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(12)(19)(CA) **Demande-Application**

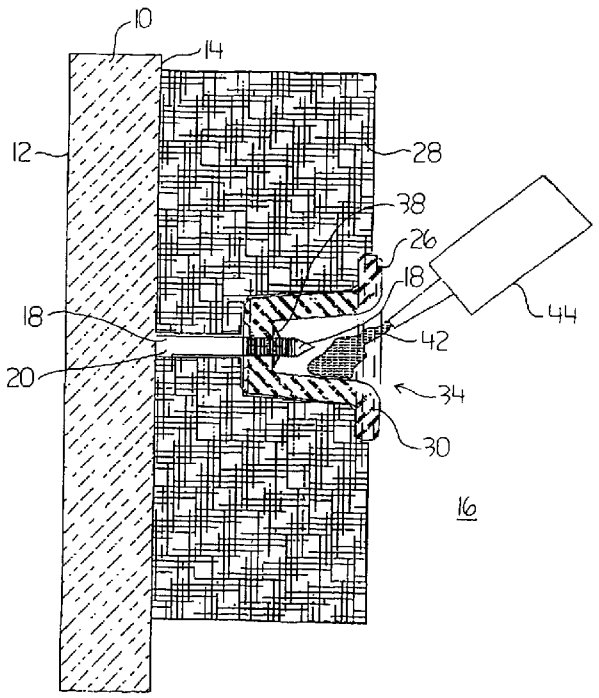
(21)(A1) **2,249,111**
(22) 1998/10/02
(43) 1999/04/22

(72) RAJEWSKI, Robert C., CA
(71) RAJEWSKI, Robert C., CA

(51) Int.Cl.[6] F23G 5/44, F23M 5/04
(30) 1997/10/22 (08/956,176) US

(54) **SYSTEME DE FIXATION DE LÆISOLANTDANS UN INCINERATEUR**

(54) **INCINERATOR INSULATION FASTENING SYSTEM**



(57) SystFme de fixation de lÆisolantdans un incinTrateur utilisant une paroi dÆincinTrateurdes tiges sÆTtendantde la paroi a lÆintTrieurde lÆincinTrateur;chaque tige comptant plusieurs crOtes sur une partie de sa circonfTrence; plusieurs fixations de produits rTfractaires; chaque fixation de produit rTfractaire possTdant une partie en forme de bride, un c(tT paroi et un c(tT incinTrateur, et une ouverture a travers laquelle une tige va du c(tT paroi jusquÆauc(tT incinTrateur, une rondelle a ressort fixTe sur chaque tige du c(tT incinTrateur de la fixation du produit rTfractaire liT a la tige, et un isolant fixT a la paroi entre chaque fixation de produit rTfractaire et la paroi.

(57) An incinerator insulation fastening system, comprising, a wall of an incinerator, pins extending from the wall inside the incinerator, each of the pins having plural circumferential ridges along a portion of each pin, plural refractory fasteners, each refractory fastener having a flange portion, a wall side and an incinerator side, and an opening through which a pin extends from the wall side to the incinerator side, a spring washer secured about each pin on the incinerator side of the refractory fastener associated with the pin; and insulation secured to the wall between each refractory fastener and the wall.

ABSTRACT OF THE DISCLOSURE

An incinerator insulation fastening system, comprising, a wall of an incinerator, pins extending from the wall inside the incinerator, each of the pins having plural circumferential ridges along a portion of each pin, plural refractory fasteners, each refractory fastener having a flange portion, a wall side and an incinerator side, and an opening through which a pin extends from the wall side to the incinerator side, a spring washer secured about each pin on the incinerator side of the refractory fastener associated with the pin; and insulation secured to the wall between each refractory fastener and the wall.

TITLE OF THE INVENTION:

Incinerator Insulation Fastening System

NAME OF INVENTOR:

Robert C. Rajewski

FIELD OF THE INVENTION

This invention relates to an incinerator insulation fastening system.

