

No. 661,903.

Patented Nov. 13, 1900.

H. BLOUTH.  
BOWLING ALLEY.

(Application filed Aug. 10, 1900.)

(No Model.)

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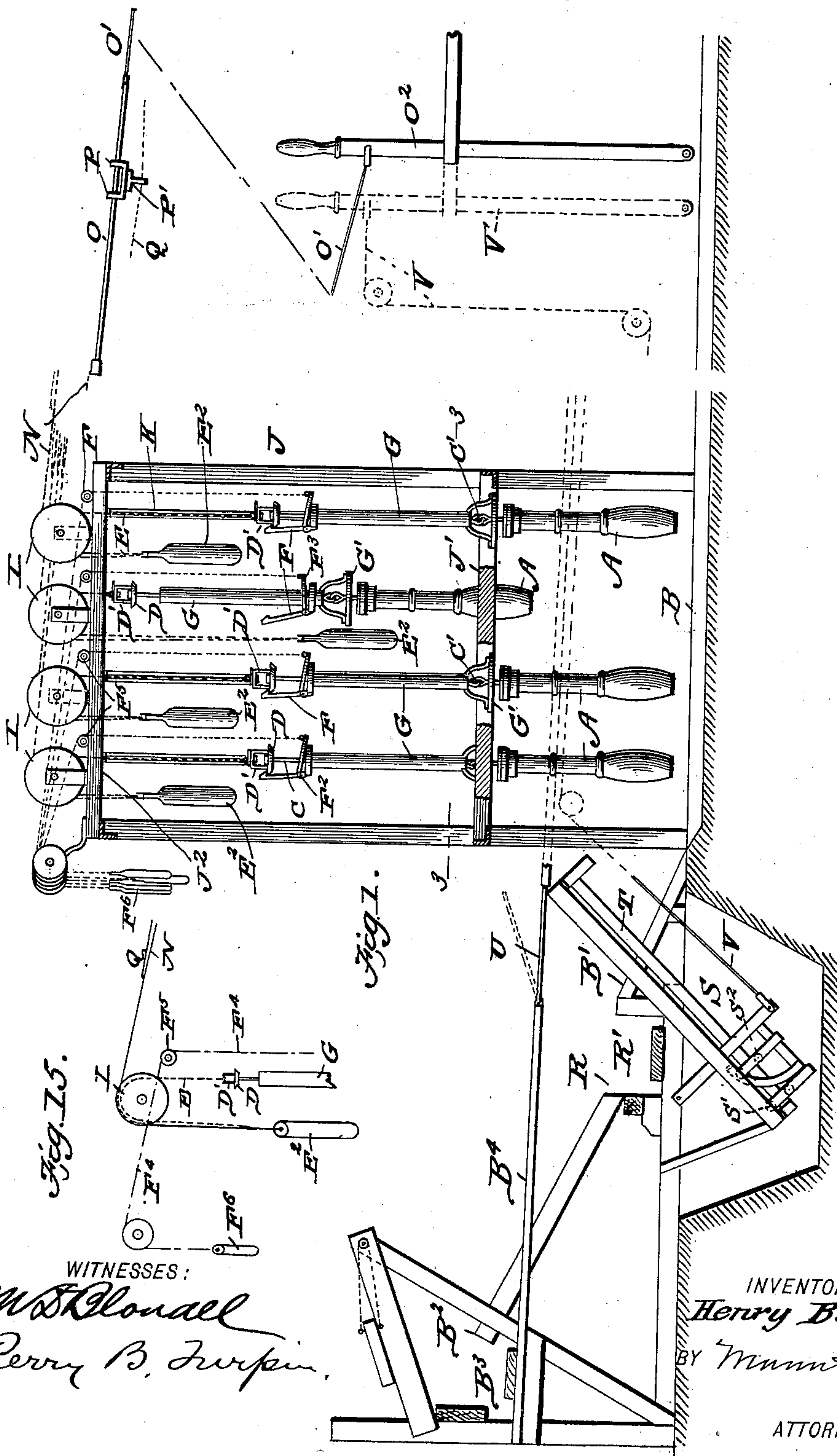


Fig. 15.

Fig. 1.

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*Perry B. Swain*

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BY *Munn & Co.*

ATTORNEYS

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Fig. 2.

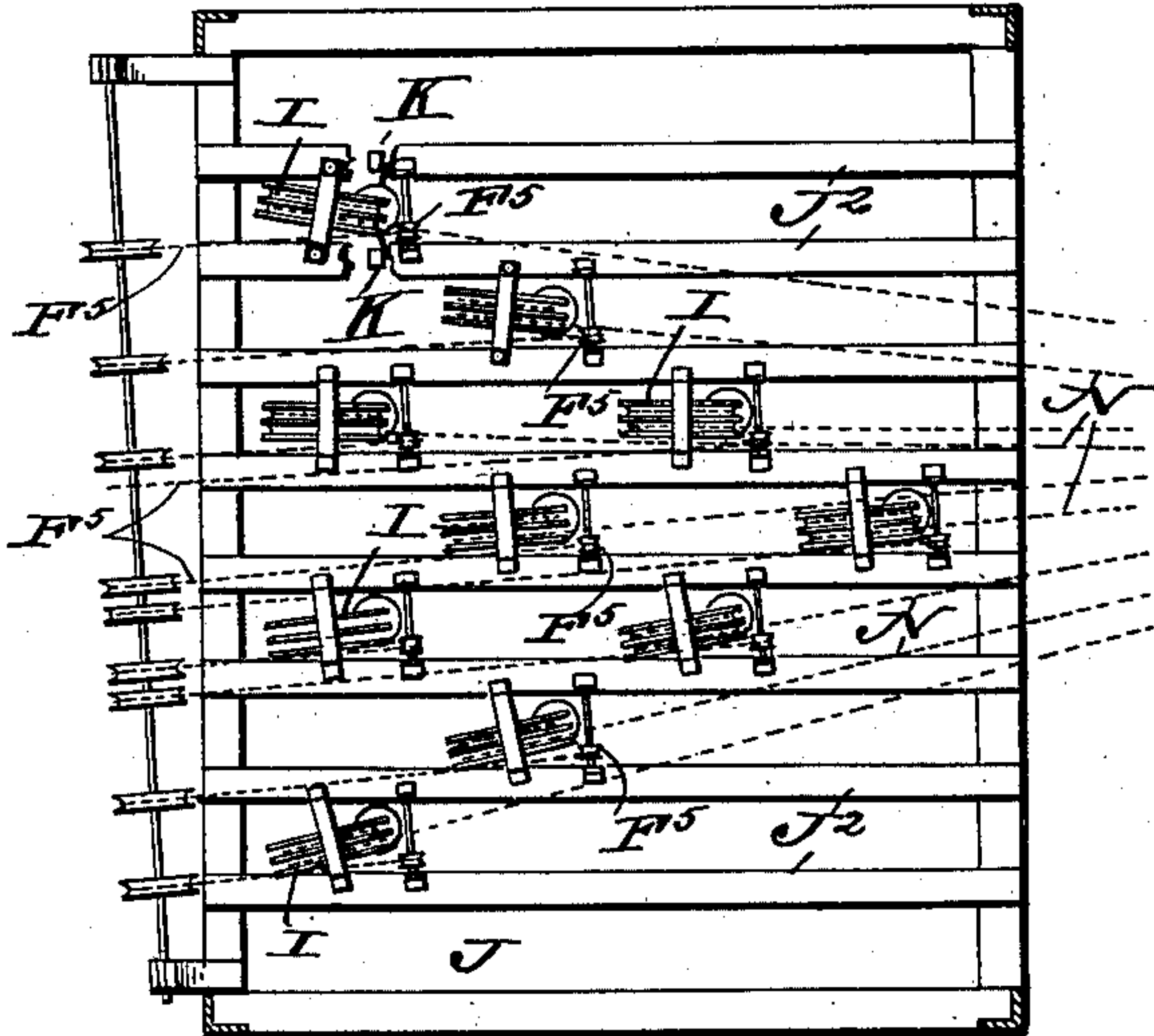


Fig. 3.

