July 7, 1942. H. CARLSON 2,288,785

STEAM IRON STRUCTURE

Filed Nov. 6, 1939 2 Sheets-Sheet 1

Fig. 1.

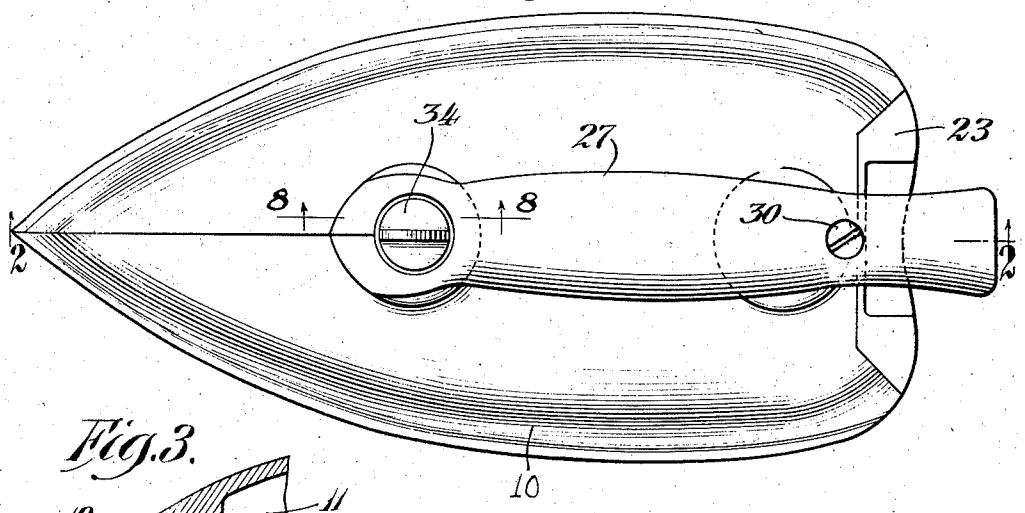


Fig. 3.

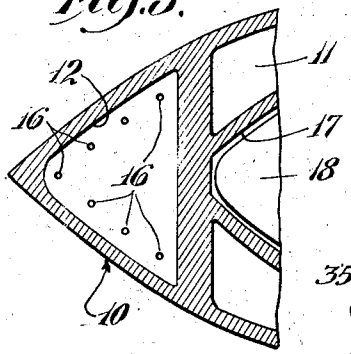


Fig. 2.

Inventor:
Harry Carlson
By Zabel, Carlson, Gitzbaugh & Wells
Attorneys

July 7, 1942. H. CARLSON 2,288,785

STEAM IRON STRUCTURE

Filed Nov. 6, 1939 2 Sheets-Sheet 2

Fig. 4.

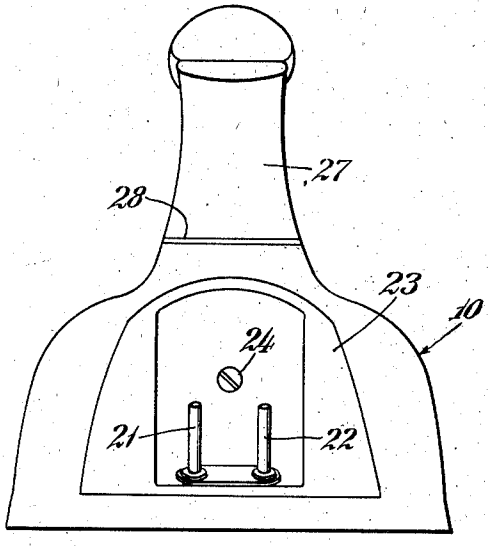


Fig. 5.

