Jan. 30, 1934. R. A. HETZER 1,945,273

GAS HEATED IRONING MACHINE

Filed Nov. 4, 1932

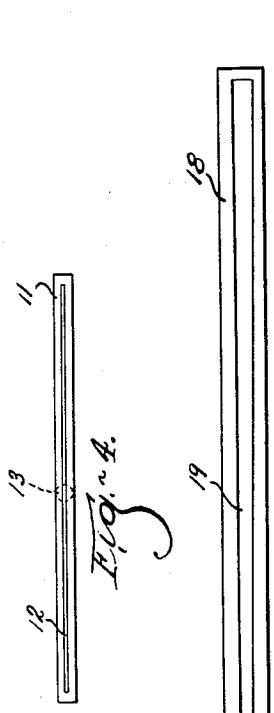


Fig. 4.

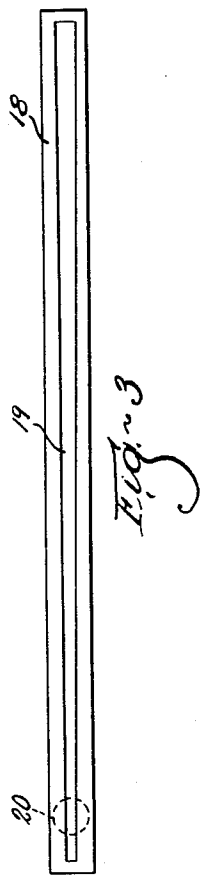


Fig. 3.

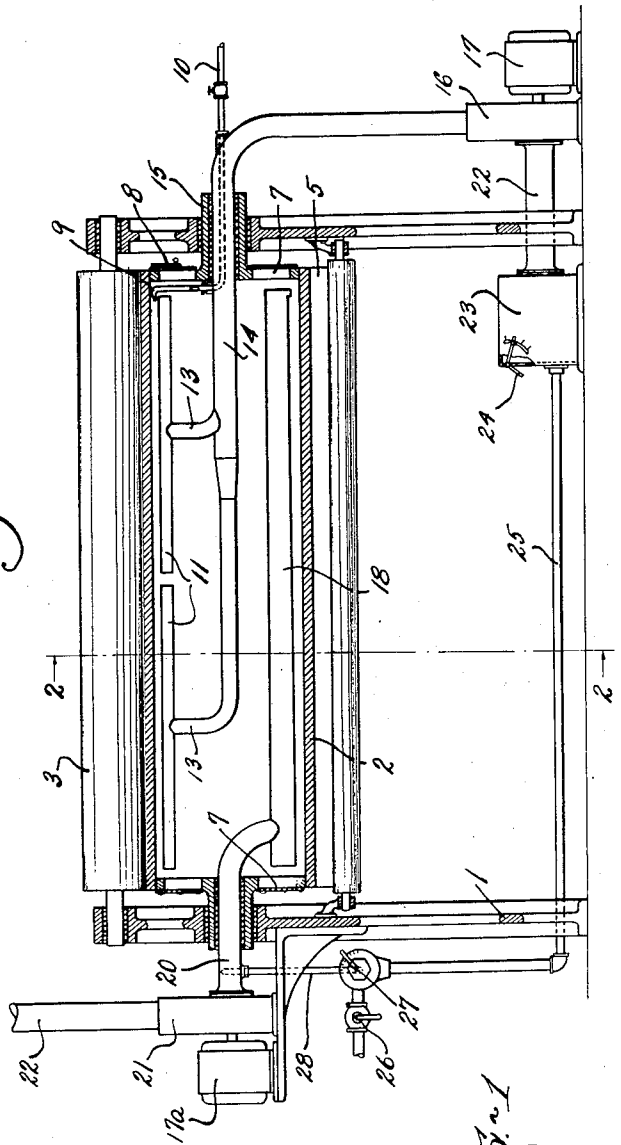


Fig. 1.