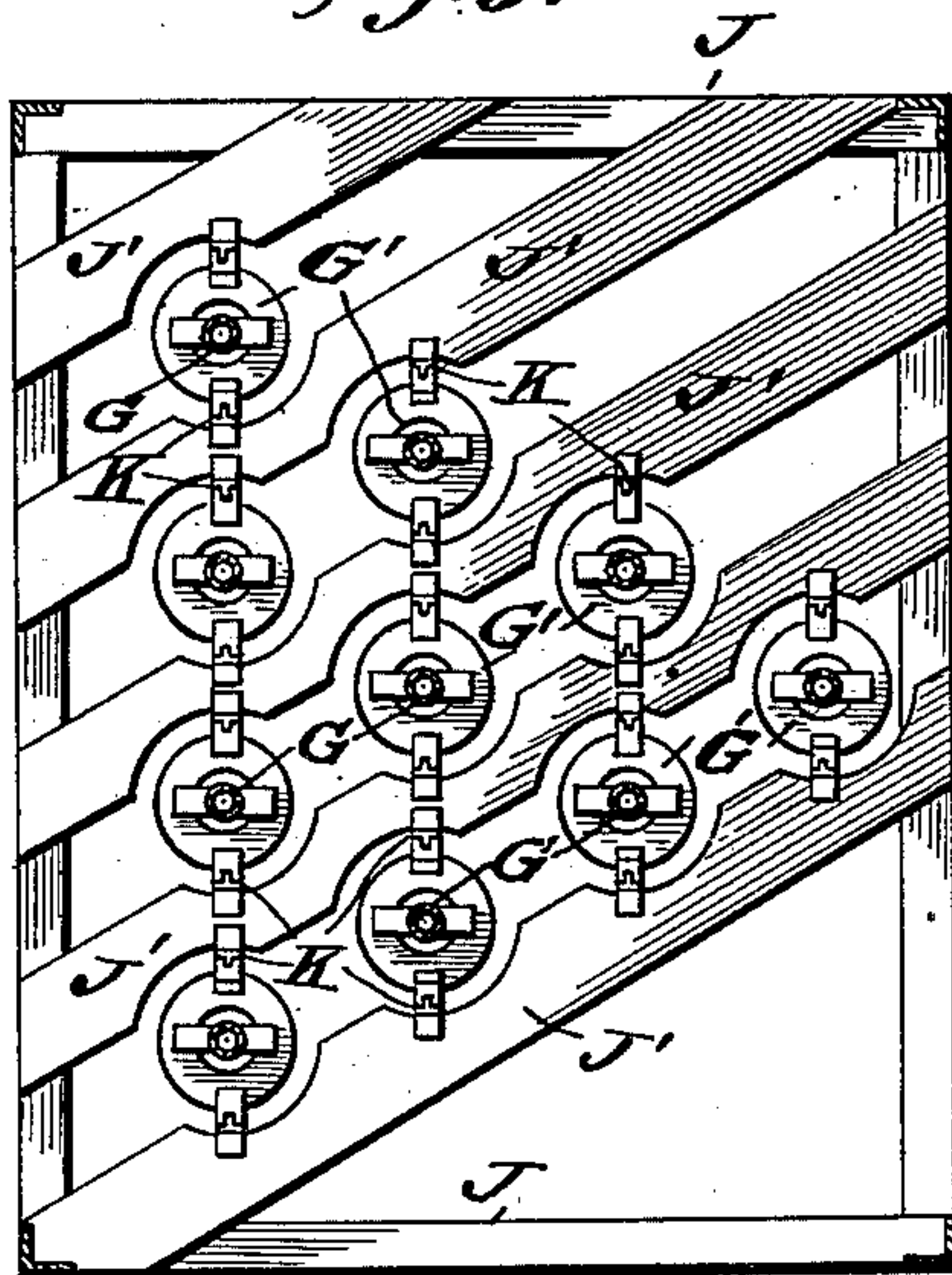


Fig. 4.

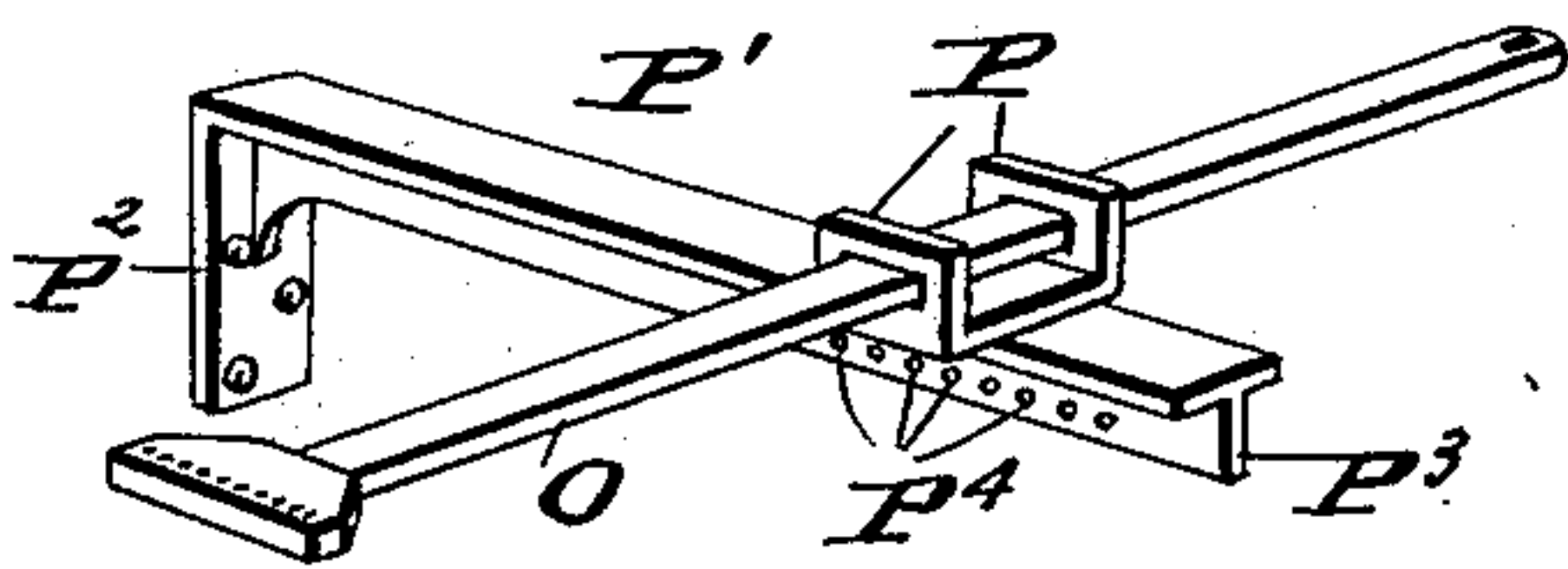


Fig. 5.

