

(No Model.)

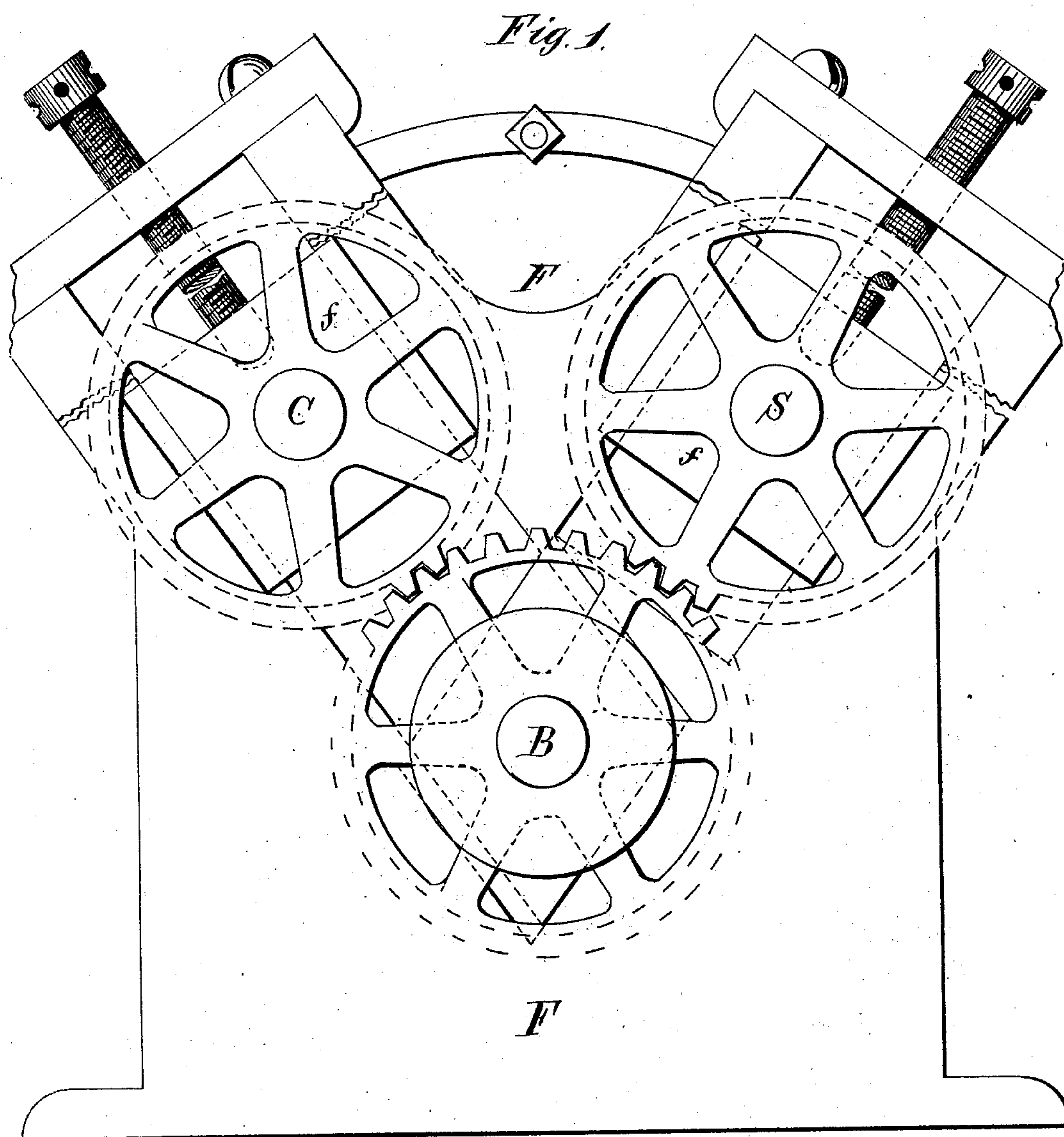
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J. M. TITUS.

MACHINE FOR CUTTING BOX PATTERNS.

No. 272,354.

Patented Feb. 13, 1883.



*Witnesses.*  
*Wm A. M. Elmer.*  
*J. S. Barker.*

*Inventor.*  
*James M. Titus*  
*per Henry Orth atty.*

(No Model.)

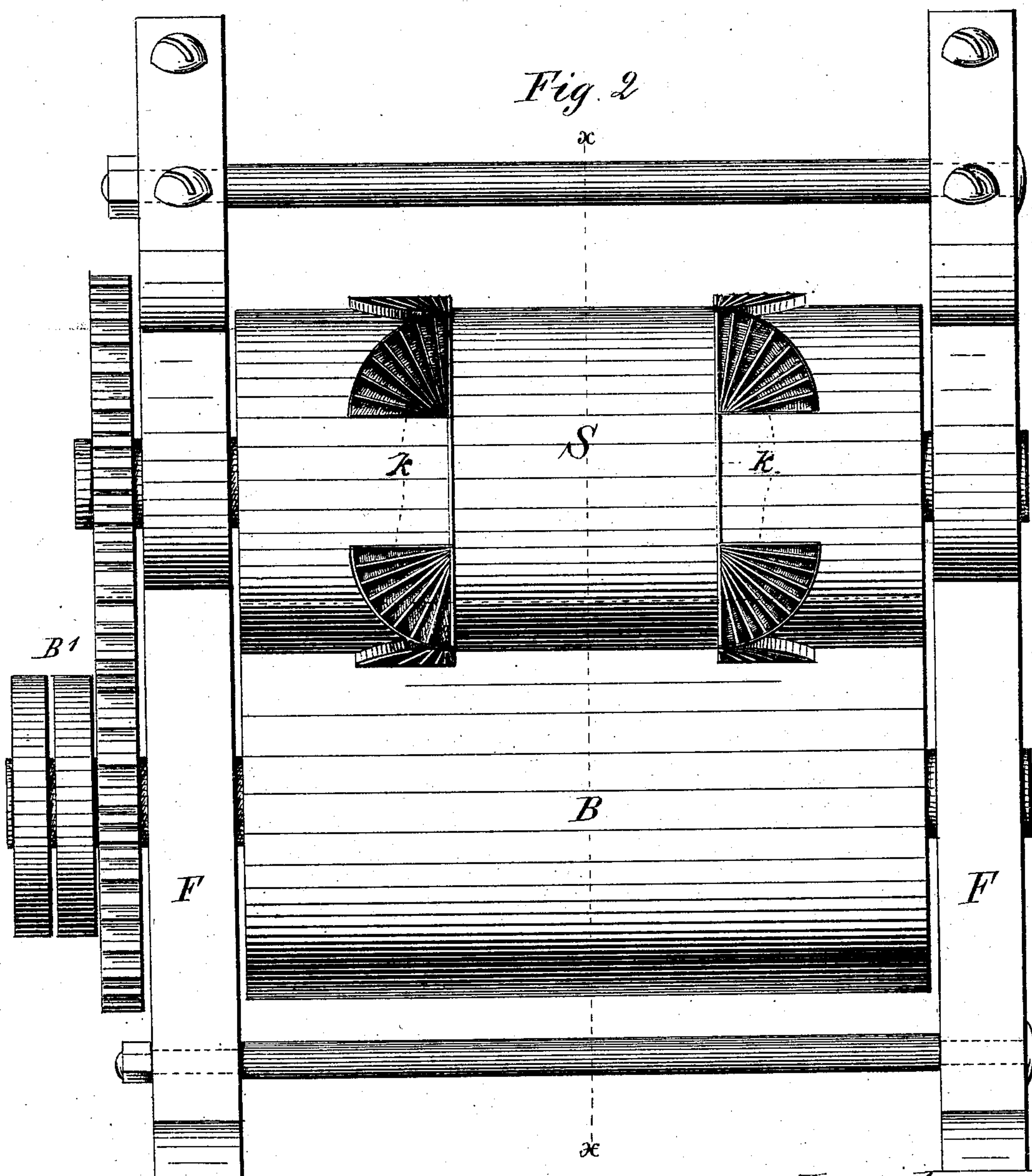
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(No Model.)

