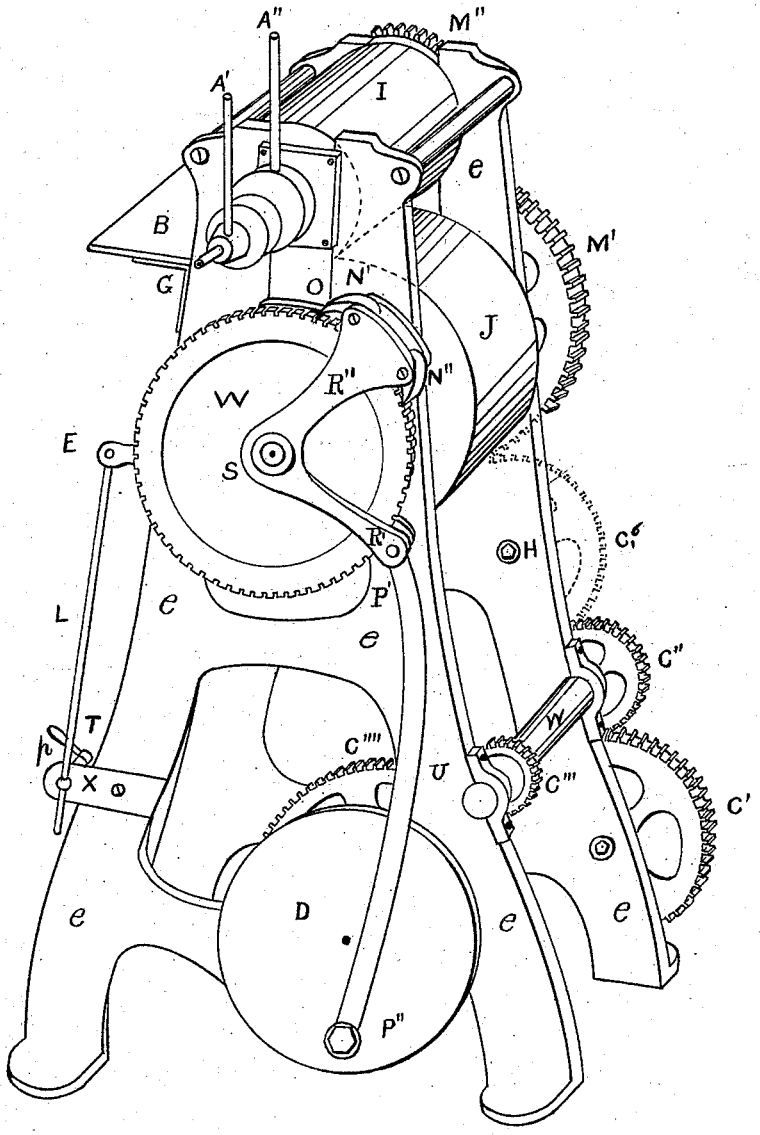
2 Sheets—Sheet 1.

R. H. & J. W. GARDNER.

Ironing-Machine.

No. 211,145. **Patented Jan. 7, 1879.**

Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 2.

