

No. 626,948.

Patented June 13, 1899.

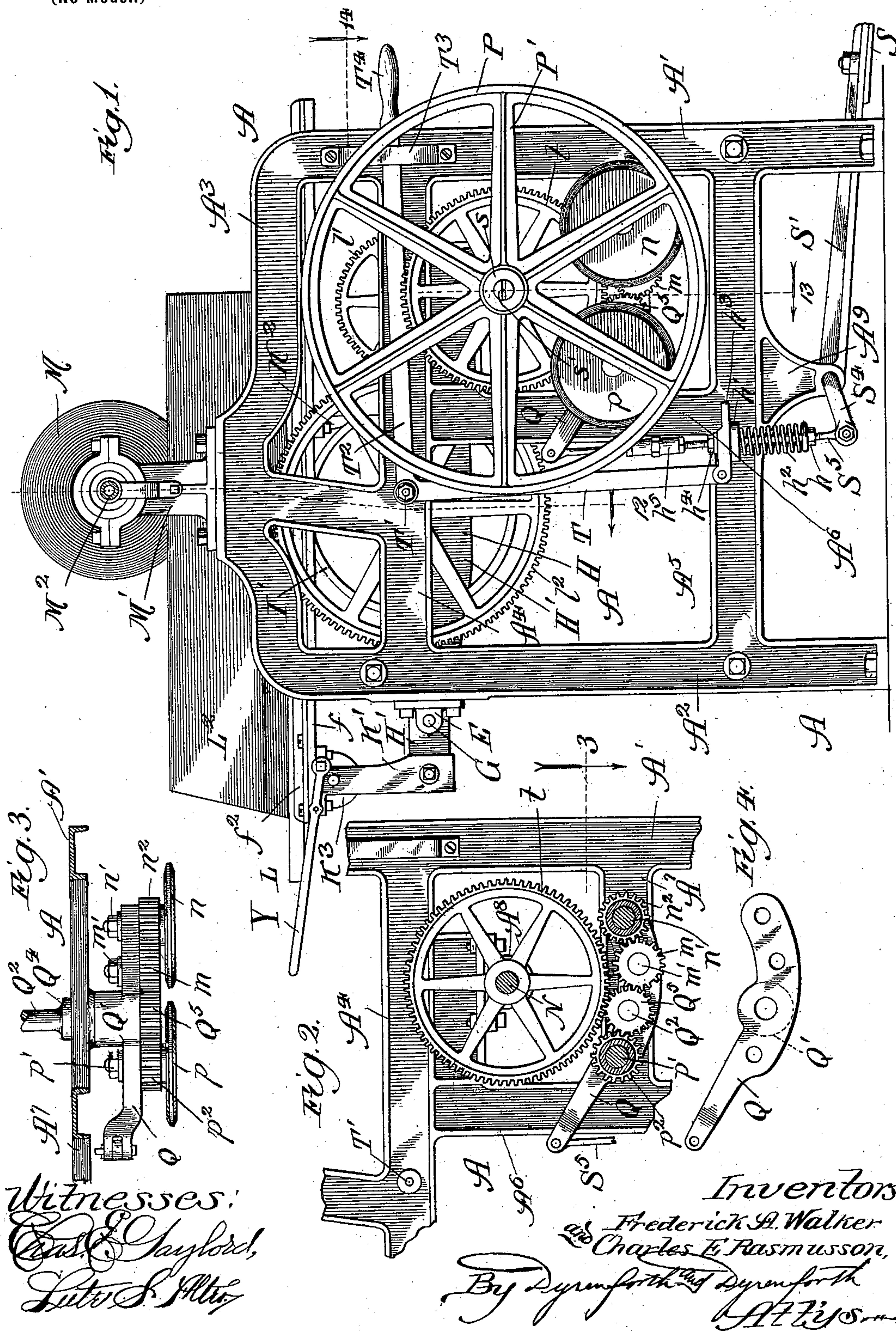
F. A. WALKER & C. E. RASMUSSEN.

IRONING MACHINE.

(Application filed Sept. 3, 1898.)

(No Model.)

7 Sheets—Sheet 1.



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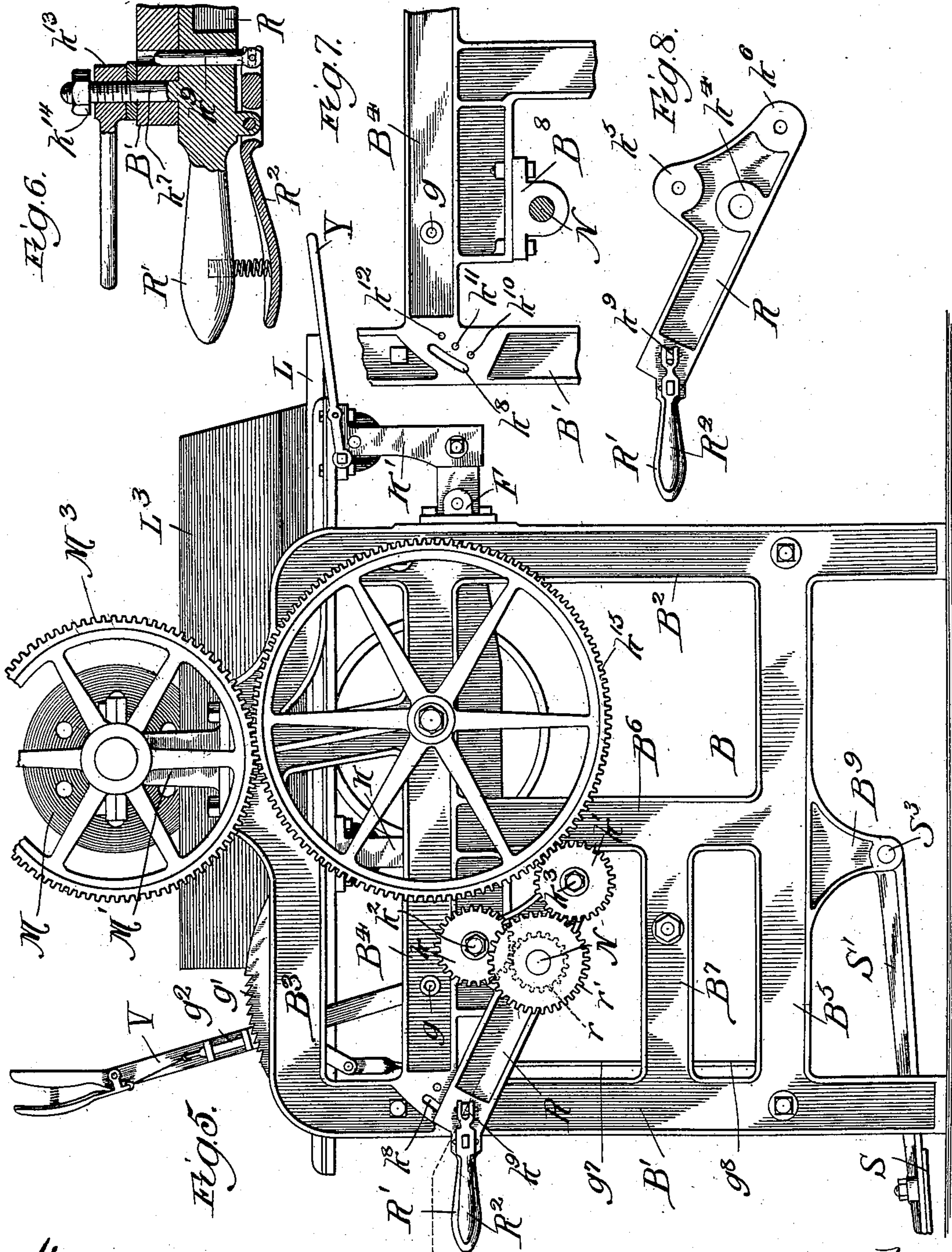
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Witnesses:
E. S. Gaylord,
L. S. Alt.

