

(Model.)

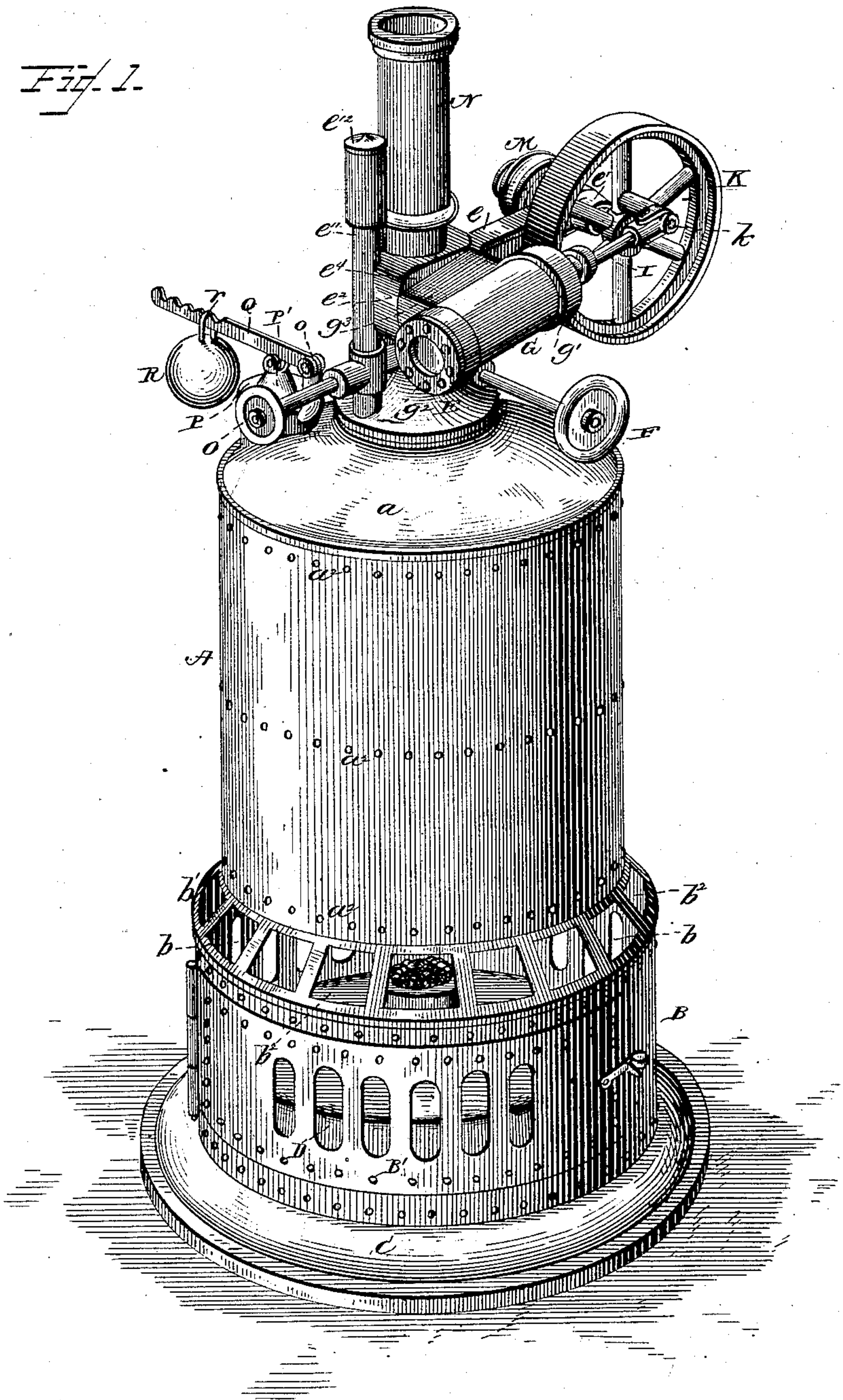
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W. N. WEEDEN.

TOY MOTOR.

No. 318,335.

Patented May 19, 1885.



Witnesses:

B. J. Williamson.

Henry C. Hazard

Inventor:-

Wm. H. Tucker, by

Orindle^{and} Russell, his Attys

(Model.)