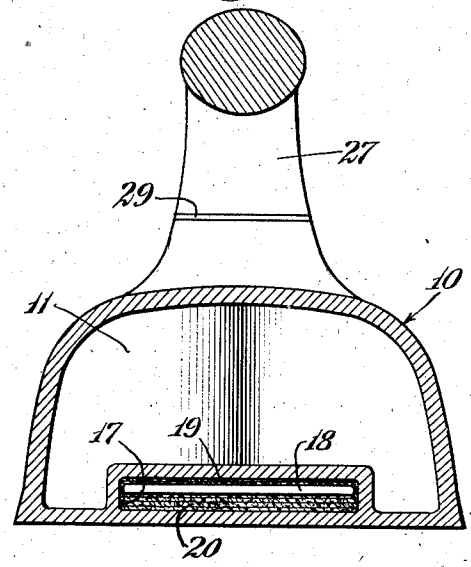


Fig. 6.

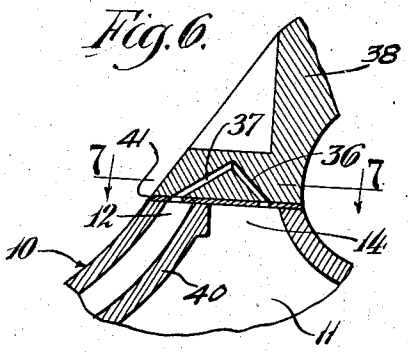


Fig. 8.

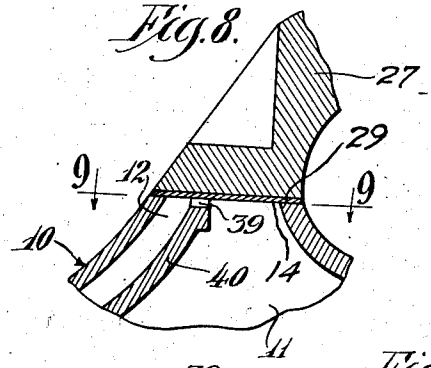


Fig. 7.

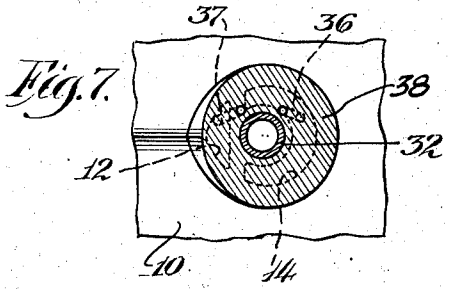
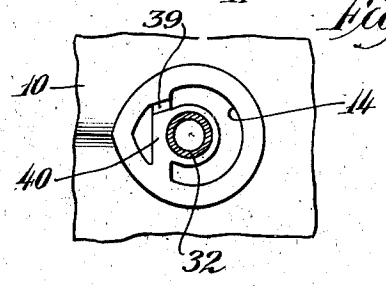


Fig. 9.



Inventor:
Harry Carlson
By Zabel, Carlson, Gribzbaugh & Wells
Attorneys.

Patented July 7, 1942

2,288,785

UNITED STATES PATENT OFFICE

2,288,785

STEAM IRON STRUCTURE

Harry Carlson, Chicago, Ill., assignor to Colfax Engineering Co., Chicago, Ill., a corporation of Illinois

Application November 6, 1939, Serial No. 303,111

3 Claims. (Cl. 38—77)

This invention relates to steam iron structures of the well-known type in which an electric heating unit is employed for producing steam from a quantity of water located in the body of the iron, such steam being released through openings in the bottom adjacent to the point of the iron. It is the object of this invention to provide a new and improved form and arrangement of parts by reason of which a highly superior iron from the standpoint of operation and durability can be produced at a minimum expenditure of labor and materials.

For bringing about these results, the body of the iron has been made in the form of a single integral casting of aluminum alloy arranged with the receptacle for the water, the chamber for the heating unit, and the duct for the delivery of the steam all formed substantially complete in the casting so as to be closed effectively by the mere addition of a handle member and a heel plate. In the construction illustrated, the arrangement is such that the machining of the body of the iron and the assembly of the iron complete can be effected very quickly and easily, practically the complete machining operation required being limited to the drilling and tapping of three bolt openings and the drilling of the openings in the bottom for the escape of the steam. By the improved arrangement as shown, the necessity for fluid-tight joints is avoided at all points except at the surfaces where the handle is connected with the body of the iron, and these joints are such that plain straight sheet gaskets are effective for long periods of years and are easily replaceable by any one with little or no mechanical ability if it is necessary eventually to substitute new gaskets.