Inventors:
Frederick A. Walker
Charles E. Rasmussen,
By *Dyrenforth & Dyrenforth*
Attys.

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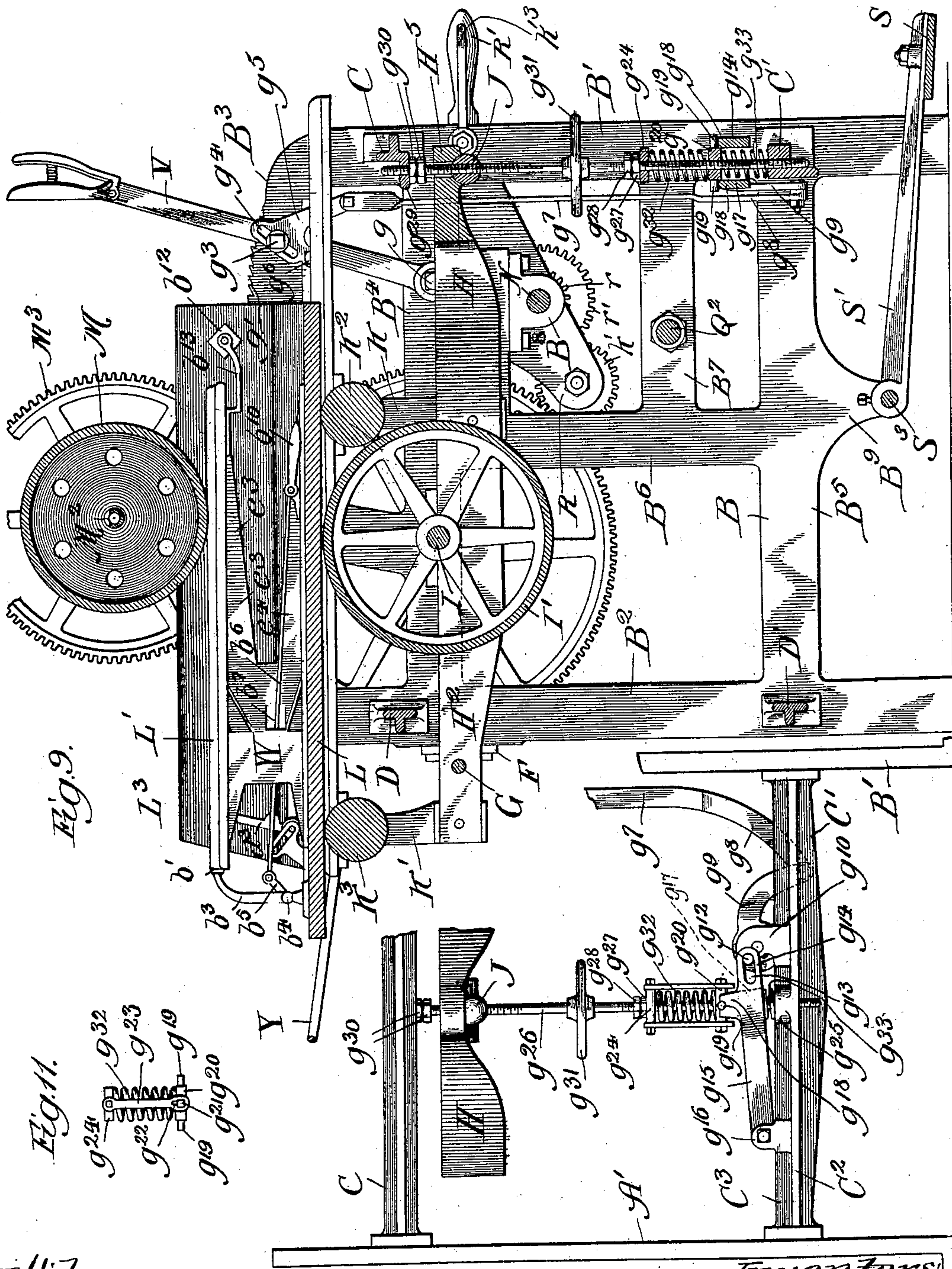
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7 Sheets—Sheet 3.



Witnesses:
Eust. Gaylord,
Lute S. Allen

Fig. 10.

Inventors:
Frederick A. Walker
and Charles E. Rasmussen,
By *Dyranforth & Dyrenforth*
Gattis, Inc.

No. 626,948.

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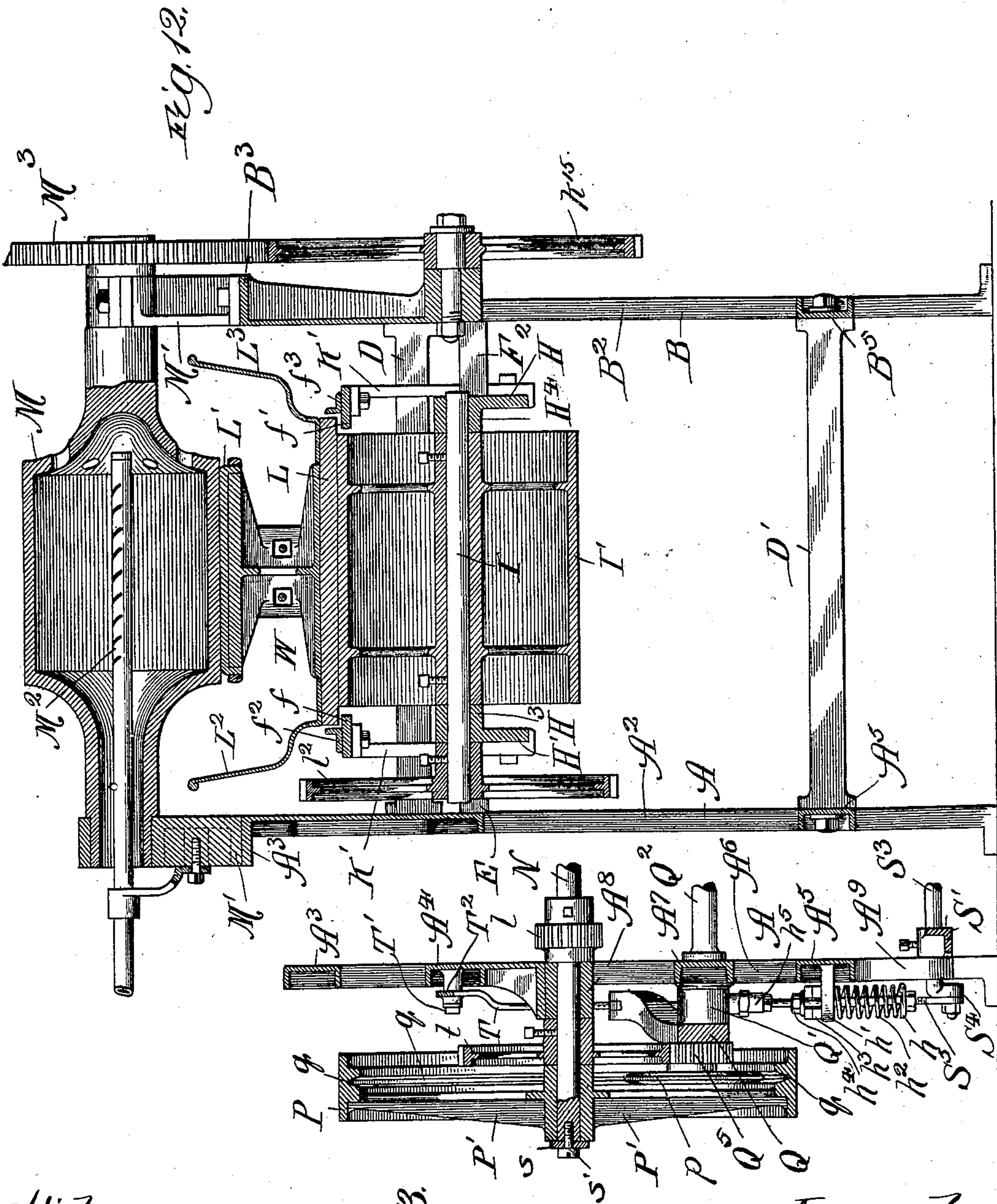
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7 Sheets—Sheet 4.