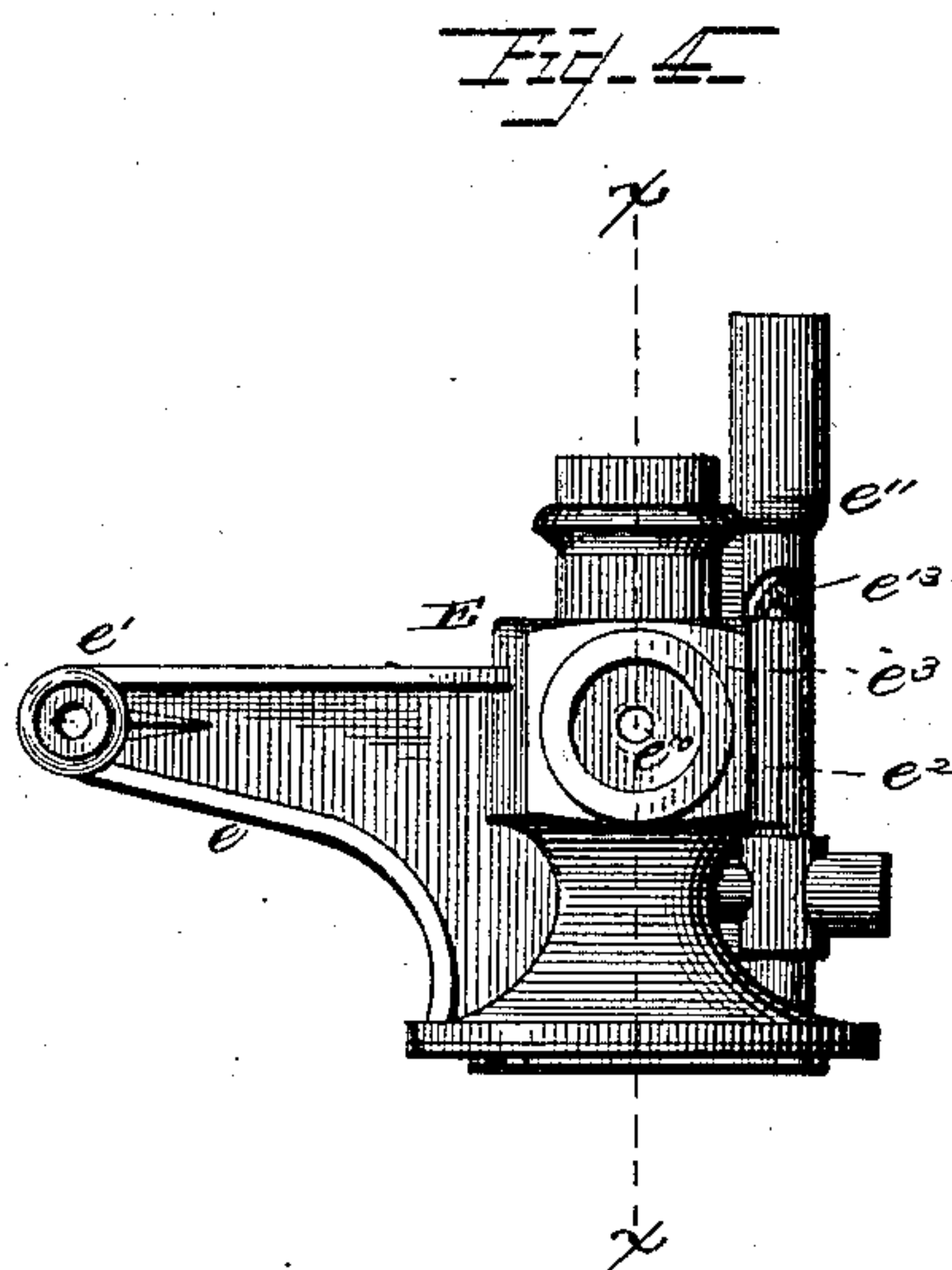
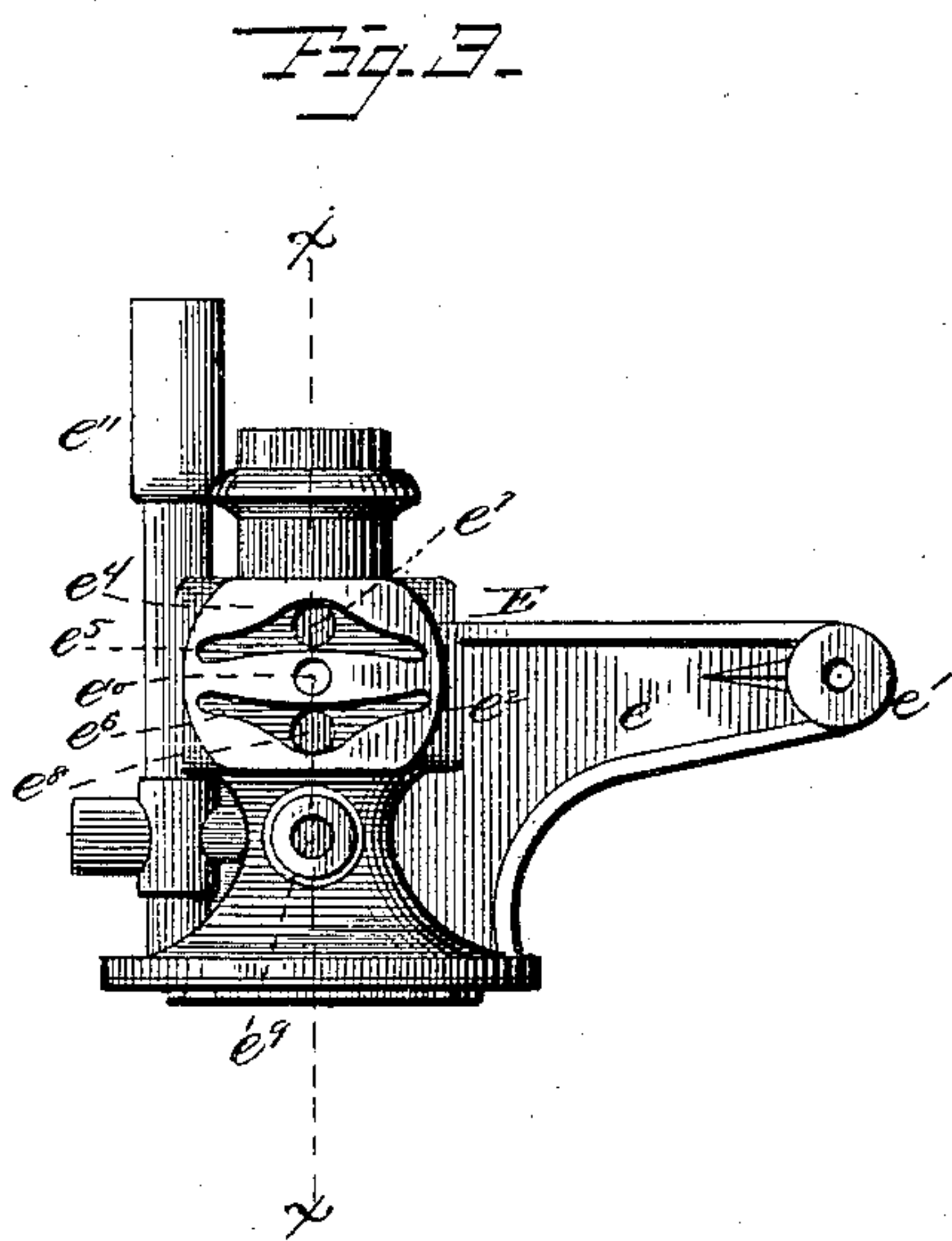