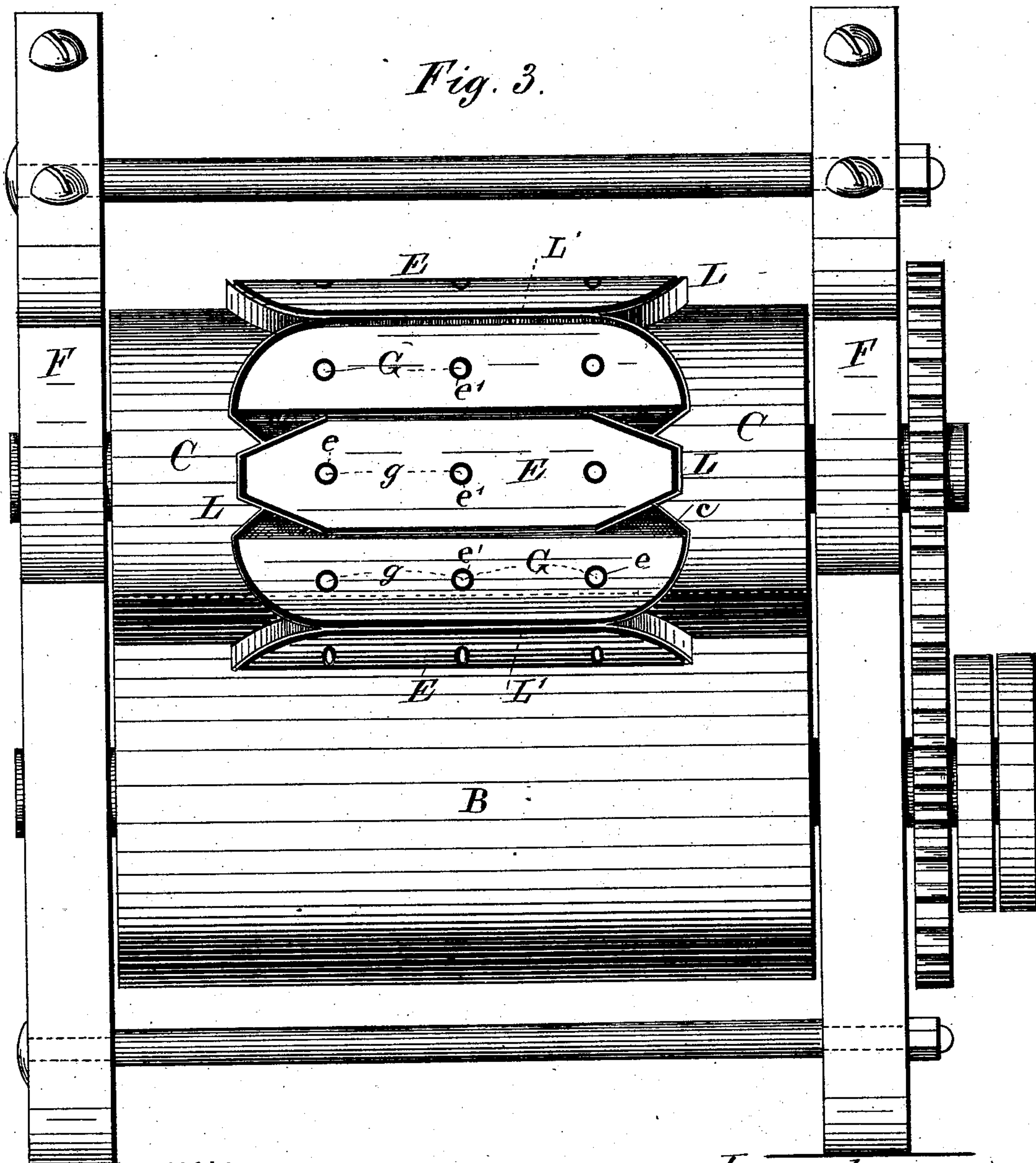
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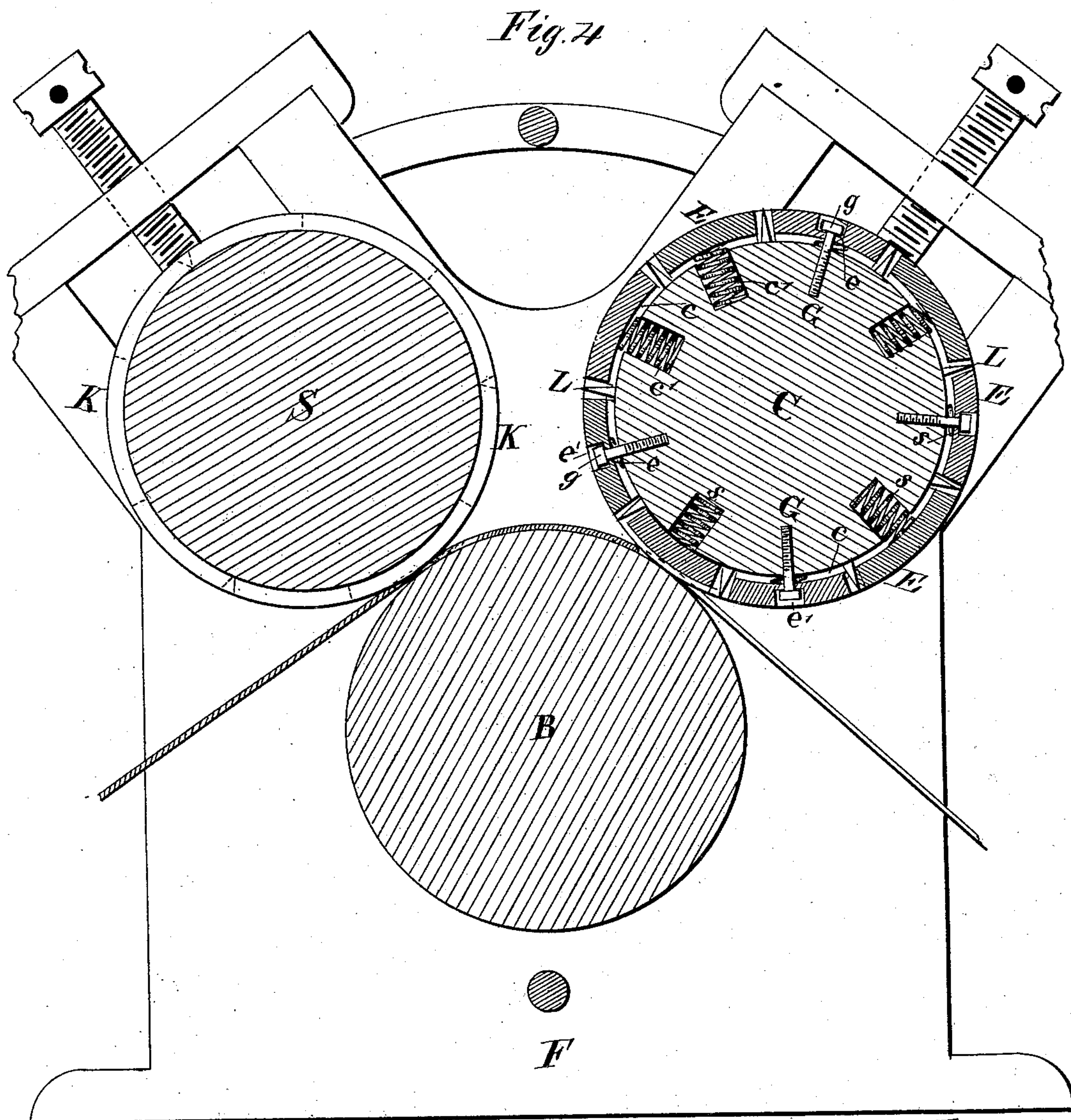
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(No Model.)

