

W. Guest.
Machine for Making Cord or Rope.

Nº 92,960.

Patented Jul. 27, 1869.

Fig. 1

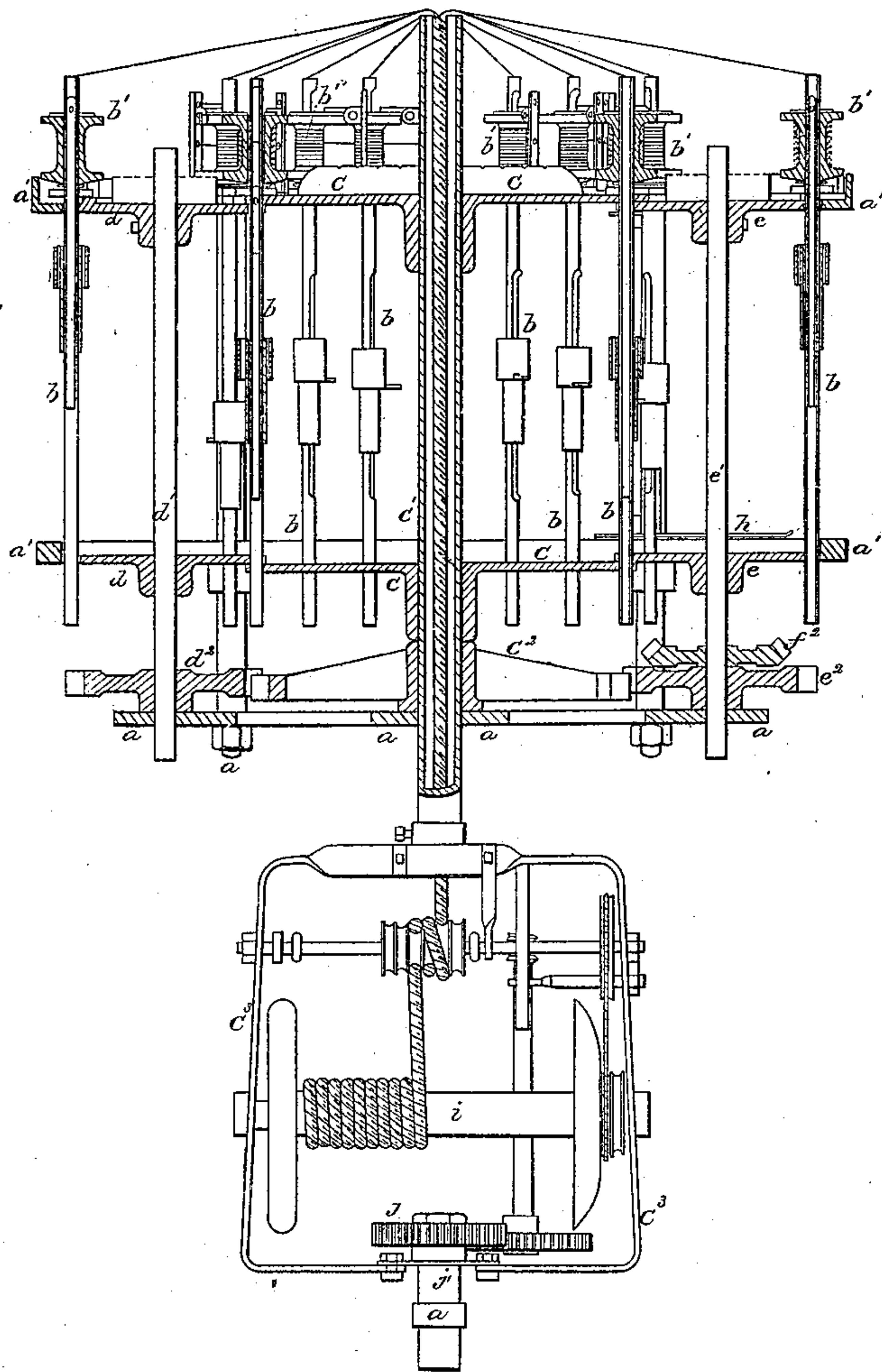
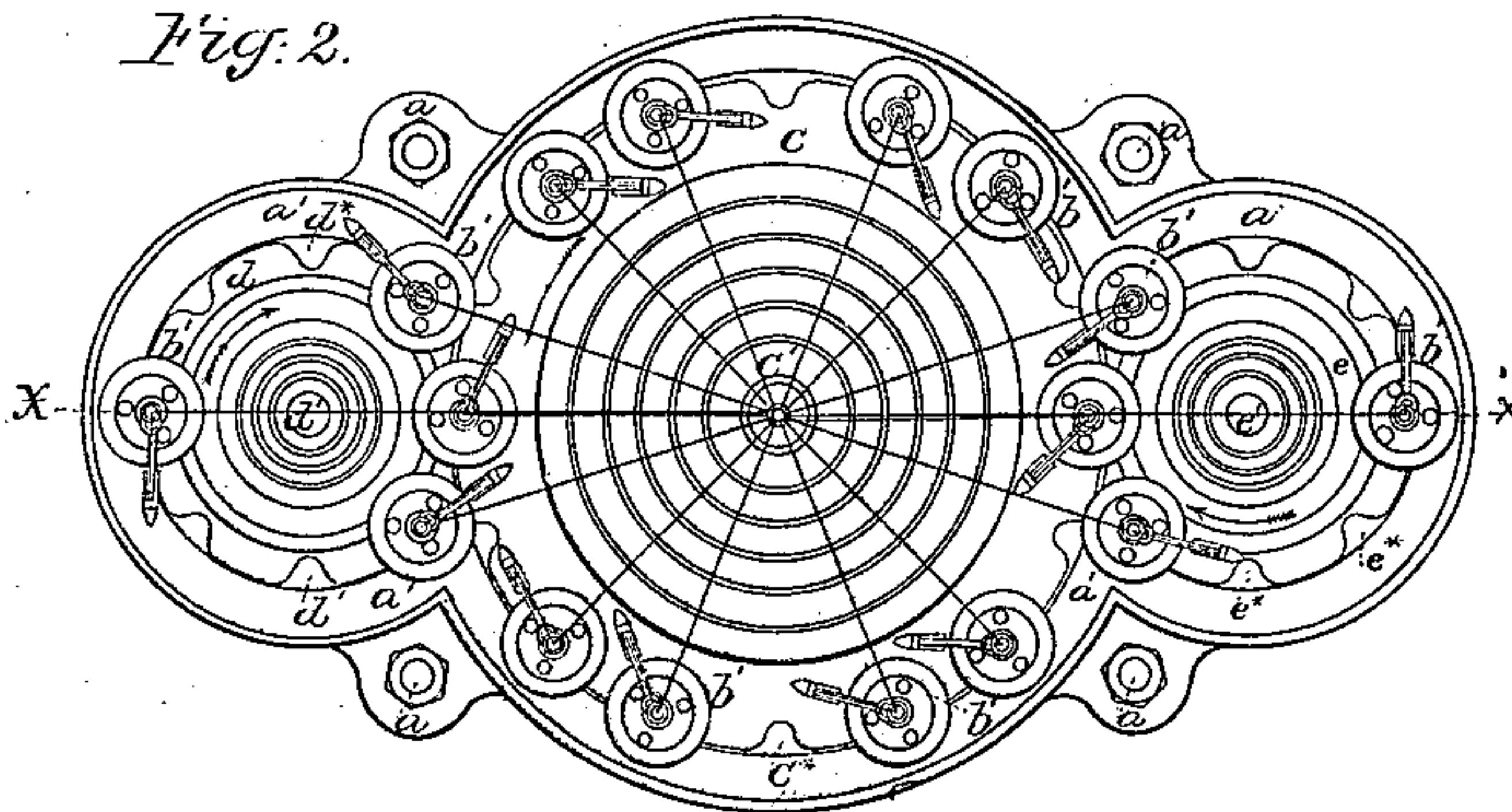


