May 2, 1933. H. C. SMITH 1,907,307

PIPE COVERING

Filed May 6, 1930

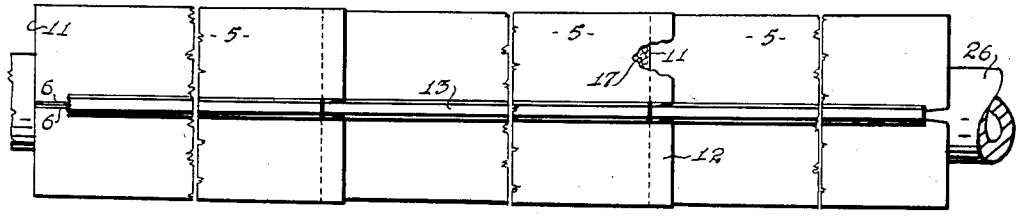

FIG. 1.

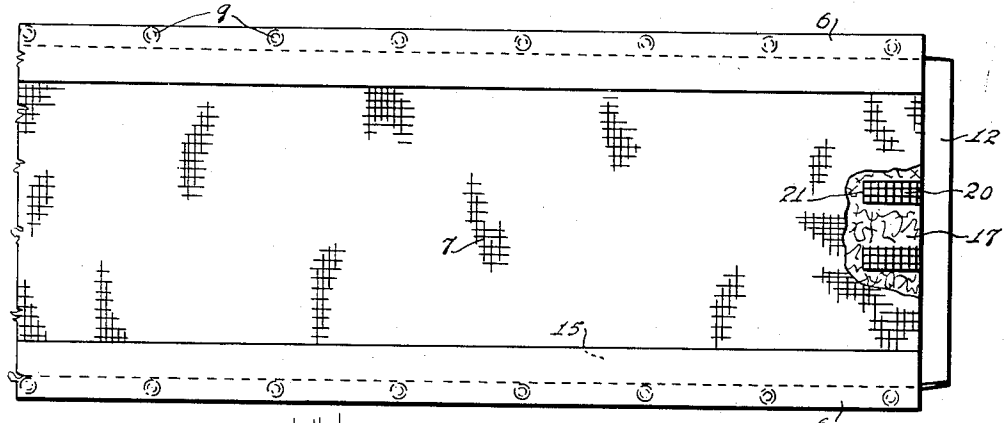

FIG. 2.

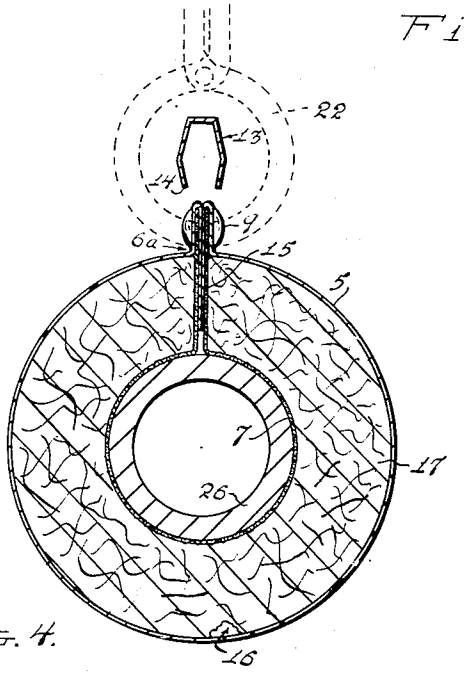

FIG. 4.

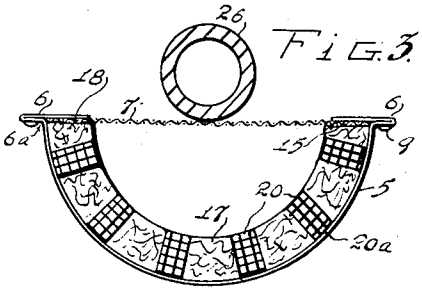

FIG. 3.

