

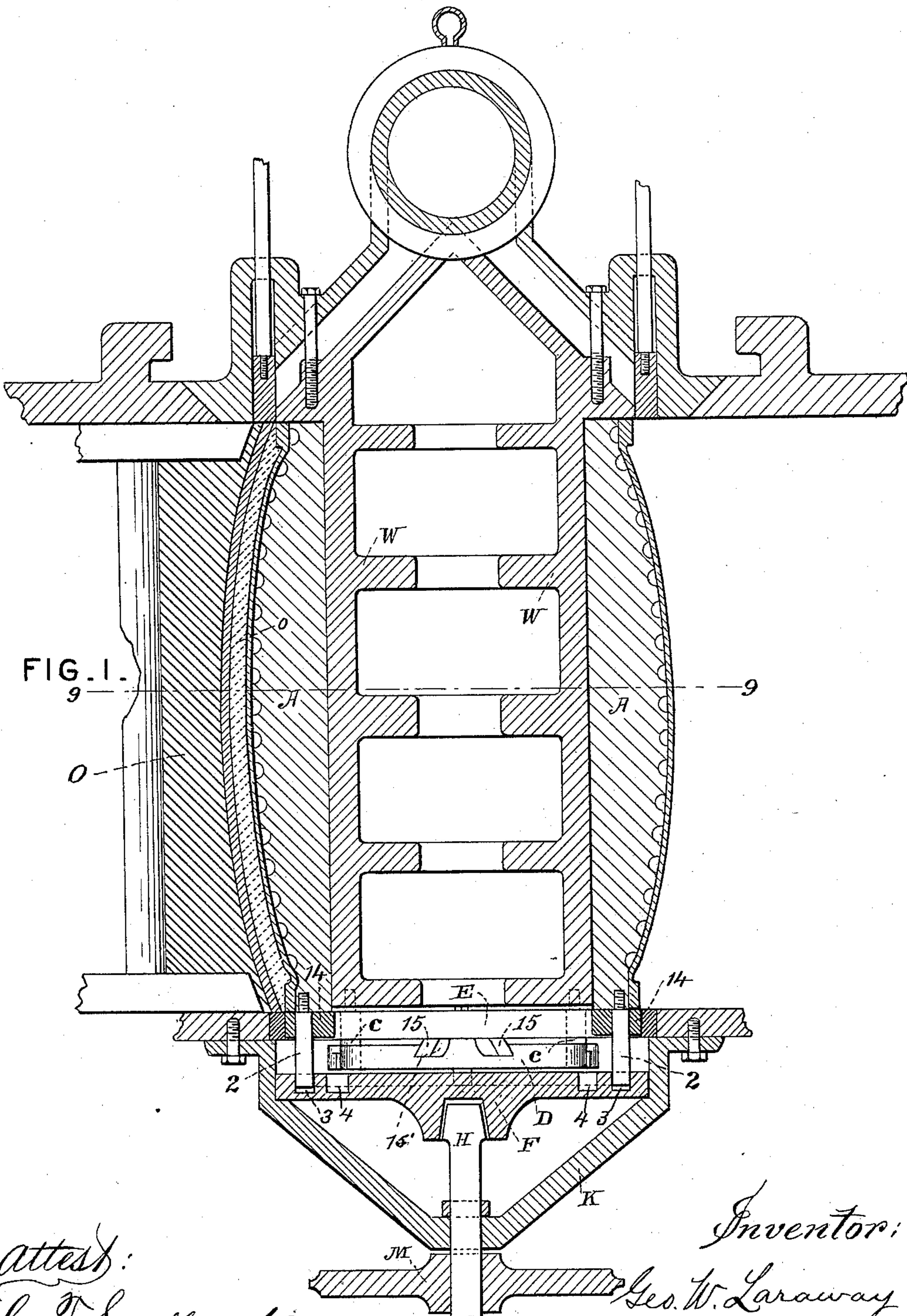
(No Model.)

4 Sheets—Sheet 1.

G. W. LARAWAY.  
PAPER BARREL MACHINE.

No. 396,752.

Patented Jan. 29, 1889.



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Geo. T. Smallwood,  
Res. Smith.

Inventor:  
Geo. W. Laraway,  
By A. M. Smith, atty

(No Model.)

