

(No Model.)

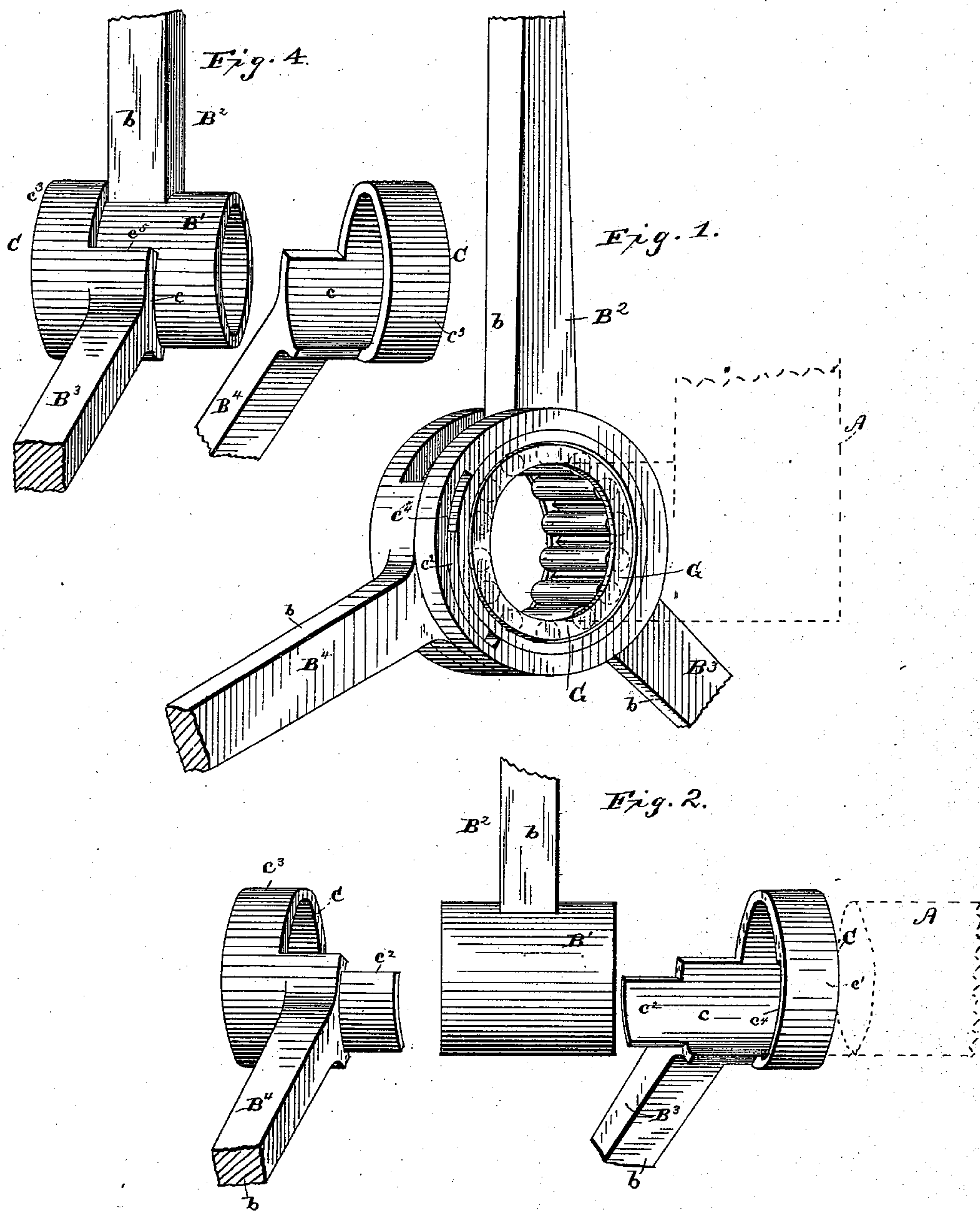
2 Sheets—Sheet 1.

M. N. & E. P. LYNN.

PITMAN CONNECTION.

No. 377,461.

