

No. 762,930.

PATENTED JUNE 21, 1904.

H. NEWHOUSE.
CARVING MACHINE.

APPLICATION FILED AUG. 17, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 4.

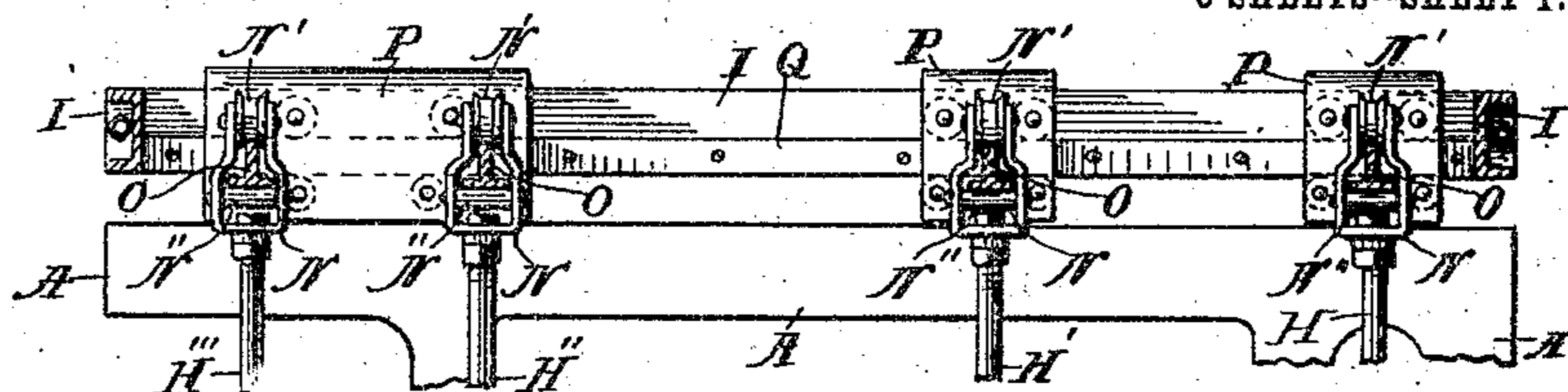
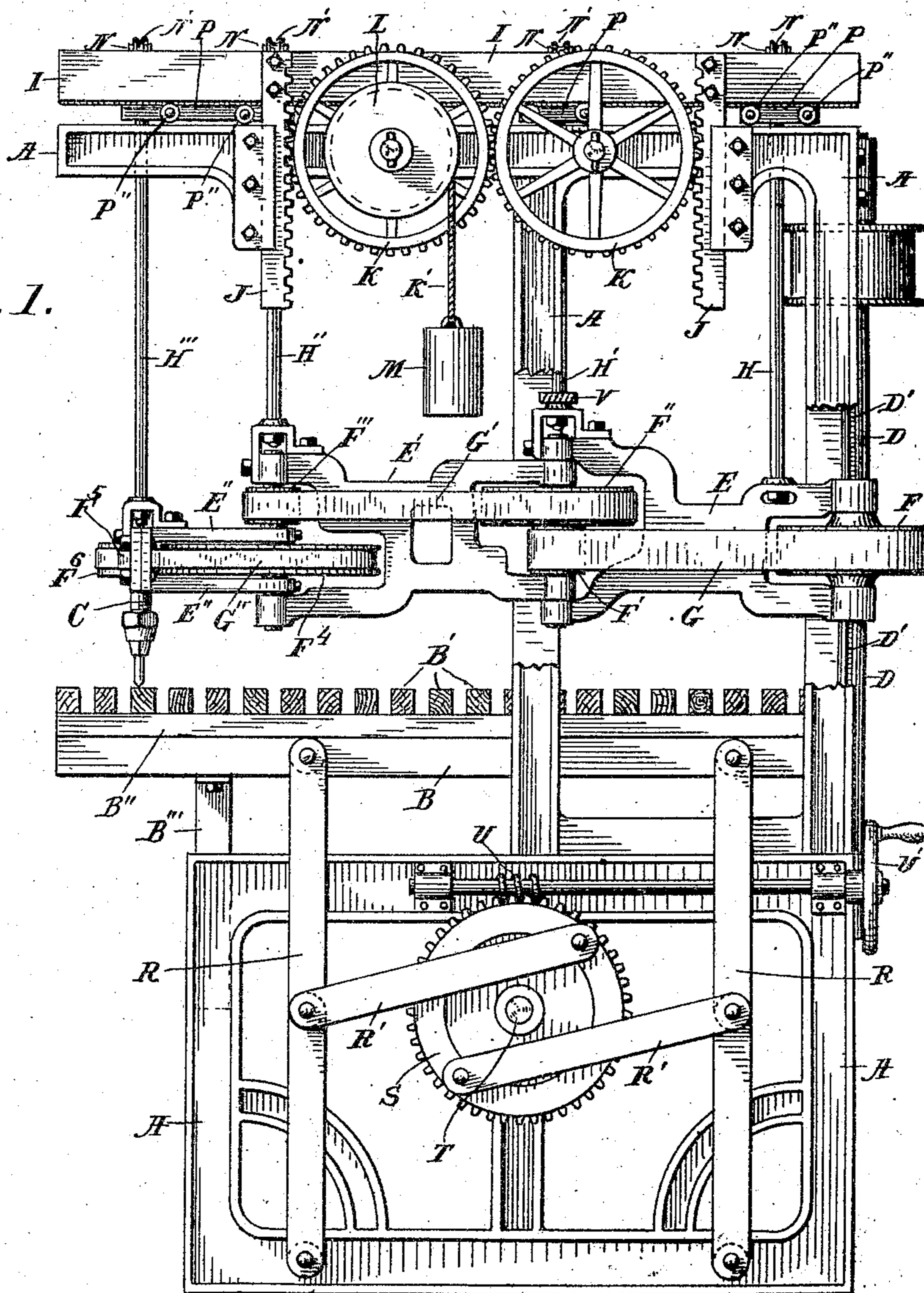