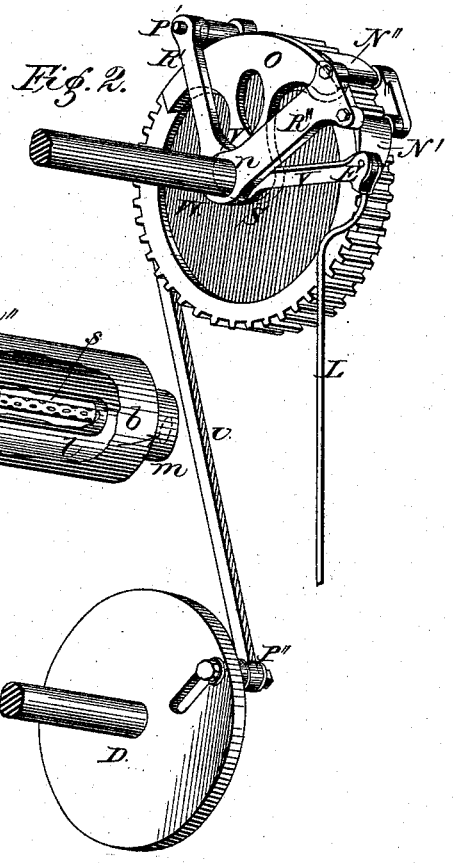
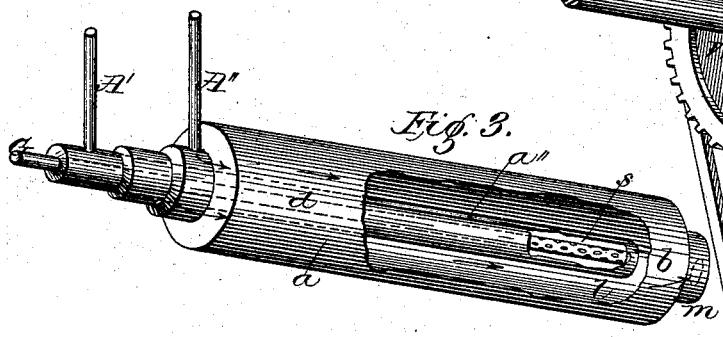


Fig. 3.



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UNITED STATES PATENT OFFICE.

RICHARD H. GARDNER AND J. WRIGHT GARDNER, OF TROY, NEW YORK.

IMPROVEMENT IN IRONING-MACHINES.

Specification forming part of Letters Patent No. **211,145**, dated January 7, 1879; application filed August 3, 1878.

To all whom it may concern:

Be it known that we, RICHARD H. GARDNER and J. WRIGHT GARDNER, both of the city of Troy, county of Rensselaer, and State of New York, have jointly invented certain new and useful Improvements in Ironing-Machines for laundry purposes, and of which the following is a specification:

Our invention relates to ironing-machines, and such as are employed to impart a smoothed finish to fabrics by means of a heated surface when being laundried, and which are more particularly adapted in application to such apparel as collars and cuffs, or other similar articles as require to be ironed in part upon one surface after having been so finished upon an opposite one.

Our invention consists in combining, with an ironing-roller constructed so as to be heated from the inside, a pressing-roller, both rollers having engaging-surfaces, and being geared together so as to have opposite motion, and arranged to intermit and reciprocate in revolution, so that the surfaces of the two rollers shall be constantly varying their points of reciprocating contact relatively to each other.

Our invention also consists of combining in engaging contact an ironing-roller and a pressing-roller, with the former constructed and arranged to be heated from the inside, and both the rollers actuated by gears so as to move oppositely, and to intermit and partly reciprocate in rotation by means of a double-armed rock-shaft, which operates, as it oscillates by one of its two radiate arms, a progressional and also a recessional pawl, with the pawls working oppositely to each other in a toothed or ratcheted wheel, attached to the same shaft as the pressing-roller and rock-shaft, the latter being actuated by a crank-connection made between one of its arms and a driving-wheel, with the measure of the progressional and recessional rotation made to differ by means of an adjustable slide-plate arranged upon the side of the ratcheted wheel parallel to its perimeter, over and along which plate the recessional pawl slides without engaging the teeth which are opposite the plate, while the other pawl works its full measure of engaging-teeth at each oscillation of the rock-shaft.

Our invention also consists in a manner of arranging, in combination with the connected ironing and pressing rollers, (and to be used when either one or both of the pawls that work the rollers by means of the ratchet-wheel are reversed, so as not to engage or turn the wheel and roller,) an additional gear-wheel, which may be put on or taken off from a fixed bearing upon the frame, so located as to cause the applied gear-wheel to engage the gears upon the end of the pressing-roller, and to also engage with a spur-wheel upon the end of the crank-wheel shaft for acquired power.