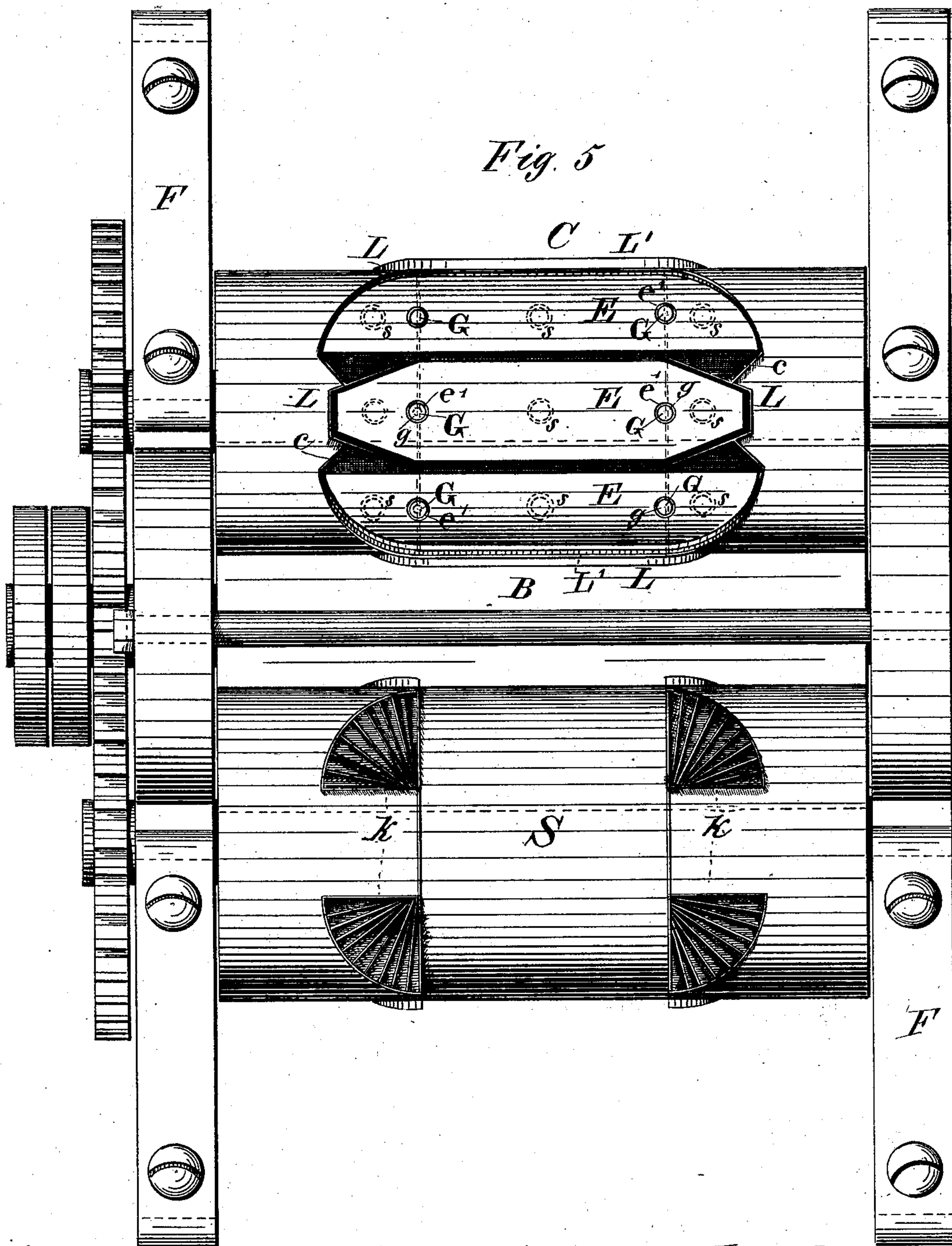
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(No Model.)

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Fig. 8.

