

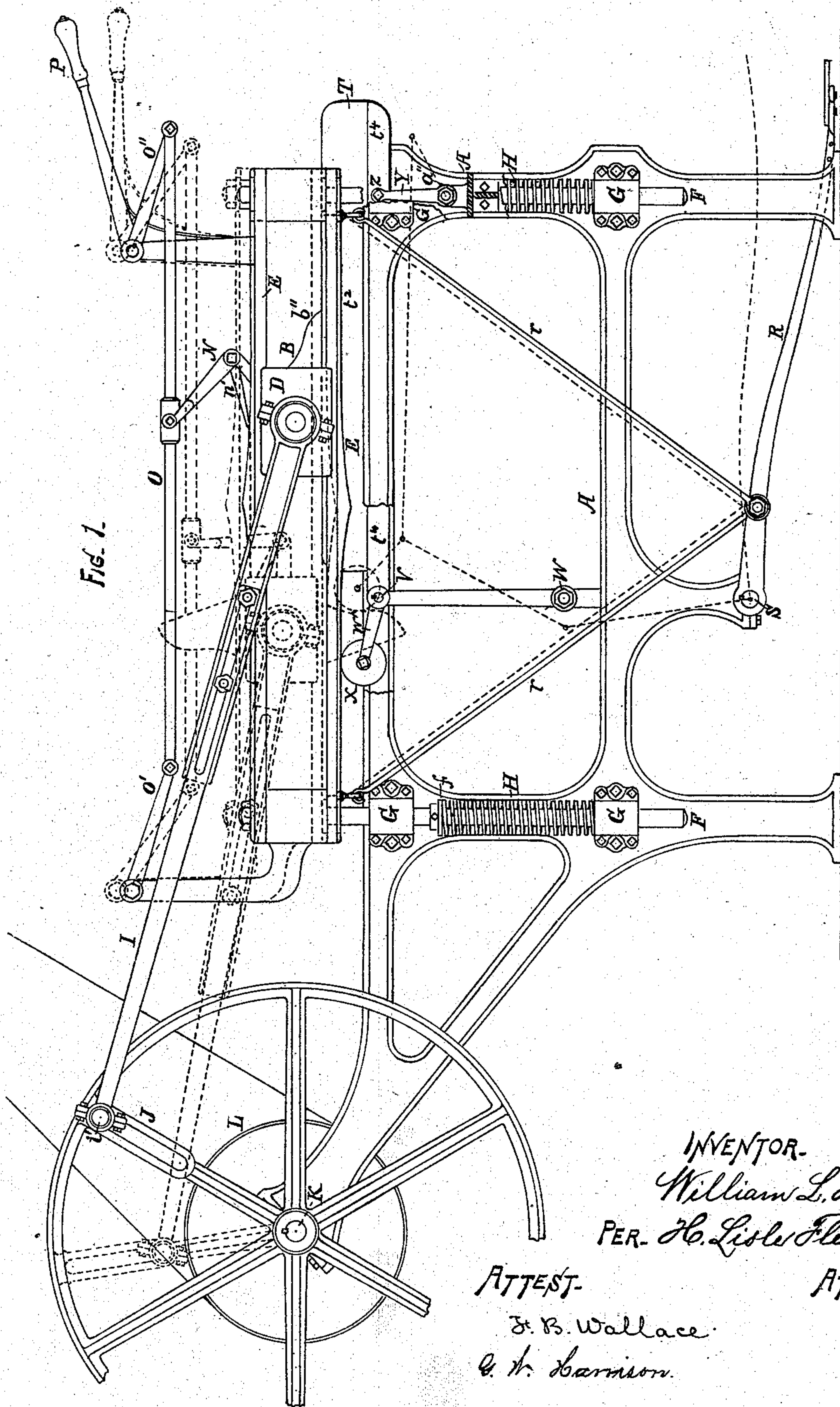
(No Model.)

3 Sheets—Sheet 1.

W. L. HALL.
IRONING MACHINE.

No. 258,229.

Patented May 23, 1882.



INVENTOR.
William L. Hall.
PER. H. Lisle Fleming.
ATTY.