Patented Feb. 7, 1888.



Witnesses,
Chas. R. Burr.
O. J. Stewart.

Inventors.
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By Church & Church
their Attorneys

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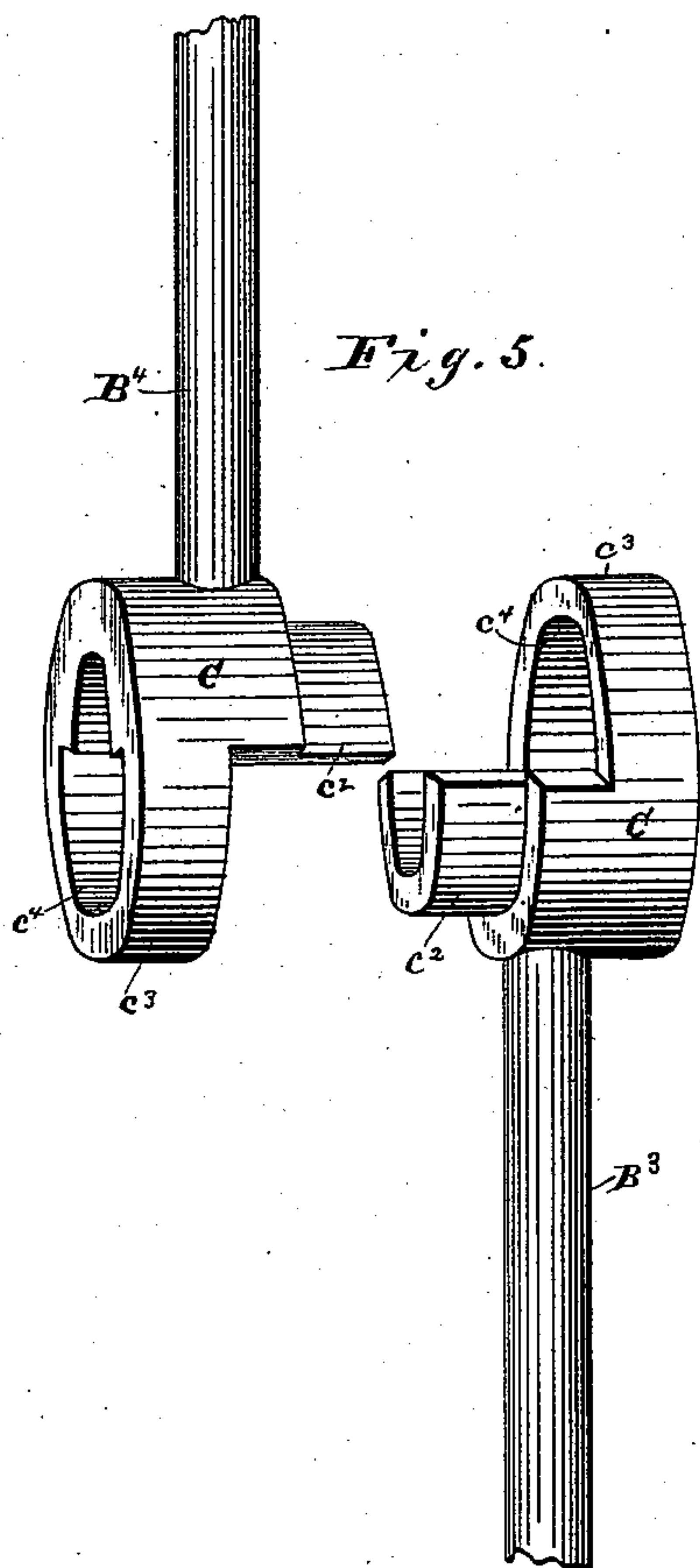


Fig. 5.