It is another object of this invention to improve irons of this type in sundry details hereinafter brought out in the description of the construction. The preferred means by which the several objects of the invention have been attained are illustrated in the accompanying drawings, in which—

Fig. 1 is a top plan view of the preferred form of iron;

Fig. 2 is a central vertical section taken substantially at the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken substantially at the line 3—3 of Fig. 2;

Fig. 4 is an end view of the iron as seen from the right in Fig. 2;

Fig. 5 is a vertical section taken substantially at the line 5—5 of Fig. 2;

Fig. 6 is a vertical sectional view similar to Fig. 8 but showing a modified form of construction;

Fig. 7 is a horizontal sectional view taken substantially at the line 7—7 of Fig. 6;

Fig. 8 is a vertical sectional view taken substantially at the line 8—8 of Fig. 1; and

Fig. 9 is a horizontal sectional view taken substantially at the line 9—9 of Fig. 8.

Referring now to Figs. 1 to 7 inclusive, in which corresponding parts are indicated by the same reference characters, 10 indicates the body of the iron in the form of a casting formed preferably of aluminum alloy. As is best shown in Fig. 2, the body 10 is hollowed out to provide a water chamber 11 and a duct 12, a plate 13 formed integrally with the body portion being provided in transverse position at the top of the iron for closing the top of the chamber 11 except for comparatively small openings at 14 and 15 at the front and rear end portions of the casting. As is best shown in Fig. 8, the opening 14 is located closely adjacent to the upper end of the duct 12 so as to make it possible to close both openings by the use of a comparatively small closure member. As is clearly shown in Figs. 2 and 3, the duct 12 communicates at its lower end with a plurality of openings 16 through the bottom face of the iron at its forward point so as to permit steam to escape through the openings after passage downwardly through the duct.

The body 10 of the iron is also provided with a chamber 17 for the reception of an electric heating unit 18 of any approved type, the chamber 17 being quite shallow so as to receive the heating unit 18 readily into position with a thin layer 19 of asbestos or other suitable insulation above the unit and a considerably thicker layer 20 of insulation below the unit. In the arrangement shown, the heating unit 18 is provided with two contacts 21 and 22 which extend upwardly at the heel portion of the iron when the unit 18 is in operative position in the chamber 17.

For closing the chamber 17 for holding the heating unit 18 in operative position, a heel plate 23 is provided, also formed preferably as a casting, being held in position by a screw 24 tapped into a lug 25 provided on the rear wall of the chamber 11. The plate 23 is provided with a porcelain block 26 which is slipped into position in a suitable opening through the plate, the contacts 21 and 22 being held firmly in operative position by their connection with the heating unit and their contact with the block 26.

The means provided for closing the openings 12, 14 and 15 at the top of the casting comprises

a handle member 27 in the form of a yoke whose legs fit down on top of the several openings, straight sheet gaskets 28 and 29 being interposed between the casting and the bearing portions of the handle. The handle and gaskets are held in effective closure position by means of a machine screw 30 engaging a tapped opening in a lug 31 on the inner face of the water chamber 11 and a tubular bolt 32 tapped into a lug 33 at the top of the casting, such bolts passing through suitable openings in the gaskets 28 and 29. The arrangement is such that the tubular bolt 32 affords access to the water chamber 11 for filling the chamber, the upper end of the bolt 32 being closed by a screw-threaded head 34, a suitable gasket 35 being employed in connection with said head 34. For affording communication between the water chamber 11 and the duct 12 at the top of the casting, a notch 39 is provided in the upper edge of the wall portion 40, as is best shown in Figs. 8 and 9.