Fig. 1.



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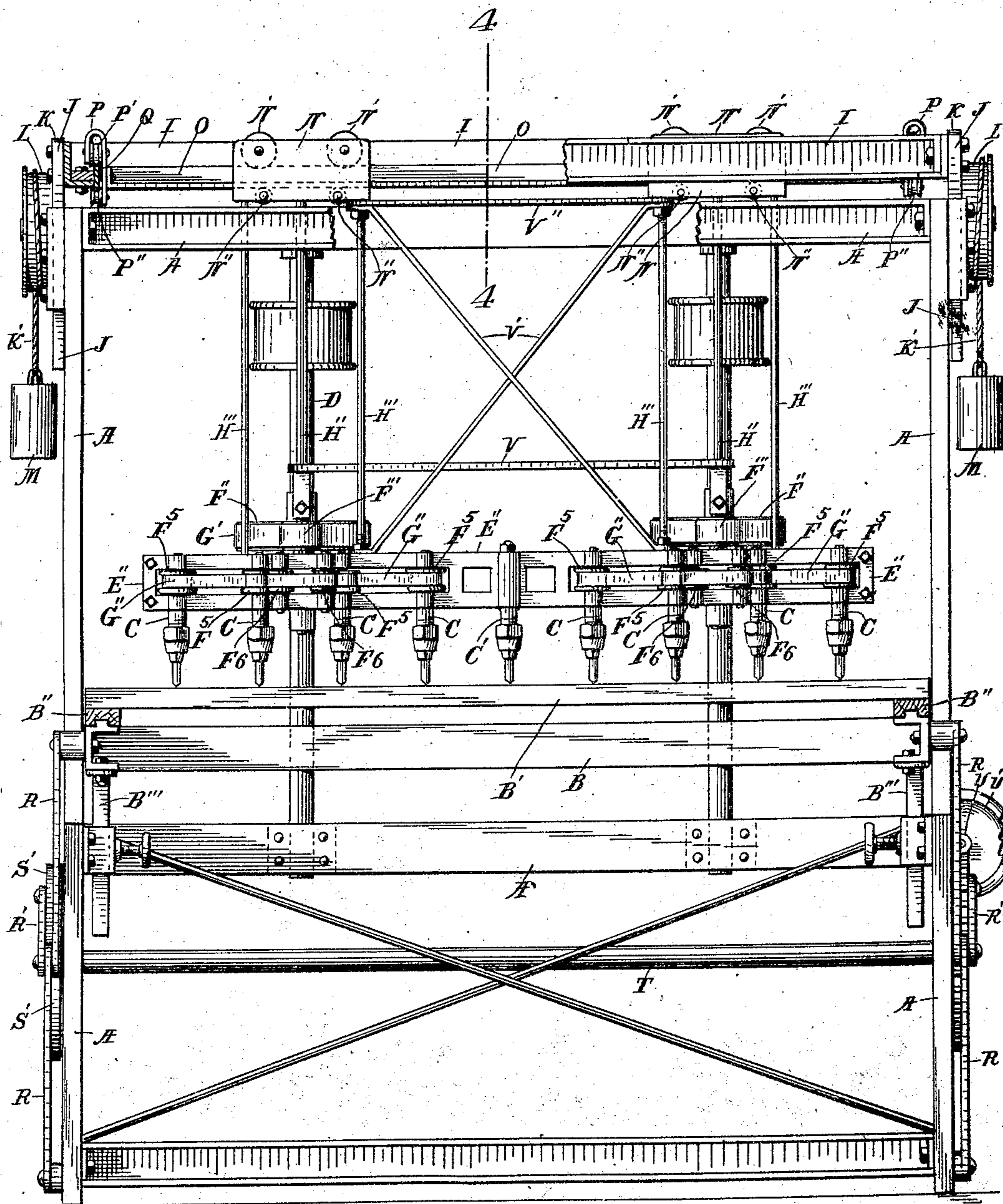
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3 SHEETS—SHEET 2.