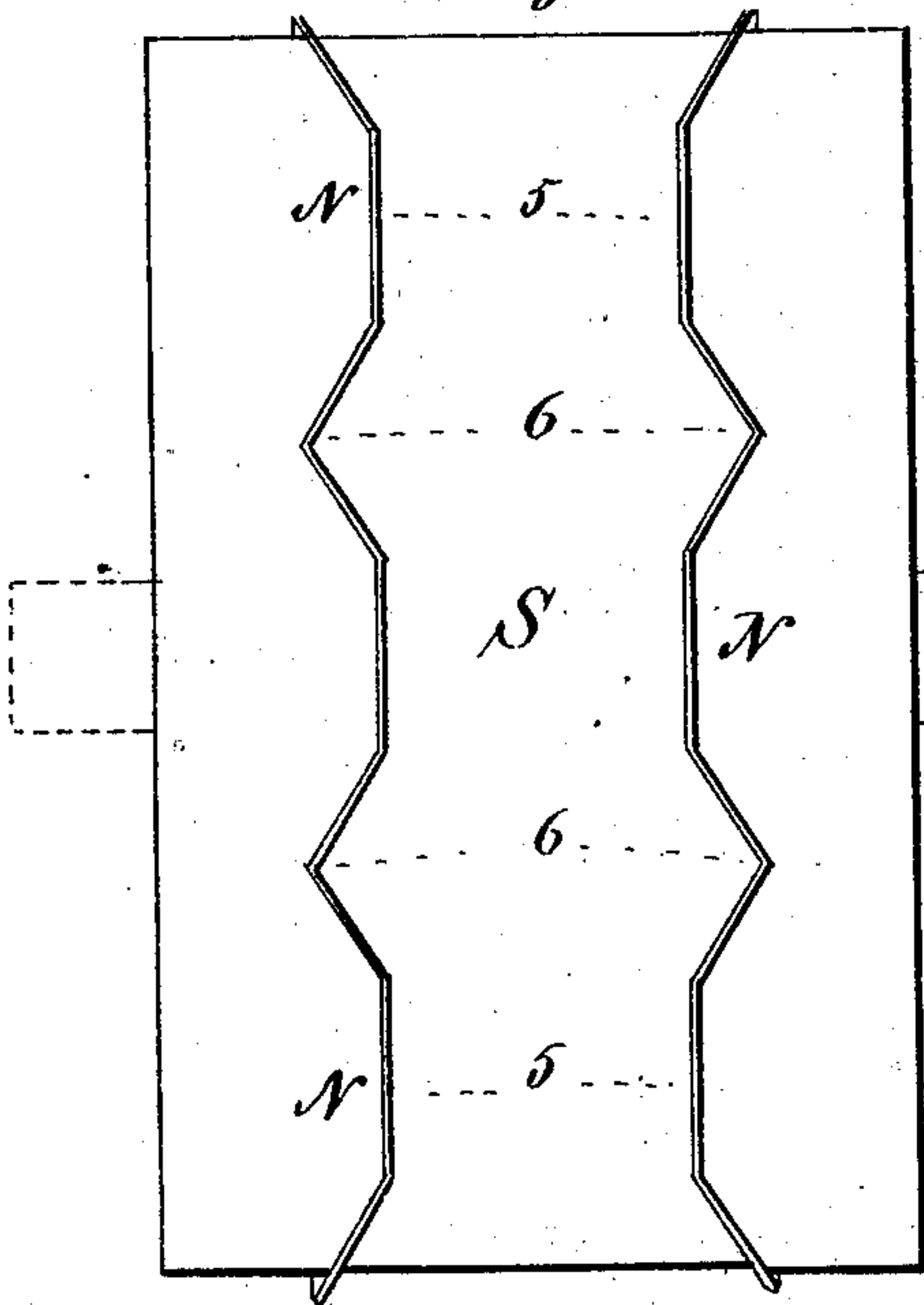
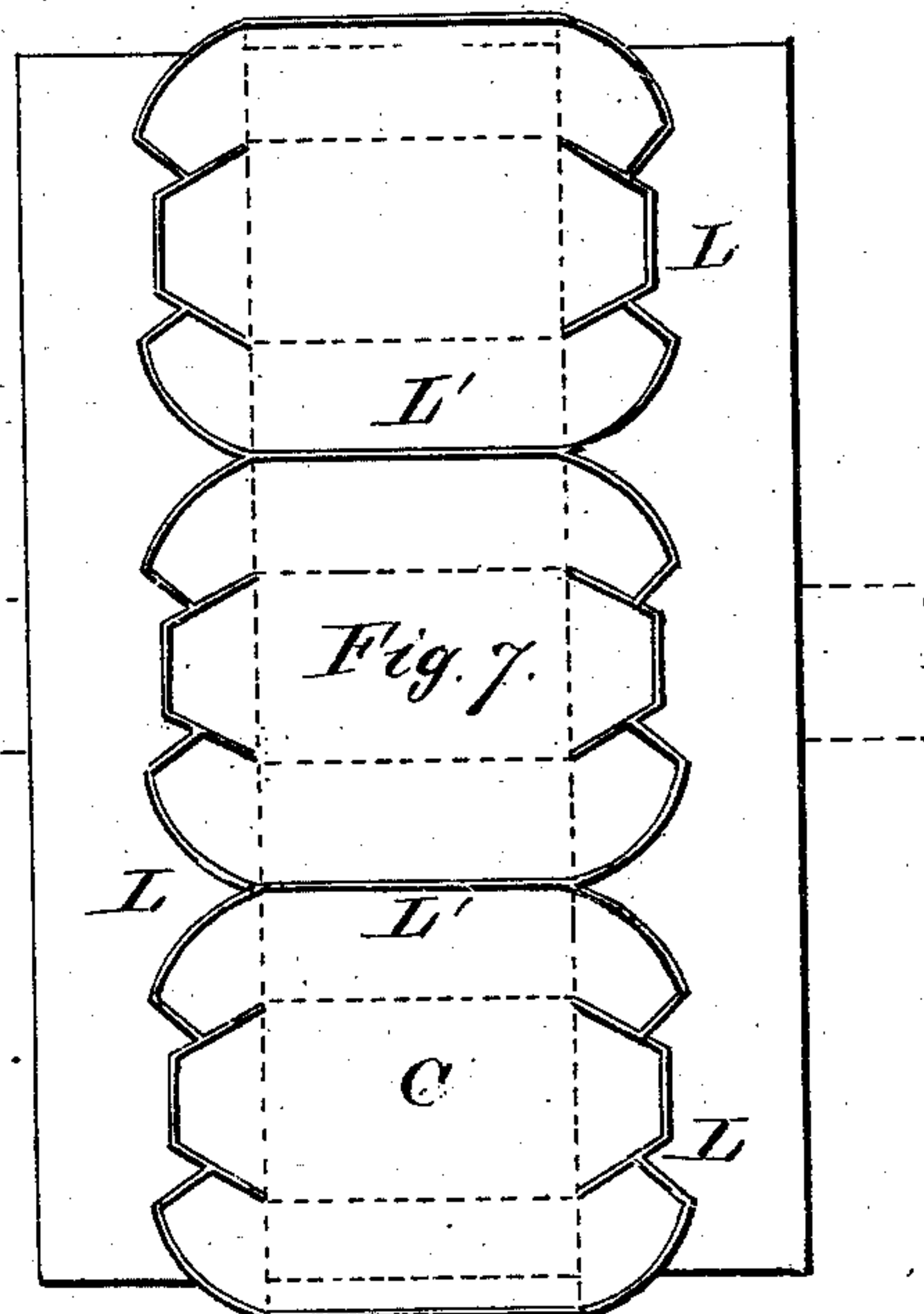