Witnesses:
E. Gaylord,
L. S. Allen

Fig. 13.

Inventors.
Frederick A. Walker,
and Charles E. Rasmussen
By *Dyrenforth & Dyrenforth*
Attorneys

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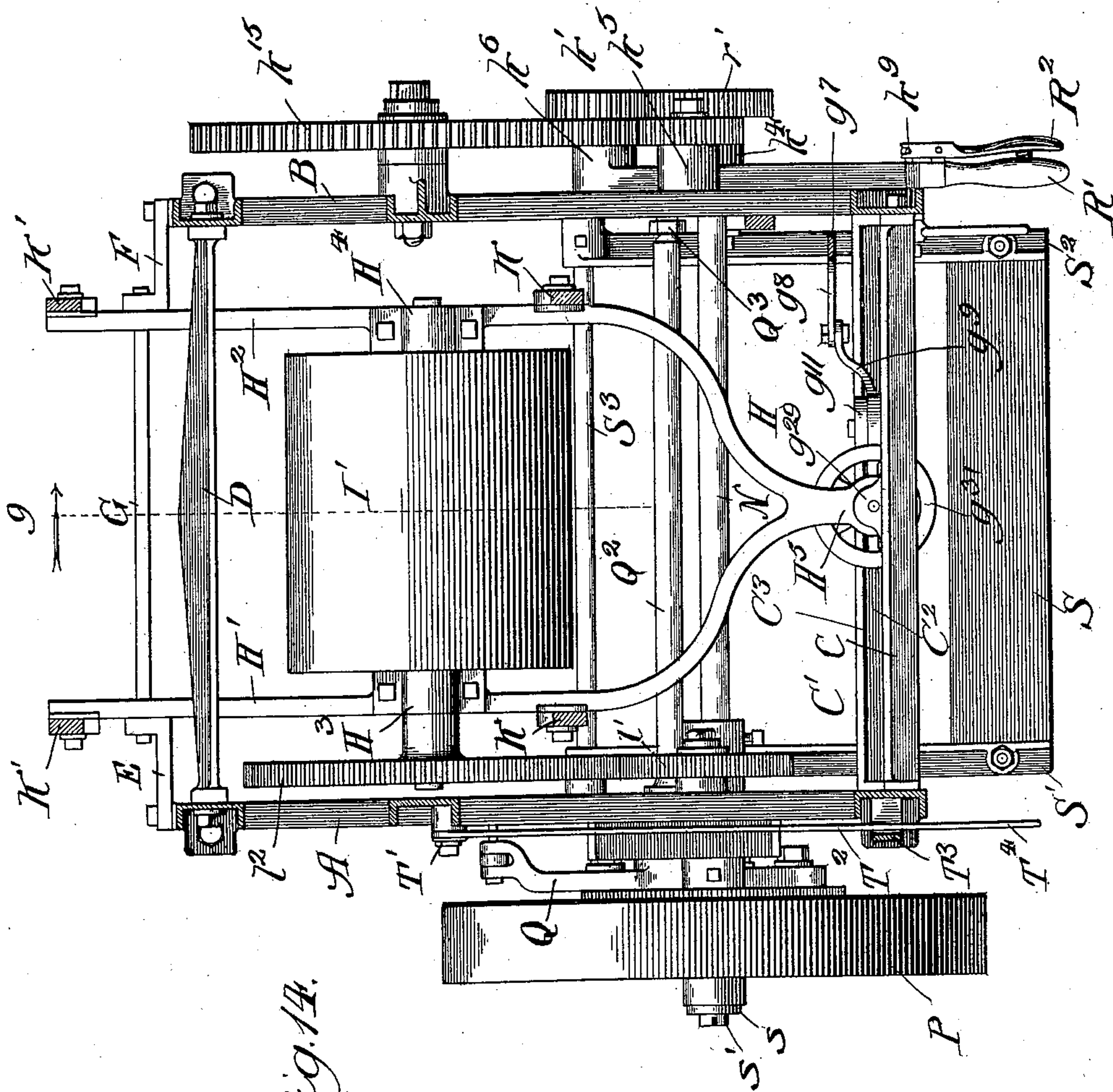


Fig. 14.

Witnesses.
E. S. Gaylord.
L. S. M. H.

Inventors:
Frederick A. Walker
and Charles E. Rasmussen.
By Dyrenforth & Dyrenforth
Attorneys