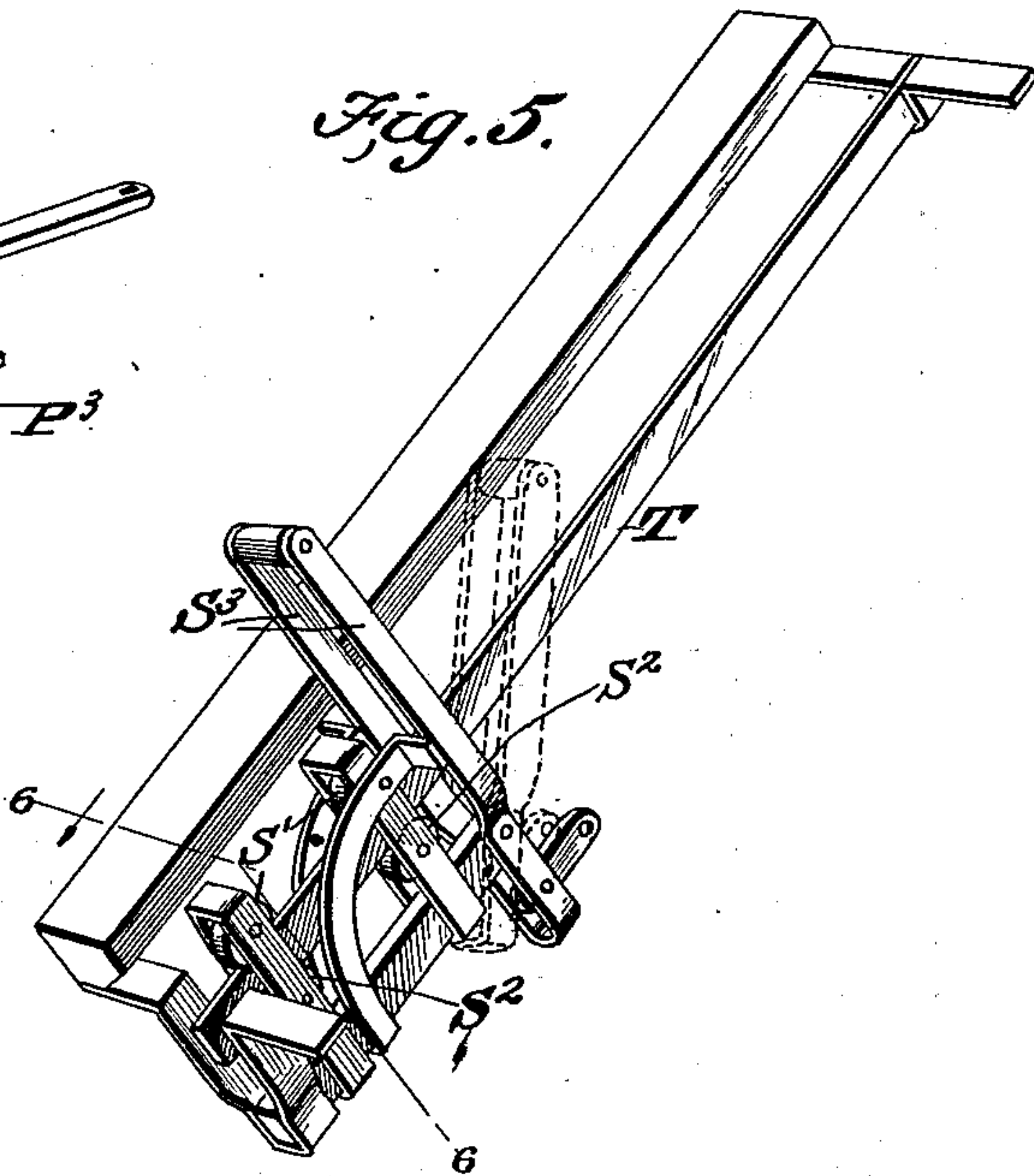
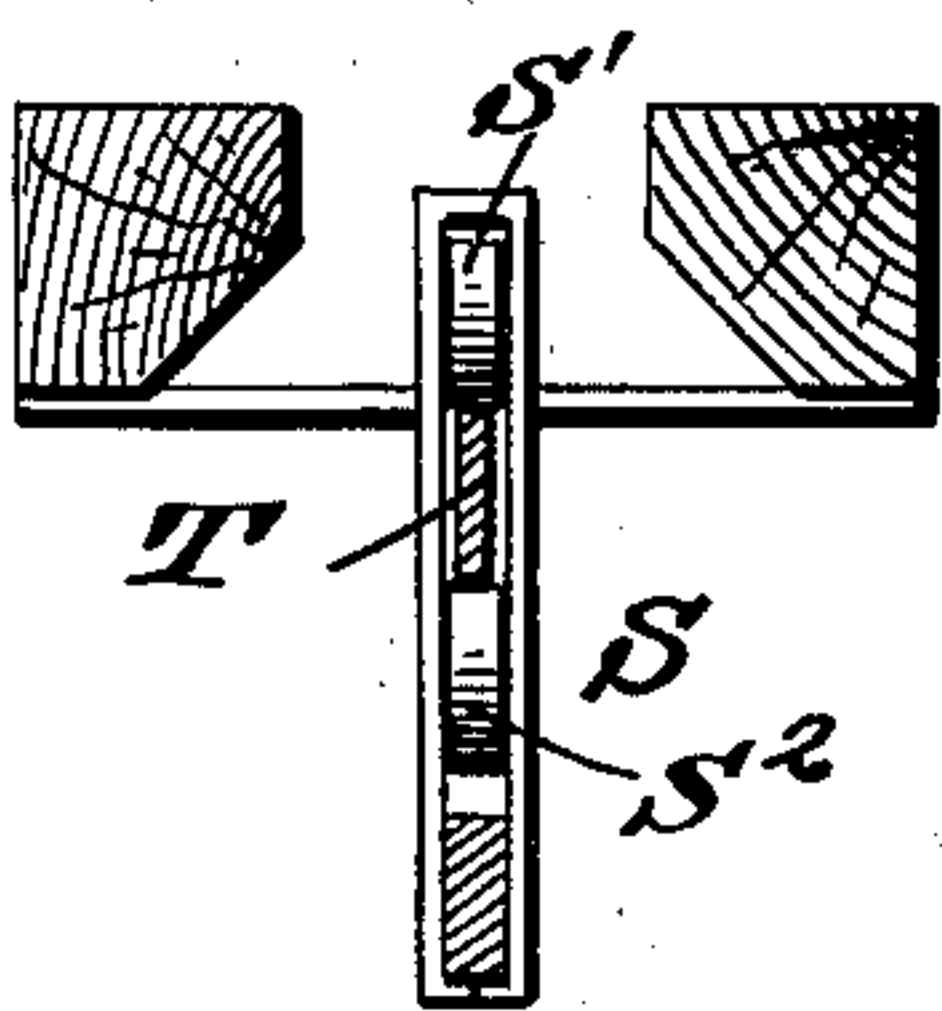


Fig. 6.