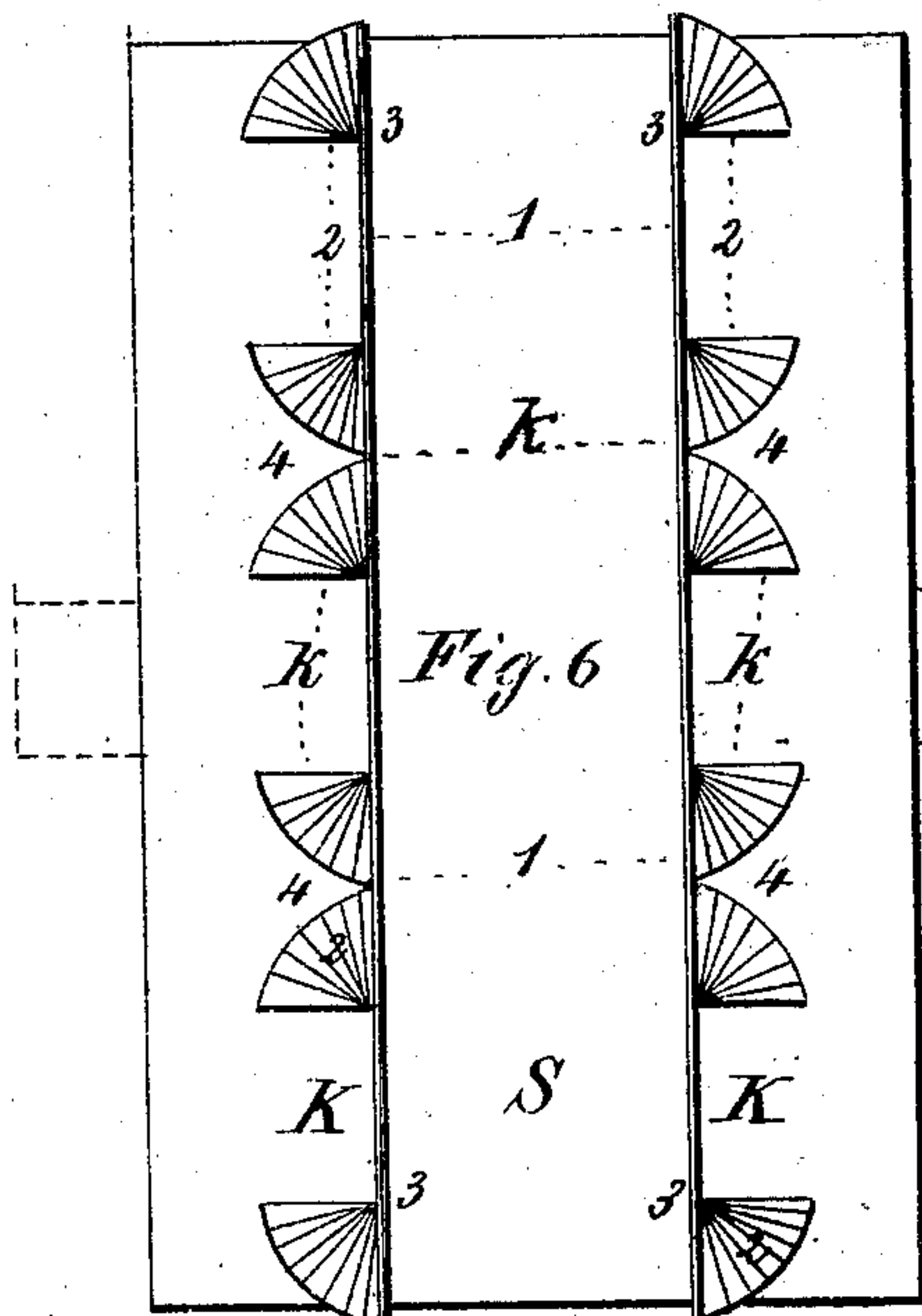
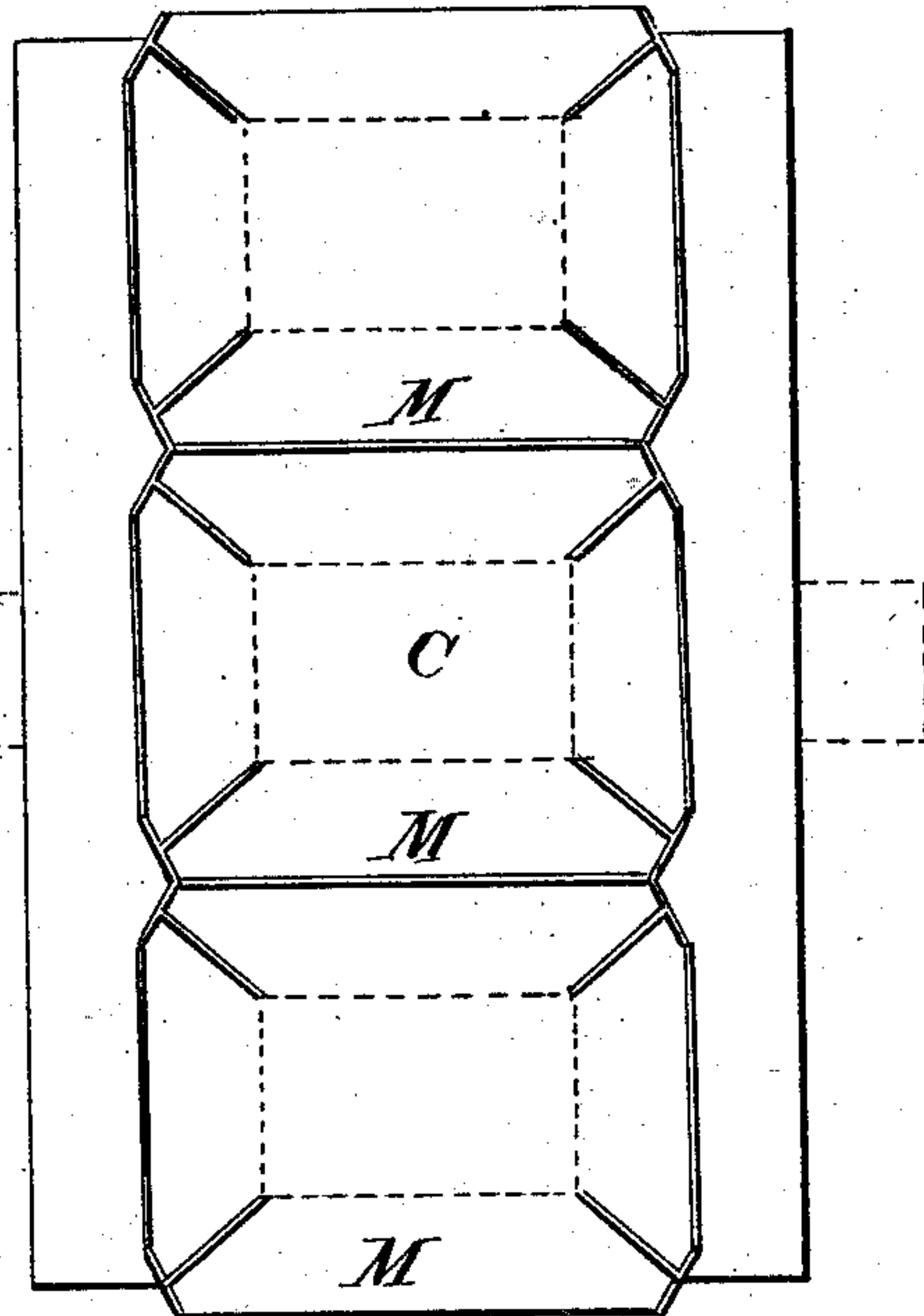