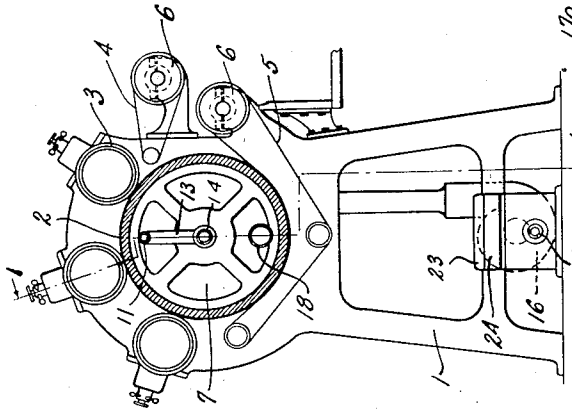


Fig. 2.

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# UNITED STATES PATENT OFFICE

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## GAS HEATED IRONING MACHINE

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5 Claims. (Cl. 68—9)

This invention relates to ironing machines and particularly to ironing machines of the cylinder and roll type, such as are used for flat work, the ironing effect being produced by passing the work between the surfaces of a heated ironing cylinder and a series of padded ironing rolls applied thereto.

The invention has to do more particularly with the application of heat to the cylinder, the hot gases or flames produced as the result of combustion of liquid or gaseous fuel being always applied to the upper portion of the cavity within the cylinder by an arrangement which causes such flames or gases to move downwardly around the inner surface of the cylinder and thence to an outlet, with the ultimate object of improving efficiency, securing more uniform results, avoiding escape of fuel or products of combustion into the atmosphere, and for other advantages which will later appear.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawing, which represents one suitable embodiment of the invention, Fig. 1 is a longitudinal sectional elevation, the section being taken on the line 1—1, Fig. 2, looking in the direction of the arrows; Fig. 2 is a transverse sectional elevation on the line 2—2, Fig. 1; Fig. 3 is a bottom plan view of the exhaust manifold; and Fig. 4 is a plan view of one of the fuel burners.

The ironing machine shown in the drawing comprises a suitable frame 1 in which is mounted a rotatable ironing cylinder 2 cooperating with one or more, three being shown, of padded ironing rollers 3, the padded portions of which are yieldingly applied to the metal surface of the cylinder to produce an ironing effect upon any work passing between them. 4 represents a feeding apron and 5 a delivery apron, both of suitable form for the purpose and, as usual, mounted to travel over suitable guide rollers 6. Rotation of the cylinder 2, rolls 3 and rolls 6 may be produced by any suitable mechanism, not shown.

The cylinder 2 is closed at its ends, but is not necessarily tightly or hermetically sealed, by heads 7, one of which has a hand hole closed by a cover 8 affording access to a pilot burner 9 communicating with a source of combustible fuel, such as gas, by way of the pipe 10.

The heating effect is produced by one or more, two being shown, of hollow burners 11, which are of elongated form with a narrow slot or orifice 12, as shown in Fig. 4, the cavities within said burners communicating by pipes 13 with a supply pipe 14 extending through a hollow gudgeon 15 of the cylinder to a pressure blower 16, operated by any driving member, such as the electric motor 17. The burners 11 are stationary relative to the frame 1 and the cylinder rotates around them, and they are located at the top of the cavity within the cylinder so that the long narrow flame of each burner is applied directly to that portion of the cylinder which is at the top.

The products of combustion pass out by way of an exhaust manifold 18 which is somewhat similar in form to the burners in that it involves a long hollow member provided with a slot 19, Fig. 3. The cavity in said exhaust manifold communicates by a pipe 20, which also passes out through a hollow gudgeon of the cylinder, with a suction blower 21 communicating with an exhaust pipe 22. The exhaust manifold 18 is also stationary relative to the frame and is located at the bottom of the cavity within the cylinder, with its orifice or slot 19 presented downwardly. Said slot is wider at one end than at the other, as shown in Fig. 3, to compensate for variations in dynamic pressure throughout the length of the manifold.

Fuel to be burned or, more accurately, a combustible mixture, is supplied to the burners 11 by admitting the same to the suction side of the blower 16. Such combustible mixture is supplied to the blower through a pipe 22 communicating with a mixing chamber within a hollow casing 23 having an air inlet which may be more or less opened or closed by an adjustable damper 24 and which mixing chamber communicates with a fuel supply pipe, such as the gas pipe 25. Said pipe may be provided with a hand shut-off cock 26, and if desired, with a thermostatically regulated supply valve 27 governed by the temperature of the exhaust gases passing out through the pipe 20, the thermostatic valve having an element 28 leading to and sensitive to the temperature in the manifold 20, as will be readily understood.