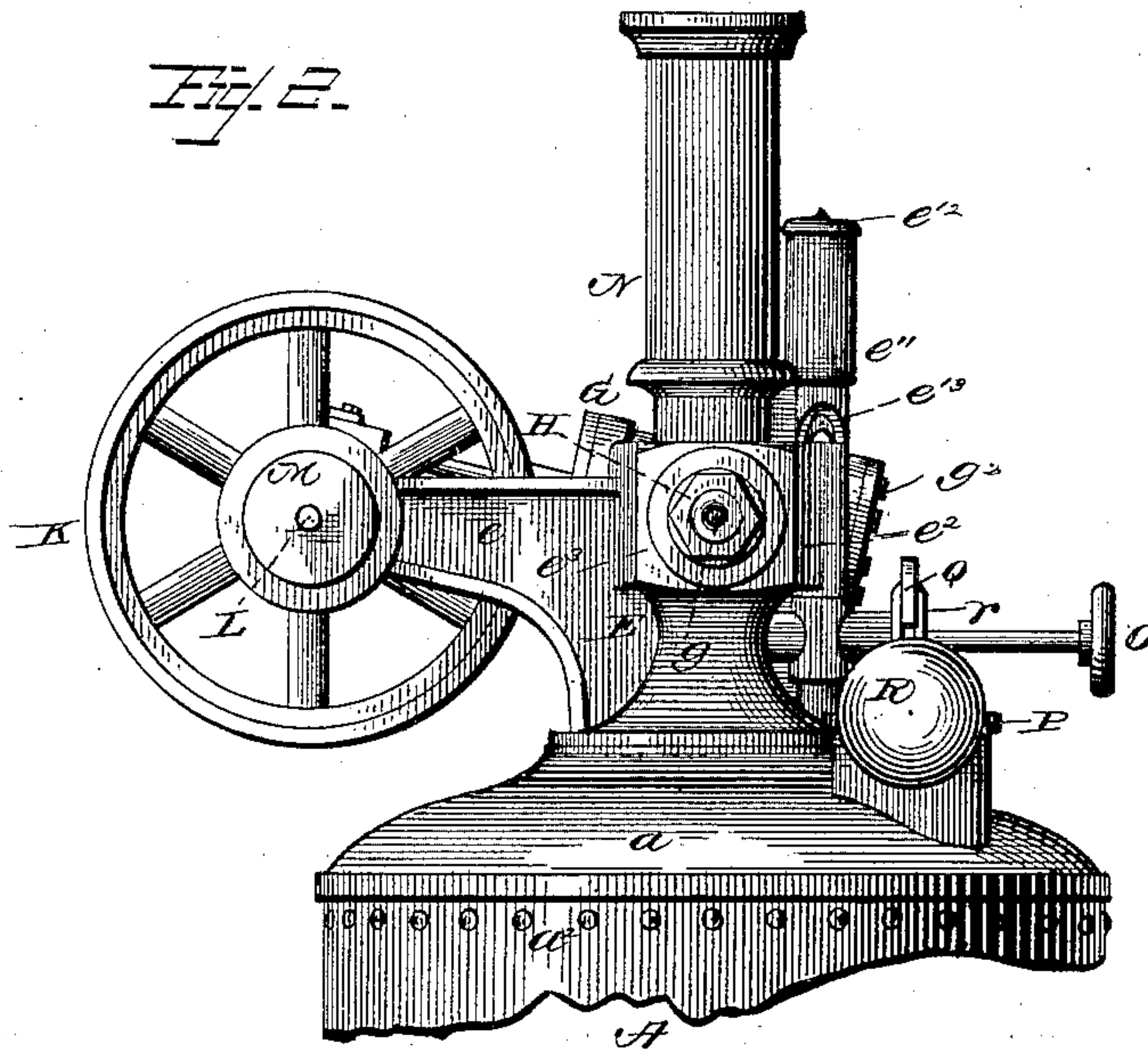
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(Model.)