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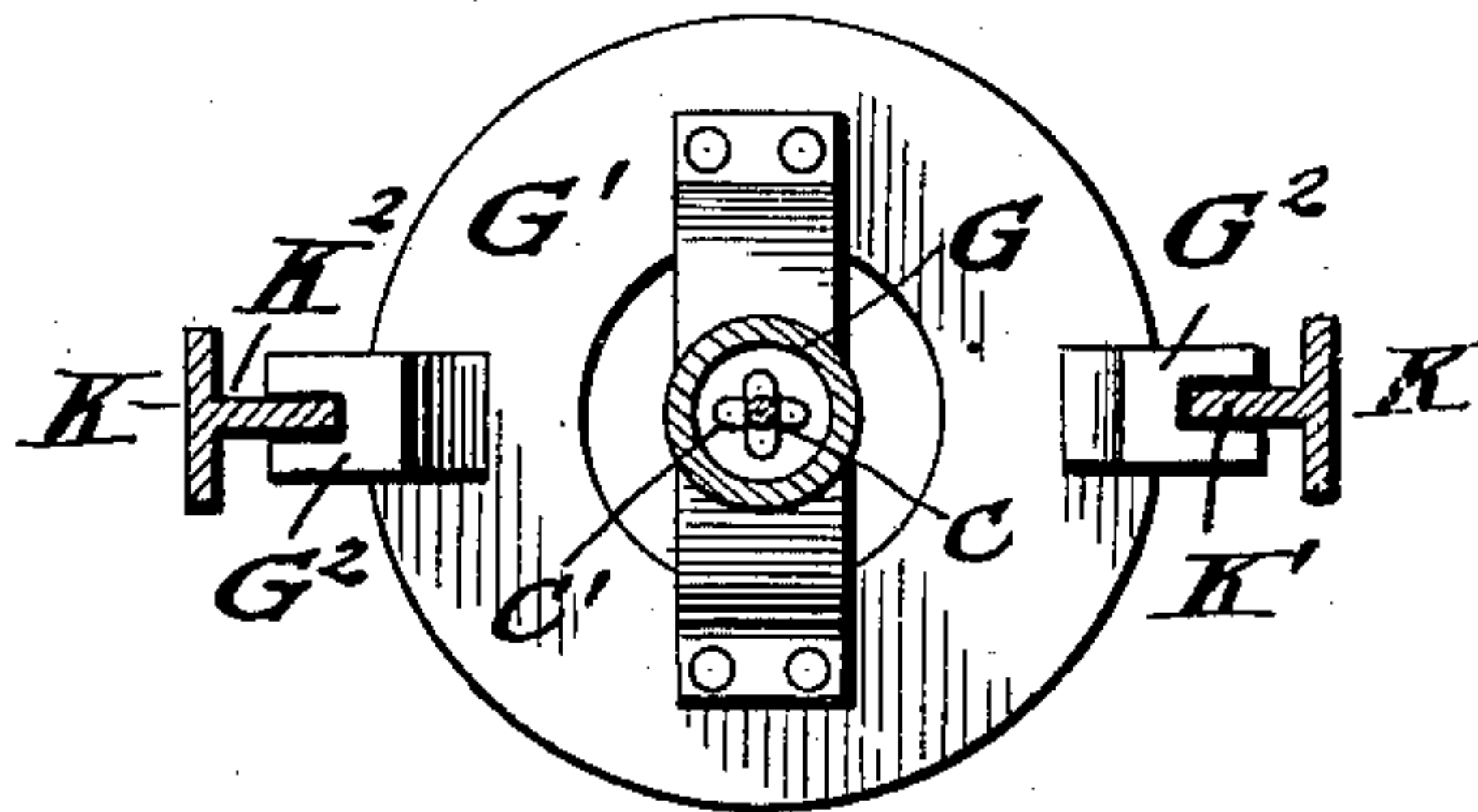
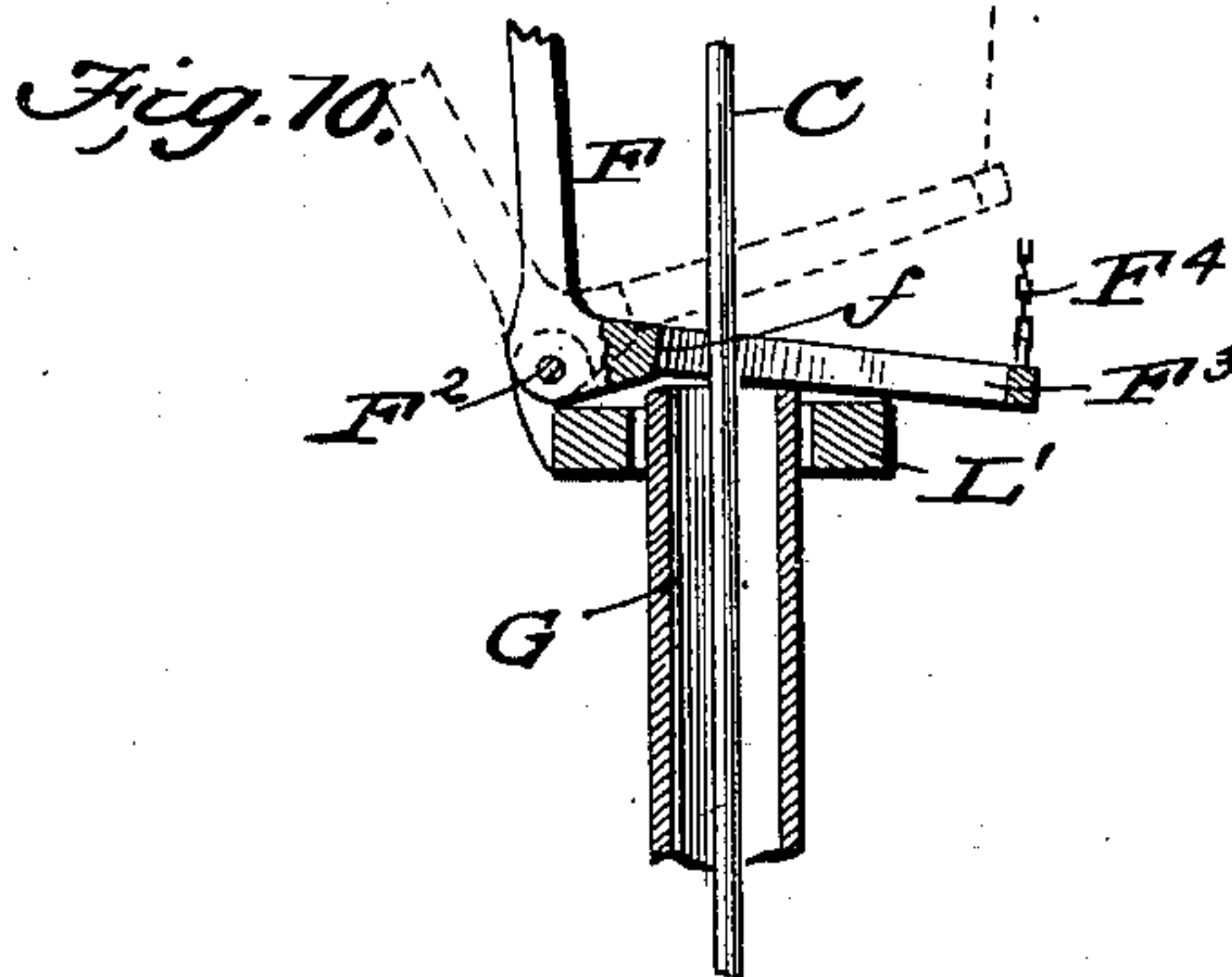