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UNITED STATES PATENT OFFICE

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PIPE COVERING

Application filed May 6, 1930. Serial No. 450,208.

My invention relates to pipe covering or insulation and has for its primary object the provision of a pipe covering embodying highly efficient loosely felted mineral wool of any commercial type.

Mineral wool, particularly in a loose felt or mantle is characterized by a very high percentage of voids and its fibres are so resilient and interlaced as to hold in loose association far better than other forms of mineral wool, altho it will appear hereinafter that the invention is applicable to any light weight fibrous material which is suited for insulation.

The further objects of the invention are simplicity of application, durability of the pipe covering, proper protection of the insulating material, and the like. Other objects and advantages will appear hereinafter.

In the accompanying drawing I have illustrated one practical embodiment of my invention.

In the drawing, Figure 1 is a plan view of a pipe or header to which are shown a plurality of my improved pipe covering sections being applied.

Figure 2 is a view in section on the line 2—2 of Fig. 1.

Figure 3 is a longitudinal section of the pipe covering section.

Figure 4 is a cross section on a line 4—4.

Referring to the drawing and the numerals appearing thereon, 5 indicates a pipe-encompassing sleeve of larger diameter than the pipe 26 to which it is to be applied. The sleeve is normally cylindrical in shape being framed of a relatively thin pliable metal blank (such as galvanized iron) rolled into the cylindrical form. The circumferential dimension of the blank is increased over the normal circumference of the sleeve and the corresponding ends of the blank are bent as at 6*a* tangential to the circumference of the sleeve so that when the sleeve is formed the ends of extents 6, 6 are contiguous to one another and tangential to the circumference of the sleeve. By moving these extents away from one another the sleeve is opened so that it may be placed over a pipe and subsequently closed by bringing the two extents, 6, 6 into abutment.

These extents are of double thickness, additional portions 6*a*, 6*a* of the blank being doubled back to clasp between them respective ends of a sheet of metal cloth 7. The metal cloth is of limited width so that it is stretched into practically straight line position when the sleeve is well opened, and this metal cloth ties the opposed extents 6—6 of the sleeve together to limit opening movement thereof; and for other purpose apparent hereinafter.

The double thickness extents, holding the metal cloth are deformed at regular intervals as at 9 along their outermost edges, thereby providing exterior protrusions 9*a* while holding the underlying portions of the metal cloth crimped and in permanent position. (See the enlarged cross section Fig. 4).

One end margin 11 of the sleeve terminates equally with the extents 6 but the other end of the sleeve is continued axially of the sleeve beyond the termination of the extents 6. Also the said continuation or extent 12 of the sleeve is slightly reduced in circumference so that the completed sleeve is of slightly tapering decreasing diameter at that end; whereby such end may be fitted into the other end of another section and to bring the extents 6, 6 of one pipe covering section into close lineal relationship to the extents 6—6 of the next section; the extents abutting one another and thereby determining the spacing of the pipe covering sections along the pipe.

An elongated U shape clip 13 is provided, adapted to be expanded over contiguous extents 6, 6 of a pipe section and over the corresponding protrusions, to lock the respective extents to each other to hold the sleeve in normal closed position. Preferably the innermost co-extensive free ends 14 of the U shape clip are bent inwardly toward one another so that the clip is more readily applied by sliding it axially of the pipe covering section over succeeding protrusions, than by pressing the clip over the extents 6, 6, radially of the section.

These extents, while extending outwardly

from the circumference of the sleeve also extend inwardly to provide interval shoulders 15, 15.

When the entire assembly of parts so far described is positioned over an encompassed pipe, and the extents are brought into contiguity and locked, there is provided an annular space 16 between the pipe and the sleeve; this annular space being of course a semi-circular space when the sleeve is in open position. When in this open position this semi-circular space is defined at each end by the corresponding shoulder 15.

Upon the inner surface 5*a* of the sleeve and between the shoulders, there is placed a mantle or felt 17 of insulating material such as the aforesaid mineral wool. This wool, is in one single loosely felted piece and in such form of course has high insulating characteristics.