ATTEST.
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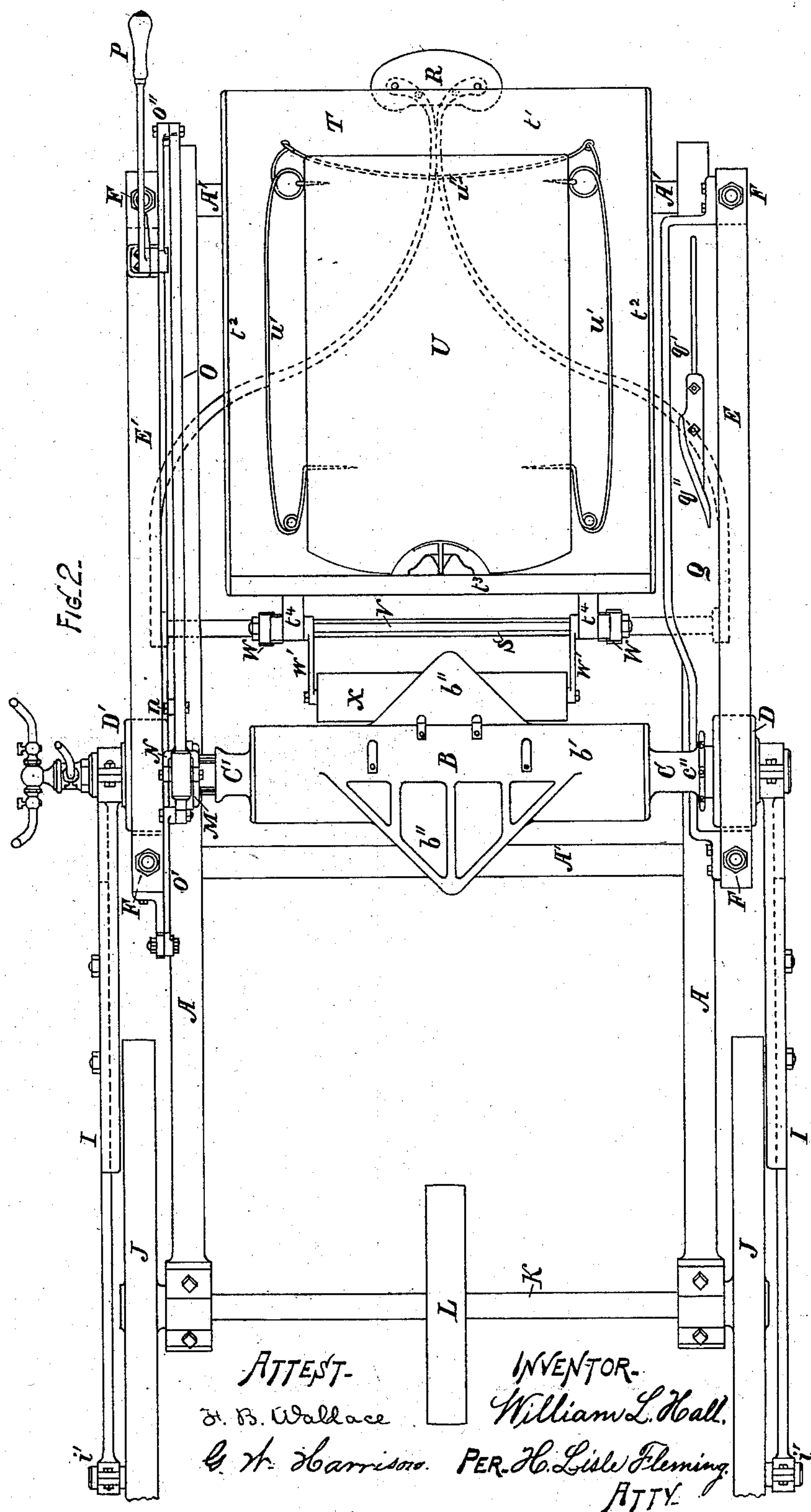