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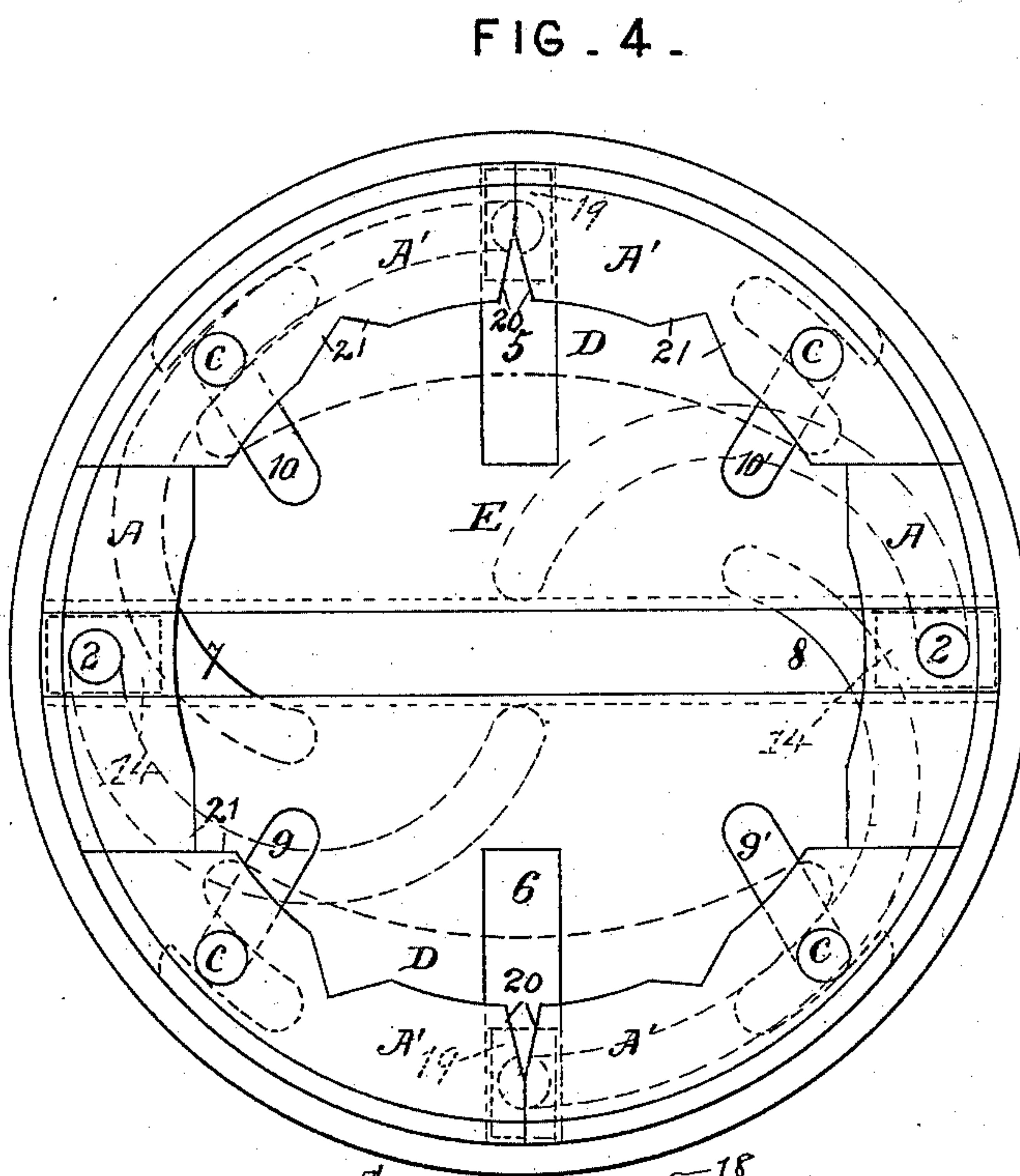