In Figs. 6 and 7, a modified form of means is illustrated for providing communication between the top portion of the water chamber 11 and the upper end of the duct 12. In the modified construction as shown in Figs. 6 and 7, a handle member 38 is employed similar to the handle 27 except that it is provided with openings 36 and 37 in communication with each other at their upper ends in lieu of the notch 39 as above described. A straight sheet gasket 41 is provided between the handle 38 and the casting, having small openings therethrough in registration with the openings 36 and 37 so as to make such openings effective for the passage of steam from the chamber 11 to the duct 12.

The improved arrangement as above described is such that the work of preparing the casting after its production and of assembling the iron complete is comparatively small. The openings 16 are drilled preferably by a single operation in a multiple drill machine; the tapping of the opening for the bolt 24 is quickly accomplished as a second operation after which the heating unit 18 can be readily inserted and the heel plate 23 applied; and the openings in the lugs 31 and 33 can be quickly tapped for the reception of the bolts 30 and 32. The notch 39 is preferably formed in the casting operation; if the arrangement shown in Figs. 6 and 7 is used, the openings 36 and 37 can be very quickly bored by the use of a simple jig.

The arrangement is such that when the iron has been assembled it is highly effective in operation. With a substantial amount of water in the chamber 11, and with the contacts 22 connected with a suitable source of electric current, the water in the chamber 11 is very quickly heated so as to cause steam to pass from the chamber 11 into the duct 12 and thence downwardly and out through the openings 16. Inasmuch as a straight sheet gasket is employed between the handle and the casting 10, both in the construction shown in Figs. 6 and 7 and also in the construction shown in Figs. 8 and 9, there is ample assurance that the joint between the handle and the casting is effectively closed and that the joint under any normal conditions will be effective for many years. If at any time the substitution of a new gasket is required, this can be effected by almost anyone with very little or no mechanical skill with the assurance that the joint after the substitution of the new gasket will be again effectively closed.

In case it becomes necessary to substitute a fresh heating unit, this can of course be very readily effected by the removal of the heel plate 23, after which the heating unit 18 can be easily slid backwardly toward the right in Fig. 2 out of the chamber 17.

While the form and arrangement of parts as shown in the drawings and as above described are preferred, it is to be understood that the invention is not limited to that arrangement except so far as the claims may be so limited, since changes might well be made in the arrangement without departing from the invention.

I claim:

1. A steam iron structure, comprising in combination an integral casting having a water chamber and a duct formed therein and opening at the top portion of the casting, means adapted effectively to close and seal the chamber and duct and to connect them in communication with each other at the top of the casting, comprising a handle member and a plain straight sheet gasket covering the openings from the chamber and the duct, means comprising a tubular bolt for holding the handle and gasket in effective closure position and serving as a means for filling the water chamber, and means for closing the opening through said tubular bolt so as to direct steam downwardly through said duct from the top of the water chamber for escape through openings in the bottom face of the iron.

2. A steam iron structure, comprising in combination an integral casting having a water chamber formed in the body portion of the casting with a transversely positioned plate formed integrally with the body portion for closing the top of the water chamber except for comparatively small openings at the front and rear end portions of the casting, and with a duct arranged at the point of the iron extending upwardly from an opening in the bottom face of the iron and along the front face of the water chamber and opening closely adjacent to the front opening from said chamber, and means comprising a handle member in the form of a yoke removably secured in position on said casting with the leg portions of the yoke extending downwardly and with the bottom faces of the legs of the yoke closing said three openings at the top of the casting so as to direct steam downwardly through said duct from the top of the water chamber for escape through said opening in the bottom face of the iron.

3. A steam iron structure, comprising in combination an integral casting having a water chamber formed in the body portion of the casting with a transversely positioned plate formed integrally with the body portion for closing the top of the water chamber except for comparatively small openings at the front and rear end portions of the casting, and with a duct arranged at the point of the iron extending upwardly from an opening in the bottom face of the iron and along the front face of the water chamber and opening closely adjacent to the front opening from said chamber, said casting being provided further with a shallow chamber cored out of the casting at the bottom portion thereof in rear of the duct for the reception of a heating unit, and a handle fixedly secured to said casting and having a face portion at one end closing two of said three openings at the top of the casting and a face portion at the other end closing the other of said three openings.

HARRY CARLSON.