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Fig. 5.

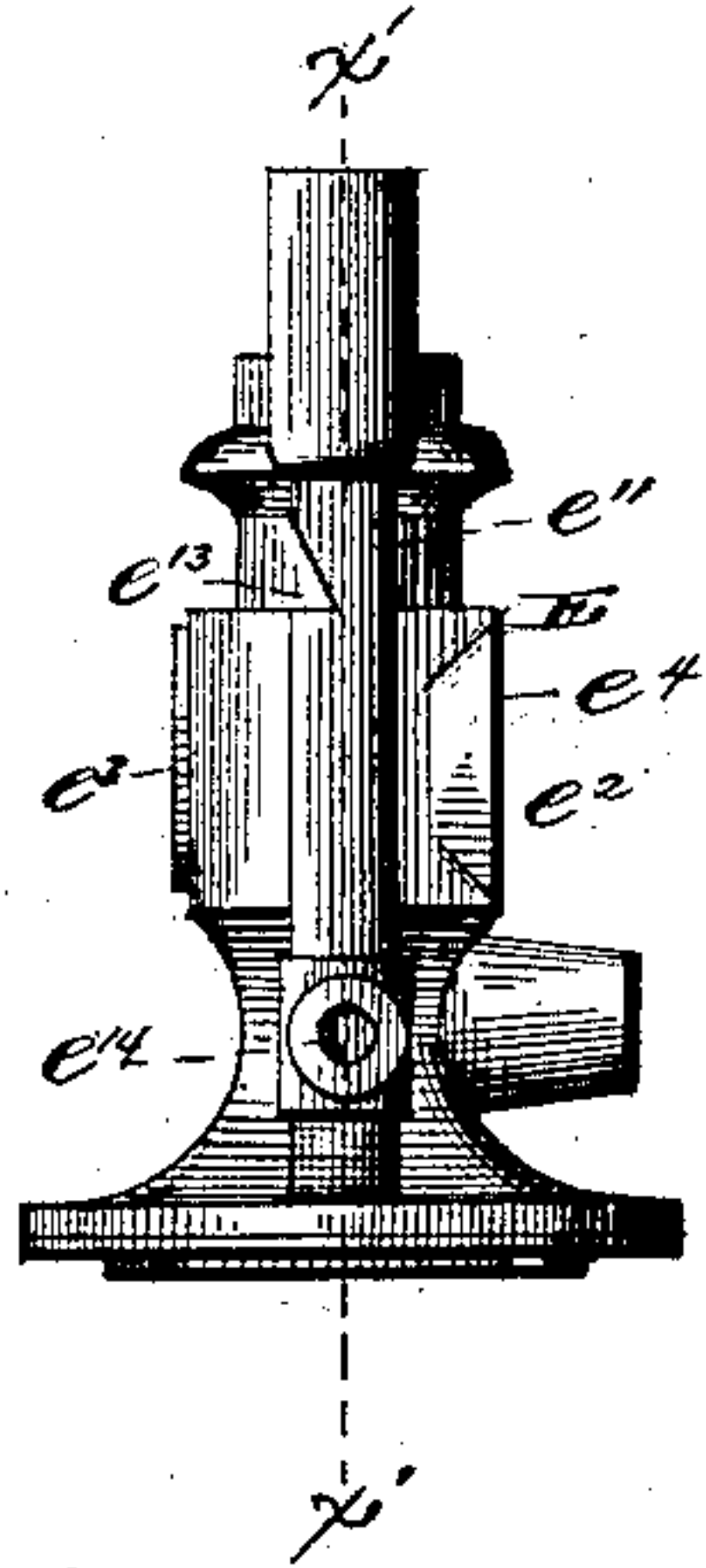


Fig. 6.