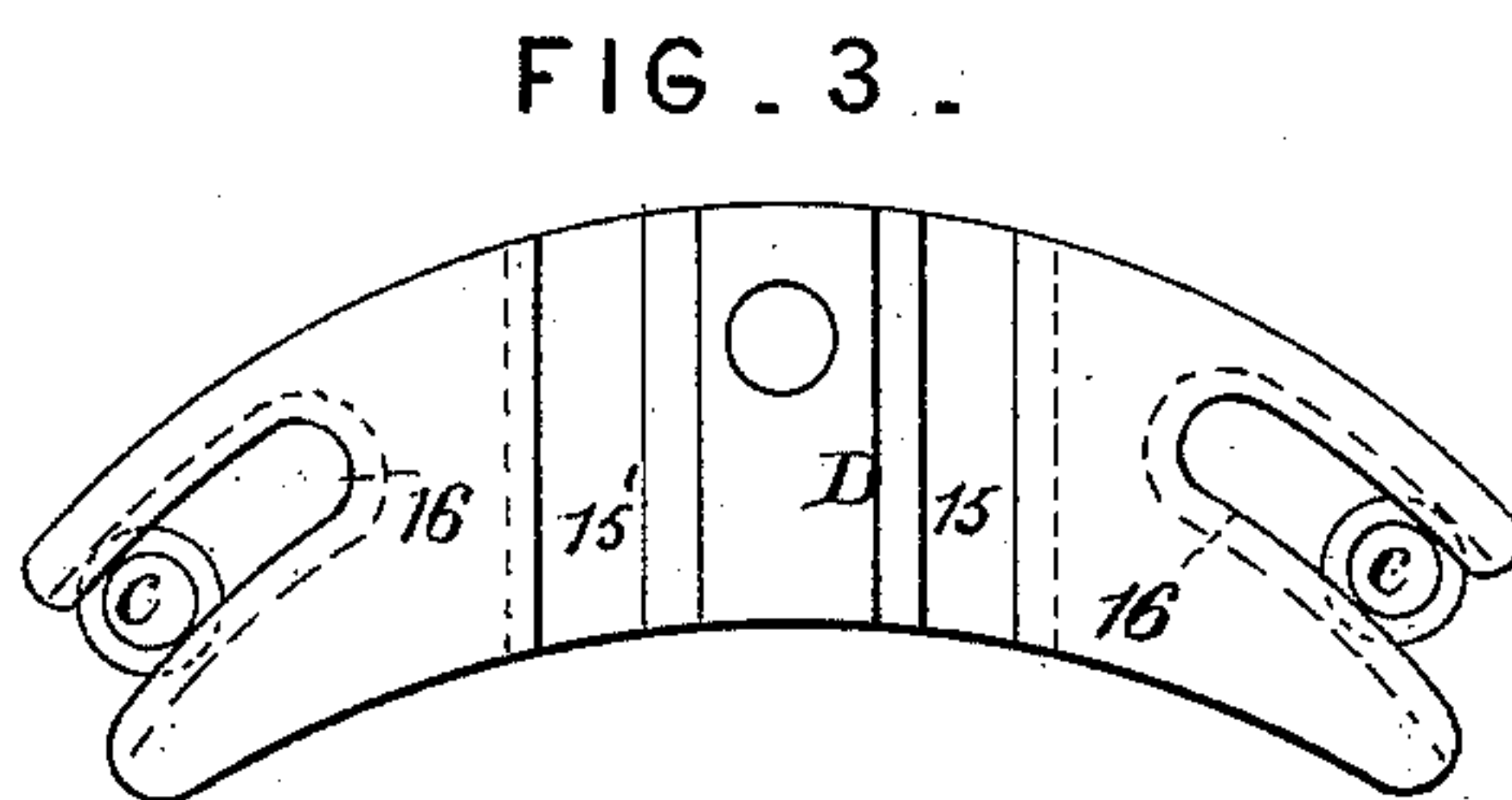
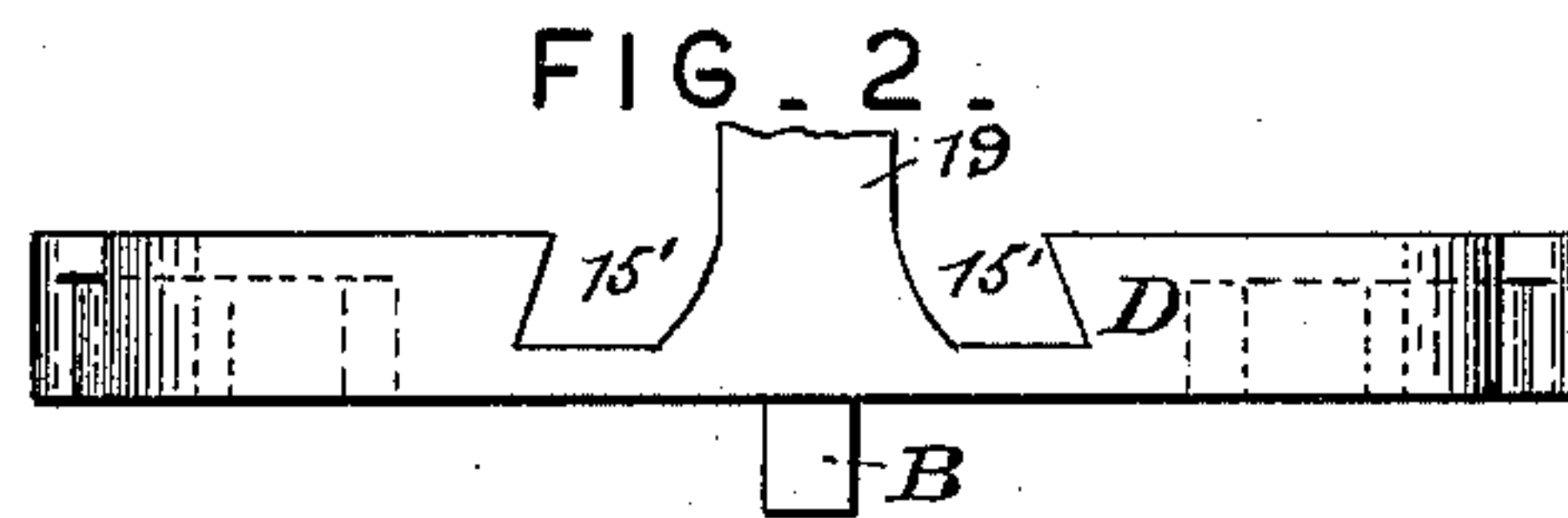