Fig. 2.



Witnesses.

George Haseltine
John Palmer

Inventor
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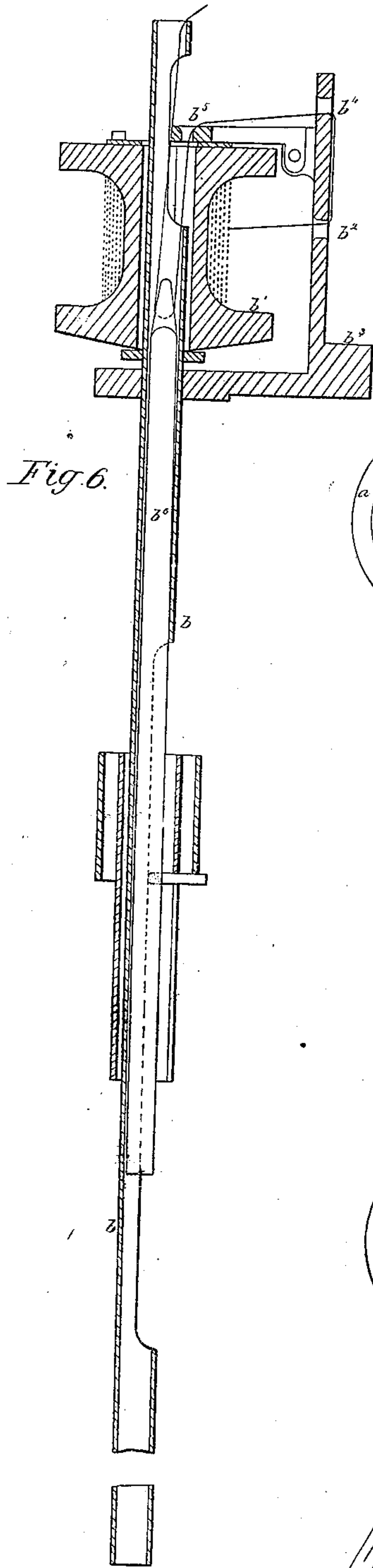


Fig. 4.