BACKGROUND OF THE INVENTION

The inside wall of an incinerator is covered with insulation to protect the wall from the high internal temperatures of the incinerator. Typically, this insulation will be made of ceramic fiber. The insulation is secured by bars that extend out from the incinerator wall and pass through the insulation. Flanged fasteners are secured to the bars, with the ceramic insulation held against the incinerator wall with the flange of the fastener.

Typically, the bars are flat metal bars with several slots spaced along the bars. The fastener used is a flat square metal washer that has a slot for receiving the pins. The washer is slipped over the bar and then twisted at one of the slots to hold the washer, and hence the insulation, on the wall. A difficulty with metal washers is that they tend to corrode in the hot corrosive atmosphere on the inside of the insulation. For this reason, Blasch Precision Refractory, of Albany, New York, makes a ceramic washer that also has a slot for receiving a bar, and which is shaped like a bowl, with the slot in the bottom of the bowl. After the ceramic washer is twisted to secure the washer on the bar, a ceramic plug and/or liquid ceramic is placed in the bowl of the washer. The

ceramic washer is not prone to corrosion but has the disadvantage that it tends to rotate and fall off the bar.

SUMMARY OF THE INVENTION

This invention seeks to provide a fastening system for incinerator insulation that overcomes disadvantages of the prior art fastening systems. There is therefore provided according to a first aspect of the invention, an incinerator insulation fastening system, comprising, a wall of an incinerator, pins extending from the wall inside the incinerator, each of the pins having plural circumferential ridges along a portion of each pin, plural refractory fasteners, each refractory fastener having a flange portion, a wall side and an incinerator side, and an opening through which a pin extends from the wall side to the incinerator side, a spring washer secured about each pin on the incinerator side of the refractory fastener associated with the pin; and insulation secured to the wall between each refractory fastener and the wall.

In a further aspect of the invention, the refractory fastener is concave on the incinerator side to form a cavity, and the system further comprises hardened liquid ceramic disposed inside the cavity and covering the pin and spring washer. The refractory fastener is preferably made of ceramic.

In a further aspect of the invention, the pin, concave ceramic fastener and spring washer may be sold as a fastener assembly.

These and other aspects of the invention are described in the detailed description of the invention and claimed in the claims that follow.

BRIEF DESCRIPTION OF THE DRAWINGS

There will now be described preferred embodiments of the invention, with reference to the drawings, by way of illustration only and not with the intention of limiting the scope of the invention, in which like numerals denote like elements and in which:

Fig. 1 is a section through an incinerator insulation fastening system according to an embodiment of the invention;

Fig. 2A is a side view of a pin for use with the embodiment of Fig. 1;

Fig. 2B is a section through a ceramic fastener for use with the embodiment of Fig. 1;

Fig. 2C is a side view of spring washer for use in the embodiment of Fig. 1; and

Fig. 3 is a plan view of a portion of an incinerator insulation fastening system according to the invention showing an arrangement of pins and refractory fasteners.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Fig. 1 shows an embodiment of the incinerator insulation fastening system. A wall 10 of an incinerator has an exterior side 12 and an interior side 14 facing the interior 16 of the incinerator. Pins 18 are secured to the interior side 14 of the incinerator wall 10 as for example by welding. The pins 18 may be steel ring nails available for example from SS Nail of Surrey, B.C., Canada. The heads 20 of the pins 18 may be used to provide a secure base for welding to the incinerator wall 10. The pins 18 thus extend from the wall 10 into the inside 16 of the incinerator. Each pin 18 has plural circumferential ridges 22 along a portion 24 of each pin. Plural refractory fasteners 26, as many as are required to hold insulation 28 on the wall 10,

are inserted over the pins 18. Each refractory fastener 26 has a flange portion 30, a wall side 32 and an incinerator side 34, and an opening 36 through which a pin 18 may extend as shown in Fig. 1 from the wall side 32 to the incinerator side 34. The refractory fasteners 26 are preferably made of ceramic or other refractory material of equivalent properties and suitable for a high temperature corrosive environment, and may be obtained from Blasch Precision Ceramic of Albany, New York. A spring washer 38 is secured about each pin 18 on the incinerator side 34 of the refractory fastener 26 associated with the pin 18. The spring washers 38 are commonly commercially available from most hardware stores. To complete the system, insulation 28 is secured to the wall 10 between each refractory fastener 26 and the wall 10. The insulation 28 is also readily commercially available and may be obtained from, for example, Premier Refractory, of Edmonton, Alberta, Canada.