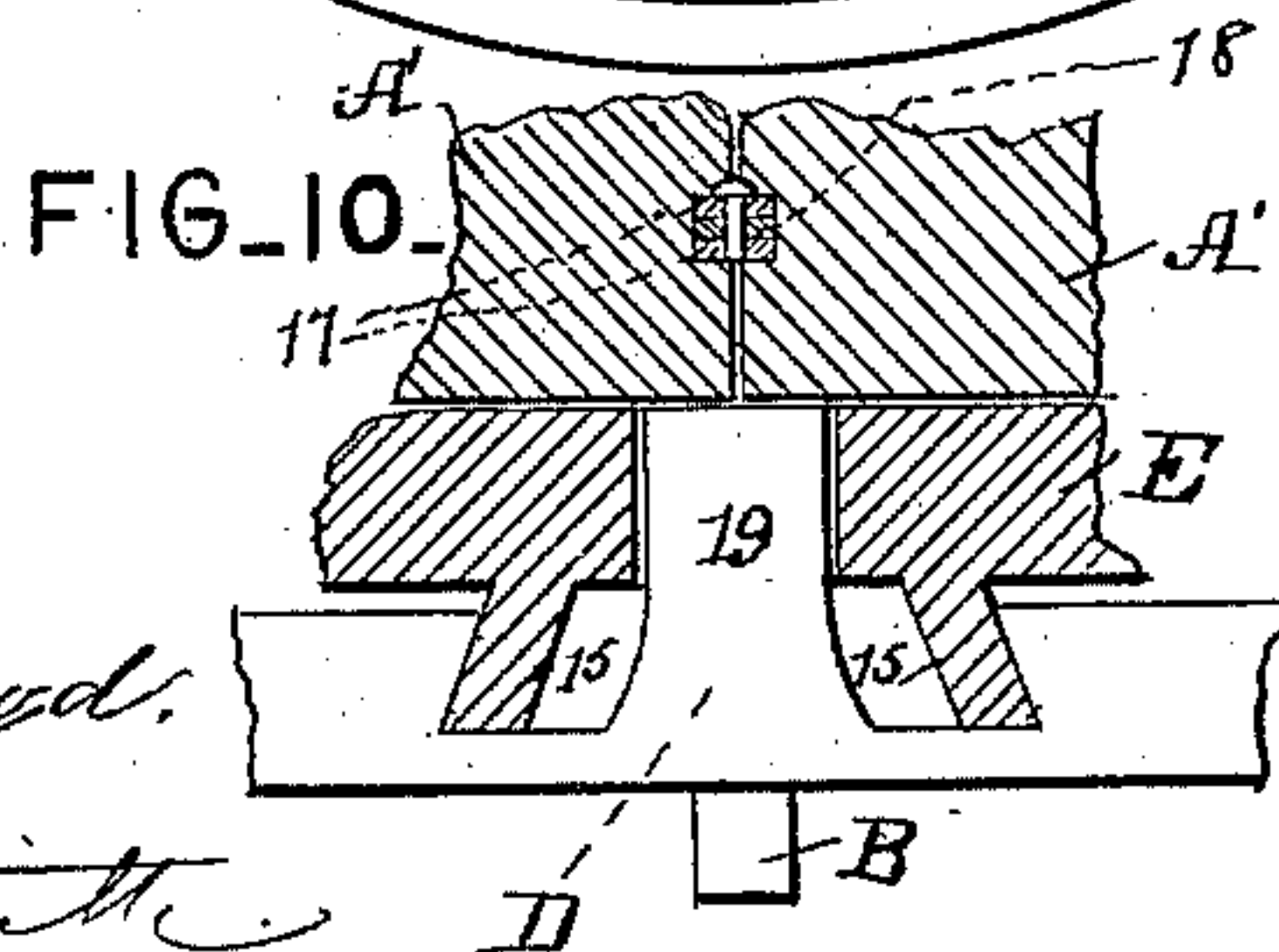
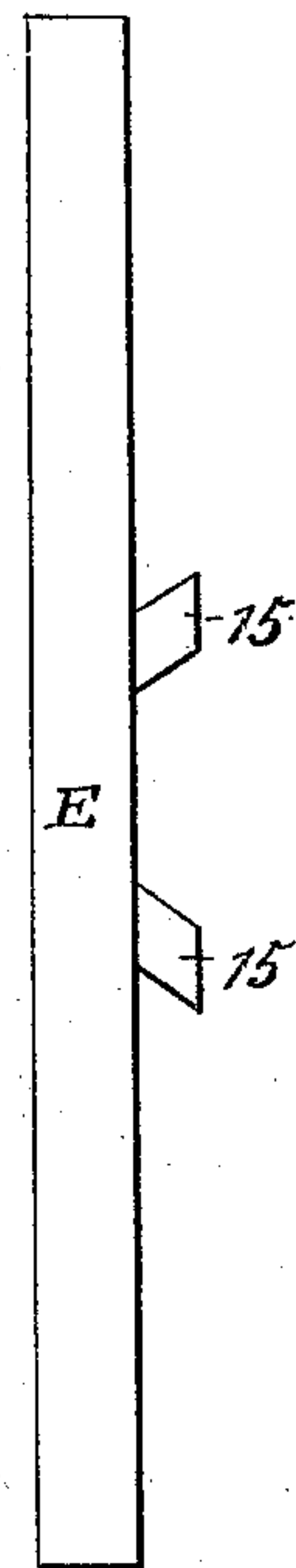