Witnesses

Fig. 2.

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3 SHEETS—SHEET 3.

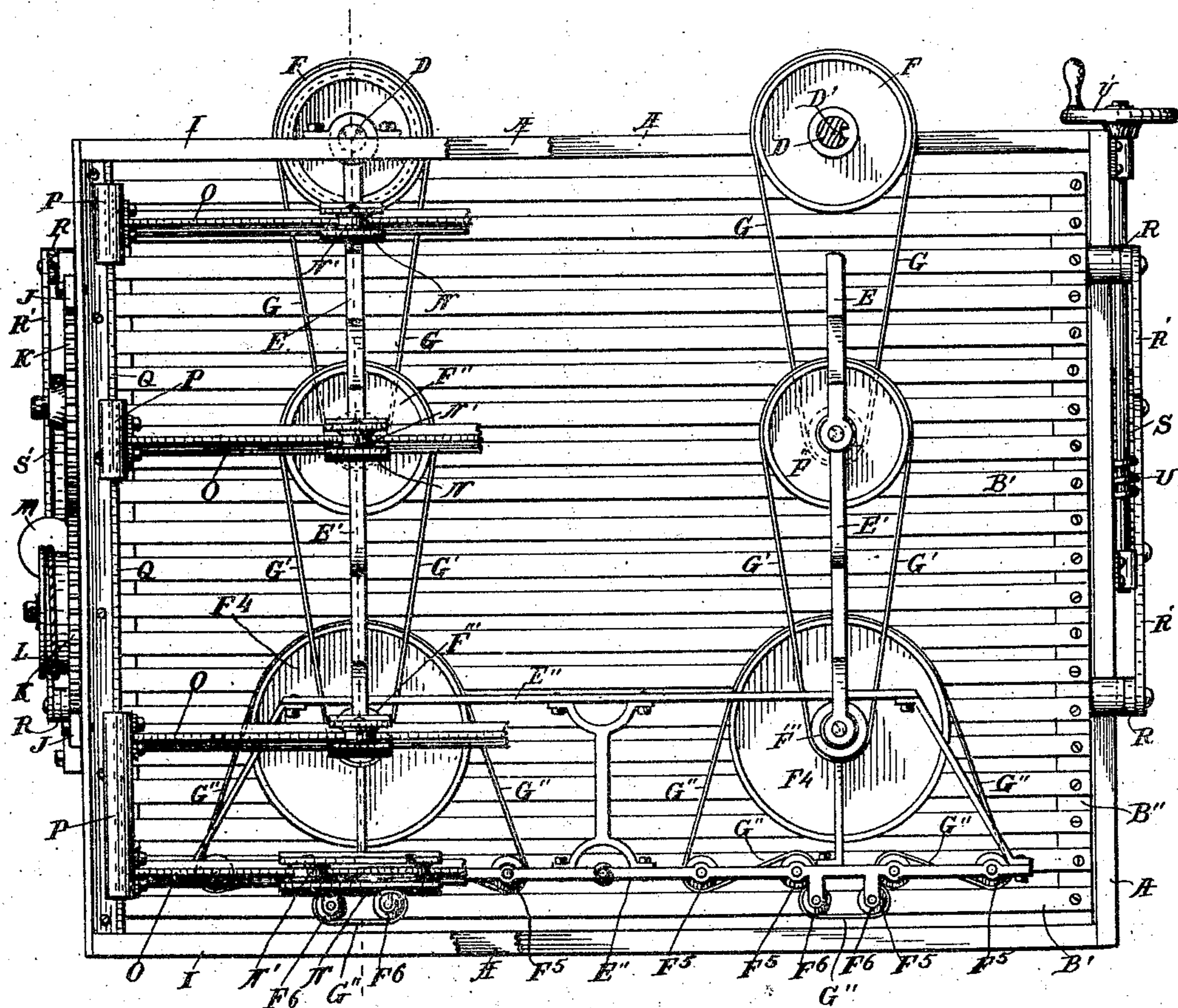