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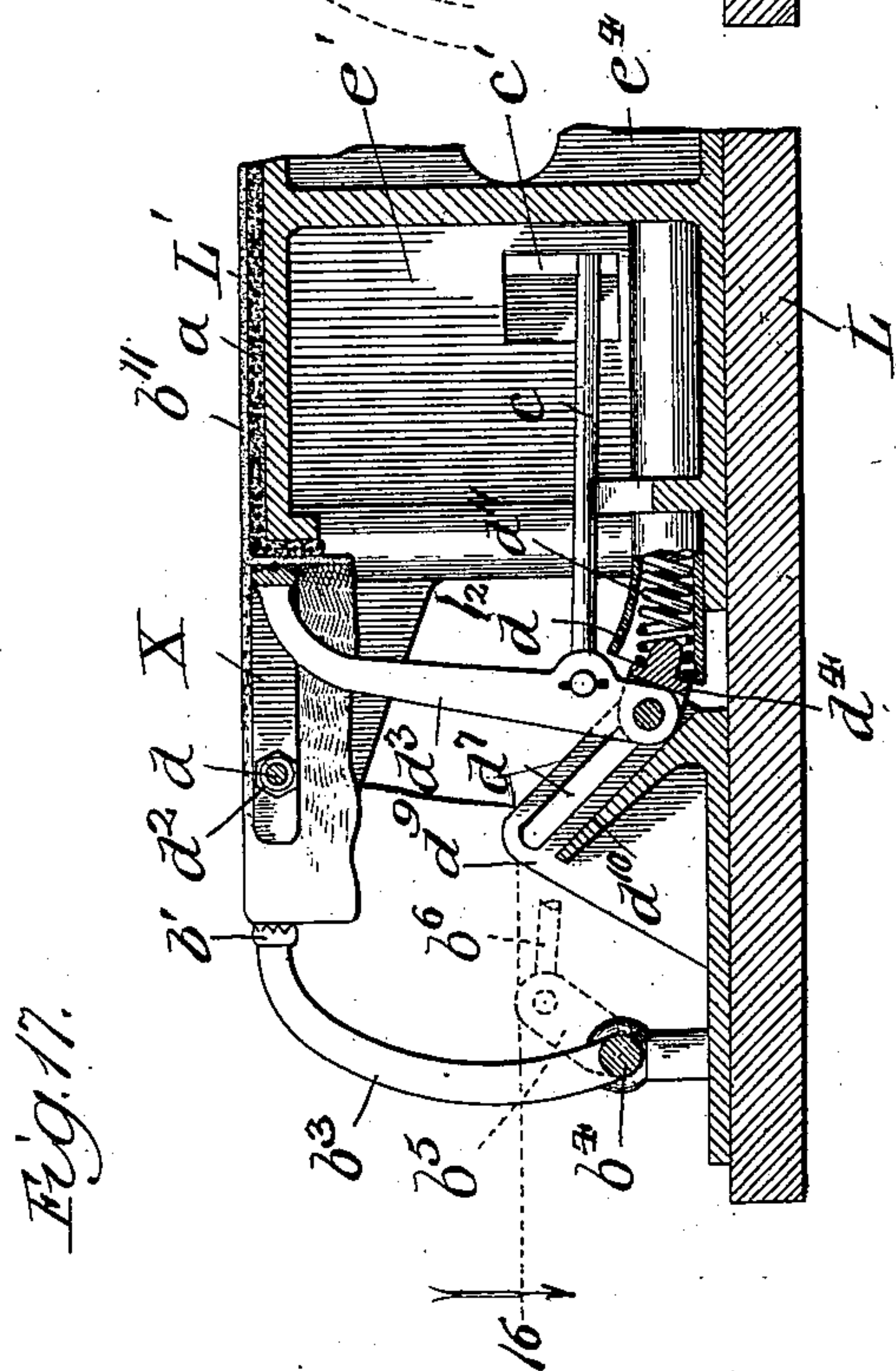
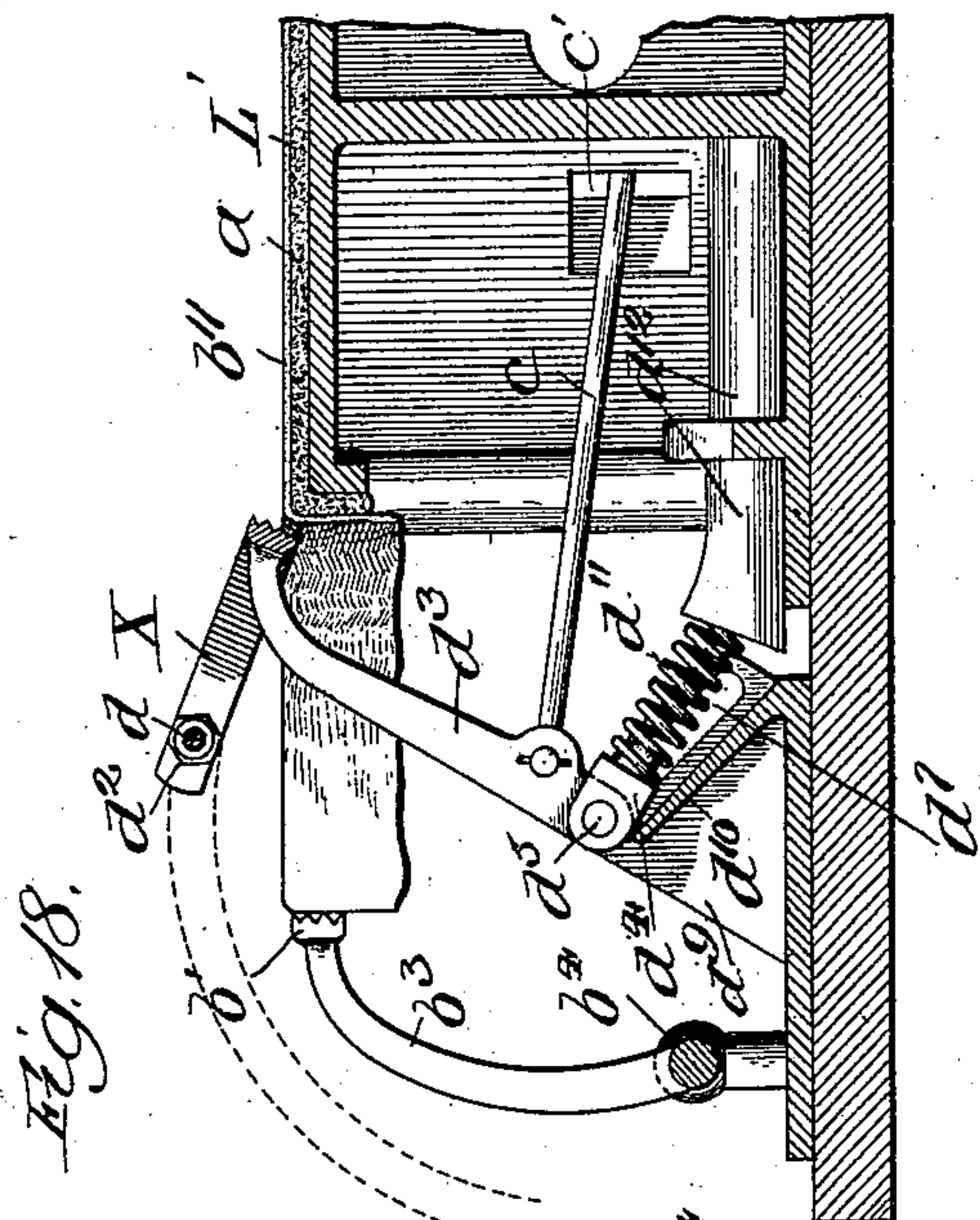
F. A. WALKER & C. E. RASMUSSEN.

IRONING MACHINE.

(Application filed Sept. 3, 1898.)

(No Model.)

7 Sheets—Sheet 7.



Witnesses:
 Jas. P. Gaylord,
 Lute S. Allen.

Inventors
Frederick A. Walker
and Charles E. Plasmussen,
By *Dyrenforth & Dyrenforth*
Attys.

UNITED STATES PATENT OFFICE.

FREDERICK A. WALKER AND CHARLES E. RASMUSSEN, OF CHICAGO,
ILLINOIS, ASSIGNORS TO THE S. H. SINCLAIR COMPANY, OF SAME
PLACE.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 626,948, dated June 13, 1899.