With this arrangement, the operation is as follows:—

Let us assume all parts cold. The gas is turned on at the hand valve 26 and the damper 24 is suitably adjusted to provide a proper mixture. Because the exhaust manifold 20 is cold, the connection 28 to the thermostatic valve 27 holds said valve in open position. Motors 17 and 17a are started, it being understood further that the pilot light at 9 has been ignited and that the capacity of the fan 21 is slightly in excess of that of the blower 16. Combustible mixture will

flow to the burners 11 and issue from the slots 12 thereof, burning as long narrow flames which are applied directly to the uppermost part of the rotating cylinder 2. The products of combustion travel outwardly and downwardly along the inner surface of the cylinder wall, hugging the same until they reach the zone adjacent the orifice 19 of the exhaust manifold through which they pass to the suction fan 21 and thence to atmosphere. Heat is thus applied until the cylinder is brought to the proper temperature, according to the adjustment of the thermostat 27. If the temperature tends to rise above the predetermined point, the temperature of the exhaust gases increases, with an effect upon the connection 28 which is reflected in automatic adjustment of the thermostatic valve to reduce the supply of fuel, with a consequent tendency to reduce the temperature. The parts function in this manner with automatic regulation of the temperature to any point to which the thermostat is set. The heat is applied very efficiently to the walls of the ironing cylinder and because of the relative capacity of the blower 16 and fan 21, all leaks to the ironing cylinder are inwardly, and no combustible mixture or products of combustion can escape to the atmosphere.

What I claim is:

1. An ironing machine of the class described, comprising an ironing cylinder and a cooperating ironing member, said cylinder being rotatable, a relatively stationary burner located within the cylinder and arranged to direct flame upon the cylinder wall at the top of the cavity therein, and a single means for withdrawing products of combustion from a zone at the bottom of the cylinder cavity, said zone having a length equal to that of said cylinder cavity and said means being effective throughout the entire length of said zone.

2. An ironing machine of the class described, comprising an ironing cylinder and a cooperating ironing member, said cylinder being rotatable, a relatively stationary burner located within the cylinder and arranged to direct flame upon the cylinder wall at the top of the cavity therein, and means for withdrawing products of combustion from a zone at the bottom of the cylinder cavity, comprising a relatively stationary exhaust manifold lying within the cylinder cavity near its bottom.

3. An ironing machine of the class described, comprising an ironing cylinder and a cooperating ironing member, said cylinder being rotatable, a relatively stationary burner located within the cylinder and arranged to direct flame upon the cylinder wall at the top of the cavity therein, and means for withdrawing products of combustion from a zone at the bottom of the cylinder cavity, comprising a relatively stationary exhaust manifold lying within the cylinder cavity near its bottom and having an orifice presented downwardly.

4. An ironing machine of the class described, comprising an ironing cylinder and a cooperating ironing member, said cylinder being rotatable, a relatively stationary burner located within the cylinder and arranged to direct flame upon the cylinder wall at the top of the cavity therein, and means for withdrawing products of combustion from a zone at the bottom of the cylinder cavity, comprising a relatively stationary exhaust manifold lying within the cylinder cavity near its bottom and having a slot-like orifice extending lengthwise of the manifold and presented downwardly, said manifold having an exhaust pipe communicating therewith and said slot-like orifice narrowing toward said exhaust pipe.

5. An ironing machine of the class described, comprising a hollow ironing cylinder, padded rolls cooperating therewith, said cylinder and rolls being rotatable, the cylinder being provided at its opposite ends with rotating gudgeons and having its ends otherwise closed, a supply pipe for combustible mixture entering said cylinder through one of said gudgeons and an exhaust pipe of products of combustion passing out through the other of said gudgeons, the first mentioned pipe communicating with a relatively stationary burner located at the top of the cylinder cavity and the second mentioned pipe communicating with an exhaust manifold located at the bottom of the cylinder cavity.

RUSSELL A. HETZER.