Fig. 3.

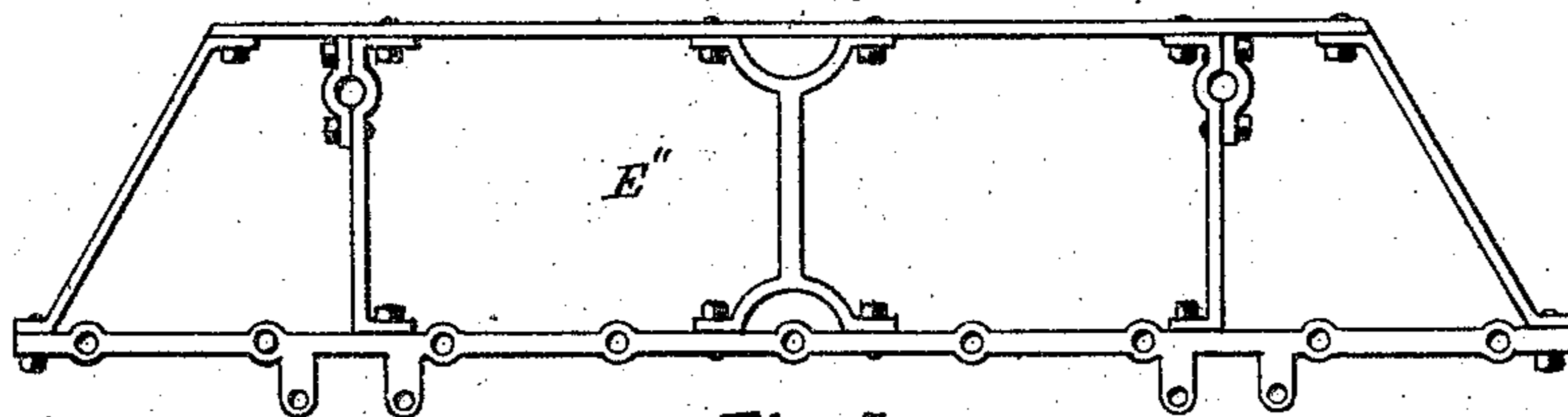


Fig. 5.

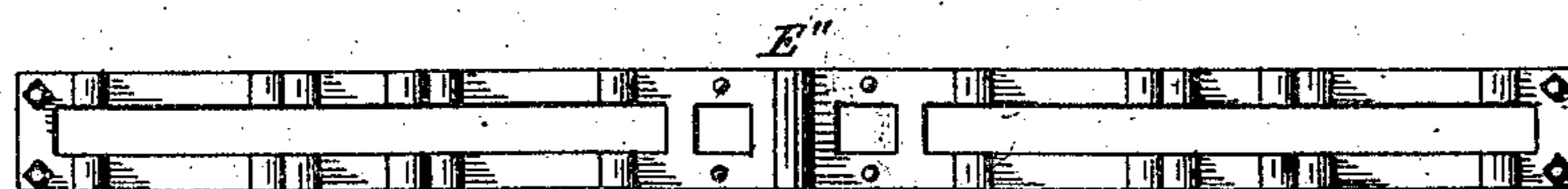


Fig. 6.