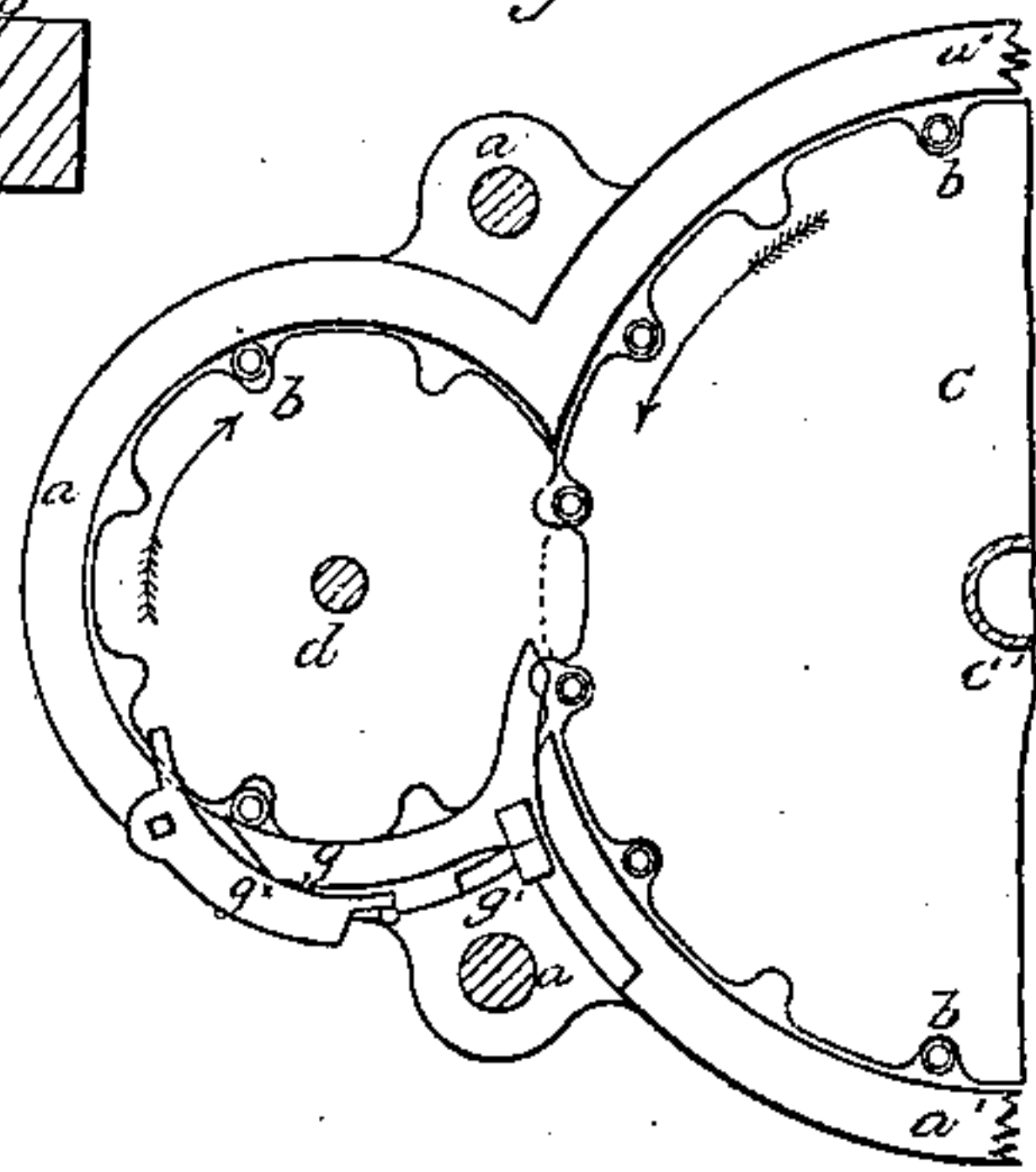


Fig. 5.