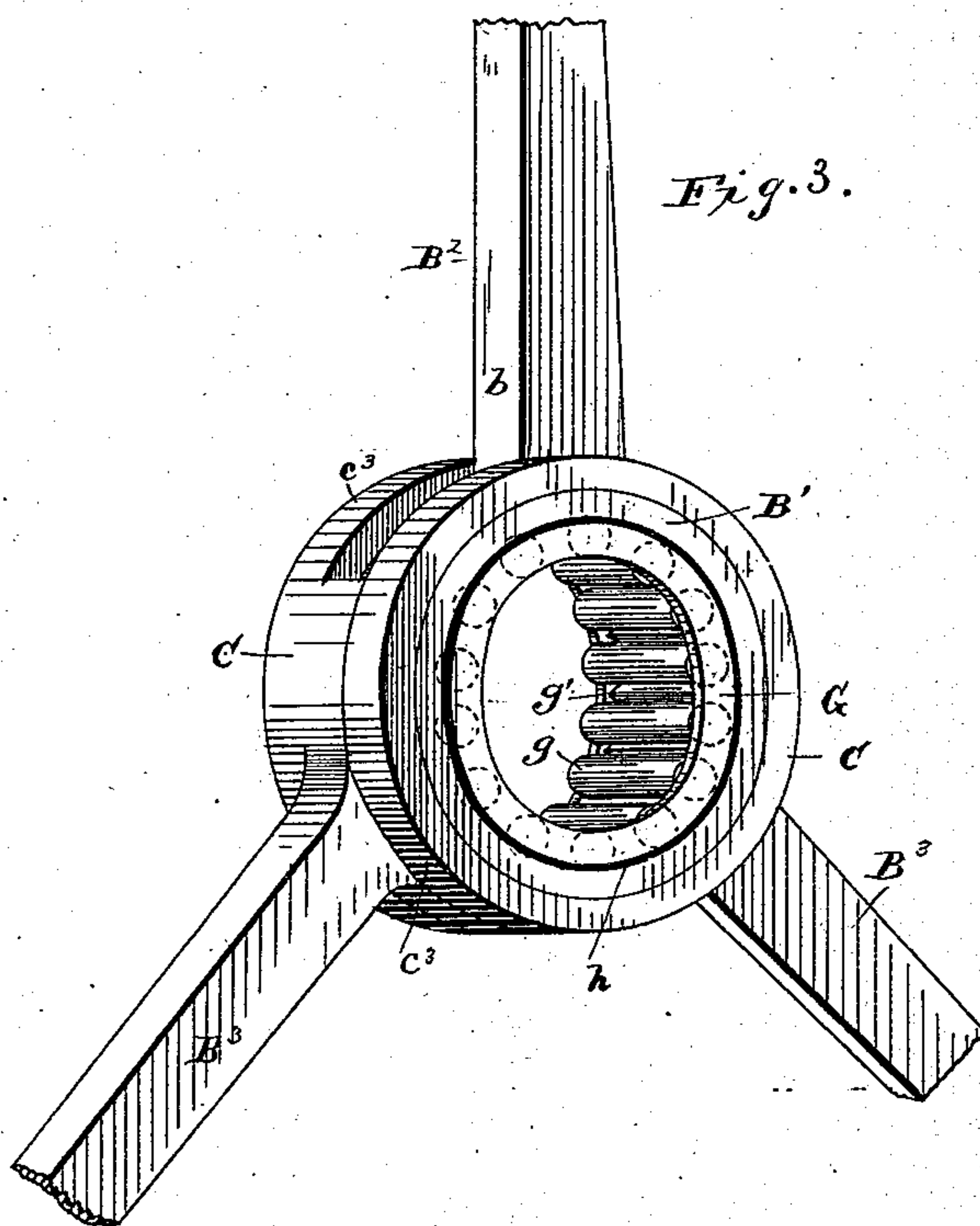


Fig. 3.