Application filed September 3, 1898. Serial No. 690,202. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK A. WALKER and CHARLES E. RASMUSSEN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Ironing-Machines, of which the following is a specification.

Our invention relates especially to an improvement in ironing-machines of the type employing a reciprocating ironing-board and an ironing-roll coacting therewith, though certain features of the invention may be employed in machines of other types.

Our object is to provide a machine of generally-improved construction wherein the means for reciprocating the ironing-board, the means for regulating its adjustment with relation to the roll, the means for varying the relative speeds of the ironing-surfaces, and the means for securing the article to be ironed to the ironing-board are within ready reach of and under easy and perfect control by an operator located in front of the machine.

Generally stated, the invention consists in an improved ironing-board and clamping means for securing a garment to the board, in an improved gearing for regulating the relative speeds of the roll and ironing-board, in improved means for adjusting the ironing-board with relation to its roll or, perhaps, more properly, for regulating the frictional contact between the ironing-board and the friction-roll by which it is reciprocated, and, finally, in certain other novel features of construction and combinations of parts hereinafter described.

In the accompanying drawings, Figure 1 is a view in right side elevation, facing with the machine, of our improved ironing-machine; Fig. 2, a broken detail view of a portion of the right side of the frame, showing the train of gears employed for effecting a reversal of direction of movement of the ironing-board; Fig. 3, a plan sectional view, taken on line 3 of Fig. 2, of the same detail, showing in addition two friction-disks by the employment of which alternately the reciprocatory movement of the ironing-board is secured; Fig. 4, a detached view of the rock-arm carrying said reversing-gears; Fig. 5, a view of the left-

hand side of the machine, showing the gearing by means of which a change in speed for the ironing-roll is obtained; Fig. 6, a sectional view on line 6 of Fig. 5, showing a detail of the operating-lever for moving said last-named gears; Figs. 7 and 8, details of the portion of the frame which receives said lever and of the detached lever itself; Fig. 9, a vertical longitudinal section taken on line 9 of Fig. 14, the section-plane being shifted to cut the base or support of the ironing-board close to one side piece; Fig. 10, a broken view of the front portion of the frame and the mechanism for adjusting the "swing" or pivoted frame in which is journaled the friction-roll which moves the ironing-board; Fig. 11, a detail of a spring shown in Fig. 10; Fig. 12, a transverse vertical section taken on line 12 of Fig. 1; Fig. 13, a sectional view on line 13 of Fig. 1, showing a driving-pulley, which is given a continuous rotary movement in one direction and from which all the parts are driven as desired through the medium of the friction-wheels shown in Fig. 3 and which are caused to contact alternately with the inner surface of the pulley-rim; Fig. 14, a plan section taken on line 14 of Fig. 1; Fig. 15, a top plan view of the ironing-board and attendant parts; Fig. 16, a top plan sectional view of the base of the ironing-board, the section being taken as indicated at line 16 on Fig. 17; Fig. 17, a broken vertical section on line 17 of Fig. 16, showing the central or neck clamp closed; and Fig. 18, a similar view showing the neck-clamp released.

The main frame is conveniently formed of right and left side frame-sections A and B, respectively, upper and lower cross-bars C C', respectively, connecting the front ends of said sections, and upper and lower cross-bars D D', respectively, connecting the rear ends of said sections. The right section A comprises, preferably, front and rear uprights A¹ A², top bar A³, horizontal connecting-bars A⁴ A⁵, a vertical bar A⁶, joining bars A⁴ and A⁵, and a horizontal bar A⁷, joining bars A¹ and A². The section B is similarly constructed, the parts being designated by the letter B, with numerals corresponding to those used in the description of the section A.

Upon the rear uprights A² B² at a conven-

ient height are brackets E and F, connected by a shaft G, upon which is pivoted near its end a yoke-like frame H, the sides H^1 H^2 of which are supplied with bearings H^3 H^4 , in which is journaled the shaft I of a friction-roll I'. At its front end the yoke is provided with a head H^5 , having on its under surface a semispherical cavity which receives a ball J, adjustably connected with mechanism for supporting the front end of the yoke in a manner to permit the same to be readily raised or lowered through the medium of said mechanism.

At opposite sides of the friction-roll I' the yoke is supplied with standards K and K', in which are journaled front and rear rolls K^2 K^3 , respectively, whose upper surfaces are approximately in a plane with the upper surface of said friction-roll. Upon these rolls rests the flat-bottomed base piece or support L of the ironing-board L'. Above the ironing-board, in such position that the board may be brought into close contact therewith, is an ironing-roll M, journaled in central uprights or standards M', supported by the top bars A^3 and B^3 of the frame-sections A and B and supplied with any suitable heating means, as with the gas-burner M^2 . (Shown in Fig. 12.) The roll M is supplied at the left end (facing with the machine) with a gear M^3 . The ironing-board L', through the medium of the friction-roll I', and the ironing-roll M, through the medium of the gear M^3 , are given movements capable of reversal and change in relative surface speeds by gearing now to be described.

Journaled in suitable bearings A^8 and B^8 , depending from the horizontal bars A^4 and B^4 of the sections A and B, is what may be termed a "main" shaft N, which projects at both ends beyond the side frame-sections. On the outer side of the bearings A^8 at the right side of the machine the shaft is supplied with a rigidly-attached gear t , Fig. 13, and adjacent thereto with a loose pulley P, held in place by a cap-piece s , secured to the shaft end by a screw-bolt s' , and outside the bearing B^8 at the left side of the machine it is provided with two rigidly-joined or integrally-formed gears r and r' of different diameters.

By preference the pulley P is provided with spokes or arms P' , having their inner surfaces in a vertical plane, while the outer surfaces are tapering or ribbed to give the requisite strength. The rim of the pulley is not symmetrically placed on the spokes, but projects inward farther than it does outward, and this widened inner rim portion is provided on its interior surface with an annular groove q , preferably of V-shaped cross-section, which receives the beveled peripheries of two friction-disks p and n . The direction of movement of the ironing board and roll is regulated by these two disks, which are for this purpose journaled on studs p' and n' , carried by a rock-arm Q, capable of moving back and forth through a small arc to cause the disks

to engage the pulley alternately. The rock-arm Q is provided centrally with a boss Q' , at which point it is pivotally mounted on the projecting end of a shaft Q^2 , fixed in the bars A^7 and B^7 , where it is confined longitudinally by a bearing Q^3 on the inner surface of the bar B^7 , Fig. 14, and a shoulder Q^4 , which bears against the inner surface of the bar A^7 , Fig. 3. Outside of the rock-shaft, on the extreme end of the shaft, is journaled an idler-pinion Q^5 . Journaled on the studs n' and p' to rotate with the disks n and p and shown in Figs. 2 and 3 as formed integrally with the disks are pinions n^2 and p^2 , the former of which meshes with an idler m , journaled on a stud m' and in mesh with the pinion Q^5 , and the latter of which meshes directly with the pinion Q^5 . The pinion Q^5 is in mesh with the gear t on the shaft N, and it will be observed that motion is transmitted from the loose pulley P on the shaft N to the disk which happens to engage the pulley and thence through one set or train of the pinions just described back to the shaft N. It will be observed, also, that inasmuch as there is one more idler in one of the trains than in the other the direction of movement of the shaft N will reverse with a change from one disk to another, as the pulley-contacting disk.

