

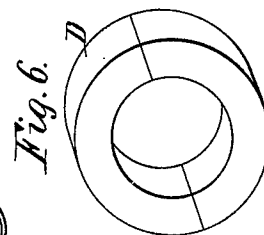
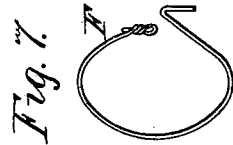
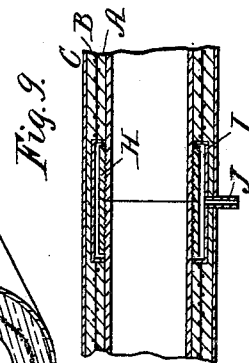
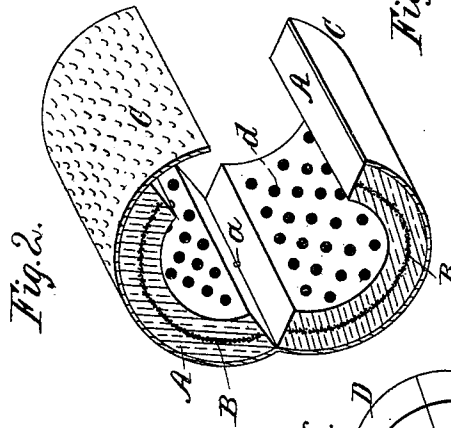
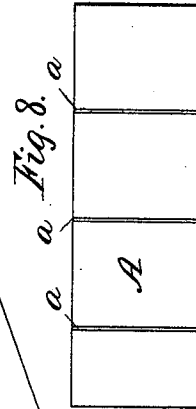
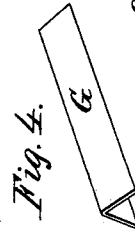
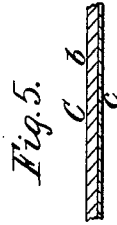
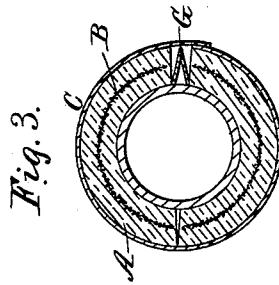
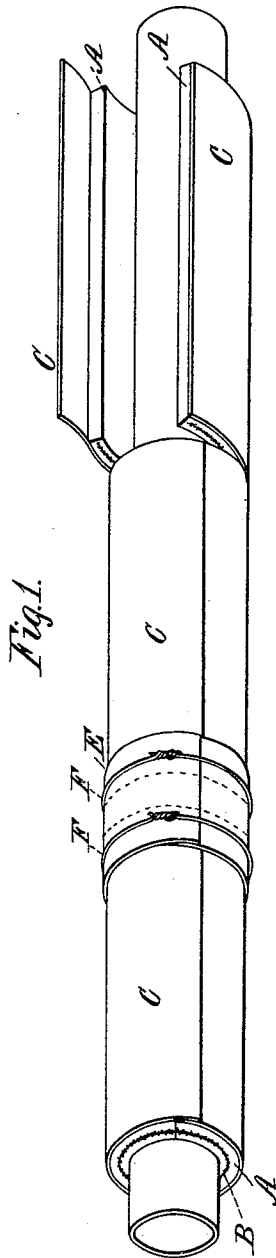
(No Model.)

P. CAREY.

COVERING FOR STEAM PIPES AND BOILERS.

No. 388,260.

Patented Aug. 21, 1888.



Witnesses:
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UNITED STATES PATENT OFFICE.

PHILIP CAREY, OF CINCINNATI, OHIO.

COVERING FOR STEAM-PIPES AND BOILERS.

SPECIFICATION forming part of Letters Patent No. 388,260, dated August 21, 1888.

Application filed April 30, 1888. Serial No. 272,289. (No model.)

To all whom it may concern:

Be it known that I, PHILIP CAREY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Coverings for Steam-Pipes and Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of coverings for steam-pipes, boilers, and the like, known as "removable" coverings, usually made and applied in sections.

It has for its object the improved construction of this class of coverings, whereby the heat is better retained and the durability of the covering increased.

The novelty of my invention will be herein set forth, and distinctly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a portion of pipe, showing the application of my improved covering. Fig. 2 is a sectional view, in perspective, of a portion of one section of the covering completed and opened. Fig. 3 is a transverse section through the pipe and covering. Fig. 4 is a perspective view of the heat-retaining strip. Fig. 5 is a sectional detail of the enveloping cover of canvas-lined corrugated paper. Fig. 6 is a perspective view of an expansible joint for the abutting sections. Fig. 7 is a perspective view of the wire tie. Fig. 8 is an elevation of one of the sections just after it has come from the mold, and showing the application of the hinge strings. Fig. 9 is a sectional detail representing the construction at a joint of the pipe.

The same letters are used to indicate identical parts in all the figures.

Each section of covering is composed of two semi-cylindrical pieces, A, formed in a tubular mold in the following manner, and preferably from the following ingredients: I take about sixty-six per cent. of plaster-of-paris and about thirty-three per cent. of asbestos or mineral fiber, which, when mixed together, are formed into a thin paste. While the above forms a good fire-proof composition, yet I wish it to be understood that I do not limit myself to the ingredients named, nor their exact proportions.