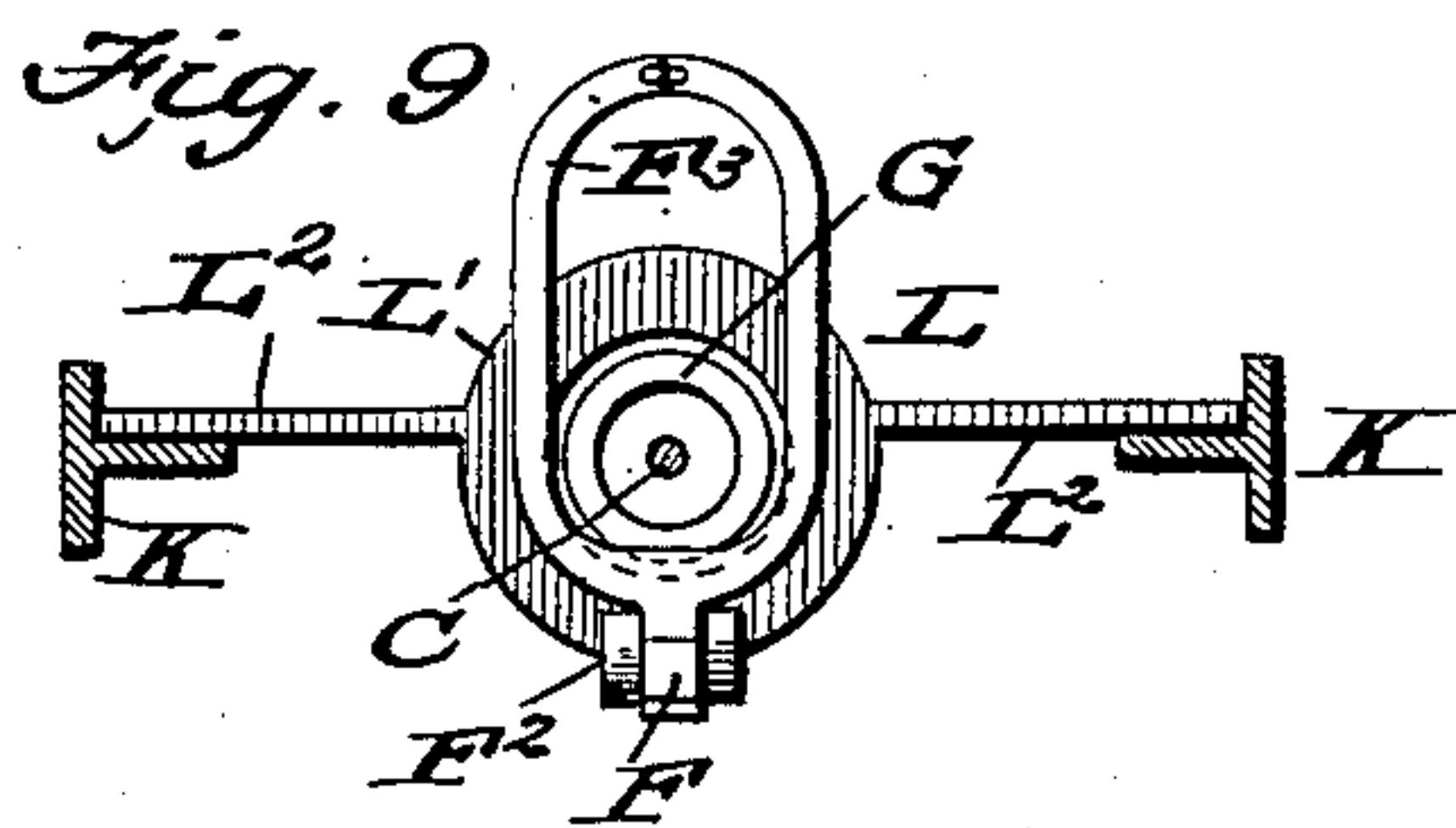
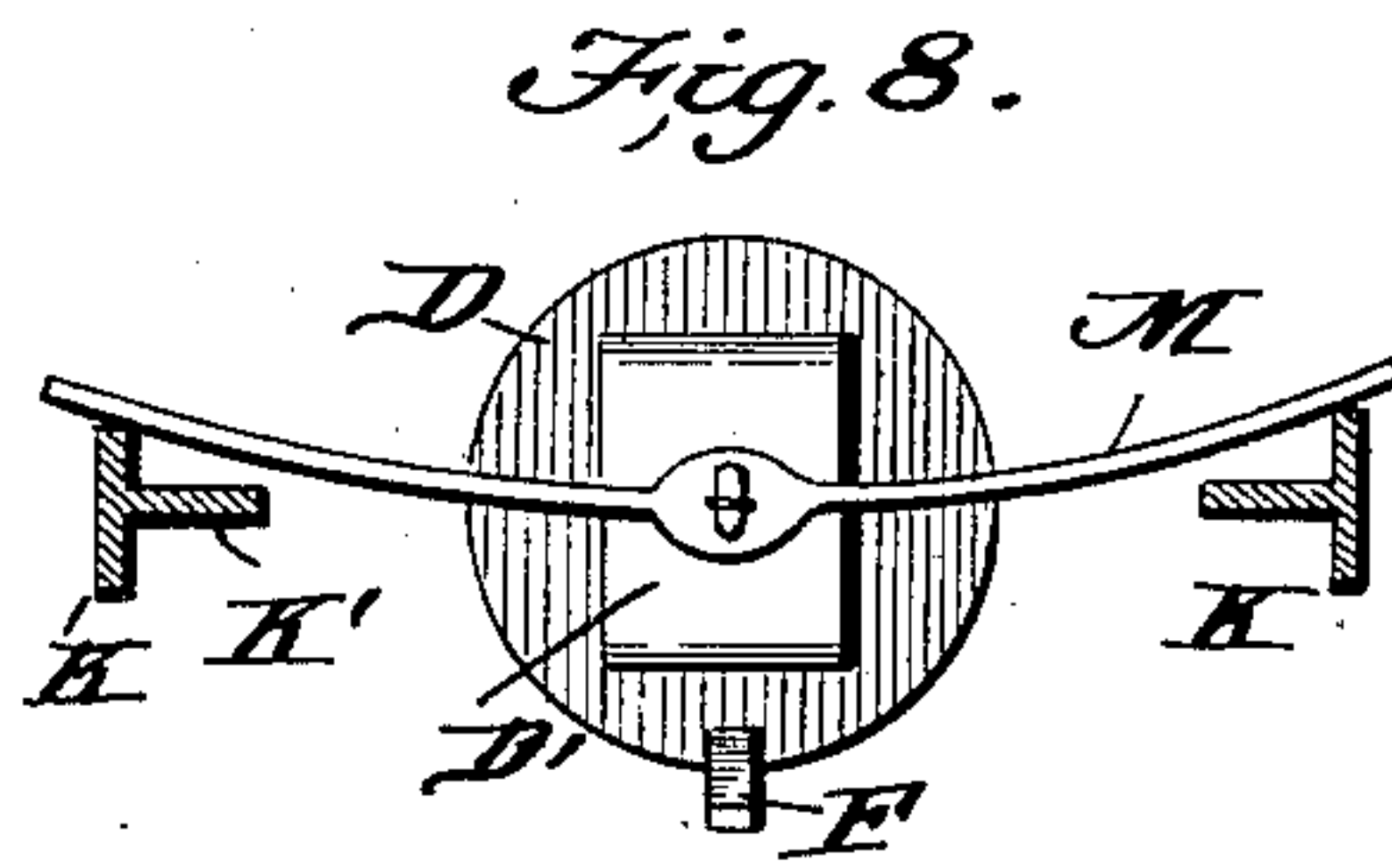
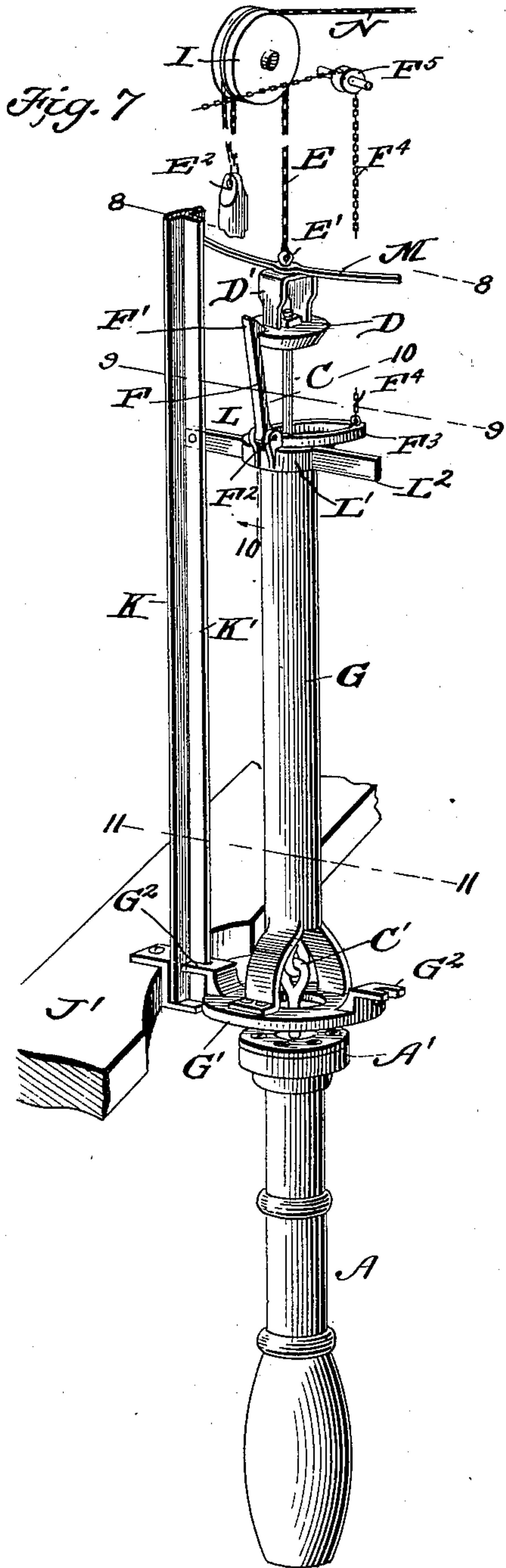
**Patented Nov. 13, 1900.**