At the inner side of the journal-box A^8 the shaft N is supplied with a rigidly-attached pinion l , which meshes with an idler l' , Figs. 1 and 14, which in turn meshes with a gear l^2 , rigidly secured to the shaft I of the friction-roll.

At the opposite side of the machine the members r r' , Fig. 5, of the compound gear on the shaft N mesh with idlers k and k' , respectively, journaled on studs k^2 k^3 , carried by a rock-arm R. An idler k^{15} , with which either idler k or k' may be caused to mesh, transmits motion to the gear M^3 of the ironing-roll. The rock-arm R is provided with a boss k^4 , Figs. 8 and 14, at which point it is perforated and pivotally mounted on the shaft N, between the journal-box B^8 and the compound gear on the end of the shaft adjacent thereto. It is further provided with bosses k^5 and k^6 , at which points it is perforated to receive the idler-studs k^2 and k^3 above mentioned. The rock arm or lever R is operated by a handle R' , near which handle the lever is provided with an inwardly-projecting bolt k^7 , which moves in a slot k^8 in the upright B' of the frame. The position of the lever is regulated by a small auxiliary spring-held lever R^2 , pivoted on the lever R and supplied at one end with a pivotally-secured pin k^9 , which projects through a hole in the lever R and into any one of the three perforations k^{10} , k^{11} , and k^{12} in the upright B' , according to the position of the lever R. The lever R is further secured in any given position by means of the clamping action of a nut k^{13} , supplied with a hand-lever, as shown, and a lock-nut k^{14} , both of which nuts are upon the bolt k^7 .

By means of the lever-and-gear mechanism

just described a change in the speed of the ironing-roll is effected without any positive change in the speed of the ironing-board.

In Figs. 1 and 14 is shown the means for throwing the rock-arm Q to different positions to cause either of the friction-disks p and n to engage the pulley P or both to clear it, as desired. Extending crosswise of the main frame at the front of the machine and close to the floor is a foot-board S, supported by forwardly-projecting arms S' and S'' , rigidly secured to a rock-shaft S^3 , journaled in bearings $A^9 B^9$, depending from the horizontal bars A^5 and B^5 of the side sections of the frame. Outside the bearing A^9 the shaft is provided with a rock-arm S^4 , the end of which is pivotally joined to the lower end of a connecting-rod S^5 , which in turn is pivotally joined at its upper end to the rear end of the rock-arm Q, which carries the friction-disks p and n . Confined between a collar h at the lower end of the rod S^5 and an outwardly-projecting lug h' on the frame-bar A^5 , through which the connecting-rod loosely passes, is a coil-spring h^2 , which serves normally to hold the rock-arm S^4 depressed, so as to bring the disk p into engagement with the pulley-rim. Upon the lug h' is a sliding block h^3 , slotted to receive the connecting-rod S^5 and thicker at its rear portion than at its front portion. Pivotally joined to the rear end of the sliding block at the lower end of its vertical member is a bell-crank lever T, pivoted to the frame at T' and provided with a forwardly-projecting member T^2 , the movement of which is limited by a guard T^3 , and which ends at the front of the machine in a handle T^4 . Above the sliding block on the connecting-rod is a collar h^4 , which is engaged by the upper or cam surface of the thick portion of the block h^3 when the block is shoved forward by the action of the bell-crank. This movement raises the connecting-rod against the action of its spring and locks the rock-arm Q in such position that neither of the friction-disks engages the pulley P. Downward pressure upon the foot-board or treadle S releases the pressure upon the cam-surface of the sliding block, and the block is withdrawn by the action of gravity upon the horizontal arm T^2 of the bell-crank. The connecting-rod is of two parts, joined by a right and left threaded union h^5 to permit adjustment in length.

In Figs. 5, 9, 10, and 14 is shown mechanism for adjusting the height of the front end of the swing or pivoted frame carrying the friction-roll I'. A hand-lever V is pivotally secured at its lower end to the horizontal bar B^4 of the frame at a point g near the front end of the machine. Its position is regulated by means of a toothed segment of a circle g' upon the top bar B^3 of the frame and a lever-operated spring-held pawl g^2 , carried by the lever V. Near its center the lever V is provided with a bolt or stud g^3 , which moves in a slot g^4 in the upper end of a connecting-link g^5 , which is also pivotally joined at g^6 to

a part rigid with the main frame. The lower end of the link g^5 is pivotally joined to the upper end of a connecting-rod g^7 , having a laterally-curved lower end g^8 pivotally joined to the long end of a curved lever g^9 , pivoted between lugs $g^{10} g^{11}$ on the lower front cross-bar C' of the frame. The bar C' is of T-shaped cross-section, with the stem C^2 projecting to the front, and the lug g^{10} is cast on the stem, while the lug g^{11} is cast on the upwardly-projecting portion C^3 of the cross of the T. The short end of the lever g^9 is shown as a disk, on the front side of which is a pin g^{12} , which engages a slot g^{13} on the front or long fork g^{14} of a bifurcated lever g^{15} , the stem of which is pivoted to a lug g^{16} on the cross-bar C' . The long fork g^{14} and the short fork g^{17} , Fig. 9, of the bifurcation are provided with lugs g^{18} , grooved to support the ends of a pin g^{19} , which projects forwardly and rearwardly from a horizontally-disposed block g^{20} , slidably connected by means of bolts g^{21} with slots g^{22} in the lower ends of upright pieces g^{23} , having secured between their upper ends a second block g^{24} . Passing loosely through perforations in these blocks and through the stem C^2 of the cross-bar C' at its center, where is supplied a boss g^{25} , is a vertical shaft g^{26} , the upper portion of which is threaded to receive the ball J, above mentioned, and the lower portion of which is threaded to receive a collar-forming nut and locking-nut $g^{27} g^{28}$ bearing upon the block g^{24} . The shaft projects above the ball J and passes loosely through the head H^5 of the swing and a lug g^{29} on the top cross-bar C. Nuts g^{30} serve to limit the upward movement of the shaft and of the front end of the swing. The shaft is equipped with a hand-wheel g^{31} for convenience in adjusting. A quite heavy spring g^{32} is coiled about the shaft between the blocks g^{20} and g^{24} , which allows some give to the swing as the ironing-board passes beneath the ironing-roll. A second coil-spring g^{33} , confined between the cross-bar C' of the frame and the block g^{20} , serves to break the shock of a quick lowering of the swing by means of the hand-lever V. The lever g^9 , it will be observed, is bent rearwardly to cause its end to clear the vertical flange C^3 of the cross-bar as the lever is lowered. By means of the mechanism just described the front end of the swing may be quickly raised or lowered to accommodate the ironing-board to the work being done, while the parts may be readily adjusted with relation to each other to cause the final adjustment of the swing to fall within the range of action of the hand-lever V. The link g^2 , it will be observed, is swung about the stud g^6 by the movement of the stud g^3 within the slot g^4 . The upper end of the link g^7 is thus given a movement in such an arc as to afford the desired range of vertical movement with but little forward and rear movement.

As shown in Figs. 1, 5, 9, and 12, the supports K and K', which carry the rolls K² and

K^3 , serve also to support guides for the ironing-board, comprising flat strips $f f'$, whose inner margins project beneath the side margins of the board, and angle-irons $f^2 f^3$, which serve to confine the board laterally.