FIG. 6.



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FIG. 5.

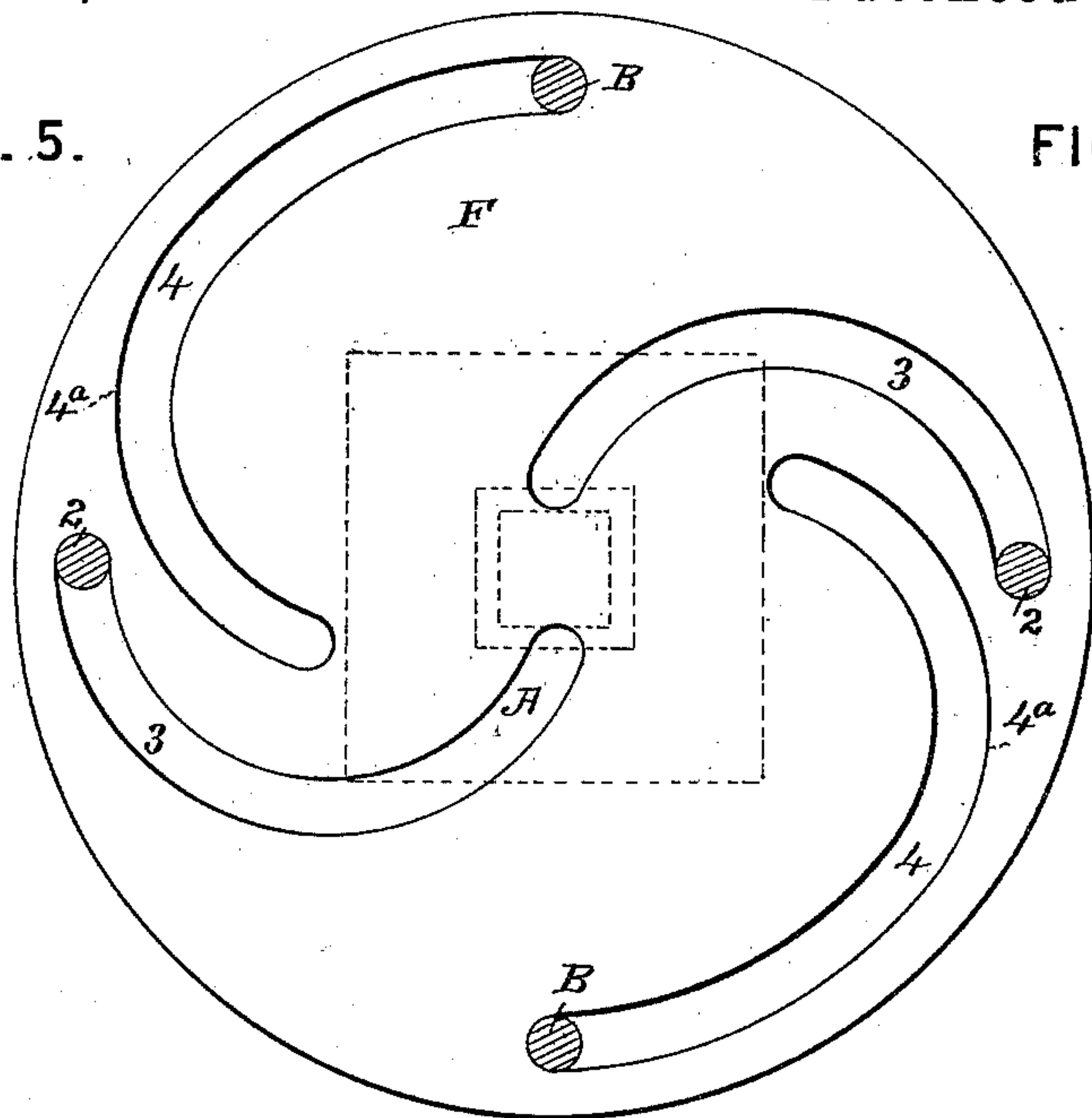


FIG. 7.

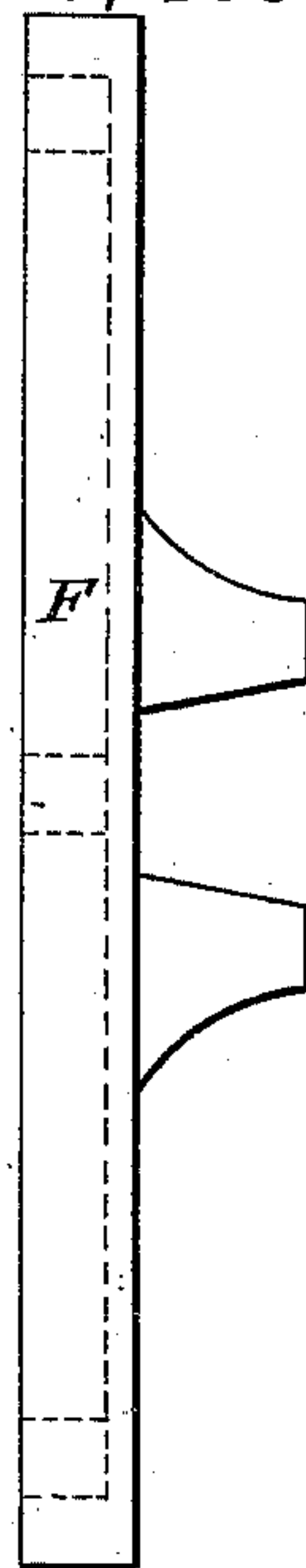
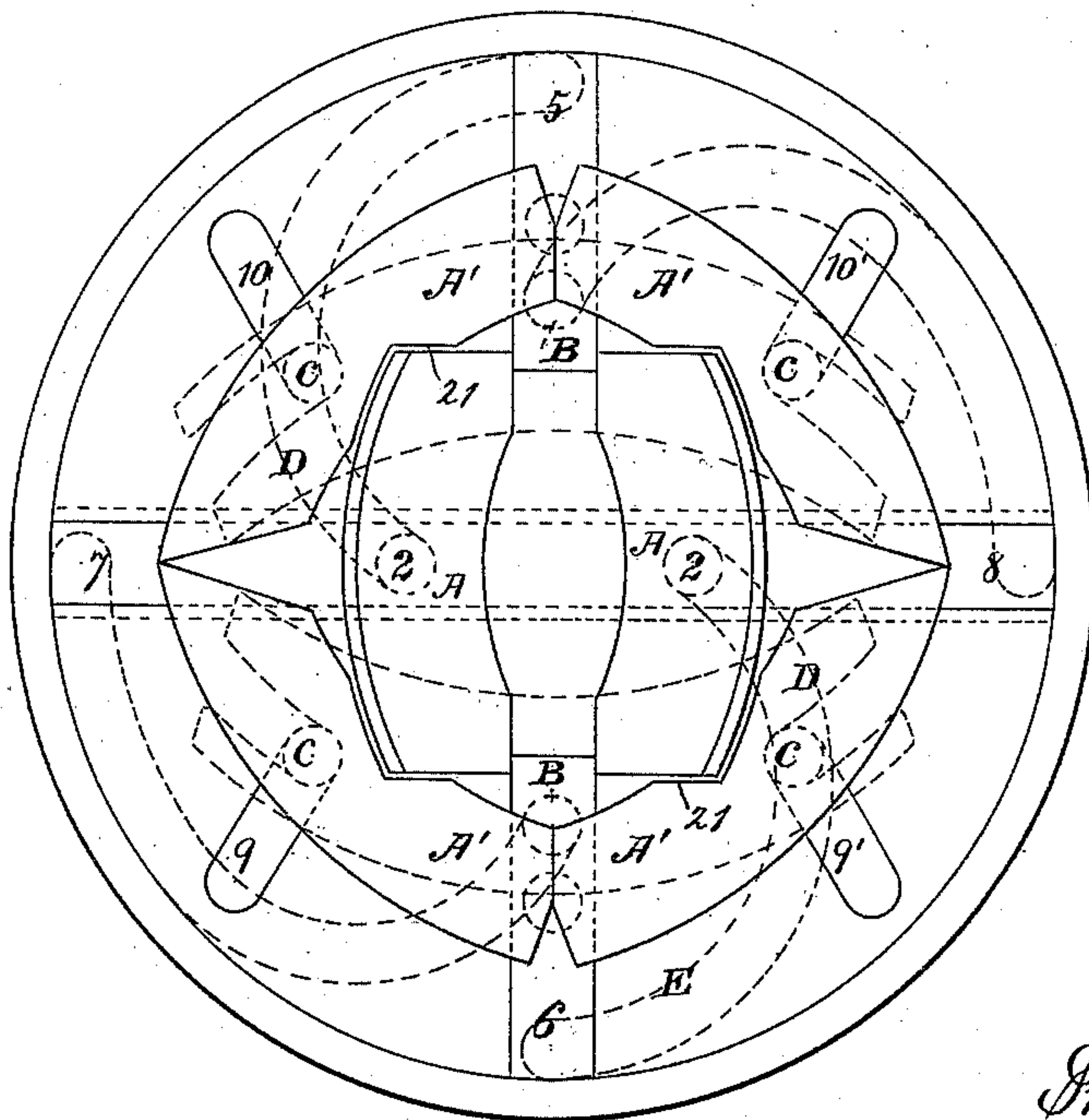