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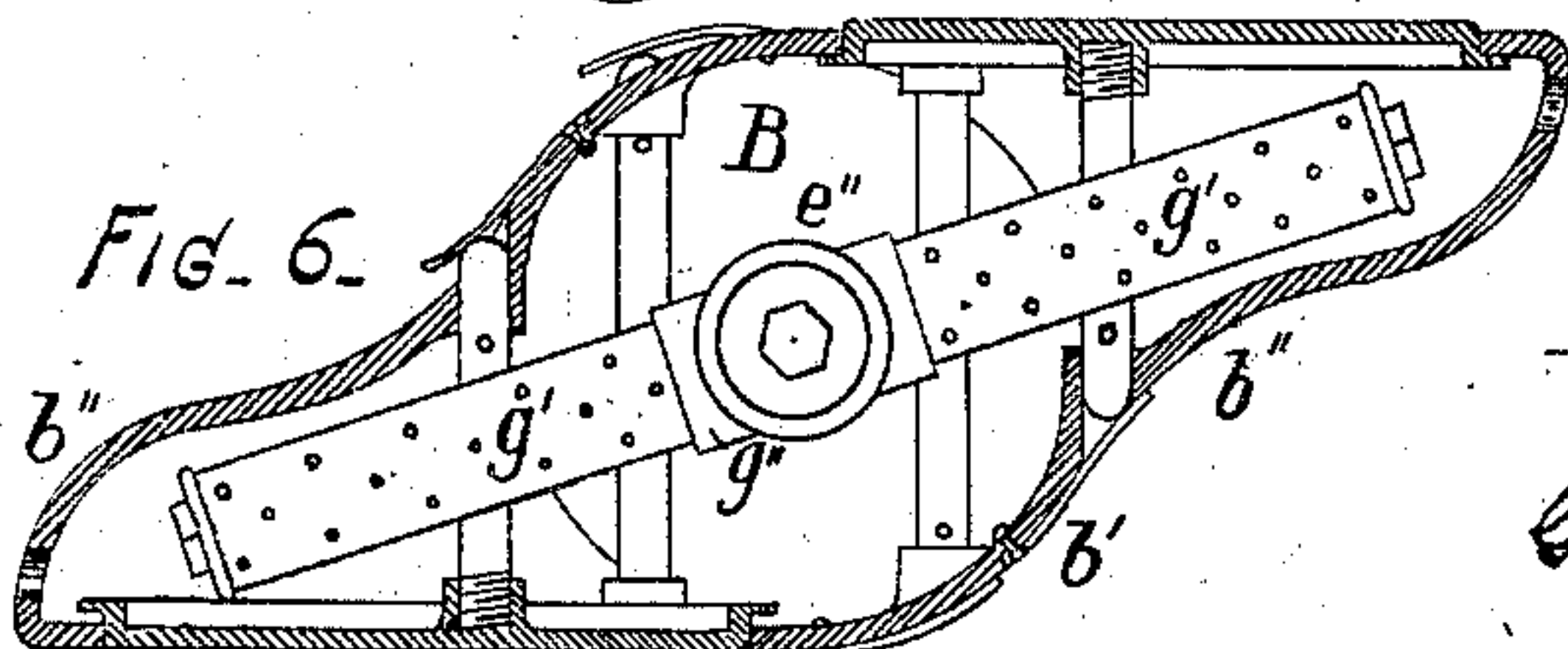
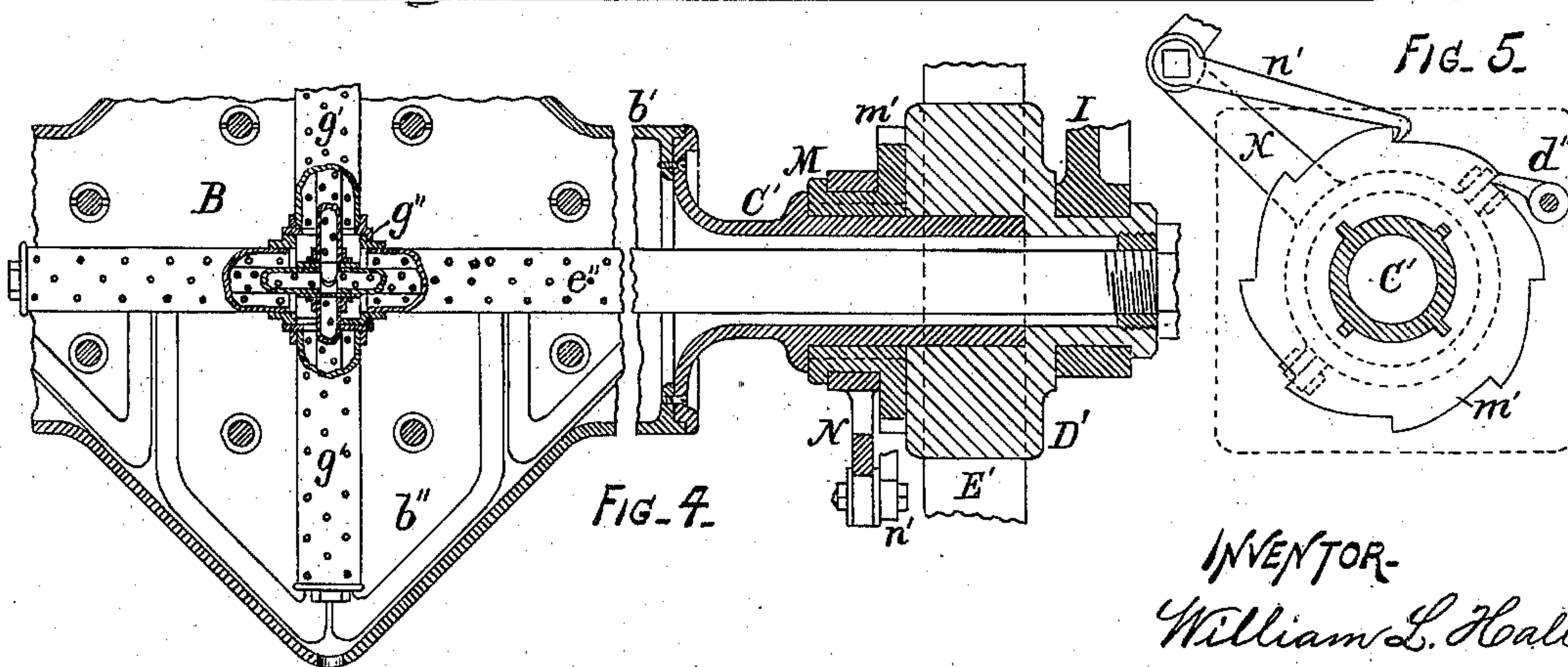
