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F. HIRSCH

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SPRAY GUN

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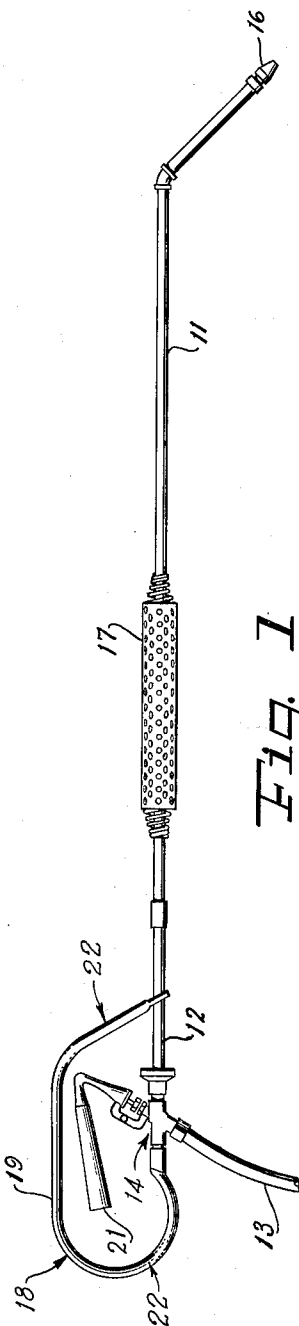


Fig. 1

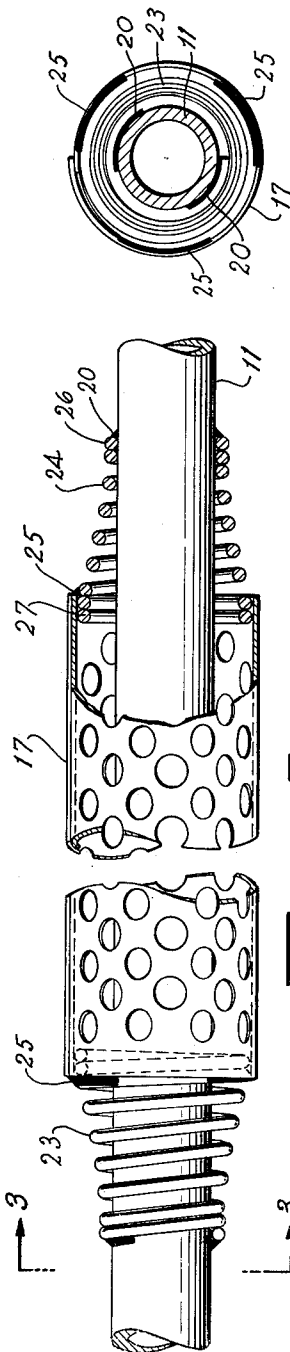


Fig. 2

Fig. 3

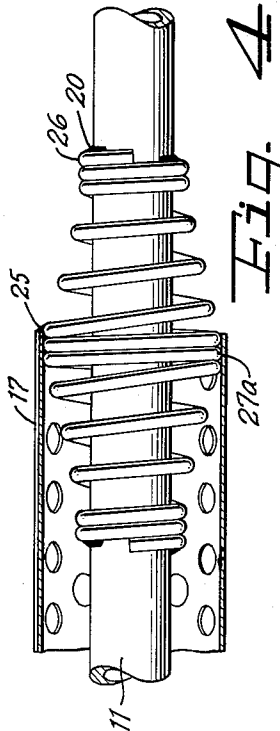


Fig. 4

INVENTOR.
FRED HIRSCH
BY
A. Schapp.
ATTORNEY

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SPRAY GUN

Fred Hirsch, Oakland, Calif., assignor to Malsbary Manufacturing Company, Oakland, Calif., a corporation of California

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4 Claims. (Cl. 239—530)

The present invention relates to cleaning systems of the type utilizing a spray of high temperature water or steam for cleansing heavy machinery and vehicles, the invention relating more particularly to the delivery pipe or "gun" used to direct the spray to the area to be cleaned.

This invention is particularly suited for use with cleaning machines of the general nature disclosed in the Patent No. 2,345,614, granted to Job F. Malsbary, et al., entitled Cleaning Machine.

As discussed in that application, the steam or cleaning liquid passing through the delivery pipe to the spray nozzle is maintained at relatively high temperatures up to or exceeding 350° F. Even with heavy gloves, it would be impossible for the operator to grip the delivery gun. Suitable heat insulated grips or handles must therefore be provided.

These handgrips will be subject to considerable abuse during cleaning operations and must be sufficiently strong to stand up under day to day use. The materials selected should, therefore be strong, while at the same time affording a handle which will not become too hot for convenience.

The cleaning gun of the present invention provides a handle construction meeting these requirements in a novel and efficient manner.

It is, therefore, an object of the present invention to provide a steam cleaning gun having novelly positioned handholds or grips which will remain relatively cool while the device is being used with cleaning fluids having high temperatures.

Another object of the present invention is to provide handholds for a steam cleaning gun which are held in spaced relation from the delivery pipe for circulation of cooling and insulating air by mounting members which diminish heat transfer from the delivery pipe through the provision of a long path for the heat to travel.

A still further object of my invention is to provide a handgrip of the character described which is resiliently mounted upon the delivery pipe in a manner serving to reinforce and protect the handgrip from damage by bumping, dropping or being stepped upon.

Further objects and advantages of my invention will become apparent from a consideration of the following description, and the claims hereto attached.