Its respective ends 18 abut the corresponding shoulders and are protected thereby when the section is open; the metal cloth serving to protect the remainder of the felt from contact with foreign objects.

The wool is held contiguous to the inner surface of the sleeve, at all times, either when the pipe section sleeve is open or closed, by clips 20 secured at one end to the sleeve and having the other free end 21 bent properly to overlay the felt and hold it in position without compressing or distorting it appreciably.

The felt will of course conform to the shape of the sleeve at all times; the clips 20 are of limited width and limited contact with the sleeve so as to not interfere with bending thereof, and said clips are foraminous and do not obscure the wool by reason of being made of small sections of heavy screen cloth.

To apply the section to a pipe it is opened to semi-circular form, then closed over the pipe, the clip is put in place and then another section is so applied further along the pipe. Now the last applied section is moved axially of the pipe toward the first applied section until the end of the first section telescopes into the other end of the last applied section and the clips 13 and extents 6, 6 are brought into contact with one another. Now there is no exposed joint or crevice between the sections opening to the now concealed wool. While the sections are being applied to or moved axially of the pipe the cloth prevents abrasion between pipe and wool. When a section is applied to the pipe the pipe is practically directly contacted by the fibrous resilient structure of the wool which compresses itself through the openings in the screen cloth to reduce the space between wool and pipe to a minimum and to provide as effective insulating contact as if the light weight screen cloth were not present. This screen cloth acts to part the wool from the pipe at any future time if the section is to be removed therefrom.

The resilient or compressible nature of the wall and the spaced arrangement and foraminous structure of the clips 20 also insures abutment of the wool of adjacent sections so that no air space remains between the adjacent wool pads of adjacent pipe covering sections. A hot pipe or like object covered with these sections is, throughout the extent of such sections, entirely surrounded by wool, equally at all points, while the wool is surrounded by metal sleeves telescoped into one another at their ends so that they are air tight and moisture tight, and each sleeve is locked and sealed at its abutting extents 6, 6 so that there also moisture and air is excluded. In other words a pipe so covered is entirely covered with a resilient covering of wool, which in turn is protected fully at all points by a metal covering. The clips 20, the metal extents 6, 6 and the screen cloth all cooperate and assist to hold the weight of the sleeve or, any external weight from eventually compressing the wool at any one point of contact along the pipe while thermal metallic connection between pipe and metal sleeve is practically nil.

I claim:

1. In a pipe covering a deformable one-piece sleeve having separated juxtaposed parallel edges extending from end to end thereof, parallel inwardly directed contiguous extents axially of the sleeve coextensive with said edges and to the axis of the sleeve, removable means for locking said extents in such position, a flexible insulating pad within said sleeve contiguous with the inner surfaces thereof, a flexible screen overlying said pad and connected at respective ends to the corresponding of the aforesaid extents; said pad cut in a single co-extensive piece from felted mineral wool and having corresponding edges abutting the said extents.

2. In a pipe covering a deformable sleeve having separated juxtaposed parallel edges extending from end to end thereof, parallel contiguous extents axially of the sleeve co-extensive with said edges and tangential to the axis of the sleeve, removable means for locking said extents in such position, and a flexible insulating pad within said sleeve contiguous with the inner surfaces thereof, said sleeve having a converging circumferential projecting extent to one end thereof, and a screen normally disposed contiguously over said pad, and connected at respective sides to corresponding extents, said extents being bent back upon themselves and thereby holding the respective sides of screen clamped thereto.

3. In a pipe covering a deformable sleeve having separated juxtaposed parallel edges

extending from end to end thereof, parallel contiguous extents axially of the sleeve coextensive with said edges and tangential to the axis of the sleeve, removable means for locking said extents in such position, and a flexible insulating pad within said sleeve contiguous with the inner surfaces thereof, and clips spaced circumferentially internally of said sleeve; said clips each attached at one end to said sleeve and having their free ends extending upwardly therefrom and bent back over said pad.

HERBERT C. SMITH.