Fig. 9.



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(No Model.)

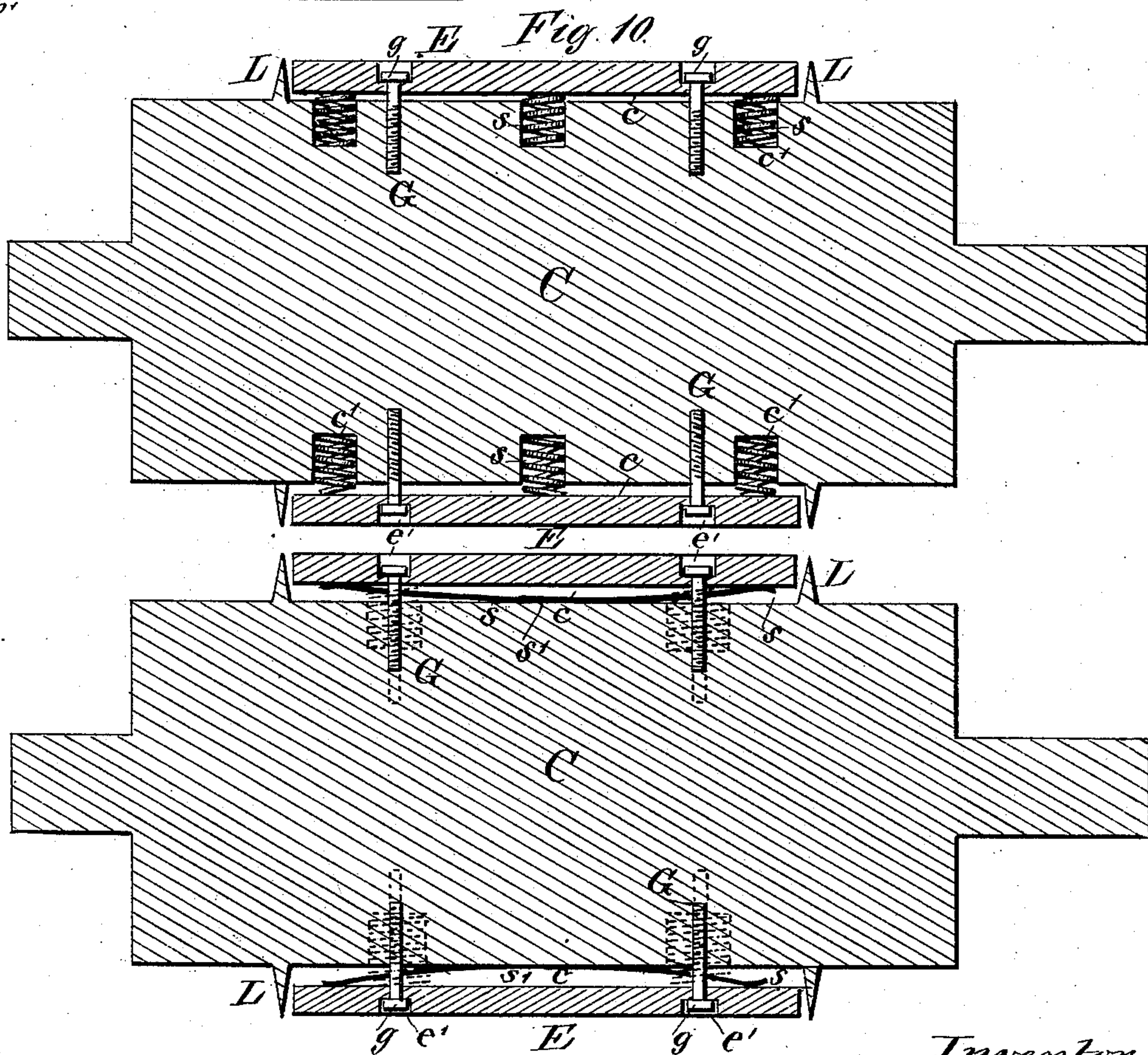
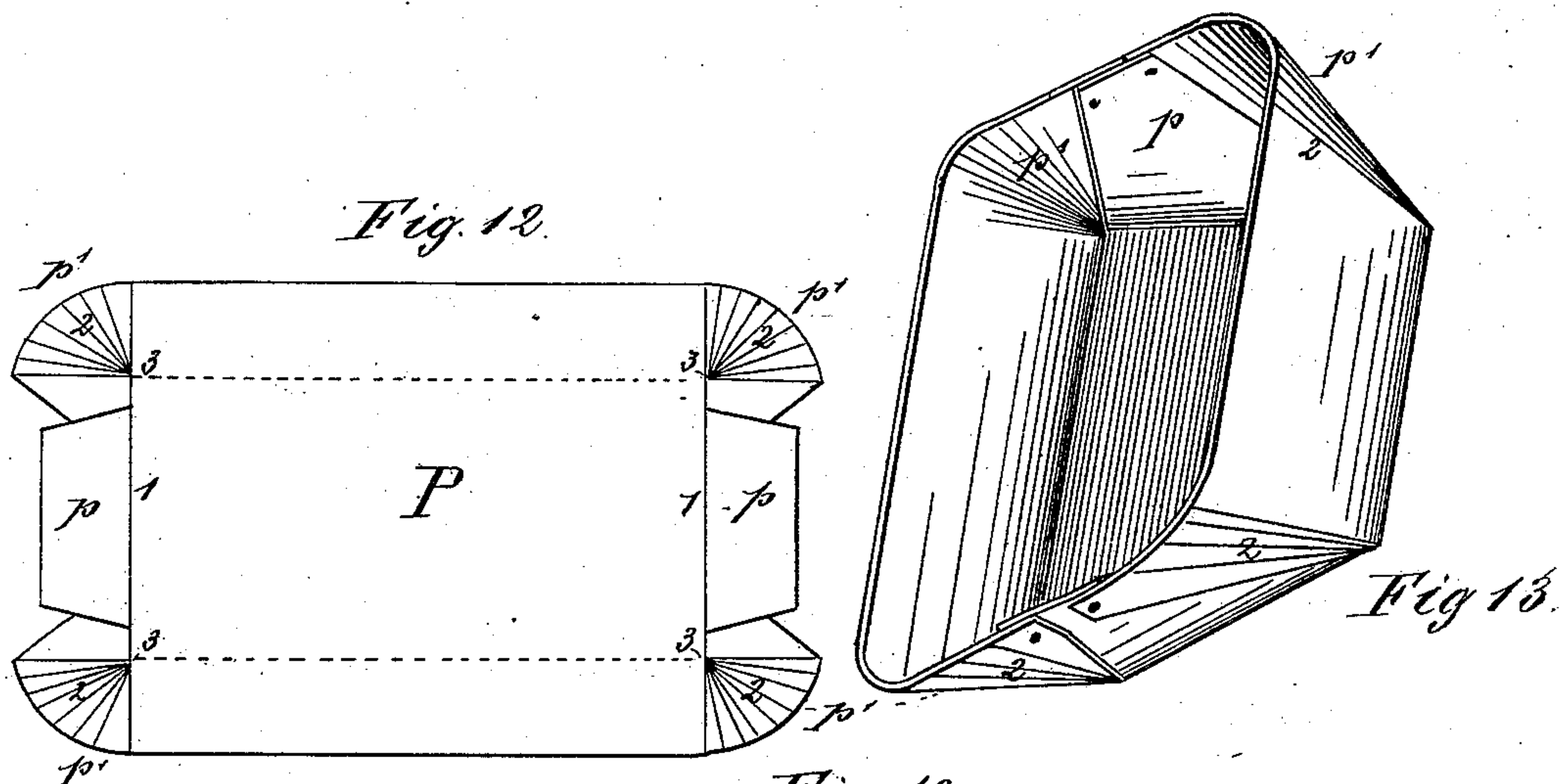
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# MACHINE FOR CUTTING BOX PATTERNS.