As shown in Fig. 2B, each refractory fastener 26 is concave on the incinerator side 34 to form a cavity 40. To protect the spring washer 38 from the corrosive environment, liquid ceramic 42 is poured into the cavity from a source of liquid ceramic 44, to form a plug disposed inside and filling the cavity 40, such that, when hardened, the liquid ceramic 42 covers the pin 18 and spring washer 38. The liquid ceramic may be obtained from Blasch Precision Ceramic of Albany, New York.

The configuration of pins 18 is selected to hold the insulation 28 on the wall 10 in known manner.

A person skilled in the art could make immaterial modifications to the invention described in this patent document without departing from the essence of the invention that is intended to be covered by the scope of the claims that follow.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An incinerator insulation fastening system, comprising:

a wall of an incinerator;

pins extending from the wall inside the incinerator, each of the pins having plural circumferential ridges along a portion of each pin;

plural refractory fasteners, each refractory fastener having a flange portion, a wall side and an incinerator side, and an opening through which a pin extends from the wall side to the incinerator side;

a spring washer secured about each pin on the incinerator side of the refractory fastener associated with the pin; and

insulation secured to the wall between each refractory fastener and the wall.

2. The incinerator insulation fastening system of claim 1 in which the refractory fastener is concave on the incinerator side to form a cavity, and further comprising hardened liquid ceramic disposed inside the cavity and covering the pin and spring washer.

3. The incinerator insulation fastening system of claim 2 in which the refractory fastener is made of ceramic.

4. A fastener assembly, comprising:

a pin having plural circumferential ridges along a portion of the pin;

a ceramic fastener having a flange portion, a first side and a second side, and an opening through which the pin extends from the first side to the second side; and

a spring washer secured about the pin on the second side of the ceramic fastener.