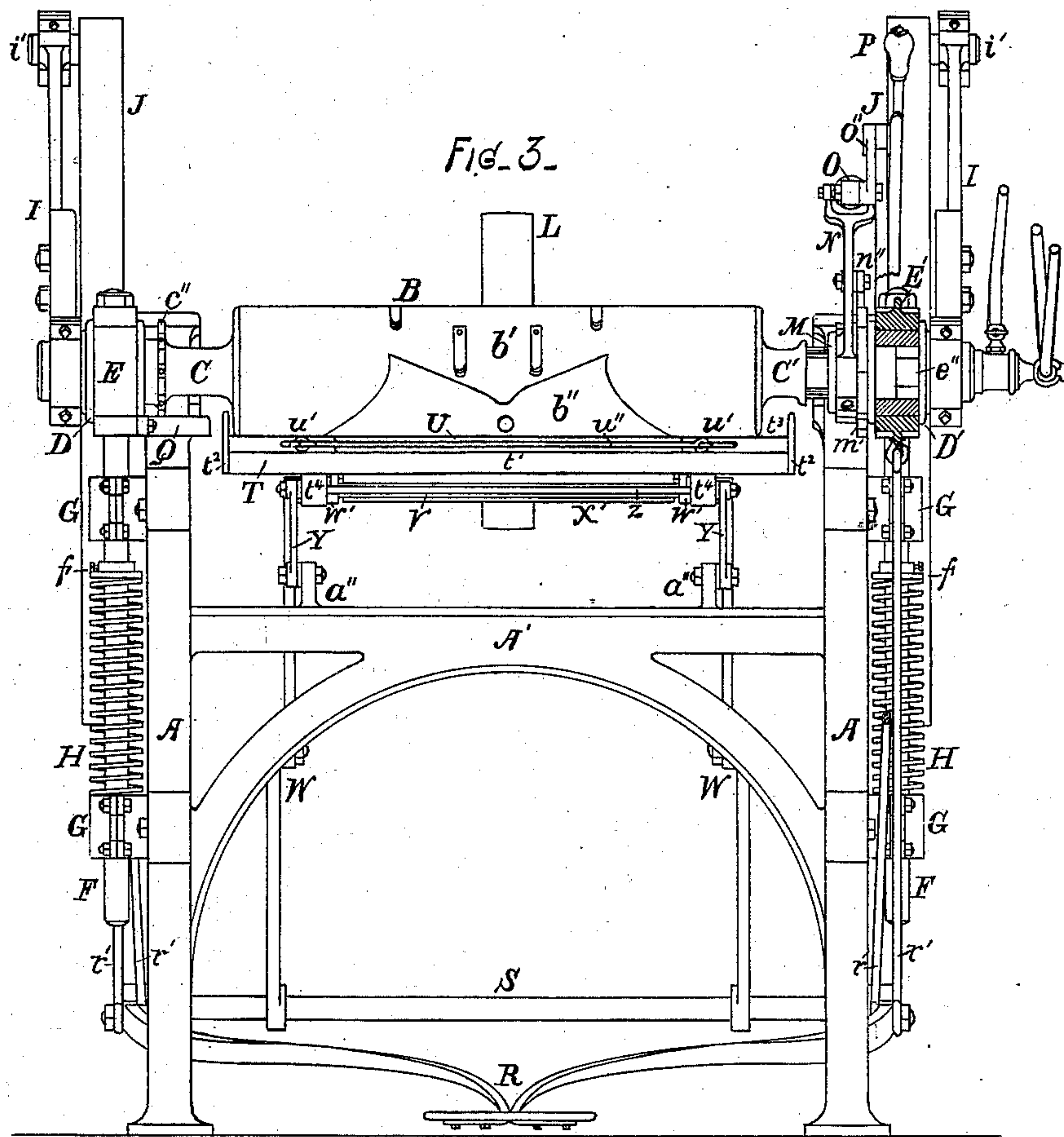
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UNITED STATES PATENT OFFICE.