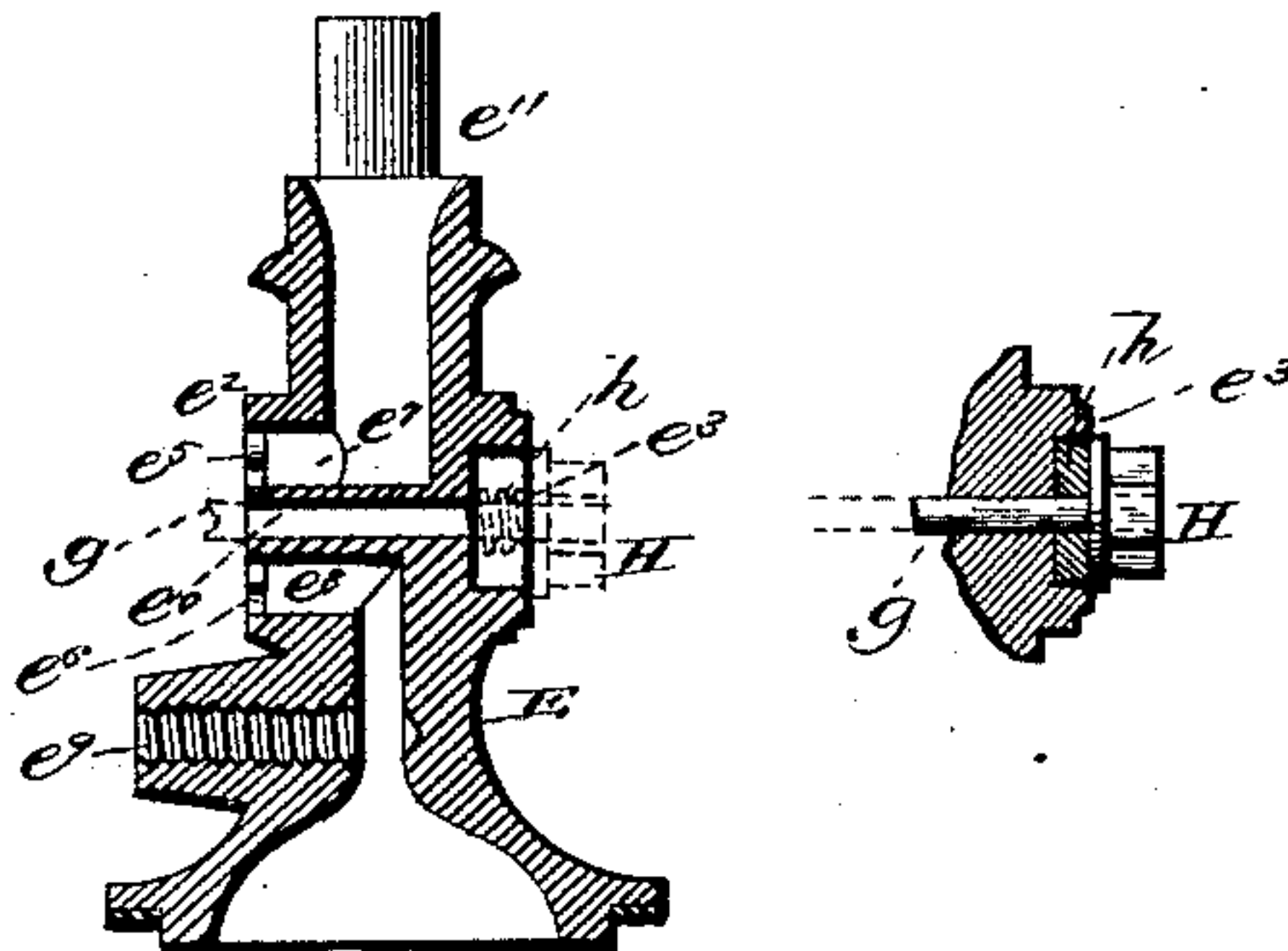
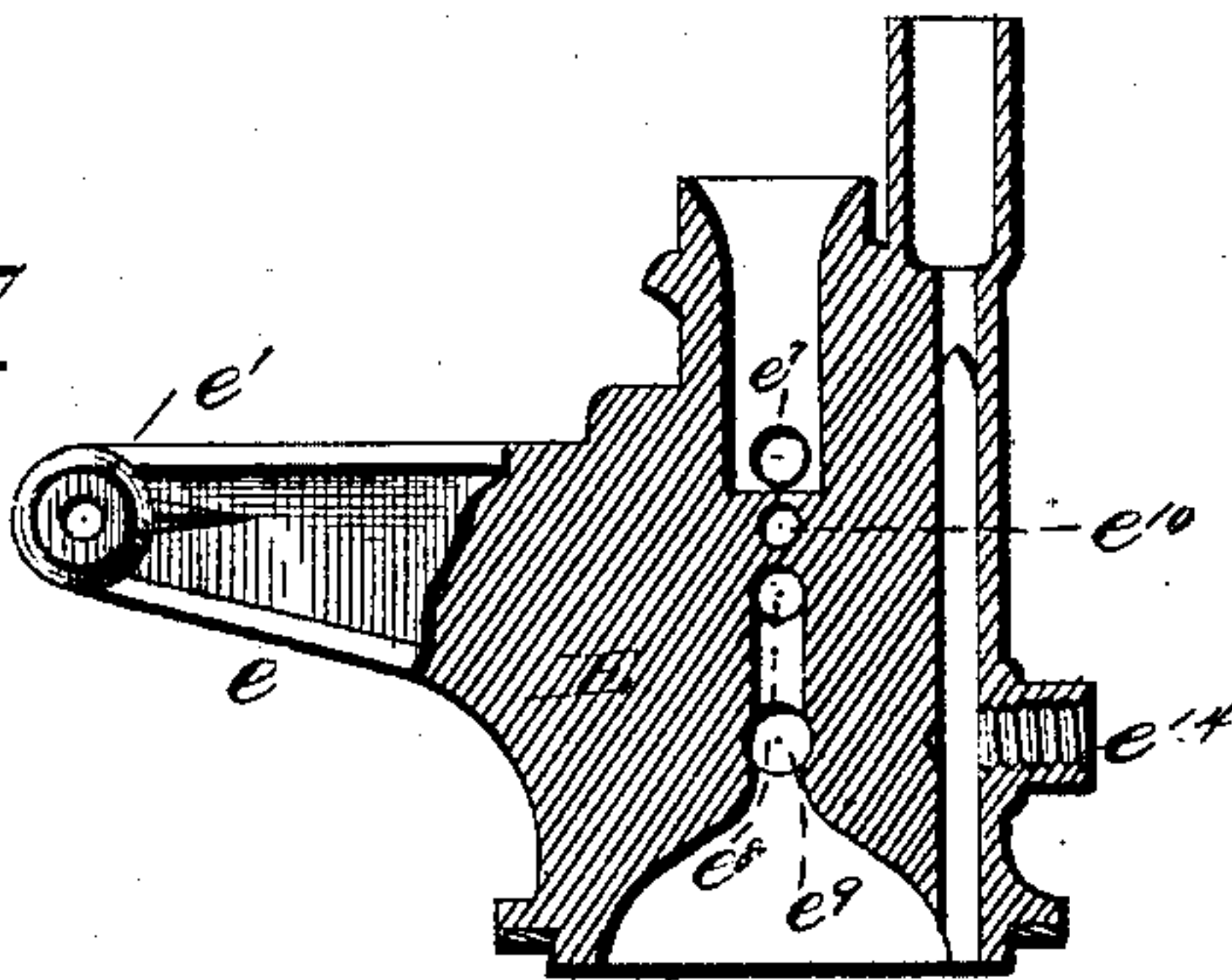


Fig. 7.



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(Model.)

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W. N. WEEDEN.

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Fig 8.