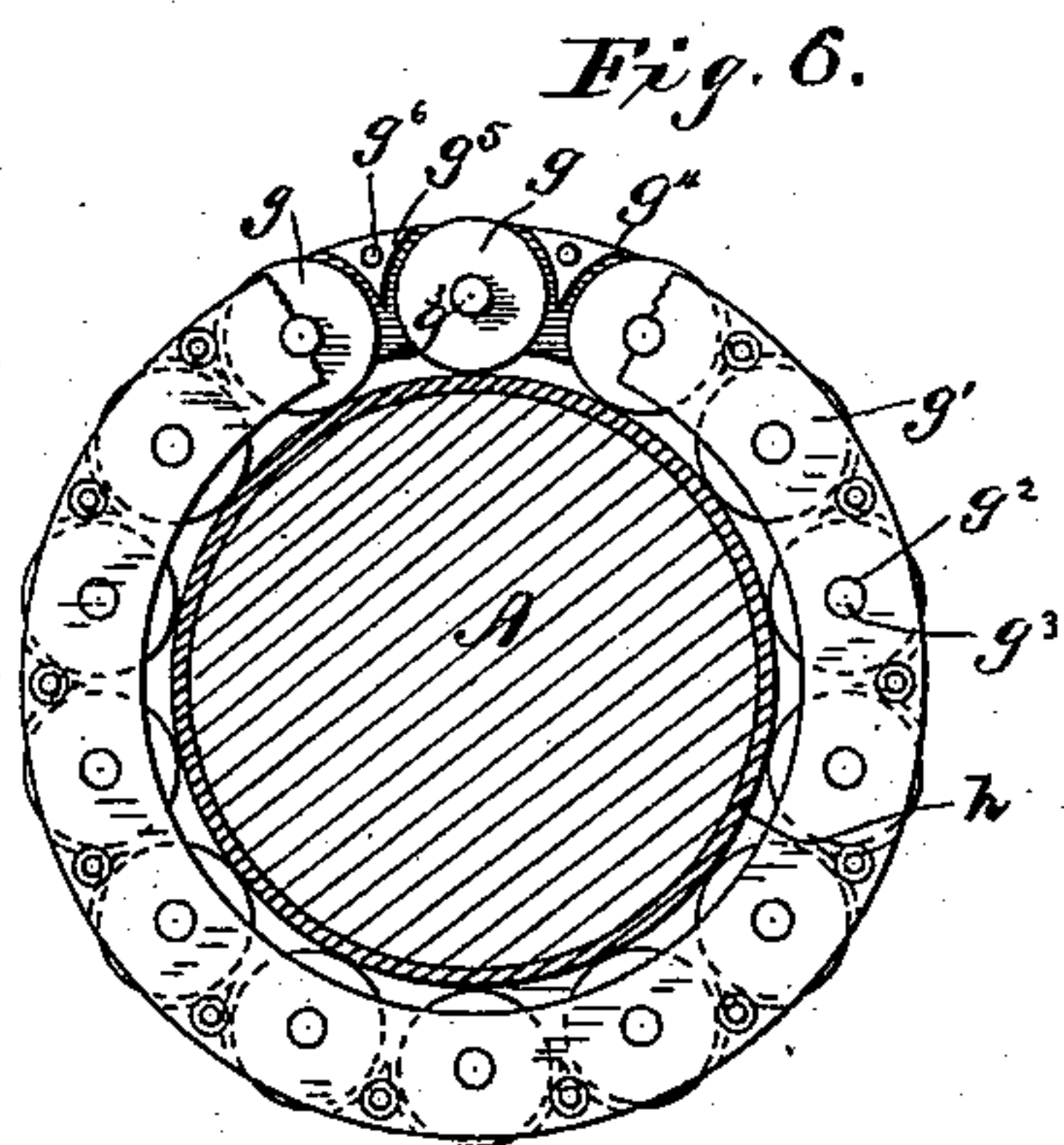


Fig. 6.