FIG. 8.



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(No Model.)

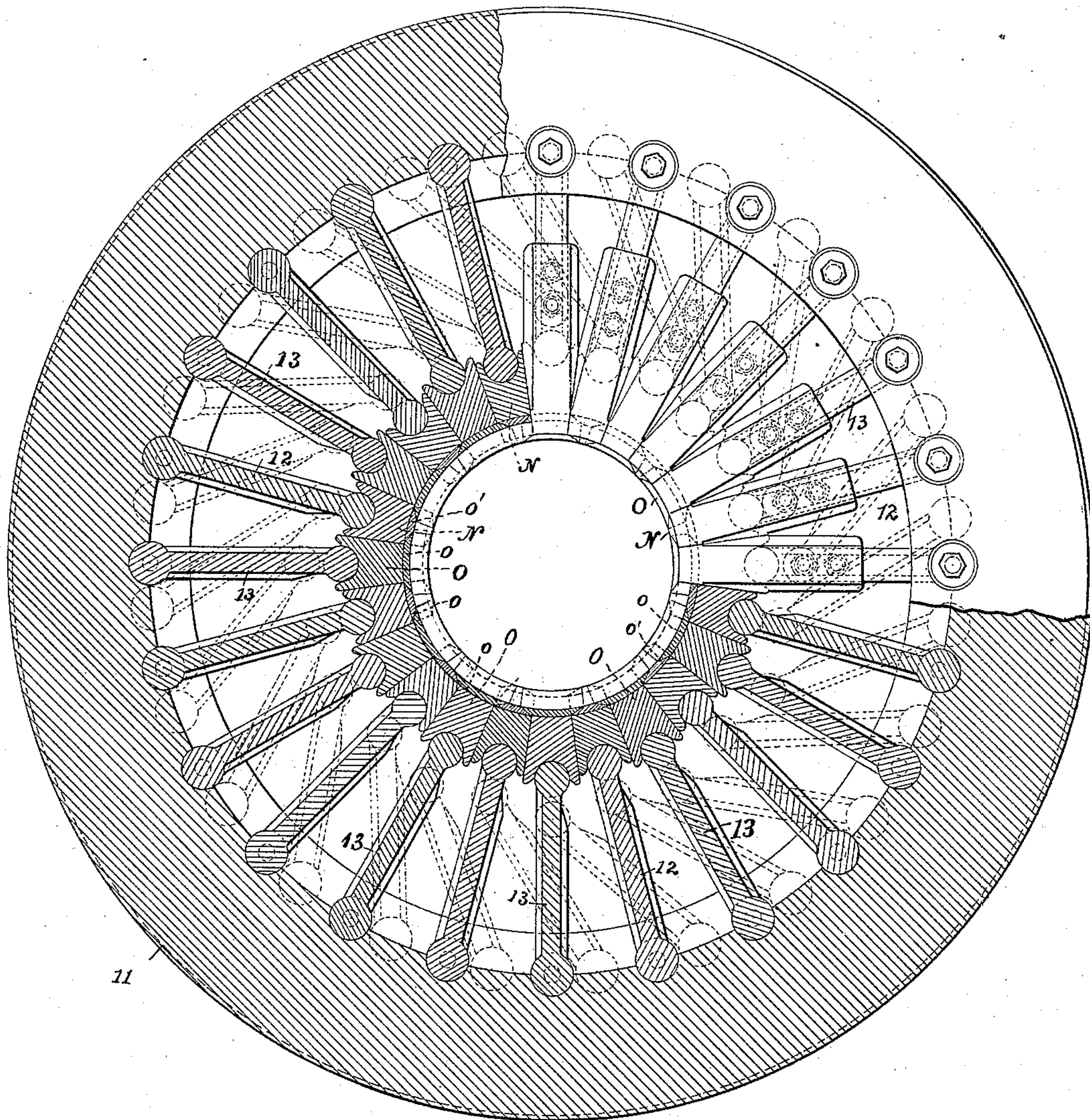
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FIG. 9.