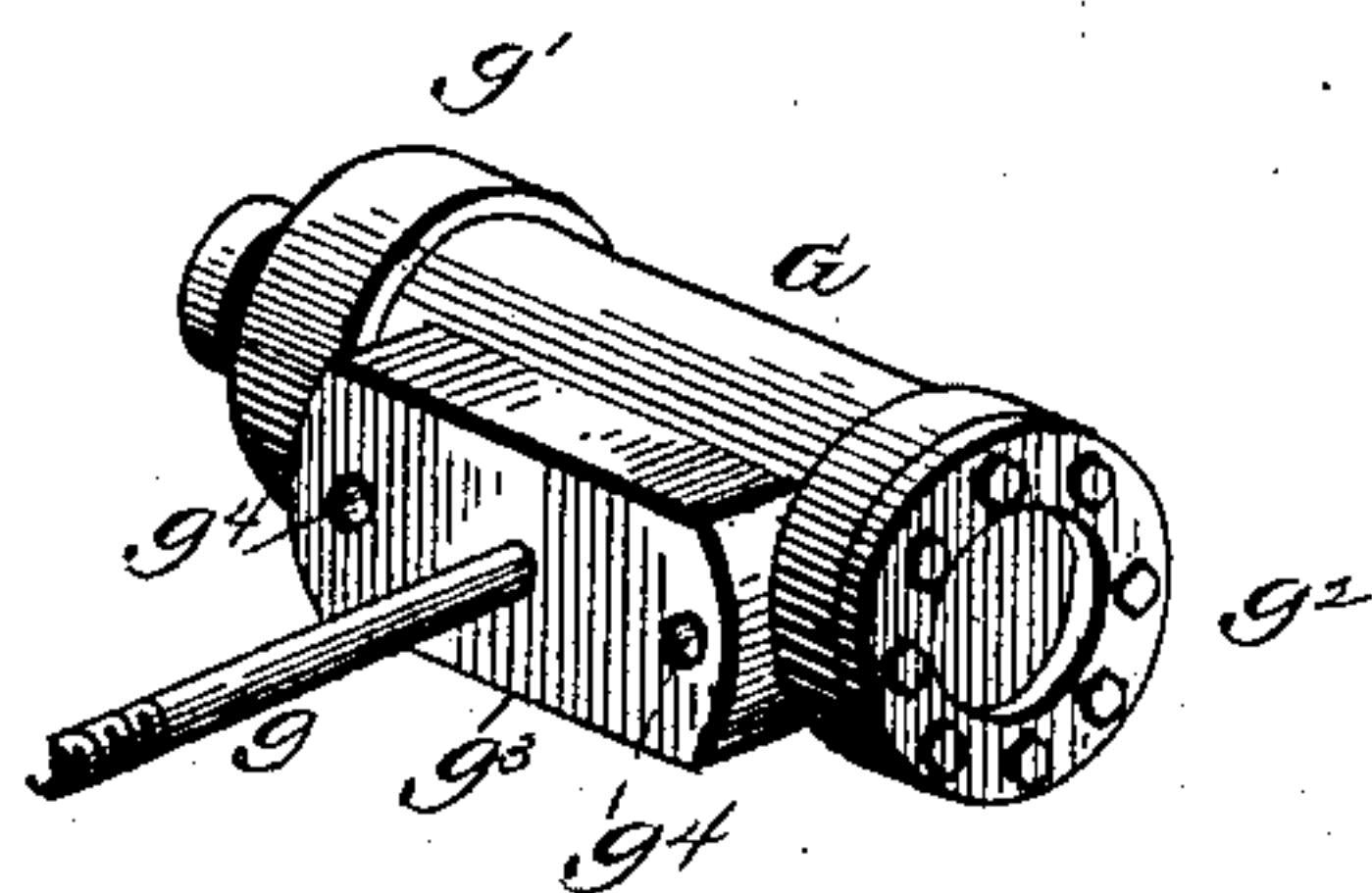
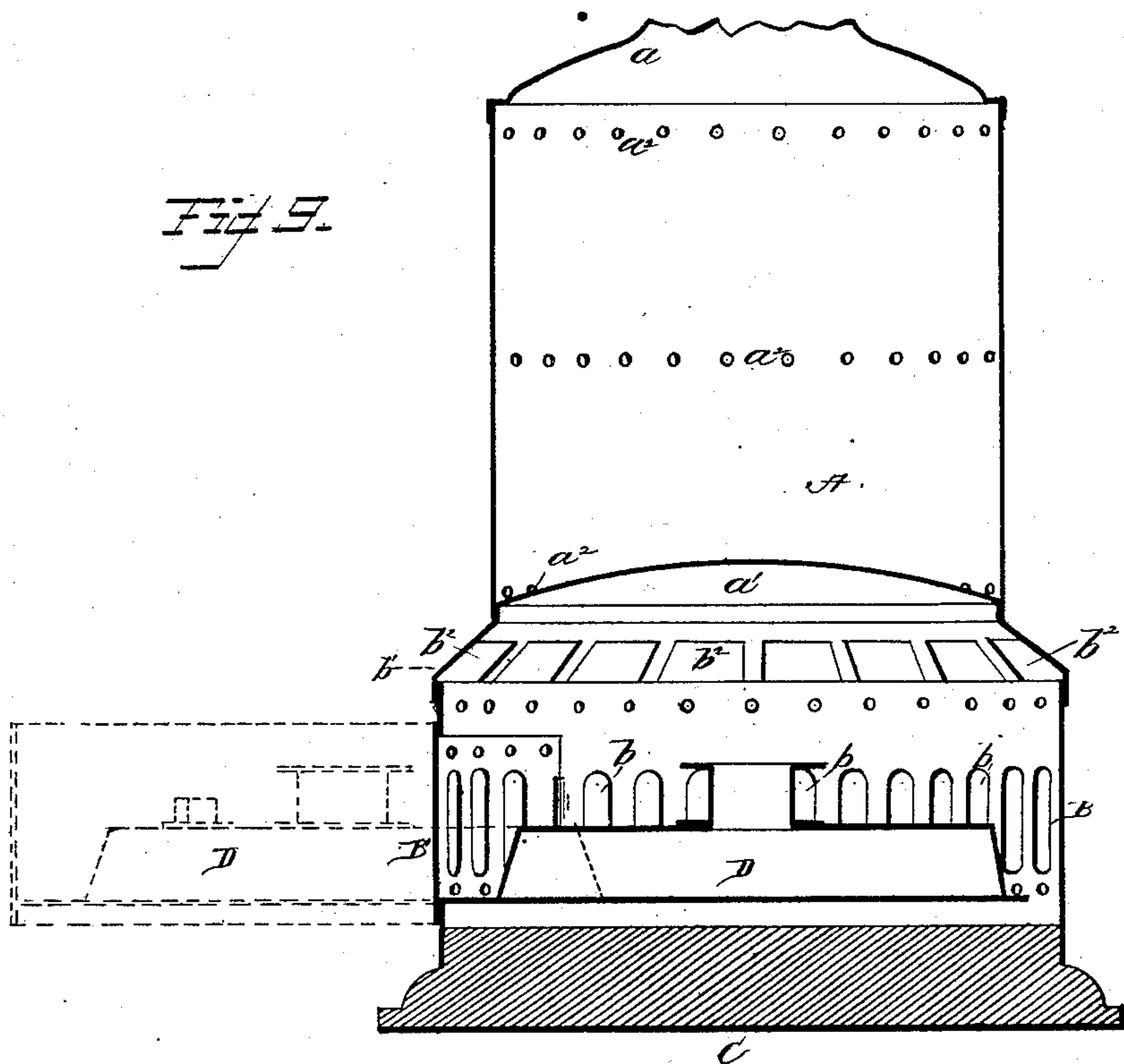