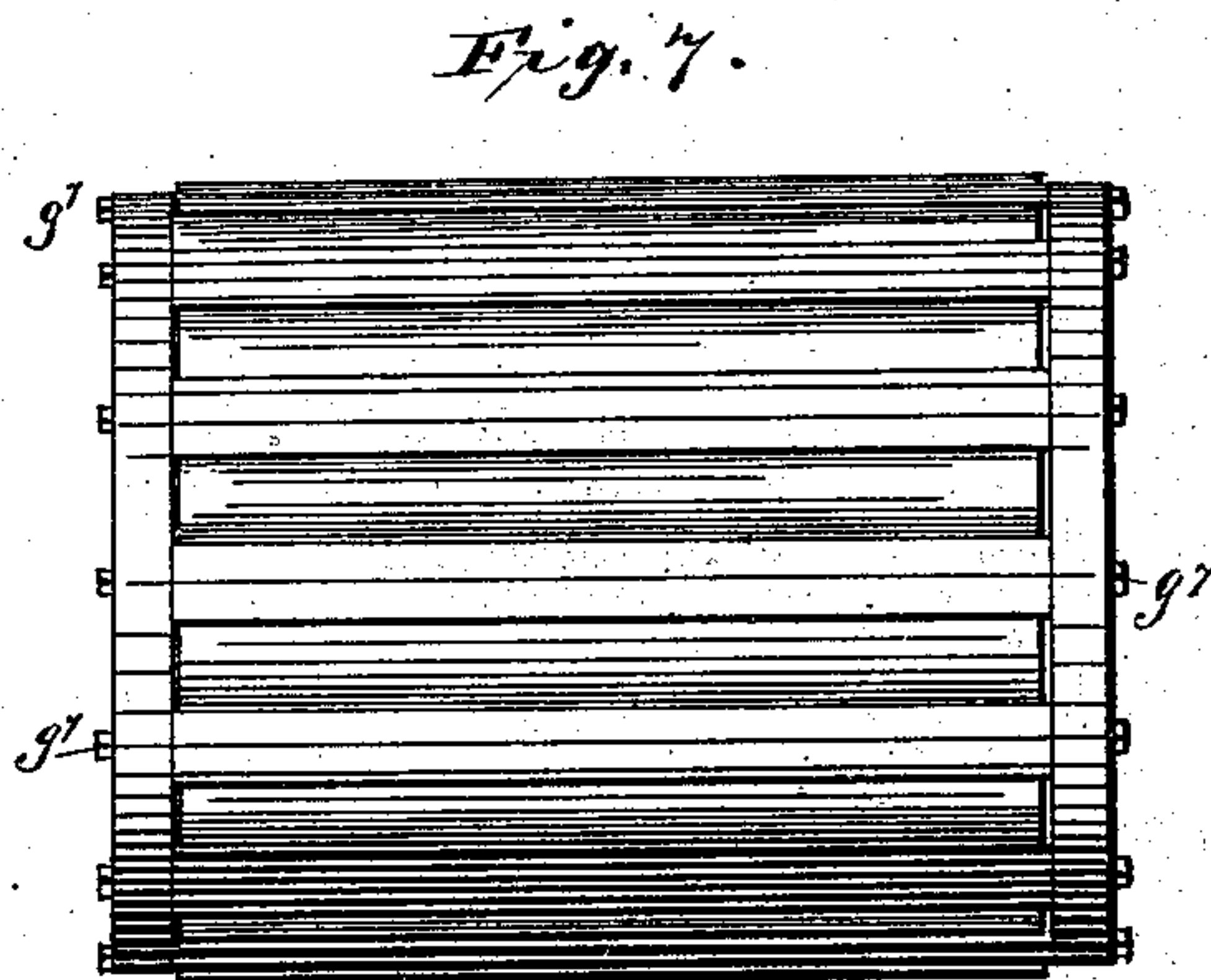


Fig. 7.

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UNITED STATES PATENT OFFICE.

MIRABEAU N. LYNN AND ELMORE P. LYNN, OF RISING SUN, INDIANA,
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PITMAN-CONNECTION.

SPECIFICATION forming part of Letters Patent No. 377,461, dated February 7, 1888.

Application filed August 6, 1886. Renewed June 22, 1887. Serial No. 242,150. (No model.)

To all whom it may concern:

Be it known that we, MIRABEAU N. LYNN and ELMORE P. LYNN, both of Rising Sun, in the county of Ohio and State of Indiana, have
5 invented certain new and useful Improvements in Pitman-Connections; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming
15 a part of this specification, and to the figures and letters of reference marked thereon.