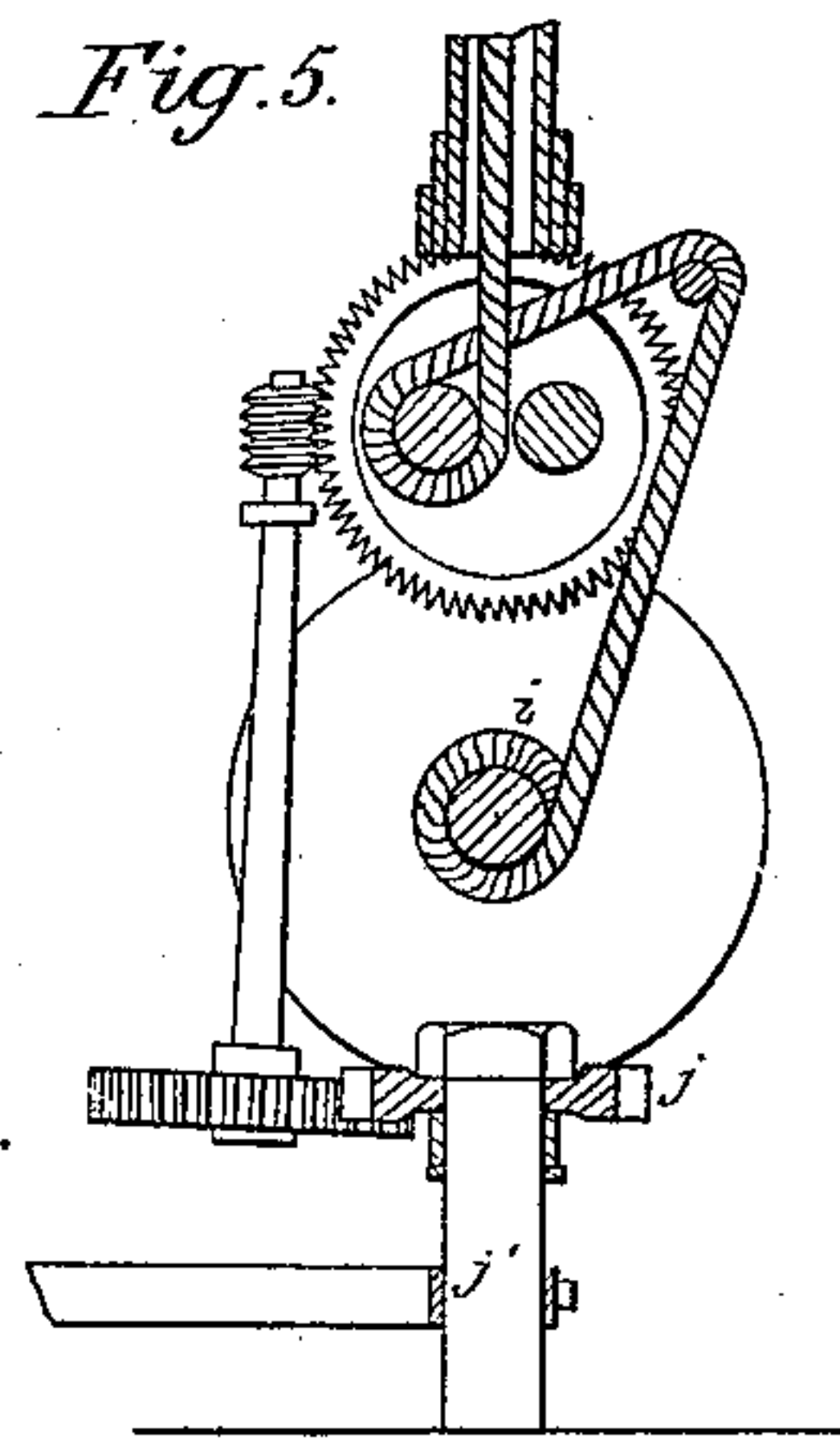
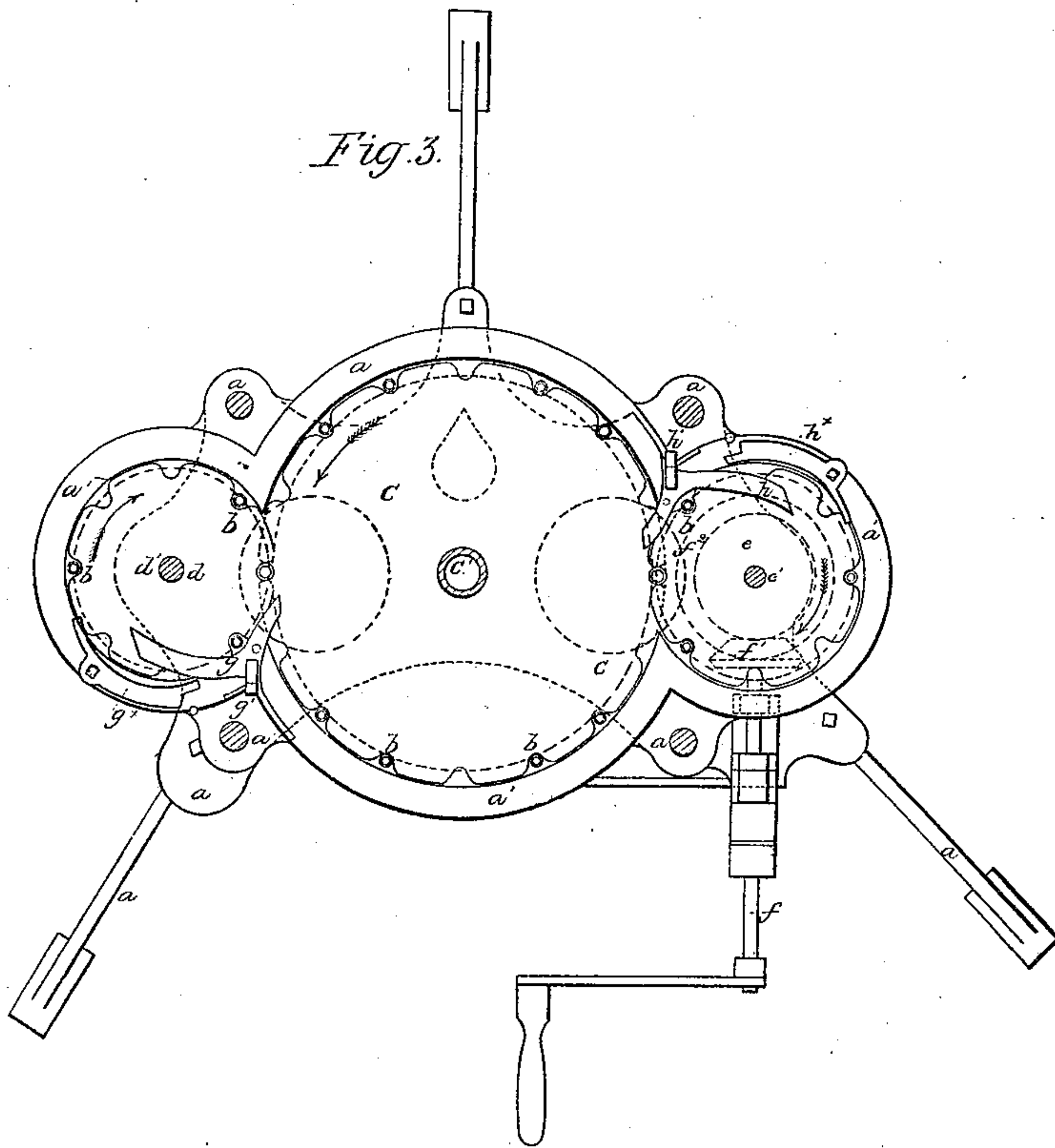


