their axial openings alter- 90 nate at right angles. Thus the openings G of the cylinders B, F, Fig. 1, stand at right angles to the openings G' of the next alternating cylinders C, E; or a plurality or group of juxtaposed cylinders as B, B', Fig. 4, may 95 alternate with a plurality or group of cylinders C, C', the cylinders B, B', having the longer sides of their axial openings coinciding and disposed at right angles to the longer sides of the openings of the cylinders C, C'; 100 or a plurality or group of juxtaposed cylinders as C, C', &c., Fig. 5, may alternate with a single cylinder, as B; the cylinders C, C', &c., having the longer sides of their axial openings coinciding and disposed at right 105 angles to the longer sides of the openings of the cylinders B.

Referring to Fig. 6, I is the gage roll, J the knife, K the delivery table, and L the rubber or elastic roll as ordinarily present in leather 110 splitting machines. A thick portion of the hide H—say at the edge of the hide—is



shown passing over the cylinder B represented in full lines; the opening G in that cylinder is in vertical position, hence the cylinder B being pressed downward by the  
 5 hide slides transversely on the shaft A, and embeds itself in the rubber roll L; and generally if any given cylinder stands with the long dimension of its opening G vertical, it is free to yield to any vertical pressure ex-  
 10 erted in the direction of the arrow, Fig. 2, the cylinder then sliding transversely to the shaft. If the cylinder be turned 45 degrees to the position shown in Fig. 3 again it will yield in a downward direction to pressure  
 15 similarly directed. And, generally again, each cylinder will slide transversely on the shaft in every position in which its axial opening G may be placed by the rotation of  
 20 said shaft, except when the long dimension *a, b*, of said axial opening is exactly at right angles to the direction of the applied force. Then, the shaft A may bend at the point where the pressure is applied. Thus in Fig. 1  
 25 if pressure is applied to cylinder C in the direction of the arrow *e* then the cylinder C will bend the shaft downward; so that while the cylinder will yield and indent the elastic roll as before, it will not do so because it  
 30 slides on the shaft, but because it bends the shaft. It will be noted that the period when the long dimension of the opening G on any given cylinder stands directly at right angles to the impressed force, is only momentary.  
 Where successive cylinders have the long  
 35 sides of their openings G disposed alternately at right angles as in Fig. 1, it is desirable to make the shaft A as flexible as possible, so that the cylinder C, for example, in descending can bend the shaft at the  
 40 cylinder E despite the short distance between cylinder C and cylinder E. But a preferable arrangement which does not require so flexible a shaft is that shown in Fig. 5. Here the cylinders B, D, F, have the  
 45 long sides of their openings G at right angles to the direction of pressure exerted by the hide H. Between the cylinders B, D, is a

group of seven cylinders, C, C', &c., and between the cylinders D, E, is another group  
 50 of seven cylinders, E, E', &c. The groups C, C', &c., and E, E', &c., all have the long sides of their openings G vertical or in the direction of pressure excited by the hide H. The thickest part of the hide obviously acts  
 55 directly on the cylinder D, which cylinder is thus forced down the shaft A as shown. This it can do the more easily because of the long distance between the cylinders B, F. The adjacent cylinders in groups C, C' and  
 60 E, E' slide transversely on shaft A. The point to be observed is that the greater the number of cylinders in each intermediate group C, C' or E, E', the more readily will the shaft bend when an obstacle or increased  
 65 thickness of hide comes over any single cylinder, as D, at the moment when that single cylinder D cannot slide transversely on the shaft, and hence the less the tendency for  
 70 the shaft to carry down with it the cylinders B and E.

We claim:

In a spring roll, a driving shaft and a plurality of individual separable cylinders of equal diameter thereon the circumferential  
 75 peripheries of said cylinders unitedly forming the roll surface, the said shaft being rectangular in cross section, and received in rectangular axial openings in said cylinders,  
 and the said cylinder openings having one dimension at right angles to the shaft axis  
 80 longer than the corresponding dimension of the shaft; the said cylinders being disposed with the longer sides of the axial openings of certain selected cylinders at right angles  
 85 to the longer sides of the axial openings of the remaining cylinders.

In testimony whereof we have affixed our signatures in presence of two witnesses.

JOSEPH H. GAY.

WILLIAM D. QUIGLEY.

Witnesses:

GERTRUDE T. PORTER,  
 PARK BENJAMIN, Jr.