The object of our present invention is to provide an improved pitman-connection and crank-pin bearing for use in multiple-cylinder engines, more especially designed for application to engines of the direct-acting type; and our said invention consists in the several novel combinations and arrangements of parts,
20 hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of a pitman-connection embodying our invention and arranged for use in a three-cylinder engine. Fig. 2 is a side
25 elevation of the three pitmen detached. Fig. 3 is a view in perspective of a modified form of the pitman attachment shown in Figs. 1 and 2. Fig. 4 is a view of the attachment, Fig. 3, with one of the outer pitmen detached. Fig.
30 5 is a modification; and Figs. 6 and 7 are side and end views, respectively, of a roller-bearing for use in connection with our improved pitman attachment.

Similar letters of reference in the several
35 figures indicate the same parts.

Referring particularly to the devices shown in Figs. 1 and 2, A designates the crank-pin, (illustrated by dotted lines,) G the anti-friction bearing, and B², B³, and B⁴ the three pitmen. The pitman B² is furnished with a transverse cylindrical head, B', in which is formed the bearing to receive the crank-pin, or the anti-friction bearing G, as desired. The ends
40 of the head B' project equally upon opposite sides of the rod b of pitman B², and upon each of said ends is fitted a ring or collar, c³, forming part of one of the pitmen B³ B⁴. The pitmen B³ B⁴ are each provided with a transverse head, C, composed of a central concave bearing, c, adapted to fit the central portion of the
50 head B', a collar, c³, provided with a seg-

mental groove or bearing, c⁴, and adapted to embrace and fit upon one end of the head B', and a segmental flange, c², opposite the collar c³, and adapted to be secured within the bearing c⁴ of the opposite pitman, B³ or B⁴. The several pitmen are arranged for application as shown in Fig. 2—that is to say, the pitmen B³ and B⁴ are reversed and held at an angle of about one hundred and twenty degrees, with
55 flanges c² opposite the bearings c⁴, so that when the said pitmen B³ and B⁴ are brought together upon the pitman B², as shown in Fig. 1, their collars c³ will embrace the opposite ends of the cylindrical head B', the flange c² of one of
60 said pitmen will enter the bearing c⁴ of the opposite pitman, and the rods b of all the pitmen will be brought into line. As thus constructed and applied, the two pitmen B³ B⁴ are connected the one to the other by the interlocking projections, and both are held in
65 position upon the cylindrical head of the pitman B² (or they may be applied directly to the crank-pin, when but two pitmen are required, as shown in Fig. 5) by the collars c³,
70 while all the rods b are given a central bearing at their ends and an equal bearing on opposite sides of the center or line of thrust. The flanges c² are narrower than their bearings c⁴ in collars c³, and the central bearings, c,
75 c, embrace somewhat less than a third of the circumference of the head B', the projections being so adjusted as to permit of the necessary lateral movement of the pitmen B³ B⁴.

As before remarked, the pitmen B³ B⁴ are
80 adapted for use either alone or in connection with a third pitman, B². In the one case they are applied to the crank-pin or roller-bearing direct, as indicated in Fig. 5, and in the other they are applied to the cylindrical head of the
85 third pitman, B², as shown in Figs. 1 and 2, the latter being mounted upon the crank-pin.

Although desirable for some purposes, it is not essential in all cases that the pitmen B³ B⁴ should be furnished with the interlocking
90 flanges c², for they may be omitted and the collars c³ made to embrace the cylindrical ends of the head B², as shown in Figs. 3 and 4.