The preferred form of the invention is illustrated in the accompanying drawing, forming part of this specification, in which:

Figure 1 is a side elevational view of a steam cleaning gun constructed in accordance with the present invention;

Figure 2 is an enlarged fragmentary detail view of a handgrip forming a part of the steam cleaning gun of Figure 1, a portion thereof being broken away and shown in section for clarity of illustration;

Figure 3 is a cross-sectional view taken substantially on the plane of line 3—3 of Figure 2, and

Figure 4, an enlarged detail view of modified form of handgrip.

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While I have shown only the preferred form of my invention, I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached, without departing from the spirit of the invention.

The steam cleaning gun of the present invention consists essentially of a tubular member or delivery pipe 11 having one end 12 adapted for connection to a suitable source of steam or other cleaning fluid under pressure, as by hose 13, valve means 14 for controlling the flow of steam through the pipe 11 to a spray nozzle 16, and a handgrip 17 secured around the pipe 11 in spaced relation thereto so as to permit circulation of air between the handgrip and pipe.

Preferably, a second handle 18 is attached to the end 12 of the pipe 11, as shown in Figure 1. The handgrip portion 19 of this handle is positioned adjacent to the actuating handle 21 of the valve means 14. This permits the operator to control the flow of steam conveniently, without letting go of handle 18.

The handle 18 and the handgrip 17 are spaced from the delivery tube 11 by a distance sufficient to allow air to circulate. This serves to cool the handholds and insulate them from the hot tube. Preferably, this spacing should be in the order of one-half inch, or more.

As here shown, the handgrip 17 is cylindrical in shape and is mounted in concentrically spaced relation around the central portion of the tube 11. The exact location is dependent upon the weight and length of the tube and valve assembly, but the distance from the handle 18 should be on the order of one to two feet. This spacing permits easy manipulation without stretching the arms.

In accordance with the present invention, the mounting means for the handle 18 and handgrip 17 minimizes heat transfer from the delivery pipe 11. This is accomplished by forming such means to provide an elongated path from the pipe to the handle, and by exposing this path to the cooling effect of the air.

The mounting means 22 of handle 18 consists of tubular brackets attached to the ends of the handgrip portion 19 and curving therefrom a considerable distance to where they are secured to the pipe 11. The length of the curved portions and the distance from the valve means 14 will keep handle 18 sufficiently cool.

As a feature of the present invention, the mounting means for handgrips 17 is provided in the form of a pair of elongated rods 23 and 24, each of which is bent into the form of a tapered helix. The inside diameter of the smaller end 26 of the helix fits onto and is secured, as by welds 20, to the outside periphery of the tube 11.

The larger end 27 of the helix is formed into one or more rings which fit into the inner periphery of an end of the handgrip 17 and which is secured thereto as by welds 25, see Figure 2. This construction supports and reinforces the handgrip ends, thus permitting the handgrip 17 to be made from comparatively thin sheet metal.

For particularly rugged service, a stronger support for the handgrip 17 on the tube 11 is provided by forming rods 23 and 24 in a double helix. This form is illustrated in Figure 4 of the drawings and consists of a helix tapered both ways from the middle 27a.

It will be noted that this construction affords a stronger spring action with the same diameter rod, while preserving the long heat transfer path from tube 11 to handle 17.

The helical form of rods 23 and 24 provides the aforementioned long heat transfer path. For example, in the steam gun illustrated in the drawings, the tube 11 may be formed of ½ inch pipe with the handgrip of approximately 1¾ inches in diameter. In such case, the rods 23 and 24 are approximately 25 inches long before being formed into the single tapered helix or spiral of Figure 2,

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or about 50 inches long in the double tapered helix of Figure 4.

Circulation of the air around the handgrip 17 is promoted by the open form of the spiral rods 23 and 24 and may be increased by perforating the handgrip barrel in the manner shown in Figure 2 of the drawings.

As will be noted, the spiral rods 23 and 24 resemble coil springs. This provides a further advantage in that blows or other forces exerted upon the handgrip will be cushioned and absorbed by flexing the rods, thus protecting the assembly from damage.

The rods 23 and 24 are here formed of mild steel for ease in welding to the pipe 11 and handgrip 17, but for rough service may be made of spring steel. In such case, due to the difficulties in welding, they may be secured to the pipe and handgrips by suitable clips or clamps, or even by the spring tension of the rods themselves.

From the foregoing, it will be seen that I have provided a steam cleaning gun which is strong, sturdy and convenient to use by reason of the placement of the handles and the construction which keeps the handles cool to the touch.

By way of example, it might be stated that in the gun in successful operation at the present time, the overall length of the tube 11 is about three feet, that of the cylindrical handgrip 17, about one foot, and the axial length of the coiled rods about one and three quarter inches.

The distance between the central portion of the handgrip and the handle 21 is about two feet, and the other parts are provided in the proper proportions.

I claim:

1. A hand grip for a spray gun of the character described, comprising a tube encircling the spray gun and having clearance therewith, a pair of tapered helical

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springs disposed at opposite ends of the tube, the springs having their small ends fitting upon and anchored to the gun in spaced relation to the ends of the tube, and having their large ends fitted into and anchored to the ends of the tube, and the clearance being sufficient to cause intermediate sections of the springs to be freely exposed to the atmosphere and to form continuous passages for conducting and dissipating heat emanating from the gun, and the effective length of said passages being greatly in excess of the distance between the anchoring points.

2. A hand grip as defined in claim 1, in which the length of the tube is approximately one foot, the axial length of the springs approximately one and three-quarter inches, and the spacing between the gun and the tube approximately one-half an inch.

3. A hand grip as defined in claim 1 in which the tube is made of relatively light material and in which the largest turn of each spring is doubled upon itself within each end of the tube to reinforce said end.

4. A hand grip as defined in claim 1, in which the helical spring at each end of the tube is continued into the tube in a symmetrical reverse taper, with its small end anchored to the gun well inside of each end of the tube.

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