Fig. 3.



Witnesses

George Russell
John Palmer

Inventor

William Guest

UNITED STATES PATENT OFFICE.

WILLIAM GUEST, OF LONDON, ASSIGNOR TO JAMES BUCKINGHAM, OF
WALWORTH, ENGLAND.

IMPROVEMENT IN MACHINES FOR MAKING CORD.

Specification forming part of Letters Patent No. 92,960, dated July 27, 1869.

To all whom it may concern:-

Be it known that I, WILLIAM GUEST, of London, England, machinist, have invented certain new and useful improvements in the manufacture of cords or ropes from strands of fibrous material or wire and in the machinery employed in such manufacture; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention has for its object the manufacture of cords or ropes of a novel character by plaiting or interweaving the strands or thread composing the cord or rope in a particular manner, as hereinafter described, whereby great strength is obtained, together with very novel and ornamental effects.

In carrying out my invention I employ machinery arranged in a similar manner to that known and employed for the manufacture of braids and plaits; but in place of causing these series of threads, strands, or wires (hereinafter called "strands") to twist or plait with one another, or in pairs or sets, I cause two opposite strands of a series to cross together in opposite directions, and thus divide the other part of the series of strands employed in forming a cord or rope according to my invention. The two strands, which thus cross in opposite directions between the two half-sets of strands forming the remainder of the series, may be compared to two weft-threads passing in opposite directions between an equally-divided set of warp-threads in weaving a fabric. Two opposite strands of a series are caused to pass under half (or between the two halves) of the remaining number of strands forming the series, (the order in which such opposite strands cross depending upon the number employed,) thus forming a solid center to the cord bound up by successive crossings of opposite strands in opposite directions.

In order to produce cords or ropes of round section, it is necessary that the number of strands forming the series employed should be even after deducting the two strands which are in the act of crossing, so that the number left may be equally divided. Thus if six strands only are employed, then each opposite strand as it crosses will pass across two or divide the other four strands, and if the whole

series of strands number sixteen the two crossing strands will each pass under seven or act to divide the other fourteen strands, and in like manner with other suitable number of strands comprising a series.

In arranging machinery suitable for manufacturing cords or ropes according to my invention, three revolving heads or plates are employed, the central plate being formed with as many openings in its periphery as there are spindles, bobbins, and strands employed to be moved or actuated in forming a cord or rope according to my invention, the two smaller revolving plates, which are placed on opposite sides of the central plate, being formed with half the number of openings in each of their peripheries to those in the central plate for receiving the spindles carrying the bobbins, which cause their strands to cross or divide the remainder of the series from time to time, as may be required, tappets or conductors being arranged and actuated in combination with the revolving heads or plates for this purpose. The axis of the central plate revolving therewith is formed hollow, the cord or rope as it is formed passing away down the hollow axis to suitable take-up apparatus actuated by the rotation of the central axis or otherwise. The cord or rope as it is delivered is either wound upon a reel or bobbin or conducted away through a central tube or passage, as may be found most convenient. The bobbins upon which the series of strands are wound are weighted to put a proper amount of tension upon each strand, as is well understood in the construction of ordinary braiding and plaiting machinery, suitable let-off apparatus being also applied to each bobbin.