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(Application filed Aug. 10, 1900.)

(No Model.)

**4. Sheets—Sheet 3.**



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**No. 661,903.**

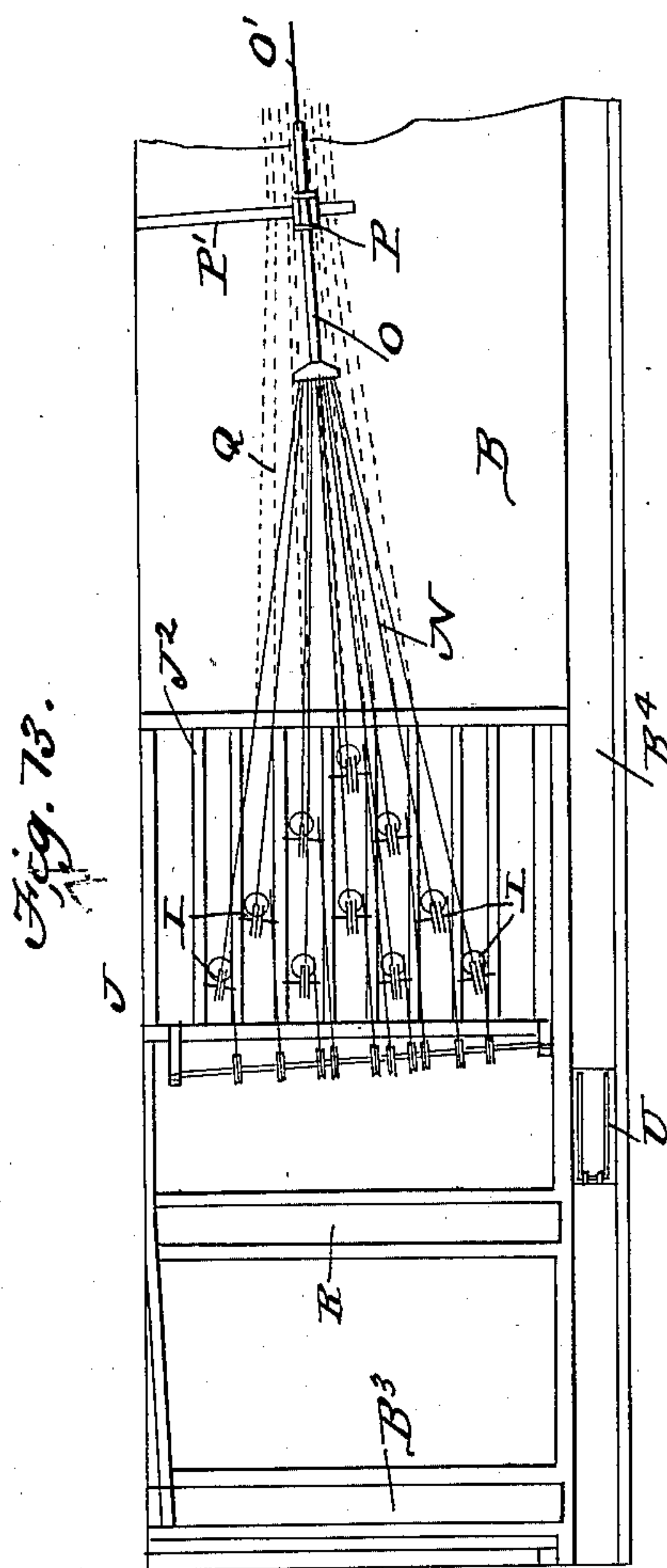
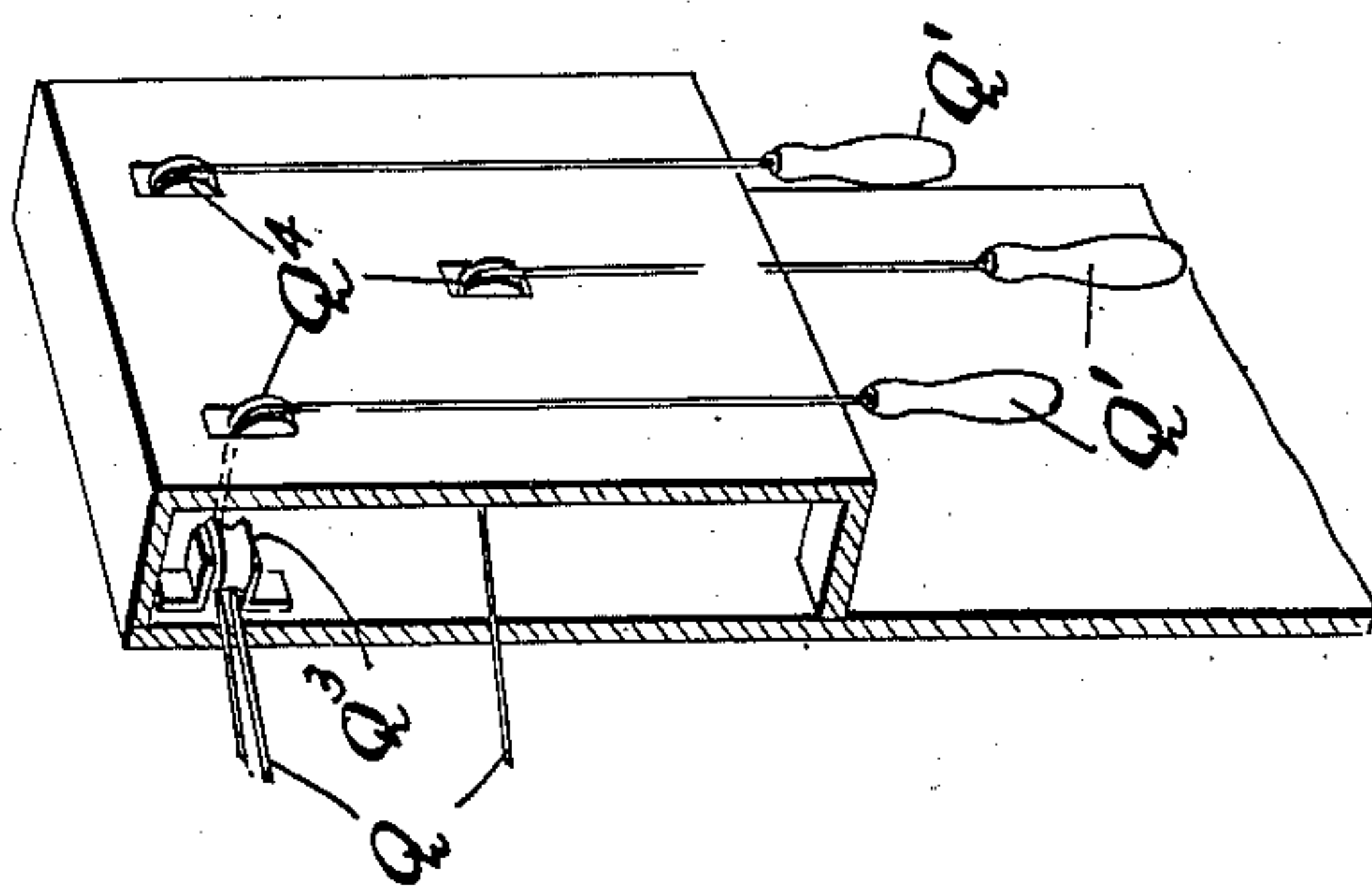
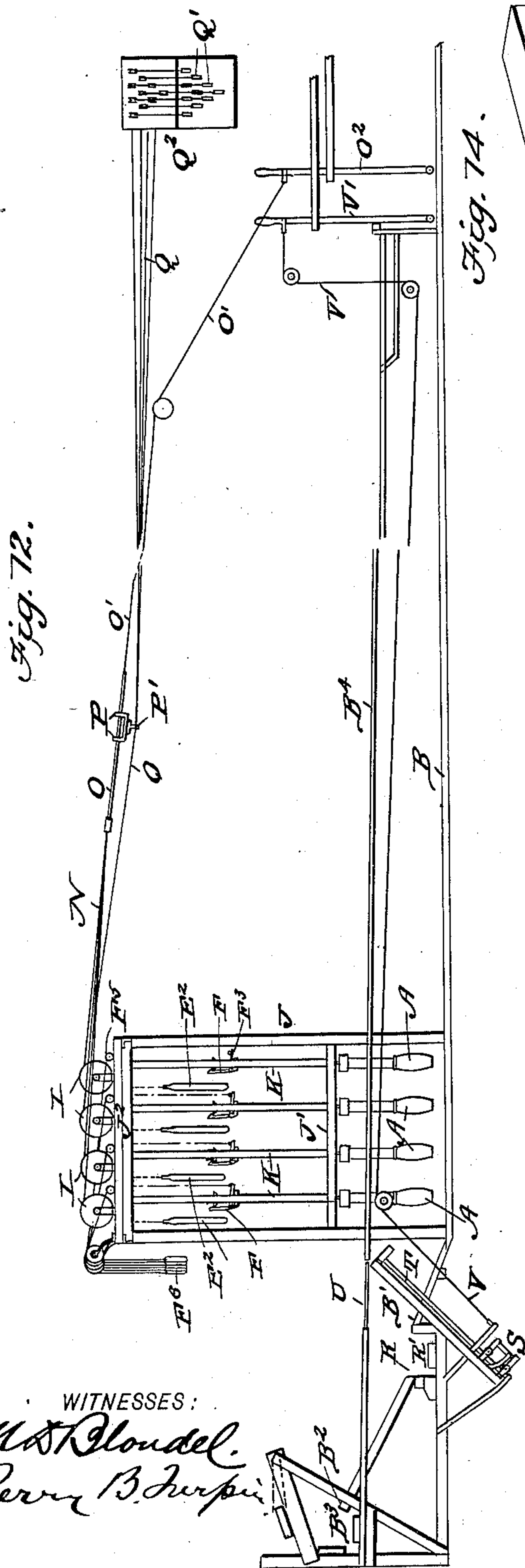
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**BOWLING ALLEY.**

(Application filed Aug. 10, 1900.)

(No Model.)

**4 Sheets—Sheet 4.**



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# UNITED STATES PATENT OFFICE.

HENRY BLOUTH, OF WILMINGTON, DELAWARE.