WILLIAM L. HALL, OF TROY, NEW YORK.

IRONING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 258,229, dated May 23, 1882.

Application filed November 25, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. HALL, a citizen of the United States, residing at the city of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Ironing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to that class of ironing machinery adapted for use in laundries where large quantities of goods are operated upon and finished by ironing, and where rapidity of execution is an essential feature, also relating more particularly to machines of this class by means of which shirt-bosoms may be thus finished or polished, said invention consisting in a reciprocating reversible iron, heated by gas or its equivalent, the main portion or body of which may be cylindrical, hung upon trunnions in sliding boxes or guides traveling through ways, and having two independently-operating ironing-points projecting therefrom, each having one or more polishing-surfaces, and each of which points may be alternately used for ironing and be alternately heated or reheated during the intervals while not so used.

The invention also consists in the arrangement of devices for regulating and controlling the movements and pressure of iron and combustion within same, and also consists in devices for receiving and retaining the goods in proper position while being operated upon, and for facilitating the insertion and removal of same, all as hereinafter more fully described, my object being to increase the efficiency of machines of class before mentioned, having under consideration a greater rapidity of execution and a better and more artistic style of finish.

In the accompanying drawings, consisting of three separate sheets, Figure 1, Sheet No. 1, is a longitudinal side elevation of my improved machine, partly broken away. Fig. 2, Sheet No. 2, is a plan or top view; and Figs. 3, 4, 5, and 6, Sheet No. 3, are respectively a front or end elevation, partly in section, and enlarged sectional or detail views.

Similar letters of reference in either view on either sheet indicate corresponding parts.

A A' represent longitudinal and transverse

portions of a suitable frame-work for supporting the operative parts of machine mounted thereon, as shown and further explained.

B represents the iron, preferably of cast metal, the same being hollow to receive the heating apparatus, and having cylindrical body b' , with two wedge-shaped cam-like ironing-points, b'' , also hollow, projecting from periphery of same, centrally longitudinally, but on opposite sides vertically, and in opposite directions transversely, the reversed level surfaces of said points forming triangulated planes parallel to each other, the base or broadest part of same being where connection is formed with body, and the same being separated vertically the exact diameter of said body, all of which may be more clearly understood by reference to Figs. 4, 5, and 6, Sheet No. 3.

By C C' are represented hollow spindles, fitted into and secured to ends of cylindrical body, and also fitted at outer extremities with trunnions, so as to be socketed in, supported by, and revolve freely in flanged slides or guides D D', fitted to travel between horizontal parallel bars or ways E E', hung outwardly upon each section of longitudinal frame-work, with vertical rods F fitted to slide freely through stationary guides or boxes G, secured to said sections, the rods being provided between boxes with suitable springs, H, and adjustable collars f , or their equivalent. The sliding guides D D' are extended outwardly, so as to form wrist-pins, upon which are hung adjustable connecting-rods I, having connection through crank-pins i' with crank-wheels J, and also adjustable thereon, said wheels being keyed to cross-shaft K, hung in suitable bearings at rear end of frame, upon which may be conveniently situated the driving-pulley L, also keyed fast, whereon a belt may be placed, and motion thereby transmitted to machine. The spindle C' is feathered and surrounded by internally-grooved sleeve M, formed with ratchet-wheel m' , having preferably eight notches or teeth, which engage in the rear with pawl d'' , pivoted upon guide D', and in front with hooked pawl n' , pivoted to elbowed lever N, hung upon sleeve, which lever is formed with a yoke straddling and hinged to a slide fitted to travel freely upon horizontal rod O, having connection at each end, respectively, with short parallel levers or links $o' o''$, the length

of same being equal, pivoted to standards secured to ways E', the link o' working loosely upon a fixed pivot, but the link o'' being keyed fast to a pivot fitted to rotate in its standard, and extended outwardly to receive spring-lever P, also keyed to same. The spindle C is formed with spur-wheel c'', also having preferably eight projections or teeth, which engage with grooves q' and adjustable frog q'' of switch-plate Q, horizontally secured to the lower bar of ways E. The trunnions of spindles C C' are so arranged in relation to their sockets in guides D D' as to allow a slight transverse movement of former in latter when shifted by switch.