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UNITED STATES PATENT OFFICE.

HENRY NEWHOUSE, OF GRAND RAPIDS, MICHIGAN.

CARVING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 762,930, dated June 21, 1904.

Application filed August 17, 1903. Serial No. 169,686. (No model.)

To all whom it may concern:

Be it known that I, HENRY NEWHOUSE, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Carving-Machines; 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.

My invention relates to improvements in carving-machines; and its object is to provide the same with certain new and useful features, hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention; Fig. 2, a front elevation of the same; Fig. 3, a plan view of the same, with parts broken away to show the construction; Fig. 4, a detail of the upper part of the machine shown in vertical section on the line 4 4 of Fig. 2, and Figs. 5 and 6 details of the head that carries the cutters.

Like letters refer to like parts in all of the figures.

A represents the stationary frame of the machine of suitable shape and material to support the various moving parts. I provide a device on which the work is supported, which is both vertically and horizontally adjustable, for which purpose B is a vertically-adjustable bed provided with a series of detachable bars B', to which the work is secured, any one or more of which bars may be removed to permit a portion of the work to project downward, as occasion requires. These bars are also spaced apart to permit inserting bolts or other fastening means between the same to secure the work thereon. These bars B' are also attached at the ends to slides B'', longitudinally adjustable on the bed B and connected thereto by tongue and groove, whereby the slides may be thus adjusted on the frame.

The bed B is mounted upon vertically-sliding posts B''' and is vertically adjusted by jointed levers R, pivoted at their lower ends to the frame A and at their upper ends to the

bed B and jointed near the middle. These levers are operated by connecting-rods R', attached to said levers and to wheels S and S', which wheels are mounted on a shaft T to rotate in unison and are adjusted by a worm U, engaging teeth in the wheel S and rotated by the hand-wheel U'. By turning this worm the middle joints of the levers R are all simultaneously moved about the axis of the lower pivots of the levers, whereby the bed B is raised and lowered at pleasure and maintained at all times in a horizontal plane.

To simultaneously carve a number of pieces of work and form the same all alike, a series of spindles C are journaled in a suitable head E'', eight being shown arranged in two groups of four each, and in the center of the head is provided a guide-point C', fixed in the head and adapted to traverse the surface of the pattern to the form of which the work is shaped by the various cutters in the spindles C. To rotate these spindles, I provide two driving-shafts D D, arranged vertically at the rear of the head, each having a keyway D', and on each shaft D is slidably mounted a driving-pulley F, having a key slidably engaging the keyway, and on each shaft is also journaled an arm E, to the forward end of which is pivoted another arm, E', the forward end of which latter arm is pivoted to the rear of the head E''. Motion is transmitted from the pulley F through attached pulleys F' and F'', journaled in the axis of the pivots, connecting the arms E and E' and attached pulleys F''' and F'', journaled in the axis of the pivots, connecting the arm E' and the head E'', and a series of belts G, G', and G'' suitably connect the various pulleys. Each belt G'' extends from a pulley F' and engages pulleys F'' on a series of four spindles and rotates two of said spindles oppositely to the other two to balance the side strains of the cutters, and for this purpose the belt extends around the front of the outer two pulleys of the series and thence around the rear of the inner two pulleys of the same series, and for the purpose of securing sufficient frictional contact with the last-named pulleys said belt G' is engaged by idlers F'', projecting from the front of the head, as shown in Fig. 3. By this arrangement of