Our invention also consists in the manner of heating the ironing-roller by burning gas inside of it, the gas and a current of air together under pressure being admitted from outside of the roller through one pipe, and together discharged from the pipe through apertures into an annular mixing-chamber, from which it passes by means of longitudinal slits to an outer chamber to burn, the outer chamber being formed between the interior surface of the roller and the outer surface of the mixing-chamber.

In the accompanying drawing there are shown three figures illustrating our invention.

Figure 1 exhibits a view, in perspective, of the machine and its combined parts. Fig. 2 illustrates, in perspective, and detached from the rest of the machine, the ratchet-wheel and radiate double-armed rock-shaft, progressional and recessional pawls, and the sliding peripheral plate forming a slide for the recessional pawl, and the manner of regulating and adjusting the slide-plate by means of a lever. Fig. 3 exhibits a view, in perspective, of the ironing-roller, with a portion of its wall cut away to show the position of the inner annular chamber in which the entering air and gas are mixed, and also the position of the slits through which the mixture passes to burn.

The various parts of the device are designated by letters of reference as follows: The frame of the machine in which the roller-bearings are formed is shown at *e e e e*, the ironing-roller at I, the pressing-roller at J, and both of these rollers are shown as having engaging-surfaces by an illustrating dotted line, and as connected by means of the gear-wheels M′ and M″, so as to have opposite motion. The feeding-table is designated at B, the toothed or

ratcheted wheel at W, the double-armed rock-shaft at R′ and R″, the progressional pawl at N′, and the recessional pawl at N″. The slide-plate which raises the recessional pawl, and does not permit it to engage with the peripheral teeth until it has passed over the plate, is shown at O, and the radiate double-armed lever which is used to adjust the slide-plate, to which it is attached, is designated at V V, with one of its arms pivoted to the same shaft as the ratchet-wheel at *n*, so as to move around parallel with its periphery, and the other arm pivoted to the rod L at E, the latter arm passing through the eye *x*, which, by a rod, passes through the frame to receive a threaded sleeve, *p*, and set-screw handle T to hold the connected parts in a secure position. The crank-rod is shown at U, forming a pivoted connection with the rock-shaft at P′, and as pivoted to the crank-wheel D at P″. At C″, C‴, and C⁗ are designated the gear-wheels communicating power to the driving crank-wheel D when the machine is employed to actuate the pawls, so as to produce an intermitting and reciprocating motion of the ironing and pressing rollers. At C′ there is designated an additional gear-wheel, which, in its position, as shown at the base of the frame, has no operating connection with the machine, but when applied, as shown by the dotted line at C⁶, so as to revolve upon the shaft H, its teeth connect with those of the actuating spur-wheel C″, and also with those of the wheel M′ upon the pressing-roller shaft, to thus actuate the two rollers with a continuous rotation when the pawls are turned up so as not to engage the ratchet-wheel.

The ironing-roller revolves around the pipe *d*. Gas enters this pipe at G, and air at A′, the air and gas under pressure being discharged by apertures from the pipe *d* into the chamber *s* to more thoroughly mix the two. This mixture of air and gas passes from the mixing-chamber *s* to the combustion-chamber *a* to burn, by means of flame-slits made in the exterior wall of the mixing-chamber, as shown at *a″*, with a discharge-opening for the escape of the products of this combustion at *m*.

The machine, as thus constructed, can be operated so that collars, cuffs, or other articles may be ironed upon one side by passing them through and between the ironing-roller and the pressing-roller, and then by removing the adjustable wheel from the position shown at C⁶, and arranging the pawls to engage the ratchet-wheel and operate the rollers, they may be caused to intermit and reciprocate in part in rotation, so that the same collars or cuffs may be partly ironed upon a reverse side, and to such an extent as may be measured by the regulating pawl-slide.