Through the wrist-pin of either guide D or D' may be inserted the necessary pipes for conveying gas and air to the interior of hollow iron B, the same being connected by suitable fixtures secured outwardly to wrist-pin, said fixtures being furnished with stop-cocks and also with the usual flexible tubing, by means of which connection is made with the source of supply in the ordinary manner, said gas and air pipes extending inwardly through interior of spindle (on the side attached) to or about the center of iron-body—preferably a short distance beyond the center—and consisting of main pipes or stem e'', with one or more sets of branch pipes, g', radiating therefrom centrally through interior of each ironing-point b'' aforesaid, the branches being connected with swivel-joint g'', fitted to rotate upon main stem, and so arranged with valve therein that when swivel is partially rotated (the stem remaining stationary) the passage for gas and air will be closed to pipes on one side and opened to pipes on the other, and that with each partial rotation the branches on either side are alternately thrown in and out of communication. The pipes composing both stem and branches may be perforated in the usual manner to insure the proper mingling and combustion of gas and air; also, openings may be provided to give proper vent, preferably through extremities of ironing-points and through the wrist-pin not occupied by pipes and fixtures.

The bottom plates of ironing-points b'' may be formed with one or more apertures to receive a corresponding number of supplementary flanged plates mounted on studs or pins passing through bosses or sockets in opposite or upper shell, that engage with a suitable spring or springs arranged upon exterior, the tendency of which springs is, through agency of pins, to press said supplementary plates outwardly from apertures and below general surface of bottom plates, each of the same serving as an independent polishing-surface. The construction of these parts may be seen by reference to Figs. 4 and 6.

By R is represented a treadle, constructed preferably with curved side bars and foot-plate, as shown, said side bars being keyed fast to cross-shaft S, hung in suitable bearings to lower part of frame, the treadle having connection on each side, respectively, with ways E

and E' by means of rods r', which are pivoted at one end to said side bars, the other ends of same being hooked into eyebolts beneath ways.

By T is represented the ironing-table, which may be composed of either wood or metal, preferably wood, and may consist of the transverse bottom boards, t', forming bed, upon which the usual imparchment may be laid to receive the shirt or bosom board U, the side boards, t², the head-rail or transverse bar t³, and the parallel longitudinal rails or bars t⁴, to which the bottom boards are secured, all as shown. Said rails t⁴ are extended in the rear beyond table, and there pivoted or hung upon transverse rock-shaft V, to which are keyed, outside of rails, one arm each of twin parallel sets of toggle-joint levers W W, hung upon and also keyed fast to aforesaid cross-shaft S beneath.

X represents a roller, that may be of wood covered with imparchment, hung transversely between arms w', likewise keyed to the rock-shaft V. The forward end of table may be hung upon short parallel links Y, pivoted at upper ends to rod or bolt z, passing transversely through rails t⁴ beneath table, and at lower ends to lugs or ears a'', attached to the forward section of the transverse frame-work A' aforesaid.

The shirt-board U may be of wood, covered with imparchment on top and bottom, and provided with side rods, u', formed of spring-wires coiled at each end, and suitably attached to board, and with bowed clamp-rod w'', hinged or linked to one siderod and fitted with ring or eye to hook on the other and to enter correspondingly-shaped recess or groove formed to receive it in edge of board, on end of same, where tail of shirt is to be fastened, the opposite end of board being formed to fit into shoulders or yoke, also hollowed out to receive neckband of shirt, and there furnished with a central peg or steady-pin fitted to enter a V-shaped notch or socket provided for its reception in rear of table, which may either be formed directly on inner upper edge or corner of head-rail t¹, or upon a suitable block centrally attached to same, as shown, the latter being preferable.