When the three pitmen are combined for application to the crank-pin, as described, the
95 two which take their bearing upon the outer surface of the head of the inner or third pit-

man have but a limited movement thereon, just sufficient to accommodate the change effected in the angular position of the pitman-rods by and during the rotation of the crank, while by far the greatest portion of wear takes place between the inner surface of the head B' and the outer surface of the crank-pin, inasmuch as the crank-pin rotates continuously within the head, while the latter is subjected to the combined pressure of the several pistons. In order to diminish the wear at this point, to preserve the life of the parts, and at the same time provide for the renewal of the bearings, instead of applying the head B' of the pitman B^2 directly to the crank-pin, we enlarge the bearing in said head, thereby obtaining a more extended surface, and interpose between said sleeve and the crank-pin a roller-bearing, G , constructed and applied as follows: Within the space between the sleeve and the crank-pin are fitted a series of steel rollers, g , lying parallel with the axis of the crank-pin, and held in position by a ring, g' , located at each end of the bearing, and provided with bearings g^2 , slightly elongated radially of the crank-pin to receive the journals g^3 of the rollers g . The two rings g' are of a width slightly less than the diameter of the rollers g , and are firmly secured together, to hold said rollers parallel to each other and to the axis of the crank, by a series of stay-rods, g^4 , interposed between the adjacent rollers g , and provided with a shoulder, g^5 , and screw-threaded extension g^6 at each end. In putting the bearing together the stay-rods are screwed into threaded openings in one of the rings until their shoulders take a firm bearing against the face of the ring, after which the rollers are inserted and the ring applied to the opposite ends, said ring having a series of openings for the passage of the threaded ends of the stay-rods. Nuts g^7 are then applied to the projecting ends of the stay-rods to clamp and hold the ring against the shoulders thereon. The rings, as thus united by the stay-rods, form a rigid frame-work in which the rollers are supported, whereby the latter are prevented from twisting or being deflected at either end. The roller-bearing thus formed is slipped over the end of the crank-pin and within the bearing in the head of the pitman B^2 , and when so applied a rolling contact between the pitman and the crank is secured, thereby greatly reducing the friction and distributing the wear. Moreover, the roller-bearing can be readily removed and replaced, when desired. The roller-bearing G , as a whole, is free to rotate within the sleeve and upon the crank-pin.

The crank-pin, as well as the inner bearing of the head B' of the pitman B^2 , are furnished with removable sleeves or linings a , (see Figs. 3 and 6,) so that as either becomes worn or

damaged it may be readily removed and replaced.

Having thus described our invention, what we claim as new is—

1. The combination, with pitman B^2 , provided with a tubular head, B' , of the pitmen $B^3 B^4$, each having a transverse bearing fitting the exterior of the head B' , and a ring or collar embracing one end of said tubular head, substantially as described.

2. In a crank-pin connection, such as described, the combination of the pitmen $B^3 B^4$, each provided with a transverse head having a segmental flange at one end and a collar at the opposite end, the said segmental flange on one head being received in a bearing formed in the collar of the other head, and uniting to form a bearing for the reception of a crank-pin or sleeve, substantially as described.

3. In combination with the pitman B^2 , provided with the transverse cylindrical head B' , the pitmen $B^3 B^4$, applied to the exterior of said head, each of said pitmen $B^3 B^4$ being provided with a collar at one end and an interlocking projection or flange at the other end fitted to a bearing in the opposite collar, substantially as described.

4. In combination with the pitman B^2 , having the transverse tubular head B' , the pitmen $B^3 B^4$, each provided with a rod, b , a central bearing, c , and a ring or collar, c^3 , the central bearings of the two pitmen $B^3 B^4$ engaging the periphery of the head B' , and the collars engaging opposite ends of said tubular head B' , substantially as described.

5. In combination with the pitman B^2 , composed of the rod b and transverse tubular head B' , the pitmen $B^3 B^4$, each composed of a rod b and transverse head, the latter constructed with the central bearing, c , ring c^3 , and projection or flange c^2 , substantially as described.

6. The combination, in a crank-pin connection such as described, and with the tubular head, of the pitman B^2 , the removable sleeve or lining h , and roller-bearing G , substantially as described.

7. In a pitman attachment such as described, and in combination with the pitmen $B^3 B^4$, having central bearings, c , and rings or collars c^3 , and the inner pitman, B^2 , having the tubular head, to which said bearings and collars are applied, the removable anti-friction roller-bearing, G , interposed between the said head B' of the inner pitman and the crank-pin, substantially as described.

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