The ironing-board L' , Figs. 9 and 12 and 15 to 18, inclusive, is supported on a cast-metal chair W , having forwardly and inwardly converging vertical wings $e e'$, which meet at e^2 , from whence upper and lower longitudinal ribs $e^3 e^4$ extend to near the front end of the board. The chair is provided with feet e^5 , which rest upon the base-plate L and are suitably secured thereto. Attached to the base-plate are upwardly and outwardly flaring sheet-metal side pieces L^2 and L^3 , which serve to prevent any portion of the garment being operated upon from becoming entangled in the relatively-moving parts of the machine.

The improved ironing-board here shown is one for use in ironing shirts. The board proper is supplied with a neckband-receiving recess, which preferably extends materially beyond a half-circle. To work in a recess extending beyond a half-circle, we have devised a clamp for the neckband which has a movement peculiarly adapted to the function it has to perform.

X is the neck-clamp of circular form, which may extend throughout or in excess of a half-circle. The ends of the arc are joined by rods $d d'$, joined by a right and left union d^2 , by means of which a change in the outline of the arc to conform to a circle of greater or less diameter is effected. The neck-clamp is carried by an arm d^3 , which is rigidly secured to the clamp at the center of the arc and is pivotally joined at its lower end to a block d^4 , provided with laterally-projecting pins $d^5 d^6$, which move in inclined slots d^7 in guides $d^8 d^9$, which flank the path of the block and are joined by an inclined web d^{10} , affording a bottom plate, upon which the block slides. A spring d^{11} , confined in a socket d^{12} , with which the base of the chair W is provided and bearing against the block, serves to force the block upward along its guides when the operating-lever is released. Pivotaly joined to the arm d^3 , near the lower end thereof, is a connecting-rod c , which extends forwardly through a perforation c' in the web e' and is pivotally joined at its front end to a rock-arm c^2 , carried by a rock-shaft c^3 , provided with an operating-handle c^4 .

It will be observed that with the mechanism just described the neck-clamp is given a forward and downward movement in closing, which enables it to enter the circular recess and causes it to draw the neckband down firmly and evenly into the recess, and in opening the clamp is given an upward and rearward movement, which causes it to clear that portion of the ironing-board which projects to the rear beyond the half-circle. With the shoulder-clamps such a complex movement is not required, and accordingly the shoulder-clamps $b b'$ are carried by rock-arms $b^2 b^3$ on

a rock-shaft b^4 , operated by an arm b^5 , linked by means of a connecting-rod b^6 , passing forwardly through an opening b^7 in the web e of the chair W to the arm b^8 of a rock-shaft b^9 , provided with an operating-handle b^{10} .

In Figs. 17 and 18 a cloth piece b^{11} , covering a felt piece a , is represented as fastened to the board. Any suitable means for securing the skirt of the shirt to be operated upon may be supplied.

In Fig. 9 is shown a block b^{12} of square cross-section, which is pivotally secured at its ends to brackets b^{13} , (one only of which is shown,) projecting forwardly from the front end of the board and serving as a means for securing the skirt.

In Figs. 1 and 9 is shown a U-shaped guard Y , which is secured at its forwardly-projecting ends to the uprights K' , and the bottom or web of which is in the path of the rear end of the ironing-board and prevents the board from moving to the rear beyond a predetermined point.

The operation is as follows: Motion is imparted to the pulley P from any suitable source, and the operator by touching the foot-lever S with his foot releases the block h^3 , which is withdrawn from beneath the collar h^4 on the connecting-rod S^5 , and the rod is immediately forced down by the spring h^2 till the friction-disk p is caused to contact with the pulley-rim. Motion in a certain direction (according to the direction of movement of the pulley) is now communicated through the pinions p^2 , Q^5 , and gear t to the shaft N , upon which the pulley P is loosely mounted. From the shaft N motion is imparted to the friction-roll I' through the pinion l , Fig. 13, idler l' , Fig. 14, and gear l^2 . Motion is also imparted from the shaft N to the ironing-roll M through the medium of the large or small member of the compound gear $r' r$ and connected gearing, according to whether the greater or less speed of the ironing-roll is desired. The gearing is such of course that the contacting surfaces of the ironing-board and ironing-roll move in the same direction. When the ironing-board has run its length and a reversal is desired, the operator presses the foot-treadle clear down, thus throwing the disk n into contact with the pulley-rim and withdrawing the disk p from contact. This effects a reversal in the direction of motion of the shaft N by reason of the extra pinion in the train of the gearing connected with the disk n and causes, necessarily, a simultaneous reversal of the ironing-board and ironing-roll.

Preparatory to the beginning of the ironing operation a shirt is placed upon the ironing-board and clamped at the shoulders and neckband. The neck-clamp, by reason of the complex movement above described, serves to draw the neckband down evenly, while the portion of the ironing-board which projects beyond the half-circle permits the ironing action to extend to the entire bosom-surface of the shirt surrounding the neckband.

Changes in details of construction within the spirit of our invention may be made by those skilled in the art. Hence we wish to be understood as intending no limitation by the above particular description, given for the sake of perspicuity, except as shall appear from the appended claims. The coacting ironing board and roll, for instance, may be replaced, so far as certain novel features of the gearing are concerned, by any coacting movable ironing members to which independent positive movements are given, the motion being imparted from a common source in substantially the manner above described.

What we claim as new, and desire to secure by Letters Patent, is—

1. In an ironing-machine, the combination with the frame, of movable ironing members, a shaft having gear connection with said members, a pulley loosely journaled to rotate constantly in one direction, friction-disks capable of alternate contact with said pulley, and gear connections between said disks and said shaft for securing a reversal in the direction of movement of the shaft with a change in pulley contact from one disk to the other, the whole operating to effect reversals in direction of movement of the ironing members, substantially as and for the purpose set forth.

2. In an ironing-machine, the combination with the frame, of movable ironing members, a shaft having gear connection with said members, a pulley loosely journaled on said shaft, disks movably journaled to permit alternate contact with the pulley, gears connecting the disks and said shaft for effecting a reversal of the shaft with a change in pulley contact from one disk to another, and means for shifting the disks, substantially as and for the purpose set forth.

3. In an ironing-machine, the combination with the frame, of an ironing-board and a coacting ironing-roll, a shaft journaled in the frame having gear connection with each of said ironing members, a pulley loosely journaled on said shaft, a rock-arm pivoted to the frame, a gear rigid with the shaft, a pinion journaled concentrically with the pivotal point of said rock-arm and meshing with the gear on said shaft, a pinion journaled on the rock-arm at one side of said pivotal point and meshing with said concentrically-journaled pinion, a friction-disk rigid therewith, an idler-pinion journaled on the rock-arm at the opposite side of its pivotal point and meshing with said concentrically-journaled pinion, a pinion journaled on the rock-arm flanking the idler and meshing therewith and provided with a rigidly-attached friction-disk, and means for oscillating the rock-arm, substantially as and for the purpose set forth.