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# UNITED STATES PATENT OFFICE.

GEORGE W. LARAWAY, OF AKRON, OHIO, ASSIGNOR OF ONE-HALF TO JOHN F. SEIBERLING, OF SAME PLACE.

## PAPER-BARREL MACHINE.

SPECIFICATION forming part of Letters Patent No. 396,752, dated January 29, 1889.

Application filed September 24, 1887. Serial No. 250,600. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. LARAWAY, of Akron, county of Summit, and State of Ohio, have invented a new and useful Improvement in Paper-Barrel Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My present invention relates, generally, to that class of machines for forming paper-pulp barrels, &c., embodied in Letters Patent No. 308,615, granted to me August 2, 1884, and relates more particularly, first, to an improvement in the construction and operation of the main and inter staves of a paper-barrel machine, and, secondly, to an improvement in the means for collapsing the inner staves of such machine.

My invention consists in certain peculiar and novel combinations of parts hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe the same, with reference to the accompanying drawings, in which—

Figure 1 is a transverse vertical section of a portion of a paper-barrel machine, sufficient to illustrate my improvements. Figs. 2 and 3 are detail views of the yoke-piece. Fig. 4 is a plan view of the supporting-plate, showing the staves thrown out and the relative position of the scroll-plate and its slots in dotted lines. Fig. 5 is a plan view of the scroll-plate. Fig. 6 is an edge view of the supporting-plate. Fig. 7 is a similar view of the scroll-plate. Fig. 8 is a plan view of the inner staves in collapsed condition, showing also the slotted base-plate upon which said staves move and are supported, and showing also the relative position occupied by the scroll-plate and its slots, indicated in dotted lines. Fig. 9 is a view partly in horizontal section on the line 9 9 of Fig. 1 and partly in plan. Fig. 10 is a sectional view illustrating the manner of connecting the adjacent ends of the staves A, hereinafter described, showing also the slotted base-plate and yoke-piece.

In its general construction and arrangement of parts this machine is similar, except

as hereinafter pointed out, to the machine embodied in the patent above referred to, and hence only such parts as are essential to an understanding of my present invention will be described in detail.

In the paper-barrel machine heretofore constructed by me I have employed interstaves, with "overlaps," so-called, to cover the openings or joints between the staves occasioned by the parting of the latter as they recede from the center, as is shown, for instance, in Patent No. 308,615, above referred to. As will be seen from the ensuing description, the interstaves in the present machine are supported against the pressure of the pulp from the inside by means of the main staves, upon which the overlapping beveled edges of the interstaves lie, and are also supported by the toggle-levers, both the main and inter staves being connected with and actuated by the rotating toggle-ring and interposed toggle-levers.

In the accompanying drawings, N and O represent, respectively, the main staves and interstaves of a paper-barrel machine. The main staves N are connected with and actuated from the toggle-ring 11 by means of toggle-levers 12, and the interstaves O are similarly connected with ring 11 by toggle-levers 13. By this arrangement the movements of the interstaves as well as the main staves will be positive, and not dependent for carriage and support upon the main staves.

The interstaves O are provided on their faces with beveled-edge face-plates *o*, which project from each side of said staves. The main staves N are also provided with face-plates *o'*, which are beveled at each side, as shown, to correspond with the beveled edges of the plates *o*, so as to underlie the same, and thereby form a practically continuous molding-surface for the barrel.

In order to prevent any liability of opening between the interstaves and to insure a close contact of the beveled edges of said staves, thus preventing any escape of pulp, the toggles 13 of the interstaves are made shorter than those 12 of the main staves, whereby the interstaves are caused to travel faster than the main staves when the ring 11



is revolved, and thus to keep the beveled edges of the main and inter staves closely together.

W indicates the core of the machine or support for the inner staves when the latter are thrown out into working position. Said core or support is preferably made, as shown in Fig. 1, with a continuous outer wall and strengthening-ribs disposed at suitable points upon the inner face of said wall, though any form of core will answer, the only requirements being that it have sufficient strength to sustain the pressure exerted upon it by the outer or main and inter staves and that it fill the space left between said inner staves when thrown out in order thus to support said staves in their operative or working position.