jointed arms, pulleys, and belts the head E' can be moved freely in all directions over the work and motion transmitted from the shaft D to all of the spindles, and by the sliding of the driving-pulleys F and arms E on the shafts D the head E', together with the spindles and all of the transmitting mechanism described, is free to move vertically without interfering with the the transmission of motion to the spindles. The guide-point C' can thus be manipulated to traverse any irregular surface, and in so doing the operator will move the head E' both vertically and horizontally to correspond to the contour of said surface, and thus each cutter in each spindle C will be guided to duplicate the form of the pattern in the material operated upon by said cutter. To support the head E' and the transmitting mechanism and to counterbalance the weight thereof, and thus enable the operator to move the same freely, a vertically-movable frame I is supported on racks J, vertically movable in suitable ways in the frame A. Each pair of racks is engaged by a pair of gears K, journaled on suitable studs on the frame A. Said gears intermesh at their adjacent sides and are provided with a drum L, on which is wound a cord K', to which cord is attached a suitable weight M, arranged to turn the gears downward at their adjacent sides, and thus to lift the racks J and support the frame I and parts attached thereto. To provide means for movably connecting the cutters and operating means with this frame and supporting the same thereby, said frame I is provided at each end with a track Q, on which are mounted carriages P, freely movable thereon, and provided with upper and under rolls P' and P'', engaging the respective upper and under sides of the tracks Q. Extending transversely across this frame and attached at each end to one of these carriages are rails O, upon which are mounted other carriages consisting of suitable yokes N, having upper and under rolls N' and N'', engaging and traversing the respective upper and under sides of said rails. Depending from these yokes are rigid rods H, H', H'', and H''', the lower ends of which are attached to the head E' and to the arms E and E', whereby the same are supported by the frame I and at a fixed distance therefrom, and at the same time the yokes N and carriages P permit these suspension-rods to traverse horizontally and freely in all directions relative to the frame I. This, together with the free vertical movement of the frame I, permits the free and corresponding movement of the guide-pin and cutters in all directions both vertically and horizontally, the weights M serving to counterbalance all of the parts supported upon the racks J. To insure corresponding movement of the respective pivots connecting the arms E and E', a rod V extends between and connects the same, whereby they are held the same distance apart at all times, and to insure cor-

responding movement of the yokes on the rails O connecting-rods V' are provided between the same and also braces V' extend diagonally downward from the yokes to the head E'. The structure is thus made rigid and the same time the spindles and cutters, while moving freely both vertically and horizontally, are each rigidly held to exactly corresponding movements with the movements of the guide-point C'. The cutters will thus accurately duplicate the shape of the form traversed by said point.

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

1. The combination of a vertically-movable frame, carriages horizontally movable on the frame, a carving-tool and a guide-point rigidly connected to each other and attached to said carriages, a counterbalance for the frame, and means for operating the carving-tool.

2. The combination of a frame, vertically-movable racks supporting the frame, intermeshing gears engaging said racks, a drum attached to one of said gears, a weight attached to said drum, a horizontally-movable carriage on the frame, a carving-tool and guide-point rigidly connected to each other and attached to said carriage, and means for operating said tool.

3. The combination of a frame, vertically-movable supports and a counterbalance for the frame, tracks on the frame, carriages movable on the tracks, rails attached to the carriages, other carriages movable on the rails, a carving-tool and a guide-point rigidly connected to each other and supported by the last-named carriages, and means for operating the carving-tool.

4. The combination of a vertically-movable frame, a counterbalance for said frame, tracks on the frame, carriages movable on the tracks, rails attached to the carriages, other carriages on the rails, a head supported by the carriages, rotary carving-tools journaled in said head, a guide-point fixed in said head, a driving-shaft, and means for transmitting motion from said shaft to the carving-tools, said means being also supported by the said last-named carriages.

5. The combination of a vertically-movable frame, a counterbalance for the said frame, tracks on the frame, carriages on the tracks, rails attached to the carriages, other carriages on the rails, suspension-rods attached to the last-named carriages, a head and jointed arms supported on the rods, a series of spindles journaled in the head, a guide-point fixed in the head, a driving-shaft on which the arms are pivoted and slidable, pulleys mounted on the arms and shaft, and belts connecting the various pulleys to transmit motion from the shaft to the pulleys.

6. The combination of a frame, vertically-movable racks supporting the frame, inter-

meshing gears engaging the racks, a drum attached to one of the gears, a weight attached to the drum, tracks on the frame, carriages on the tracks, rails attached to the carriages, other carriages on the rails, suspension-rods attached to the last-named carriages, a head and jointed arms supported by the rods, a driving-shaft on which the arms are slidably journaled, a series of spindles, and a guide-point mounted in the head, a pulley on the driving-shaft, pulleys connected in pairs and journaled in the axes of the joints of the arms, and belts engaging the various pulleys to transmit motion from the shaft to the spindles.

7. The combination of a vertically-movable frame, a counterbalance for the frame, tracks on the frame, carriages on the tracks, upper and under rolls in the carriages, and oppositely engaging the tracks, rails attached to the carriages, yokes on the rails, upper and under rolls in the yokes and oppositely engaging the rails, suspension-rods attached to the yokes, a head supported by said rods a carving-tool journaled in the head, a guide-point fixed in the head, and means for operating the carving-tool.