## BOWLING-ALLEY.

SPECIFICATION forming part of Letters Patent No. 661,903, dated November 13, 1900

Application filed August 10, 1900 Serial No. 26,506. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY BLOUTH, residing at Wilmington, in the county of New Castle and State of Delaware, have made certain new and useful Improvements in Bowling-Alleys, of which the following is a specification.

This invention is an improvement in bowling-alleys, and has for an object, among others, to provide a device for conveniently resetting the pins which have been knocked down, for indicating to the players the pins which have been knocked down, and for returning to the players the balls which have not been thrown with sufficient force to travel entirely up the incline leading to the ball-returning trough; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a side view of a bowling-alley embodying my invention, parts being removed and others shown in section. Fig. 2 is a top plan view of the main frame for supporting the pins and the guide-pulleys for the cords leading therefrom. Fig. 3 is a sectional top plan view on about line 3 3 of Fig. 1. Fig. 4 is a detail perspective view of the common drag-bar to which several pin-adjusting lines are secured. Fig. 5 is a detail perspective view, partly in section, of the ball-elevating carriage and the device on which it operates. Fig. 6 is a cross-sectional view on about line 6 6 of Fig. 5. Fig. 7 is a detail perspective view illustrating one of the pins and the parts directly connected therewith. Figs. 8, 9, 10, and 11 are detail sectional views on about respectively lines 8 8, 9 9, 10 10, and 11 11 of Fig. 7. Fig. 12 is a diagrammatic side elevation of a bowling-alley embodying my invention. Fig. 13 is a vertical top plan view of the bowling-alley. Fig. 14 is a detail rear perspective view, partly in section, of the indicator; and Fig. 15 is a detail perspective view illustrating the lines leading to the weights.

The pins A are alike and are supported alike, so the description of one will answer for all. As shown in Figs. 7, 1, and 12, the pin A does not rest upon the floor B of the bowling-alley, but is suspended so it hangs above such floor and sufficiently near thereto

to be struck by a ball properly directed along the said floor. The pin is suspended from a rod C, swiveled at its upper end to the base-plate D of a swiveled nut D', which is shown as connected at E' to a counterbalancing-cord E. The base-plate D of the nut D' forms a circular projecting flange for engagement by the latch F, presently described, and the pin A is suspended universally at the lower end of the rod C by means of the link connection at C', as best shown in Fig. 7. By the described construction the nut D' and rod C form a hanger for the pin, and the pin is free to swing at its lower end in any direction and its upper end at A' is extended squarely in a lateral direction, so it will rise at one point whenever the pin is so swung. This elevating operation of one edge of the upper end of the pin A may cause it to bear against the under side of the plate G' at the lower end of a tube G, which encircles the rod C, and is arranged at its upper end to operate upon the latch F and release said latch from engagement with the plate D, which is connected with the rod C, so the plate D, the rod C, and the pin A connected thereto may be lifted by the counterbalancing devices presently described whenever the pin A is struck by the ball and tilted thereby to cause it to elevate the tube G. This operation will be understood from Fig. 7, in which the latch F is shown as having a hook F' to engage the plate D and pivoted at F<sup>2</sup>, with a portion F<sup>3</sup> in position for engagement by the upper end of the tube G when the latter is elevated by the pin, as before described. The pin and the devices connected thereto being freed at this time will be raised by the weight E<sup>2</sup>, carried on the pulley I and depending thence, as shown.

By the described construction it will be seen that the counterbalancing-weights are never directly held, but exert a constant tension upon the hangers for the pins, the restraining means or detents being engaged with said hangers and not with the weights. Consequently the springs exert a constant tension on the pins, and the pins are therefore held and balanced more delicately than they would be if suspended by their gravity and will respond much more quickly when struck by the balls in operation.

In the specific construction of the alley I



provide a main frame which has a base-grating, as shown in Fig. 3, composed of the side frame and the bars  $J'$ , arranged diagonally in the frame  $J$  with respect to the direction of the length of the alley. This diagonal arrangement of the bars  $J'$  is preferred because it permits the extension of the bars between the several pins and yet provides for supporting the uprights  $K$  at points on opposite sides of the said pins, as shown in Fig. 3. The top of the main frame has the longitudinal bars  $J^2$ , to which the guide-bars  $K$  are secured at their upper ends and which also support the bearings for the guide-pulleys  $I$ , as shown in Figs. 1, 2, and 12.

The guide-bars  $K$  are of T-shaped metal and have the inwardly-projecting wings  $K'$ , over which fit the slotted ends of the lugs  $G^2$ , which extend laterally from the base-plate  $G'$  of the tubes  $G$ , so the said base-plate and its attached tube can slide vertically and will be held in proper position at its lower end throughout its vertical movement. The upper end of the tube  $G$  operates through the central ring  $L'$  in the support  $L$  for the latch  $F$ , such support having lateral arms  $L^2$ , which are secured at their outer ends to the inwardly-projecting wings  $K'$  of the guide-bars  $L$ , as shown in Figs. 7 and 9. The tube  $G$ , it will be noticed, after releasing the latch  $F$  slides upward through the ring  $L'$  from the position shown in connection with the lowered pin in Fig. 1 to that shown in connection with the pin which has been elevated in said figure, the latch and its support remaining in the same place during such operation, as will be understood from Fig. 1. The latch  $F$  has its portion  $F^3$  made in the form of a loop or ring, which extends some distance from the pivot  $F^2$ , and is connected at its outer end with a counterbalancing-line  $F^4$ , leading over the pulley  $F^5$ , and provided with a weight  $F^6$ , whose purpose is to slightly counterbalance the weight of the portion  $F^3$  of the latch and so render the operation of such latch easier. The latch is provided at  $f$  with a portion arranged for engagement by the upper end of the tube  $G$  for the purpose of releasing the latch. This will be best understood by reference to Fig. 10, in which the latch is shown in full lines in latched position and the tube  $G$  is lowered to the position shown in Fig. 7. If now the tube be raised slightly by the tilting of the pin  $A$ , the upper end of the tube  $G$  will strike against the bearing portion  $f$  of the latch and will tilt the latch to the position shown in dotted lines in Fig. 10, releasing the latch from engagement with the plate  $D$  of the rod  $C$ , so the said rod and the pin, together with the tube  $G$ , can be elevated by the weight  $E^2$ , as before described.

The nut  $D'$  is guided in its vertical movements by a transverse curved bar  $M$ , leading therefrom and bearing against the guide-bars  $K$ , as shown in Figs. 7 and 8 of the drawings. From the above description it will be understood that each pin operates independently

of the others, and if a ball be operated to release one, two, or more of the pins each and every pin so released will move upward out of the way of the succeeding balls. To readjust the pins, I connect with the weights  $E^2$  or with the lines leading therefrom to the pins the readjusting-lines  $N$ , one of which is provided in connection with each pin and all of which lead to a drag-bar  $O$ , which is common to all of the pins and is connected by a line  $O'$  with a lever  $O^2$ , which can be operated to readjust one, two, or more of the pins, according to the number which have been displaced by the throw or throws of the operator. The drag-bar  $O$  is movable longitudinally in guides  $P$ , supported on a T-shaped bar  $P'$ , which may be supported at  $P^2$  on the wall or other structure. The depending wing  $P^3$  of the bar  $P'$  is provided at  $P^4$  with a series of perforations for the lines  $Q$ , which lead from a suitable connection with the weights  $E^2$  to the weights  $Q'$  of the indicator  $Q^2$ , which is located convenient to the point of play and may be constructed, as shown in Fig. 14, with guides  $Q^3$  and  $Q^4$ , over which the lines  $Q$  lead to the weights  $Q'$ . As will be understood from Figs. 12 and 14, the weights  $Q'$  when the pins are all set will occupy a position relative to each other corresponding to the positions of the pins. Then as each pin or pins are struck by the ball and knocked out of position the corresponding weight  $Q'$  will be raised through the action of the line  $Q$  and so indicate with certainty to the operators just how many pins have been knocked down and which of the ten pins are still standing. After the lever  $O^2$  is drawn forward to reset the pin or pins that may have been raised by the operation before described such lever  $O^2$  is pushed back to the position shown in Fig. 12, the lines  $N$  being then slack between the points where they connect with the drag-bar  $O$  and the points where they are connected with the lines  $Q$ , which lead to the indicator.