The mold has placed in the center of its chamber two semi-cylindrical pieces of wire-netting, B, with their edges nearly abutting to form a cylinder, and held together by strings, and the paste is then poured in, after which, when set, it is taken from the mold and dried. Before drying, I secure three or more strings or pieces of asbestos or other fire-proof twine, *a*, Fig. 5, around the section, so that they are embedded flush in its surface. The section thus made, and while heated, is placed in a heated bath of what is now commercially known as "still-wax," the last residuum of petroleum—which possesses excellent fire and water proof qualities, and which is a comparatively new article of manufacture—and becomes saturated therewith. The section is then wrapped on its outer surface with any suitable covering, C—such as corrugated paper, canvas, or the like—after which it is sawed through axially at the line of the contiguous ends of the wire-netting, where it was held by its strings, but leaving the strings *a* on one side intact, to form partial hinges to hold the two sections together.

In Fig. 5, *b* represents the paper and *c* the canvas secured thereto at the under side of the lap.

I prefer paper on the outer surface for its non-conducting qualities, and I give the lap strength by the insertion of a canvas lining for uniting the two parts of the sections when applied to a pipe.

Where the sections abut I insert around the pipe a ring, D, of flexible fibrous material, into which, if desired, springs may be inserted to insure its expansion after being compressed, and I cover the joint thus made with an additional strip of paper or other flexible material, E, surrounding the joint and held in place by the wire ties F on each side of the joint, which are easily applied and yield to the expansion of the parts under heat. Again, to prevent the loss of heat at the joint of the portions A, I provide a folded strip of paper or other flexible springy material, G, which is inserted in the joint and the latter is closed tight upon it, and which, if desired, may have its inner ends secured to the sides of each portion to insure its always opening whenever the joints open by expansion of the pipe, as will be readily understood.

Whenever a joint is formed in the pipe, as

in Fig. 9, I surround the coupling H with a metal jacket, I, having a tube, J, extending from it through an opening made in the covering to permit the escape of any leakage water or steam, which might otherwise injure the covering. The same provision may be made for any parts of the covering where leakage is likely to occur, as at rivets in boilers, tanks, &c.

10 The advantages of my invention arising from the employment of still-wax are as follows:

Heretofore it has been customary to coat or saturate these removable coverings or compositions with some quick-drying oil, as rosin-oil or liquid asphaltum or other mixtures containing linseed or other oils; but I have found that the action of the heat upon the covering or composition would soon remove and destroy these oils, thereby leaving the composition of the covering entirely unprotected, so that the vitality of the plaster-of-paris or other plastic ingredients or material would be entirely destroyed, and would crumble and fall apart from the expansion and jarring of the pipe, and, in event of leakage, not only would the composition be reduced to a pulpy or mushy mass, but the pipe would be corroded and the covering would be destroyed if it were attempted to remove it, as in case of repairs. Again, the still-wax acts upon the plaster and other ingredients of the fire-proof composition, when subjected to heat, in such a manner as to combine chemically with them and not only render the whole covering water and fire proof, but very light, porous, and strong, so that such a covering will improve with age and may be applied and removed as often as desired without affecting its durability.

In case it is desired to provide more dead-air space than is afforded by the porosity of the covering, chambers *d*, Fig. 2, may be made upon the inner surface of the sections before the same are saturated with the still-wax.

The employment of the centrally-arranged wire-netting adds strength to the sections when completed and renders them less liable to be broken in handling during the earlier manipulations of the same.

I am aware that wire-netting has been before used for securing compositions and cover-

ings on pipes, but not on removable or portable coverings composed of two sections hinged together and each having embedded in it a semi-cylindrical portion of the netting.

By the employment of the canvas-lined corrugated paper the overlapping joint may be torn apart and refastened oftener than if merely the paper were employed, as the paper lap alone has not sufficient strength.

Having thus fully described my invention, I claim—

1. A removable covering for steam-pipes and the like, composed of a porous fire-proof composition saturated with still-wax and made into hinged sections united around the pipe, substantially as and for the purpose specified.

2. In a removable covering for steam-pipes and the like, the semi-cylindrical portions of porous fire-proof composition having embedded therein sheets of wire-netting, and saturated with still-wax, substantially as and for the purpose specified.

3. The herein-described removable covering for steam-pipes and the like, composed of the porous fire-proof sections A, into which wire-netting B is embedded, united by hinge-strings *a*, and the corrugated enveloping-paper C, lined with canvas at its lap, and which said sections are saturated with still-wax, substantially as and for the purpose specified.

4. The combination, with the portions A and enveloping material C, of the heat-retaining strip G, applied at the joint, substantially as described.

5. The combination, with the abutting sections of a removable covering, of interposed elastic wings, and the enveloping-strip covering the joint and held in place by the wire ties, substantially as described.

6. The combination, with a pipe or steam-chamber and its non-conducting covering, of a drain-cup within the covering, provided with an escape-tube passed through an opening in the covering, substantially as and for the purpose specified.

PHILIP CAREY.

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