Fig 9.



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UNITED STATES PATENT OFFICE.

WILLIAM N. WEEDEN, OF NEW BEDFORD, MASSACHUSETTS.

TOY MOTOR.

SPECIFICATION forming part of Letters Patent No. 318,335, dated May 19, 1885.

Application filed September 5, 1884. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM N. WEEDEN, of New Bedford, in the county of Bristol and State of Massachusetts, have invented certain
5 new and useful Improvements in Toy Motors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, in which—

10 Figure 1 is a perspective view of my improved motor from the front side. Fig. 2 is an elevation of the same from the opposite side. Figs. 3 and 4 are elevations from opposite sides of the frame or trunk of the engine.
15 Fig. 5 is an elevation of the same from the rear. Fig. 6 is a vertical section of said frame upon lines xx of Figs. 3 and 4. Fig. 7 is a like view upon line $x'x'$ of Fig. 5. Fig. 8 is a perspective view of the cylinder from its inner
20 side; and Fig. 9 is a vertical central section of the boiler, fire-box, and base, the lamp being shown in dotted lines swung outward from beneath said boiler.

Letters of like name and kind refer to like
25 parts in the several figures.

The design of my invention is to produce in one organization a toy steam-motor which shall embody all of the leading features of the usual portable steam-engines; to which end said in-
30 vention consists, principally, in the construction of the trunk or frame of the engine, substantially as and for the purpose hereinafter specified.

It consists, further, in the construction and
35 combination of the cylinder, valve-seat, and steam-chest, substantially as and for the purpose hereinafter shown.

It consists, further, in the construction of the boiler, substantially as and for the purpose
40 hereinafter set forth.

It consists, further, in the construction of the fire-box and its combination with the boiler, substantially as and for the purpose hereinafter shown and described.

45 It consists, further, in a lamp-heater in which the lamp is secured to and swings outward with the door of the fire-box, substantially as and for the purpose hereinafter specified.

It consists, finally, in a toy motor in which
50 are combined in one organization elements

substantially as and for the purpose hereinafter shown.

In the annexed drawings, A represents the shell of my boiler, which has the form of a cylinder, and at its upper end is inclosed by
55 means of a dome-shaped head, a , while its lower end is in like manner inclosed by a crown-sheet, a' , that has, also, a dome shape, its edge, together with the inclosing edge of said shell, being extended downward below
60 its body so as to cause the lower end of said boiler to have a concave bottom. The head a and crown-sheet a' are secured to the shell A by solder or by any usual means, while around the upper and lower ends of said shell
65 and, if desired, at points between said ends, are formed rows of convex protuberances, a^2 , that in size and relative arrangement correspond to and resemble the heads of rivets, and thereby give to the boiler the appearance of having
70 the construction of ordinary steam-boilers. The boiler thus constructed is placed above and supported by a fire-box, which is composed of a cylinder, B, that is somewhat larger in diameter than said boiler, and has a series of openings, b , in and through its sides,
75 and a top, b' , that has an upward and inward inclination, and is also provided with openings b^2 . Said top b' is preferably an outward and downward extension of the crown-sheet
80 a' , but may, if desired, be constructed separately. The fire-box B rests upon and is secured to a circular base, C, constructed preferably from wood, and at one side is provided with a door, B' , that swings horizontally out-
85 ward, and affords access to the interior.

Heat for the vaporization of the liquid contents of the boiler is supplied by a lamp, D, which is secured upon the inner side of said door, and when the latter is closed is in proper
90 position for use, and by the opening of said door, is swung outward, so as to relieve said boiler from heat, and to be in position for trimming, filling, or lighting.

Air for the purpose of combustion enters
95 through the side openings, b , while the heated escaping products of combustion, after having been thrown against the crown-sheet a' , pass downward around the dependent edge of the same, and thence upward through the

openings b^3 . By thus temporarily confining said gaseous products within the concave lower end of the boiler a large proportion of their heat is given off to the latter, and a material saving in fuel effected.

The fire-box, like the boiler, is provided with encircling rows of protuberances, which resemble rivet-heads, and complete the resemblance of the apparatus to a regularly-constructed steam-boiler and fire-box. At the center of the head a is an opening, within and over which is secured the frame or trunk E of my engine. As seen in the drawings, said frame consists, generally, of a cylindrical vertical center, from one side of which a bracket-arm, e , extends horizontally outward, and terminates in a horizontal journal-box, e' , that is arranged at a right angle to the line of said arm.