In order that my invention may be most fully understood and readily performed or carried into practice, I will proceed to describe the drawings hereunto annexed.

In the drawings, Figure 1 is a vertical section of my improved machine. Fig. 2 is a plan of the same. Fig. 3 is a horizontal section of the said machine. Figs. 4, 5, and 6 represent detached portions thereof.

Like letters indicate the same parts throughout the drawings.

The framing *a* of the machine carries the fixed guiding-surfaces *a' a'* for the rotating spindles *b*, which carry the bobbins *b' b'*.

c , d , and e are the circular disks or plates which actuate the spindles, being formed with recesses c^x d^x e^x in their peripheries to receive the spindles b b . The axes c' d' e' revolve in suitable bearings formed in the framing, the stationary guides a' a' and the disks c , d , and e on their respective spindles acting to retain them in correct position, as is well understood in machinery of this description. The axes c' , d' , and e' are caused to rotate in the directions indicated by the arrows by the following means:

f is an axis carried by suitable bearings, to which motion is communicated either by hand or other motive power.

f' is a beveled pinion upon the axis f , which communicates motion to the beveled wheel f^2 , fixed upon the axis e' , and motion is communicated from the axis e' to the axes c' and d' by means of the toothed wheels e^2 , c^2 , and d^2 , fixed upon their respective axes.

In the arrangement shown in the drawings there are sixteen spindles and bobbins employed, although it is not essential that this number should be chosen, as machinery of this description may be arranged for other suitable numbers without departing from the nature of my invention.

g and h are tappets or conductors oscillating upon pivots g' h' upon the framing a . The conductors g and h are so acted upon by the spindles b b during their rotation as to select every third spindle of the series carried round by the disks c and guide it respectively into the disks d and e , which carry such spindles around into such a position that the conductors g and h return such selected spindles into the series carried round by the disks c , the spindles so selected always retaining the same relative position on opposite sides of the axis c' .

g^* and h^* are levers which reverse the position of the conductors g and h by the rotation of the spindles b in contact therewith. The necessary motion is imparted to the conductors g and h by the rotary movement of the spindles b b acting thereon, as is well understood in machinery of this description.

I would remark that in machines of this character where other suitable numbers of spindles and bobbins are employed the order of selection from the central disk will have to be varied in accordance with such number, so that the opposite threads of the series may cross in opposite directions over the respective halves of the remaining series of threads or strands. Each thread or strand in passing from its bobbin b' is conducted through an eye, b^2 , in the arm b^3 , thence through the eye b^4 in

the same arm, and through the eye-piece b^5 , hinged to the arm b^3 . The thread then passes through the weighted hook or eye-piece b^6 , which is suspended on the thread within the hollow spindle b . Each thread passes out at the top of its hollow spindle to the top of the central spindle, c' , where the strands are woven together, as previously described, the weighted eye-pieces b^6 acting to retain the strands at a suitable degree of tension at the varying distances of the bobbins b' from the central axis, c' , during their rotation. The central axis, c' , being hollow, the cord or rope as it is formed passes downward through it to and around a suitable taking-up reel.

By varying the colors of the series of strands employed in manufacturing a cord or rope according to my invention highly ornamental effects may be produced, and cords be made suitable for blind or picture cords, trimmings, or for other purposes. Machinery similar to that above described and arranged to work with a suitable number of bobbins may be employed for covering telegraph-cables or other cords or ropes by passing the same down the central axis to form a core to the strands as they are interwoven around it.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A circular woven cord or rope with a solid center, made by weaving the threads or strands together across the center of the cord or rope, substantially in the manner herein set forth.
2. The combination of the spindles b with the plates c , d , and e , when said parts are all constructed, arranged, and made to operate conjointly, substantially in the manner and for the purpose herein set forth.
3. The conductors g and h when combined with the spindles b and with the levers g^* and h^* , and so arranged as to select automatically the desired number of spindles from the central plates, c , and guide them into the recesses d^x e^x in the peripheries of the plates d and e , while the other spindles are carried round with the said central plate, all substantially as and for the purposes set forth.
4. The spindles b , plates c , d , and e , the conductors or tappets g and h , and central hollow axis, c' , combined and operating together, substantially as and for the purposes set forth.

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Witnesses:

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