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Witnesses  
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*Fig. 11*

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# UNITED STATES PATENT OFFICE.

JAMES M. TITUS, OF PETERSBURG, VIRGINIA, ASSIGNOR TO GEORGE A. MANNIE & CO., OF SAME PLACE.

## MACHINE FOR CUTTING BOX-PATTERNS.

SPECIFICATION forming part of Letters Patent No. 272,354, dated February 13, 1883.

Application filed February 16, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. TITUS, of the city, county, and State of New York, a citizen of the United States, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented certain new and useful Improvements in Machines for Cutting Box-Patterns; and I do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to machines for cutting patterns from continuous sheets of veneer or analogous material, as hereinafter fully described, and specifically pointed out in the claims.

In the accompanying seven sheets of drawings, Figure 1 is an end elevation of a machine for scoring a sheet of veneer and cutting therefrom a pattern, from which a round-cornered box or dish is made, showing the manner of gearing the rolls. Figs. 2 and 3 show the same in front and rear elevation, respectively. Fig. 4 is a transverse section of the machine, taken on line *xx* of Fig. 2. Fig. 5 is a top plan view of the same. Figs. 6 and 7 show respectively diagrams of the periphery of a scoring and pattern-cutting roll for making round-cornered boxes or dishes from veneer. Figs. 8 and 9 are like views of the periphery of a scoring and pattern-cutting roll for making square-cornered boxes. Fig. 10 is a longitudinal section of the pattern-cutting roll shown in Figs. 3 and 5. Fig. 11 is a like view of said roll, showing a modified arrangement of ejecting devices. Fig. 12 is an under side view of the pattern from which round-cornered boxes or dishes are made, and Fig. 13 shows in perspective a round-cornered box complete.

Like letters of reference are employed to indicate like parts wherever such may occur in the above figures of drawings.

In carrying out my invention, and in the construction of square-cornered boxes, I first form in a continuous sheet of veneer two continuous scores, composed of the parallel straight scores

5 and the triangular scores 6, upon the lines of which the end flaps are to be bent, as shown in Fig. 8. When boxes or dishes having round corners are to be made I first form a series of continuous scored patterns, composed of two continuous parallel straight scores and scores 4, which diverge from given points on said straight scores over that portion of the veneer that is to form the corner flaps, so that said flaps may be bent to form round corners, as shown in Fig. 13. I then pass the scored sheet under a cutting-roll that will cut a series of patterns from the scored sheet and automatically remove the patterns as fast as they are cut from the cutting-cylinder.

When square-cornered boxes are to be made, the sheet, scored as first above described, is cut into patterns by a cutting-roll, the knives or cutters M of which are arranged as shown in Fig. 9. In constructing round-cornered boxes from a sheet of veneer said sheet is first scored as above described, in successive patterns, each having two straight scores, 1, for the end flaps and a series of scores, 2, diverging from a point, 3, of the straight scores, to form the corners 4. I next cut from the so-scored sheet of veneer the patterns P, having end flaps, *p*, and rounded and radially-scored corner flaps, *p'*, as shown in Fig. 12. The end flaps, *p*, are then bent on the line of the straight score 1. The corner flaps, *p'*, are then bent on the lines of the radial scores 2, to overlap the end flaps, *p*, and form the round corners, and said corner flaps are finally attached to the end flaps in any suitable manner, as shown in Fig. 13. In a practically similar manner I make the square-cornered boxes or dishes, cutting the blanks of the form shown in Fig. 9, the knives M forming the edges of each pattern from a sheet of material scored, as above set forth, by the knives N of the scoring-roll.

The manipulation of the patterns when cut by the pattern-cutting roll, Fig. 9, on which the scores are shown in dotted lines, will be readily understood, and needs no further explanation, especially as my invention relates more particularly to the construction of round-cornered boxes, the other forms being simply referred to as an illustration of the interchangeable pattern and scoring rolls in the same machine, as



hereinafter more fully described, as a convenience for cutting patterns either for round or square cornered boxes.

The scoring of the continuous sheet of veneer and the cutting of the finished patterns P from said sheet may be effected in separate machines.

To save time and labor and the difficulty of causing the scored sheets to properly register with the pattern-cutters, I feed the scored sheet directly as it leaves the scoring-roll to the pattern-cutting roll. To avoid the patterns severed from the sheets from sticking to the cutters, I apply ejectors to automatically eject the pattern from the cutters as they are cut from the sheet.