4. In an ironing-machine, the combination with the frame, of a reciprocating ironing-board, an ironing-roll journaled in the frame above said board, a shaft journaled in the frame, gear connection between said shaft and the ironing-board, a rock-arm pivoted on

said shaft near one end, a gear composed of two members of different sizes rigid with the shaft adjacent to the rock-arm, two idlers journaled on the rock-arm in mesh with said compound gear members, gearing connected with the ironing-roll with which either one of said idlers may be caused to engage at will, and means for rotating said shaft alternately in different directions, substantially as and for the purpose set forth.

5. In an ironing-machine, the combination with the frame, of a reciprocating ironing-board, an ironing-roll above said board, gearing connected therewith, a shaft journaled in the frame, a large and small member compound gear at one end of said shaft, a rock-arm pivoted on said shaft, idlers journaled on said rock-arm meshing with the members of said compound gear, either one of which is thrown at will into mesh with the gearing connected with the ironing-roll, gearing connected with said shaft for reciprocating the ironing-board, a gear on the shaft at the side of the machine opposite the ironing-roll gears, a pulley loosely journaled on the shaft adjacent to the last-mentioned gear, friction-disks alternately movable into contact with the pulley, and gears connecting each of said friction-disks with the gear on the adjacent end of said shaft, whereby a reversal of the movement of the shaft may be effected, substantially as and for the purpose set forth.

6. In an ironing-machine, the combination with the frame, of a movable ironing member, a shaft journaled in the frame, a pulley loosely mounted thereon, two friction-disks within the rim of said pulley and alternately movable into contact therewith, gears connecting each disk to the shaft whereby a reversal of the shaft is obtained with a change in the pulley-contacting disks, and gears connecting the shaft to said ironing member, substantially as and for the purpose set forth.

7. In an ironing-machine, the combination with the frame, of a movable ironing member, a shaft journaled in the frame, a loosely-journaled pulley, friction-disks alternately movable into contact with the pulley, gears connecting each disk to said shaft, gears connecting the shaft and said ironing member, and spring and foot operated mechanism for moving the disks alternately into and out of contact with said pulley, the whole operating to give to the shaft, and through it to the ironing member, alternate movements in opposite directions, substantially as described.

8. In an ironing-machine, the combination with the frame, of a cooperating ironing-board and ironing-roll, a shaft journaled in the frame, gear connection between shaft and roll and between shaft and ironing-board, a loosely-journaled pulley, disks journaled on a rock-arm to permit them to be moved into alternate contact with the pulley, gear connection between each disk and said shaft, a connecting-rod pivotally secured to an end of the rock-arm, a foot-treadle connected with

said connecting-rod for moving the rock-arm in one direction, a spring for moving said rock-arm in the opposite direction, and means for holding said rock-arm in opposition to the action of said spring in a position to prevent contact of the pulley with a disk, substantially as and for the purpose set forth.

9. In an ironing-machine, the combination with the frame, of a movable ironing member, a shaft journaled in the frame, means for communicating motion from shaft to ironing member, a loosely-journaled pulley, disks journaled on a rock-arm and alternately movable into contact with said pulley, gear connection between each disk and said shaft, a connecting-rod pivotally joined to said rock-arm, a spring for moving the rock-arm in one direction, a foot-treadle for moving it in the opposite direction, a bell-crank lever pivoted to the frame, and a sliding block connected with one of the arms of the bell-crank and engaging the frame and a projection on the connecting-rod and serving to lock the connecting-rod against the action of said spring in such a position as to cause both disks to clear the pulley, substantially as and for the purpose set forth.

10. In an ironing-machine, the combination with the frame, of an ironing-roll, an ironing-board beneath said roll, a friction-roll beneath the ironing-board for moving the board, a shaft journaled in the frame, gear connection between shaft and ironing-roll and between shaft and friction-roll, a pulley loosely journaled on the shaft, friction-disks alternately movable into contact with the pulley, gear connection between each disk and said shaft, and means for effecting the alternate movement of the disks into pulley contact, substantially as and for the purpose set forth.

11. In an ironing-machine, the combination with the frame, of an ironing-roll journaled therein, a pivoted frame or "swing" beneath said ironing-roll, an ironing-board supported by the swing, reciprocating means for the ironing-board, and means for adjusting the height of the front end of the swing, comprising a lever g^{15} pivotally joined to the front end of the frame, connecting means between said lever and the front end of the swing, lever g^9 having pin-and-slot connection with the lever g^{15} and itself pivotally secured to the frame, and lever-and-link connection between the frame and the lever g^9 for moving the latter, substantially as and for the purpose set forth.

12. In an ironing-machine, the combination with the frame, of an ironing-roll journaled therein, a pivoted frame beneath said roll, an ironing-board supported by the pivoted frame, reciprocating means for the ironing-board, and means for adjusting the front end of the pivoted frame, comprising a vertical shaft, ball-joint between shaft and front end of pivoted frame, pivoted lever g^{15} , spring connection between said lever and shaft, pivoted lever g^9 having pin-and-slot connection with the lever g^{15} , and link-and-lever mechanism

connecting lever g^9 and the main frame, substantially as and for the purpose set forth.

13. In an ironing-machine, the combination with the frame, of an ironing-roll journaled therein, a pivoted frame beneath said roll, an ironing-board supported by the pivoted frame, reciprocating means for the ironing-board, and means for adjusting the front end of the pivoted frame, comprising levers g^9 and g^{15} pivotally connected with the frame, yielding connecting means between said levers and the front end of the pivoted frame, a lever V pivotally joined to the frame, a link g^5 pivoted to the main frame at one point and having pin-and-slot connection with the lever V at another point, and a link g^7 joining link g^5 to lever g^9 , substantially as and for the purpose set forth.

14. In an ironing-machine, the combination with the frame, of an ironing-roll journaled therein, a pivoted frame beneath said roll, an ironing-board supported by the pivoted frame, reciprocating means for the ironing-board, and means for adjusting the front end of the pivoted frame, comprising levers and links V, g^5 , g^7 , g^9 , bifurcated lever g^{15} , shaft g^{26} , ball J having threaded connection therewith and affording a bearing for the front end of the pivoted frame, movably-connected perforated disks upon said shaft the lower one of which is supported by the bifurcated head of the lever g^{15} , and a spring-coil confined between the disks, substantially as and for the purpose set forth.

15. The herein-described improved shirt-ironing board, comprising an ironing-board proper having a neckband-receiving circular recess the periphery of which extends beyond a half-circle, a suitable support therefor, and means for clampingly engaging the shirt-neckband, comprising a neck-clamp, a spring-held slidable rocking arm or stem supporting the clamp, inclined guides for the base of the stem, and means for moving the stem slidably and rotatably to give to the clamp the desired movement, substantially as and for the purpose set forth.

16. The herein-described improved ironing-board, comprising an ironing-board proper having a neckband-receiving circular recess, a suitable base for said board, and means for clampingly engaging the neckband of the shirt, comprising a neck-clamp, a stem d^3 supporting said clamp, a block d^4 pivotally connected to the lower end of said stem, an inclined guideway for said block, a spring for holding said block at the upper end of its traverse, a connecting-rod pivotally joined to said stem between said block and said neck-clamp, and means for reciprocating the connecting-rod, substantially as and for the purpose set forth.

FREDERICK A. WALKER.
CHAS. E. RASMUSSEN.

In presence of—
R. T. SPENCER,
D. W. LEE.