At the vertical center of the frame E is an enlargement, e^2 , which upon two opposite sides is provided with parallel vertical faces, e^3 and e^4 . Within one of said faces e^4 are formed two horizontal recesses, e^5 and e^6 , that have the form shown in Fig. 3, and extend nearly to the ends of said face. From said upper recess, e^5 , an opening, e^7 , extends inward to the center of said frame E, and thence enlarged upward to the top of the latter, while from said lower recess, e^6 , a similar opening, e^8 , extends inward and thence downward, and affords communication with the interior of the boiler. Said opening e^8 is closed, when desired, by means of a screw-valve, F, which passes into the same through a horizontal threaded opening, e^9 .

Passing horizontally through the enlargement or steam-chest e^2 , midway between the longitudinal centers of the recesses or ports e^5 and e^6 , is an opening, e^{10} , which serves as a journal-bearing for the shaft g of an oscillating cylinder, G, of usual form. Said cylinder is preferably cast with and forms part of its front head, g' , while its rear head, g^2 , is provided with a peripheral thread, and is screwed into the correspondingly-threaded end of said cylinder. The cylinder G is provided upon one side with a valve-seat, g^3 , which corresponds in size and general shape with the face e^4 , and is provided near each end with a port, g^4 , that passes through the wall of said cylinder and opens into its interior. Said ports are arranged centrally in a line with the axis of said cylinder, so that when the latter is in position upon the frame E and is arranged horizontally said ports will come opposite to and be covered by the solid portion of said face e^4 , which separates the recesses or ports e^5 and e^6 of the latter, while, by turning said cylinder upon or with its pivotal shaft, one of said cylinder-ports g^4 will communicate with the upper frame-port, e^5 , and the other cylinder-port with the lower frame-port, e^6 . The shaft g passes entirely through the frame E, and has its end threaded to receive a nut, H, that operates to hold the cylinder G in position. Between said nut and the face e^3 is

placed a spring, h , or an elastic-washer, which produces a yielding pressure between the seats or faces e^4 and g^3 .

Within the cylinder G is a piston, of any usual construction, from which a rod, I, passes outward through the front cylinder-head, g' , and has its outer end pivoted upon a crank-pin, k , of a fly-wheel, K. Said fly-wheel is secured upon one end of a shaft, L, that is journaled within the box e' , while upon the opposite end of said shaft is placed a belt-pulley, M. If, now, steam is generated within the boiler A and the valve F is opened, said steam will pass through the opening e^8 into the port e^6 , and from the latter through one of the ports g^4 , into the cylinder G, where it will operate to move the piston to the opposite end of said cylinder. The oscillation of said cylinder will cause its said ports g^4 to be alternately placed in communication with the induction-port e^5 to admit a supply of steam into said cylinder and then placed in communication with the eduction-port e^6 to permit of the escape of said steam after use, such operations being continued and a constant movement of the driving-shaft L thereby produced. The escaping steam passes out of the upper end of the frame E, and in order to conduct the same to a sufficient height to prevent annoyance, and at the same time to render the toy more like an ordinary steam-engine in appearance, a stack, N, is placed upon and extends upward from said frame, and at its upper end has the usual flaring shape.

At the rear side of the frame E, directly opposite to the bracket-arm e , is a vertical pipe, e^{11} , which at its lower end communicates with the boiler, and at and below its upper end is considerably enlarged. A plug, e^{12} , closes the upper end of said pipe, while at a point near the lower end of its enlargement is provided a V-shaped notch, e^{13} , that extends into the interior and forms of said pipe a whistle. A screw-valve, O, passing horizontally through a threaded opening, e^{14} , into said pipe below said notch, enables steam to be shut off from or admitted to the same, as desired.

The frame, steam-chest, ports, journal-bracket, whistle, and valve-boxes for the throttle and whistle valves are cast in one piece, which requires but slight fitting in order to adapt it to the purpose intended, by which means a large saving in expense is effected, and no liability exists to a derangement of parts.

In order to complete the device it is only necessary that undue pressure should be guarded against, to which end a seat, P, for a safety-valve, P', is placed within the boiler-head a , at one side of the frame E, and said valve pivoted upon a lever, Q, which is in turn pivoted at one end upon an arm, o , that projects upward from one side of said valve-seat. A weight, R, suspended by a loop, r , from said lever Q, (and adjustable toward or from the fulcrum of the latter, renders the safety mechanism complete.

Having thus fully set forth the merits of my invention, what I claim is—

1. In a toy motor, in combination with the boiler, the steam - chest, journal - bracket, 5 whistle, throttle-valve box, and whistle-valve box, made in one piece of cast metal, supported upon the boiler, the throttle and whistle valves, the drive-wheel, the shaft thereof journaled in the bracket, and the oscillating 10 cylinder supported from the casting, provided with suitable ports, the piston and piston-rod, substantially as and for the purpose described.

2. As an improvement in toy motors, in combination with the boiler and the engine, substantially as described, with its valves and 15 whistles supported upon the boiler, the fire-box below the boiler, the door for the box, and the lamp supported from and swinging with the door, substantially as and for the purpose 20 described.

3. The hereinbefore-described toy motor, in which are combined in one organization, substantially as shown and described, the boiler, the fire-box provided with the hinged door, the lamp supported upon and swinging with 25 the door, the combined engine-frame, steam-chest, and whistle supported upon the boiler, the valves and valve-boxes therefor, the pivoted cylinder, the driving-shaft and fly-wheel, and the safety-valve, all combined into one or- 30 ganization as a toy motor, and adapted to operate in the manner substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of 35 August, 1884.

WILLIAM N. WEEDEN.

Witnesses:

CHARLES W. CLIFFORD,
WM. F. CASWELL.