5. The fastener assembly of claim 4 in which the ceramic fastener is concave on the second side to form a cavity.

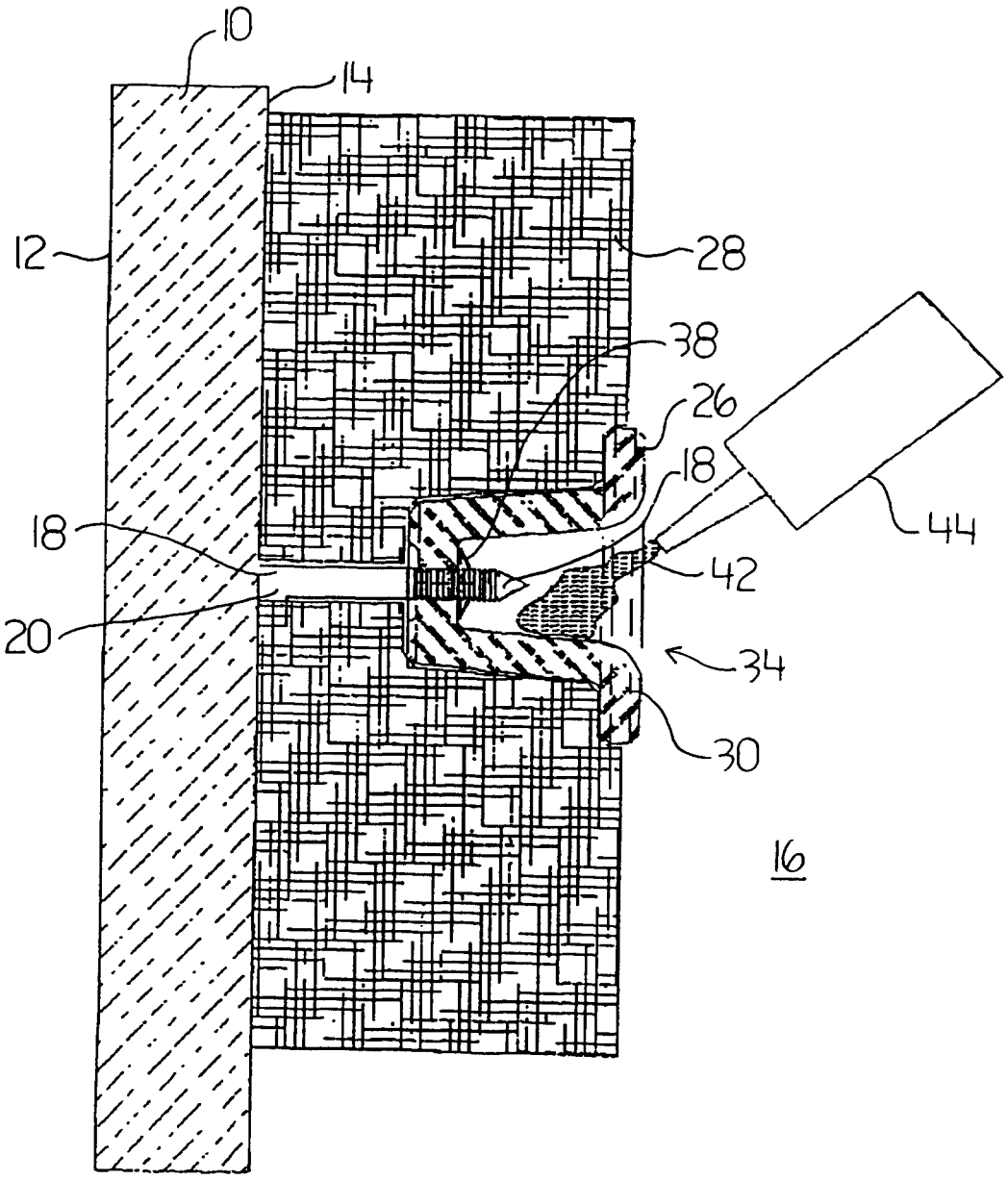


FIGURE 1

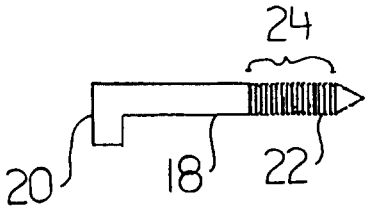


FIGURE 2A