We are well aware that gas and air have been passed into the interior of an ironing-roller under pressure and there burned to heat it, and we make no claims to invention in this connection other than such as is limited to the improvement that we have made upon these older methods, to better adapt the combustion employed to heat an ironing-roller which reciprocates in rotation, so as to come twice in pressing contact with a part of the cloth surface of the pressing-roller, before the relative positions of the two surfaces wholly change, and which necessitates a very uniform heating of the ironing-roller to prevent burning the cloth upon the exterior of the pressing-roller. Where the rotation is uniform and continuous, and the engaging-surfaces are constantly changing, this is not so important, and the ordinary jet form of flame may be used. By our means of mixing the air and gas no greater heat is evolved, but the heat is more evenly diffused and distributed through the interior of the roller by means of the sheet-flame instead of the series of jet-flames.

While the combination of an ironing-roller, arranged to be heated from the inside, and a connected pressing-roller, with the surfaces of the two rollers in engaging contact, and both rollers so geared as to move oppositely, to intermit and reciprocate in rotation, will, when thus arranged, perform in a specific manner the specific object—to draw in and then eject by reciprocating rotation such fabrics as the engaging-surfaces of the two rollers in contact may grasp, and thus produce upon the fabric being ironed two intermittent ironing-pressures from opposite lines of application—it is plain that this feature of our invention and arrangement of combined factors would produce the same result in this respect in the same manner, whether the mechanism shown, or some other mechanism actuating the rollers in the same way, was employed.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an ironing-machine for laundry uses, an ironing-roller arranged to be heated from the inside, and a pressing-roller geared to the former, and both rollers having engaging-surfaces arranged to move oppositely, to intermit and partly reciprocate in rotation, so that the engaging-surfaces of the two rollers shall be constantly varying in contact relatively to each other, as and for the purposes herein described and set forth.

2. In an ironing-machine for laundry purposes, an ironing-roller arranged to be heated from the inside, and a pressing-roller, with the latter so geared to the former that the surfaces of both shall engage and move oppositely, and combined to intermit and in part reciprocate in rotation, by means of two pawls working oppositely from one of the arms of a double-armed radiate rock-shaft, in a ratchet-wheel, with the ratchet-wheel keyed to and actuating the pressing-roller shaft, the rock-shaft turning on but not with the latter, and the measure of pawl action caused to differ by means of a slide-plate loosely pivoted to the roller-shaft and parallel to the periphery of

the ratchet-wheel, and rising above it, so as to carry the pawl over the teeth to which the plate is opposite, as shown and described.

3. In combination, to actuate the ironing and pressing rollers of an ironing-machine, that are geared together to rotate with engaging-surfaces, and are arranged to intermit and reciprocate in part in rotation by means of two pawls working oppositely from one arm of a radiate rock-shaft in a toothed wheel upon the same shaft as the pressing-roller, and the measure of pawl action caused to differ by means of a slide-plate, the crank-rod U, and crank-wheel D, with the rod pivoted to the lower arm of the rock-shaft at P′ and to the crank-wheel at P″, as shown and described.

4. In an ironing-machine for laundry purposes having an ironing and a pressing roller with their surfaces in contact, geared together, and actuated to intermit and in part reciprocate by means of two oppositely-working pawls, and a ratchet-wheel upon the same shaft as the pressing-roller, the additional and removable gear-wheel C′, arranged upon the bearing H, and so as to engage the cogs upon the pressing-roller wheel M′, and also those of the spur-wheel C″, to give a continuous motion to the rollers when either or both of the pawls are reversed, so as not to engage the teeth of the ratchet, as and for the purposes described.

5. In an ironing-machine, to heat the ironing-roller, the fixed gas-pipe G and air-pipe A′, connecting outside of the roller and inside with the inner perforated pipe, *b*, from which the air and gas entering under pressure is discharged through the perforations S into the mixing-chamber *d*, and from the latter through the flame-slits *a″*, to burn as shown and described.

Signed at Troy, New York, this 1st day of August, 1878.

RICHARD H. GARDNER.
J. WRIGHT GARDNER.

Witnesses:
GILES KELLOGG,
CHARLES S. BRINTNALL.