In order to facilitate the operation of collapsing the inner staves after the core has been removed, so that the barrel may be readily removed from the mold, a rotary scroll-plate, F, is employed, provided with two sets of scroll-slots, 3 and 4, said plate being arranged below the supporting-plate E, on which the staves rest and move. The base-plate E is provided with slots 5 6 7 8, and the staves A A are provided with guide-blocks 14, traveling in the slots 7 and 8, and also with pins 2 2, which extend from the bottoms of the staves A A and enter the slots 3 3 in the scroll-plate. The staves A' A' are hinged at their adjacent edges by means of the perforated lugs 17 and 18 and connecting-pin, as shown in Fig. 10, or any usual or preferred form of hinge may be employed. The adjacent edges of the staves A' A' are beveled or cut away, as shown at 20, to allow the staves to adjust themselves as they are drawn in by means hereinafter described. Said staves are also cut out or recessed on their inner faces, as shown at 21, to allow them to be folded in the more closely and snugly around the staves A A. Yoke-pieces D are arranged between the scroll-plate F and supporting-plate E, and are connected to the latter and supported by oblique projections 15 on the bottom of the supporting-plate E, which extend into corresponding and obliquely-cut grooves or ways, 15', in the upper face of the yoke D, as shown. These yoke-pieces are provided at their ends with slots 16, which are adapted to receive and carry the pins c c c c, projecting from the lower ends of the staves A' A' A' A', and extending also through slots 9 9' 10 10' in the base or supporting plate E. The yokes D D are also provided on their lower faces with pins B B, which project therefrom into the scroll-slots 4 4 of the scroll-plate F, and on their upper faces with blocks or guides 19, which travel in the slots 5 and 6 in the base-plate E. Thus it will be seen that as the scroll-plate F is revolved the grooves 3 3 will engage the pins 2 2 on the staves A A and draw said staves inward toward the center of the base-plate or space lately occupied by the core W. By the

time the staves A A have reached their inward limit or after they have passed by the edges of the other staves, A' A', the deflecting parts 4<sup>a</sup> of the scroll-slots 4 4 in the scroll-plate F reach the pins B B on the lower faces of the yoke-pieces D, and, acting thereon, cause said yoke-pieces to travel inward toward each other. These yoke-pieces slide upon and are supported by the dovetailed projections 15, above referred to, and are thereby guided and steadied in their movements.

The yoke-pieces D, as they are moved toward each other, act upon the pins c c, projecting downward from the staves A' A' through the slots 9 9' 10 10' in the base or supporting plate E and into the slots 16 of said yoke-piece. This causes the staves A' A' to be folded inward toward each other and around the staves A A, previously acted upon. This operation being completed, and the outer or main and inter staves having been withdrawn, the pressed-paper barrel may be readily removed.

The operation of throwing the inner staves out into working position is of course just the reverse of that above described, the scroll-plate acting as well in one direction as the other.

For revolving the scroll-plate F any suitable mechanism may be employed, that shown being a short shaft, H, journaled in a suitable bracket, K, secured beneath the machine-frame, and having a square end engaging a corresponding socket on the lower face of the scroll-plate, being provided at its other end with a gear-wheel, M, adapted to receive a drive chain or belt, or to be driven in any usual or preferred manner.

The toggle-actuating ring 11 may have power applied to it for rotating it in any usual or preferred manner, and other parts of the machine, not particularly described, may likewise be constructed, arranged, and operated as desired.

Having now described my invention, what I claim as new is—

1. In a paper-barrel machine, the combination, with the main staves and the interstaves, of the toggle-levers, of different lengths, and means, substantially as described, for simultaneously operating said toggle-levers.

2. In a paper-barrel machine, the main staves and the interstaves provided on their working-faces with the bevel-edged plates, in combination with the toggle-levers connected with and acting directly upon both the main and inter staves and the ring for operating said toggle-levers simultaneously, as and for the purpose described.

3. In a paper-barrel machine, the main staves and inter staves provided on their working-faces with the intermeshing bevel-edged plates, in combination with toggle-levers of different lengths for varying the relative speed of the different staves, and an actuating-ring for operating said levers.

4. In a machine for forming paper barrels, &c., the combination of the main staves N, the



interstaves O, the longer toggles, 12, the shorter toggles, 13, and the toggle-ring 11, substantially as described.

5 5. The combination of the interstaves O, provided with the projecting beveled plates, the main staves having also correspondingly-beveled plates underlying the beveled projections of the interstave-plates, the short toggles 13, the long toggles 12, both connected with  
10 said staves, and the toggle-actuating ring, substantially as and for the purpose set forth.

15 6. The combination, with the base-plate and the scroll-plate, of the yoke-pieces provided with pins B and slots, and the inner staves, also provided with pins, and means, substantially as described, for operating said scroll-plate, substantially as and for the purpose specified.

20 7. The combination, with the inner staves having guide-pins and the slotted base-plate having the oblique projections, of the mov-

ble yoke-pieces provided with grooves corresponding to the form of said oblique projections, and also provided with guide-pins and slots, and a rotary scroll-plate, and means for  
25 actuating the latter for operating the yoke-pieces and staves, all substantially as described.

8. The combination, with the slotted base-plate and the inner staves having guide-pins, 30 of the yokes provided with slots 16 and guide-blocks 19, and also with pins B, and a slotted scroll-plate, and means for actuating the latter for operating the yokes and staves, substantially as described. 35

In testimony whereof I have hereunto set my hand this 7th day of September, A. D. 1887.

GEORGE W. LARAWAY.

Witnesses:

HOWARD E. SEARS,  
HELEN C. HOWARD.