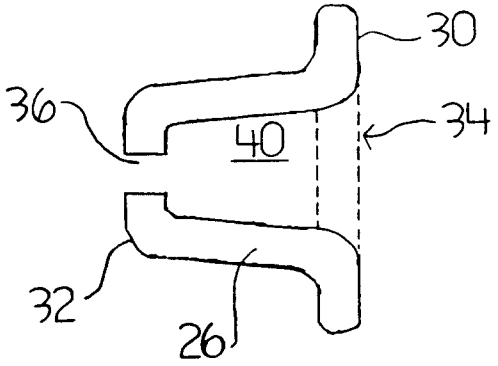


FIGURE 2B

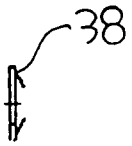


FIGURE 2C

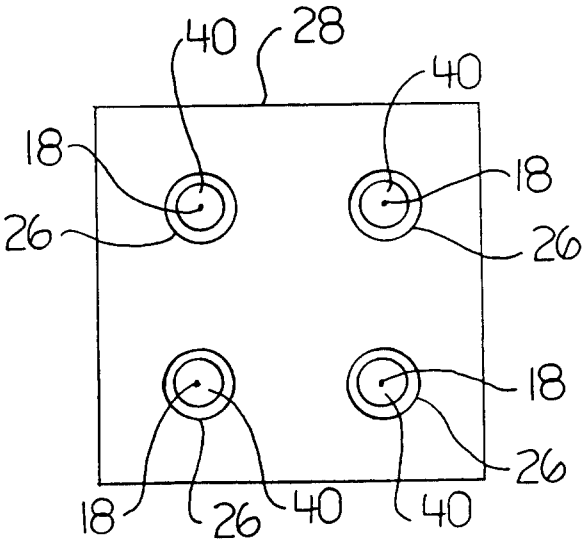
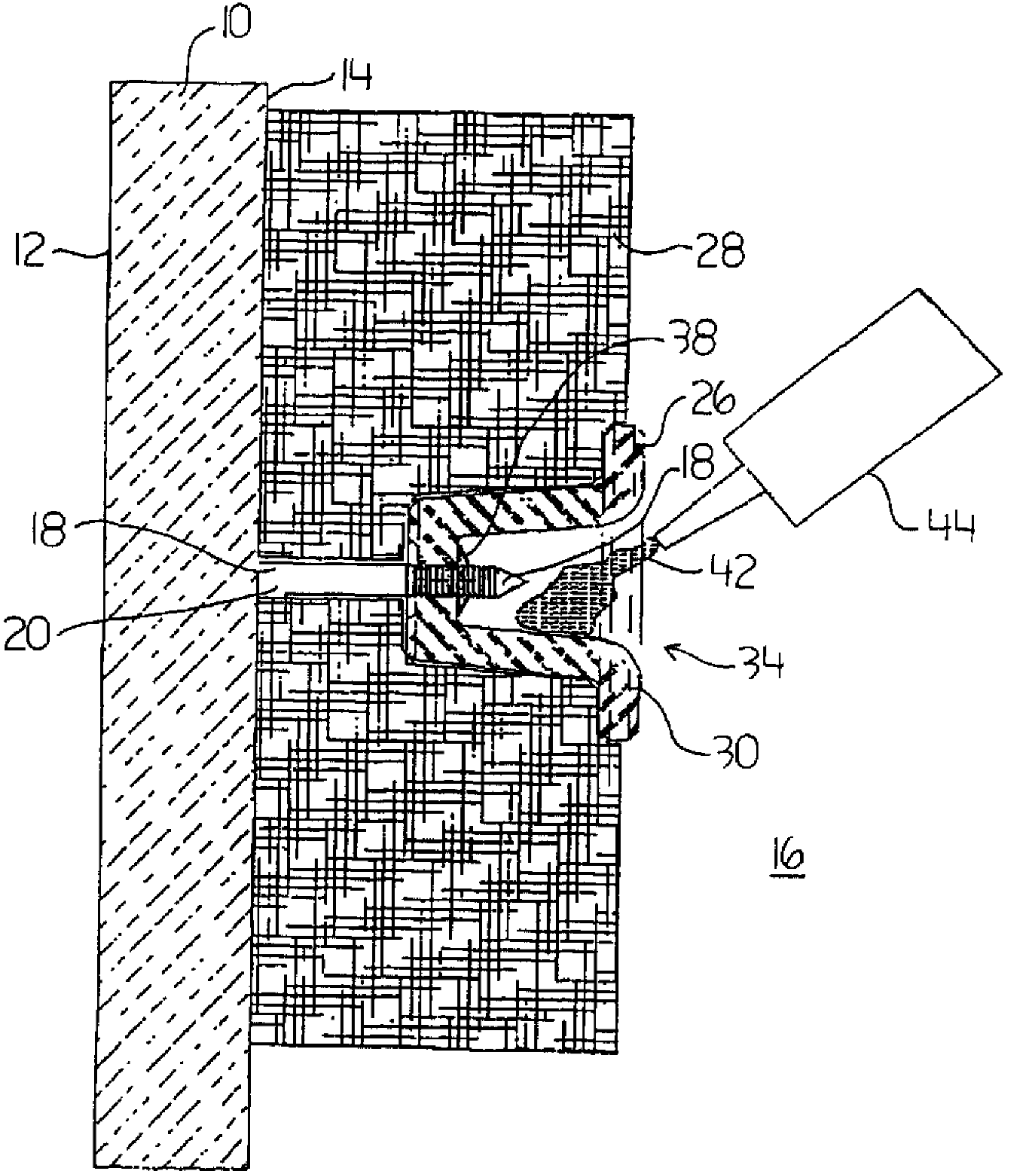


FIGURE 3


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