The machine embodying the mechanical elements of my invention is constructed as follows: Upon a suitable supporting-frame, F, are mounted a bearing-roll, B, preferably of brass, (though other suitable metal or wood may be employed,) a scoring-roll, S, and a pattern-cutting roll, C, the latter two rolls being mounted in adjustable bearings. The adjustability of these rolls relatively to the bearing-roll is advantageous, as it enables the operator to adjust the depth of cut of the scoring and cutting roll. The relative arrangement of the three rolls is such that the bearing-roll B will serve as a bearing for both the scoring and cutting rolls, also as a feed and driving roll, the scoring and cutting rolls, as shown in Fig. 1, being geared with the bearing-roll and the shaft of said roll carrying the driving-pulley, and may also carry a loose pulley, for obvious purposes.

The scoring-roll S is provided around its periphery with the scoring-knives K, that form the straight end scores, 1, of the pattern, and with a series of knives or serrations, k, that produce the scores 2 of said pattern, which diverge from the scores 1, to adapt the corner flaps, p', being bent, and take a rounded shape, as plainly shown in Figs. 3, 5, 6, 12, and 13. When patterns for boxes having square corners are to be cut the rolls C, S (shown in Figs. 2, 3, 5, 6, and 7) are removed, and rolls, like those shown in Figs. 8 and 9, are substituted, or any rolls having scoring and cutting knives for any other pattern. It will therefore be seen that boxes or dishes having round or square corners and made from different patterns may be made by changing the scoring and pattern-cutting rolls.

The pattern-cutting roll C has its knives L arranged to cut the pattern from which a box of a given shape is to be made. That shown in Figs. 3, 4, 5, and 7 has its knives or cutting-edges L arranged to cut a pattern, P, Fig. 12, from which a round-cornered box is made, and those shown in Figs. 8 and 9 have their knives or cutters arranged to cut a pattern from which a square-cornered box is made.

The cutters are so arranged upon the periphery of the rolls as to form a continuous succession of patterns, and their diameter depends, therefore, on the size of the boxes or

dishes to be manufactured, with which the cutters on the scoring-roll must always correspond, as will be readily understood.

The cutters or knives may be cast with the roll, and subsequently tooled or sharpened; or they may be attached to the rolls to score and cut the desired pattern. As the cutters or knives project some distance above the periphery of the roll C, recesses c, having the shape of the pattern, are formed, and as the cutting-edges of the cutters are beveled the pattern, when cut by the passage of the cutter-roll over the sheet of veneer, is forced into these recesses c, and does not always fall out. Hence, when a pattern "sticks," it has to be removed by hand, involving a great deal of labor and loss of time. To avoid this I apply ejectors to each of the recesses c, which may be composed of one or more spring-actuated follower-plates.

As shown in the drawings, the ejectors are composed of plates E, of any suitable material, preferably brass, actuated by coiled springs s, and held within the recesses c by headed guide-pins G. The head g of each pin lies within a countersink or enlargement, e', of the apertures c, formed in the plate E, through which the pins pass. The guide-pins G are or may be screw-threaded at one end, and are screwed or otherwise attached to the cutting-roll C.

The coiled springs s are partially inclosed in recesses c', formed in roll C, as shown, and said coiled springs may be arranged in like recesses around the guide-pins G, as shown in dotted lines, Fig. 11. Any other means for actuating the followers E may, however, be employed, and, instead of coiled springs, leaf-springs s may be employed, as shown in Fig. 11, or any other form of spring may be used. The ends of these leaf-springs are forked or slotted, and straddle the guide-pins, said ends bearing against the under side of the opposite ends of the plates E, while the curved portion or back s' of the springs rest on the periphery of the roll, no fastening being needed, as the guide-pins G hold the springs against lateral and longitudinal displacement. These leaf-springs may be reversed, and their curved part or back s' made to bear against the under side of the plates E, and their forked or slotted ends upon the periphery of the roll. Said springs may also be attached at the curved part or back s' either to the under side of the plate E or to the periphery of the roll, as the case may be, and their ends left free to act either upon the periphery of the roll or the under side of said plate, according as the spring is attached to the plate or roll. In their normal position the upper face of the plates E are flush or nearly flush with the cutting-edge of the cutters, and as the latter travel over the moving scored sheet of veneer to cut out the patterns the plates E are forced back into the recesses c by the severed pattern, and as soon as the cutters are out of contact with the bearing-roll B the plates are forced outward



into their normal position by the spring or springs *s*, and the patterns are automatically ejected.

The arrangement of the cutters upon the periphery of the roll *C*, as above described, is such that they form a continuous series of pattern-cutting devices, each cutting out a pattern, the longitudinal cutters *L'* forming the lateral edges of the patterns, thus severing each pattern completely from the sheet of veneer.

From the description of the construction of the machine its operation may be described in a few words, and will be readily understood by those acquainted with this branch of the arts.

The bearing-roll *B* being rotated through the medium of its belt-pulley *B'* from any suitable prime motor or by means of a crank and hand-power, the other rolls are rotated, a sheet of veneer is fed between the bearing-roll *B* and the scoring-roll *S*, that forms the scores of the patterns, and the scored sheet passes from the latter roll directly under the cutting-roll *C*, that cuts out the patterns from the scored sheet, which, as fast as cut, are automatically ejected from the cutting devices by the followers or ejectors *E*, and from which patterns the boxes are then made, as hereinbefore described.

The machine as constructed may be employed for cutting patterns or blanks from pasteboard, card-board, or analogous material with equally good results.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for scoring and cutting out patterns for boxes or dishes from veneer or analogous material, the combination, with a scoring-roll and a cutting-roll, of a single bearing-roll, operating to feed the material first to

the scoring-roll and then to the cutting-roll, as described, for the purpose specified.

2. In a machine of the class described, the combination, with a pattern-cutting roll having a continuous series of knives arranged upon its periphery to cut two or more patterns successively, of a corresponding series of spring-actuated ejector-plates, arranged in sections, two or more for each pattern, said sections having the form, or nearly so, of the pattern cut, substantially as and for the purpose specified.

3. In a machine of the class described, the combination, with a scoring-roll having a continuous series of knives arranged upon its periphery to score a given pattern, of a cutting-roll having a corresponding series of cutters and spring-actuated ejectors, both having the form of the pattern, and a feed and pressure roll, operating to feed the veneer or analogous material directly from the scoring to the cutting roll, whereby the patterns are scored, cut, and ejected from the cutters in continuity, substantially as and for the purpose specified.

4. The combination, with the scoring-roll *S* and the pattern-cutting roll *C*, the former having a continuous series of scoring-knives and the latter a corresponding series of pattern-knives arranged upon their peripheries, as described, of the bearing-roll *B*, operating to feed a continuous sheet of veneer or analogous material first to the scoring-roll and then to the pattern-cutting roll, substantially as and for the purposes specified.

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

JAMES M. TITUS.

Witnesses:

CHAS. E. MAY,  
R. W. DE HAVEN.