When the ball is thrown along the floor  $B$ , it will pass along the rear end of the alley up the incline  $B'$  and if thrown with sufficient force will be discharged at the upper end  $B^2$  of the incline  $B'$  into the transverse trough  $B^3$ , which leads to the return-trough  $B^4$ , which inclines toward the front end of the alley, as shown. It frequently happens that the ball is not thrown with sufficient force to ride up to the top of the incline  $B'$ , but will roll back onto the alley. To avoid this, I provide at a short distance above the lower end of the incline  $B'$  a gap or break at  $R$ , over which the balls thrown with sufficient force will jump, while those thrown with less force will drop through the gap  $R$  into the trough  $R'$ , which inclines toward one side of the alley and discharges the ball to a carriage  $S$ , which travels on a suitable way  $T$ , which inclines upward toward an upwardly-opening gap  $U$  in the base of the return-trough  $B^4$ , so the balls can be elevated by the carriage  $S$  from the trough  $R'$  into the trough  $B^4$  and roll



thence back to the operator. For elevating the carriage S, I provide a line V, leading over suitable guides to an operating-lever V', arranged in a convenient position for the players.

The carriage S is preferably formed, as shown in Fig. 5, with a suitable frame having rollers S' and S<sup>2</sup>, which operate above and below the track-rail T, the carriage having at its front end the upright bars S<sup>3</sup>, lying on opposite sides of the rail T in position to bear against the ball and cause the same to roll upward along the rail T as the carriage is elevated by the device before described. By this means I insure the return automatically to the players of every ball thrown along the alley past the point where the pins are supported.

The upright bars S<sup>3</sup> form a bed against which the ball rests, and this bed is pivoted at S<sup>4</sup> (see Fig. 5) at a point above its lower end, forming the upper arm against which the ball rests and which is provided with a roller S<sup>5</sup> and the lower arm, to which the line V is connected. This bed when in normal position rests back against stops S<sup>6</sup> on the carriage-frame, but can tilt forward, as indicated in dotted lines, Fig. 5. It is evident from Figs. 5 and 12 that the portion of the bed S<sup>3</sup> above the stops S<sup>6</sup> supports the ball, and in case the carriage has been raised to lift one ball and another ball drops below the carriage while the latter is still elevated the pivotal connection S<sup>4</sup> of the bed S<sup>3</sup> will permit the bed to swing forward at its upper end and pass under the ball, this operation being facilitated by the roller S<sup>5</sup> rolling under the ball.

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

1. The combination of the pins, hangers suspending the same, counterbalancing devices for said pins, and restraining devices engaging said hangers for holding the pins against the action of their counterbalancing devices, and arranged to be released substantially as set forth.

2. The combination of the pins, the hangers therefor comprising rods connected with the pins and plates for engagement by the latches, the counterbalancing devices, the latches engaging said plates, and the tubes encircling the hanger-rods and arranged at their upper ends to release the latches from engagement with the plates, and at their lower ends for operation by the pins substantially as set forth.

3. The combination of the pins, the counterbalancing devices therefor, the restraining means, the mechanism for releasing said restraining means and including a tube arranged at its lower end for operation by the upper end of the pin when the latter is struck, and guides for the said tube, such guides being extended practically to the lower end of the tube when the latter is in its lowermost

position whereby to hold the said end of the tube from lateral displacement by the movement of the pin when the latter is struck, substantially as set forth.

4. The combination of the framing having upright guide-bars, the pin movable longitudinally between said bars, the counterbalancing devices, the hanger between the same and the pin, the latch between the upright guide-bars and arranged to engage the hanger, and the latch-releasing tube having its lower end arranged for operation by the pin and provided at such end with means engaging and slidable along the upright guide-bars substantially as set forth.

5. The combination of the framing having upright guide-bars, the pin, the hanger therefor, a guide-bar M at the upper end of said hanger and engaging the said guide-bars, the counterbalancing devices, the latch for restraining the same, and the tube encircling the hanger and arranged at its lower end for operation by the pin and having at such end means engaging with and slidable along the upright guide-bars substantially as set forth.

6. The combination in a bowling-alley of the framing the counterbalancing-weight suspended freely, the pin suspended freely, intermediate connections between the weight and pin, and latch devices arranged to operate upon said intermediate connections and arranged to be released through the movement of the pin substantially as set forth.

7. The combination of the pin, the counterbalancing devices connected therewith, the hanger for the pin having a bearing for engagement by the latch, the latch having an upright portion arranged to engage the bearing of the hanger, and pivoted at the base of such upright and having a laterally-extended base, and the releasing device arranged to engage such base and adapted for operation by the pin substantially as set forth.

8. In a bowling-alley, the combination of pins, the rods connected therewith and to which the pins are universally jointed, swiveled connections at the upper ends of said rods, the counterbalancing-weights having their lines connected with the swiveled connections, the latches arranged to engage the swiveled connections, and the tubes encircling the rods and arranged at their lower ends for operation by the pins and at their upper ends to release the latches when the pins are operated, substantially as set forth.

9. In a bowling-alley, the combination of the pins, the counterbalancing devices for elevating the same, latches by which to restrain the operation of the counterbalancing devices and independent counterbalancing devices for the latches, substantially as set forth.

10. The combination in a bowling-alley, of the frame having upright rods, the pins, the counterbalancing devices therefor, the latches for restraining the said counterbalancing devices, the supports for said latches secured



at their ends to the uprights of the frame and having at their middles ring-like guide portions, and the tubes for releasing the latches, said tubes being guided at their upper ends in the ring-like guides of the latch-supports and at their lower ends by the uprights of the framing and arranged at such lower ends for engagement and operation by the pins when the latter are tilted in the operation of the play, substantially as set forth.

11. In a bowling-alley the combination substantially as described, of the framing, the pin, the rod to the lower end of which the pin is universally jointed, a connection swiveled to the upper end of said rod, the counterbalancing-line leading from such connection, the latch engaging with such connection for restraining the operation of the counterbalancing device, and the tube encircling the rod on which the pin is suspended and arranged at its upper end to release the latch and at its lower end for operation by the pin, substantially as set forth.

12. In a bowling-alley, the combination of the pins arranged to move vertically and means for so moving the pins, and the frame having a base-grating provided with bars or slats arranged to extend between the pins and ranging diagonally with respect to the direction of the length of the alley, substantially as set forth.

13. In a bowling-alley the combination substantially as described, of the vertically-movable pins, counterbalancing devices for elevating the pins when struck, the indicator having weights corresponding to the pins and connections between the weights of the indicator and the counterbalancing devices whereby the indicator can be operated correspondingly to the pins, substantially as set forth.

14. In a bowling-alley, the combination of the ball floor or bed of the alley having an incline in rear of the pins said incline being inclined upwardly from front to rear and provided in said incline with a gap leading to a trough below the incline, a carriage for receiving the balls from said trough and the ball-return trough or run to which the balls may be discharged by such carriage, substantially as set forth.

15. In a bowling-alley, the combination of the ball-floor, an incline at the rear end thereof and provided with a gap through which the balls may pass, and a carriage for elevating such balls consisting of a frame having upper and lower wheels and an inclined rail above and below which said wheels operate, substantially as set forth.

16. In a bowling-alley the combination with the ball-returning trough or run having a gate arranged to open and close and a carriage adapted to elevate the balls and discharge the same through such gate into the return trough or run, substantially as set forth.

17. The combination in a bowling-alley, of the incline B' having a gap R, the transverse trough R' below such gap, the incline rail T leading upward from the trough R, the carriage movable on said rail and having upright front bars S<sup>3</sup> extending on opposite sides of the rail T, means for operating the carriage and the ball-returning trough or run to which the balls are delivered by the said carriage, substantially as set forth.

18. A carriage for elevating the balls of a bowling-alley comprising a frame and a pivoted bed against which the balls may rest and which can tilt or rock on its pivot to pass under a ball below it, and a track or way for such carriage substantially as set forth.

19. In a bowling-alley the combination of the carriage-frame having stops, and the bed for the balls, the bed being pivoted to said frame and abutting said stops and having an arm for connection with the drag-line and the drag-line substantially as set forth.

20. In a bowling-alley, the combination of the ball-floor, the ball-returning trough and a carriage for elevating the balls to said trough, such carriage having a pivoted bed against which the balls may rest substantially as set forth.

21. In a bowling-alley a ball-returning mechanism comprising an inclined track, and a carriage movable thereon and having a pivoted bed against which the ball may rest substantially as set forth.

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Witnesses:

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