The operation of my improved machine is as follows: The currents of gas and air being admitted by opening the stop-cocks, the same being ignited within the interior of iron, and power being transmitted through medium of the driving belt and pulley aforesaid, the machine may be set in motion and said iron caused to reciprocate in unison with guides, between parallel ways, in consequence of the connection of iron with guides, the guides with crank-wheels, and the crank-wheels with driving-pulley, as hereinbefore described, the flexibility of tubing connecting said gas and air pipes with source of supply allowing a pendulous vibration of same during this reciprocatory movement. The shirt may then be prepared for ironing by stretching the same, as usual, over the shirt-board, the lower or rear flap of tail being drawn tightly and folded upwardly over edges of same, the upper or front flap being

folded similarly downward and over rear flap, when the clamp-rod, which should be left free while folding the flaps, may be sprung over the same into the recess and hooked in the eye aforesaid, the effect being to draw the yielding muslin more tightly over the edges, and also into recess, thereby still further stretching the shirt lengthwise upon board, the side rods conforming themselves to shape of shirt-body and exerting sufficient pressure within to properly tighten or stretch the same crosswise upon said board, the side rods also having projection through slits between flaps, at extremities where connected with clamp-rod, so as to allow free operation of the latter while placing shirt in position. The board, having shirt thus arranged thereon, may then be placed upon table, with either front or back of same upward, preferably the back first, the steady-pin entering socket aforesaid, so as to bring shirt centrally beneath ironing-point, which is important when bosom is uppermost, the spread of points being only about equal to the width of bosom of largest-sized shirt. By then depressing the treadle through connection of the various parts before explained the toggle levers and links to which table is hung may be caused to assume a vertical and said table a horizontal position, the ways at same time being depressed, and iron in consequence brought down to the level then occupied by shirt-board, the polishing-surface of one ironing-point being in contact therewith, the former position of these parts being shown by the skeleton dotted outlines in Fig. 1. The iron may be then allowed to pass over shirt during one or more partial or entire revolutions of the crank-wheels, as required to give the necessary finish, when, by releasing the treadle, the parts mentioned may be returned by action of springs to the said former position, so that without stopping the machine the shirt-board may be reversed upon table to allow the opposite portion of shirt to be ironed, or said board removed to be replaced by another, when the treadle may be again depressed to repeat the process. The treadle may be also provided with a suitable spring to assist in elevating the same, if found necessary.

To expeditiously operate the machine, a number of boards should be provided and assistants employed to arrange the shirts thereon and to remove them from same after being ironed, to be in regular rotation replaced by others, so that the attendant in charge may continuously be supplied with prepared boards, and can rapidly and successively manipulate the same. Various-sized boards may be used to accommodate different-sized shirts, and the stroke of iron may likewise be regulated to suit same by the adjustment of connecting-rods I. The crank-pins should also be correspondingly adjusted upon crank-wheels, so that the iron may always return to the same point on rear stroke. How to effect these adjustments may be seen by reference to Fig. 1. When found necessary, probably each time the boards are exchanged, the iron may be re-

versed, also without stopping the machine, by depressing the lever P aforesaid, causing the horizontal rod connected therewith to descend in a line parallel to its former position, which, through connection with elbowed lever, actuates the same, causing the pawl thereon to rotate the ratchet-wheel, and consequently the iron, about one-eighth turn, the change being effected while the table is down, the ways elevated, and the machine at extremelimit of rear stroke, so that the ironing-point just previously above table may dip behind and below same as then situated, and behind aforesaid roller, also then elevated; and on the return or forward stroke the upper surface of cam-like point may engage with roller, which in its passage over same nearly completes the required semi-rotation of iron, leaving the polishing-surface of opposite ironing-point at a slight angle above the horizontal, which angle is increased between same and upper surface or bed of table by the downward and forward pitch of latter while in said situation, thus facilitating the manipulation of shirt-boards thereon, as before described, this variation being also shown by dotted lines in Fig. 1, those showing iron and corresponding connections having special reference to said movement. The iron may be entirely reversed and the alternate polishing-surface brought to bear, when the different co-operative parts have been returned to the proper position for ironing, by again depressing the lever previously used, released, and elevated by spring, the pawl upon elbowed lever having obtained a fresh grip upon ratchet, the same parts being again actuated with similar and desired result, after accomplishing which the lever should be released, as before, the rear pawl upon guide checking any tendency of the iron to rotate in contrary direction. If found necessary to give ironing-point a greater pressure at extremity to obtain a better finish in polishing therewith, this may also be effected through agency of said lever, the advantage of this arrangement of the reversing-lever in connection with horizontal rod, and elbowed lever with slide traveling thereon, being that the operation of same in relation to iron is not interfered with by its reciprocating movements, and that by the first-mentioned lever remaining stationary the handling of same is rendered much more convenient. During each semi-rotation of iron, the branch pipes being thereby coincidentally rotated upon main stem through agency of valve in swivel-joint, the combustion is commenced in point previously used and discontinued in point substituted, the ignition in one taking place just before the entire extinguishing in other, so that each point may in turn be heated while not employed in ironing, as before alluded to herein. The object of the wedge-shaped form of said points is, in the forward passage of iron over shirt, the ironing process commencing from rear of table to bear upon the center of the bosom first, to better smooth down the wrinkles by pressing them outwardly at an an-

gle therewith, the cylindrical body also smoothing portions of shirt outside of bosom not reached by points.