8. The combination of a head, vertically and horizontally movable supports for the head, a large pulley and a series of four spindles journaled in the head, pulleys on the spindles, a belt engaging the rear of the large pulley and also engaging the front of two of the spindle-pulleys and the rear of the other two spindle-pulleys, and means for driving the large pulley.

9. The combination of a head, vertically and horizontally movable supports for the head, a large pulley and a series of four spindles journaled in the head, pulleys on the spindles, a belt engaging the rear of the large pulley and the front of the two outer spindle-pulleys and the rear of the two inner spindle-pulleys, and thence extending forward between the last-named pulleys, and idlers engaging said belt.

10. The combination of a head, a driving-shaft, an arm having a middle joint and slidably journaled on the shaft at one end and pivoted to the head at the other end, a pulley slidably on the driving-shaft, two attached pulleys journaled in the axis of the joint of the arm, two attached pulleys journaled in the axis of the pivot connecting the arm and head, a series of spindles having pulleys and journaled in the head, belts engaging the various pulleys to transmit motion from the shaft to the spindles, a guide-point in the head, and vertically and horizontally movable supports for the head and arm.

11. The combination of a head, a driving-shaft, an arm having a middle joint and slidably journaled on the shaft and pivoted to the head, a pulley movable on the driving-shaft, two attached pulleys journaled in the axis of the pivot connecting the arm and head, two at-

tached pulleys journaled in the axis of the joint of the arm, a series of four spindles journaled in the head, pulleys on the spindles, a guide-point fixed in the head, belts connecting the various pulleys, one of said belts engaging the front of two of the spindle-pulleys and the rear of the other two spindle-pulleys, an idler engaging said belt and projecting forward from the head, and vertically and horizontally movable supports for the head and arm.

12. The combination of a vertically-adjustable bed to support the work and pattern, a vertically and horizontally movable spindle-head, a series of spindles journaled in the head, a guide-pin fixed in the head, means for rotating the spindles, a vertically-movable frame to support the spindle-head and carriages horizontally movable in all directions on the said vertically-movable frame and attached to the spindle-head.

13. The combination of a vertically and horizontally adjustable bed to support the work, a spindle-head, a series of spindles journaled in the same, a guide-point fixed in the same, a driving-shaft, a jointed arm slidably journaled on the driving-shaft and pivoted to the spindle-head, a vertically-movable frame, a counterbalance for the same, carriages on said frame and horizontally movable in all directions, supports connecting the carriages with the spindle head and arm, and means for transmitting motion from the driving-shaft to the spindles.

14. The combination of a vertically-movable bed, jointed levers supporting the bed, means for simultaneously adjusting said levers, a driving-shaft, a spindle-head, a series of spindles journaled thereon, a guide-point fixed on the spindle-head, a journaled arm pivoted to the spindle-head and slidably jointed on the driving-shaft, means for transmitting motion from the driving-shaft to the spindle and mounted on the arm, a vertically-movable frame, racks supporting the same, gears engaging the racks, a drum and weight to operate the gears and balance the frame, carriages horizontally movable in all directions within the frame, and rods connecting the carriages and the spindle frame and arm.

15. The combination of a stationary frame, a vertically and horizontally adjustable bed, jointed levers to vertically adjust the same, a shaft journaled in the stationary frame, wheels on the shaft, rods connecting the wheels and levers, a worm and gear to adjust the wheels, a driving-shaft, a spindle-head, a jointed arm pivoted to the spindle-head and journaled on the driving-shaft, pulleys and belts to connect the driving-shaft and spindles and supported by the arm, a vertically-movable frame, carriages horizontally movable in all directions within the frame and supporting the jointed arm and spindle-head, and a counterbalance for the movable frame.

16. The combination of a vertically and horizontally adjustable bed to support the work and pattern, a vertically and horizontally movable spindle-head, cutter-spindles and a guide-
5 point mounted on the spindle-head, means for rotating the spindles, a vertically-movable frame, carriages mounted on the frame and horizontally movable in all directions and supporting the spindle-head, and a counter-

balance for the frame and parts supported to thereby.

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

HENRY NEWHOUSE.

Witnesses:

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LUTHER V. MOULTON.