The independent polishing-surfaces before described, by reason of their yielding bearing, may accommodate themselves more readily to any inequalities of board beneath during the passage over same, and by the diminished area of each produce a better finish; but this arrangement is not absolutely essential, and may be dispensed with, a single polishing-surface for each point being ordinarily sufficient.

Through agency of switch-plate and spur-wheel engaging therewith, the iron may be slightly shifted transversely at each end of stroke, so that the same will recede on a different line from that on which it advanced, thus more evenly distributing the effect; but this arrangement also is not essential, and may likewise be dispensed with. Pegs, set-screws, clamps, or any other suitable device may be used in connection with table, if necessary, to prevent shirt-board from slipping forward on table while under pressure.

The roller before mentioned, besides assisting in reversal of iron, may support the same while in operation after passing behind and so that it will not then dip below table, and may also serve, when properly covered, to clean said iron by rubbing or rolling against it while in passage. The object of the side boards upon table is to prevent the sleeves of shirt from coming in contact with lubricated parts, whereby the same might be soiled.

Any suitable appliances, in connection with the driving-belt aforesaid, may be employed to regulate the power transmitted to machine for starting or stopping and for varying the speed of same; also, a suitable brake may be attached to rear of frame, engaging with crank-wheels, connected so as to be conveniently operated from forward end of said frame, and said crank-wheels may be provided with balance-weights, if these devices are found necessary to insure the checking of iron for any reason during its reciprocations.

I do not claim broadly in ironing-machines either reciprocating or reversible irons, as I am aware that the same have been heretofore used. Neither do I make any claim to the heating of iron by combustion of gas and air therein, nor to the method of introducing the same; but

What I do claim, and desire to secure by Letters Patent, is—

1. In an ironing-machine, the combination of an iron, the main portion or body of which is cylindrical, with two independently-operating wedge-shaped cam-like points projecting therefrom, each having one or more polishing-surfaces, mechanisms, substantially as described, for bringing each end alternately into use and heating them when not in use, trunnions upon which said iron is hung, sliding

boxes carrying said trunnions, ways for said slides, and mechanisms, substantially as described, for longitudinally and transversely reciprocating, reversing, elevating or depressing, and regulating the stroke of said iron when desired, for the purposes set forth.

2. The combination of the switch-plate Q, secured to ways E, having grooves q' and adjustable frog q'' , the spur-wheel c' upon spindle C, engaging said grooves and frog, and the guides D D', with the iron B, having transverse movement between said guides, for the purpose specified.

3. The combination of iron B, having cam-like projecting points b'' , with the roller X, in connection with arms w' , rock-shaft V, toggle-levers W, cross-shaft S, and treadle R, for purpose specified.

4. In combination with the ironing-points b'' , the independent polishing-surfaces, provided with pins and springs, constructed, arranged, and operating substantially as set forth.

5. The combination of the spring reversing lever P, horizontal rod O, and links $o' o''$, hung upon stationary standards attached to ways E, one of which links rotates upon a fixed pivot, the other being keyed to a rotary pivot, to which said lever P is also secured, the elbowed lever N, hung upon sleeve M, and hinged to the slide traveling upon said rod, the sleeve and ratchet-wheel m' thereon, and the pawls $d'' n'$, engaging said ratchet-wheel, with the feathered spindle C' and iron B, for objects set forth.

6. In combination with a reversible iron, the automatic device for regulating the combustion of gas and air within and alternately heating different portions of same, consisting of stationary main pipes or stem e' , rotary branches g' , and swivel-joint g'' , with valve therein, substantially as shown.

7. The combination of the table T with the links Y, toggle-levers W, rock-shaft V, cross-shaft S, and treadle R, the cross-shaft and links being hung to frame-work, all operating in elevation and depression of said table, the same having inclining and receding tendency during latter movement, as hereinbefore described.

8. In combination with iron B, having centrally-projecting wedge-shaped points, the table with recess or socket correspondingly located in transverse head-rail, and shirt-board provided with steady-pin fitted to enter said socket, substantially as and for the purpose specified.

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

WILLIAM L. HALL.

Witnesses:

P. H. NEHER,
F. W. LOBDELL.