June 30, 1931. J. H. YOUNG 1,812,732

PROTECTED METAL ARTICLE

Filed Sept. 20, 1929.

FIG. 1.

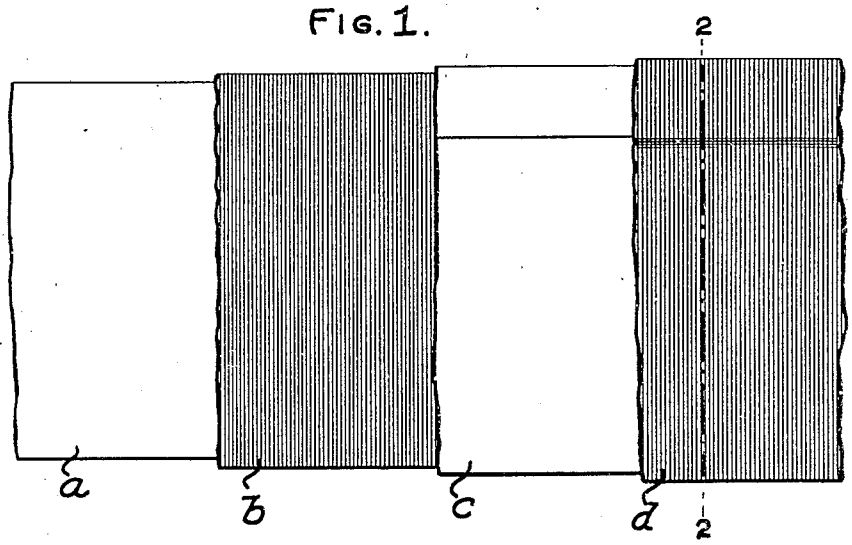
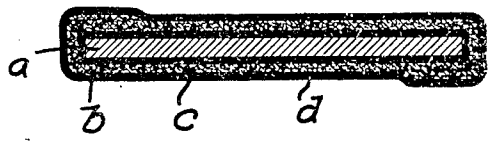


FIG. 2.



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UNITED STATES PATENT OFFICE

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PROTECTED METAL ARTICLE

Application filed September 20, 1929. Serial No. 393,956.

This invention relates to a protected metal article of the character described in United States Patent No. 1,432,512 granted to me October 17, 1922.

Protected metal articles of the character described employ a fire-resisting asphalt composed of a mixture of asphalt and chlorinated napthalene as a saturant for the asbestos felt or like fibrous layer or layers affixed to the metal article.

This fire-resisting asphalt is efficient for resisting fire and for preventing the spread of a fire if one is started, but is open to the objection of losing its efficiency after the protected metal article has been in service and exposed to the weather for relatively long periods of time, due to the slow evaporation of the chlorinated napthalene.

As a result of this slow evaporation of the chlorinated napthalene, the life and usefulness of the asphalt-protected metal article and particularly an asphalt-protected metal sheet used in the construction of buildings for the roof and side walls, is materially shortened, because the adhesion of the felt layer to the metal sheet is weakened in time, which permits the felt layer to shrink and pull away from the edges of the metal sheet, which is usually of steel, and expose the same to the corrosive action of the weather and acid and alkali fumes.

Furthermore, when the protected metal sheet is corrugated, the felt layer in shrinking pulls away from the bottom and side walls of the valleys in the corrugated metal sheet, and the felt layer is then liable to be torn away in patches by high winds, leaving the metal sheet exposed for parts of its surface.

The present invention has for its object to provide a protected metal article of the character described which is not open to the objections recited and one in which the felt layer is nonshrinkable or substantially so under conditions of use for long periods of time, and which therefore is a superior and more ecnomical product for use as a roof or side wall in buildings.

To this end, the felt layer is saturated or impregnated with a fire-resisting and substantially non-granulating asphalt composed of asphalt and chlorinated di- or poly-phenyl, which saturant is not only a better fire resistant but also is substantially permanent, in that practically no evaporation loss on long exposure is experienced, and further said fire-resisting saturant seems permanently miscible with asphalts.

The particular features of the invention will be pointed out in the claims at the end of this specification.

Fig. 1 is a plan of a protected metal article embodying the invention, with parts broken away, and

Fig. 2, a section on the line 2—2, Fig. 1.

Referring to the drawings, *a* represents the metal article to be protected, which may be a bar, sheet, or other article, and which is represented in the form of a sheet and will be hereinafter so designated.

The metal sheet *a* herein shown is covered with a coating or layer *b* of asphalt or like bituminous material, preferably a relatively hard or high-melting point asphalt.

The metal sheet *a* has affixed to it a layer *c* of fibrous material, such as asbestos paper or felt, which in accordance with this invention is saturated with a substantially permanent fire-resisting, substantially non-granulating asphalt, composed of asphalt fluxed with chlorinated poly-phenyl, such as di- or other poly-phenyls, and this saturated felt layer *c* preferably has affixed to it a layer *d* of asphalt, preferably of high-melting point.

The fire-resisting asphalt may be composed of asphalt and chlorinated poly-phenyl in various proportions and preferably in the proportions of 60% asphalt and 40% chlorinated poly-phenyl.

The chlorinated poly-phenyl is readily miscible with the asphalt and when mixed with the same produces a substantially permanent fire-resisting asphalt which readily penetrates into the felt layer *c*, and enables the said layer when affixed to the metal sheet by the bonding of the asphalt saturant with the asphalt layer *b* on the metal sheet, to form a substantially permanent protective fibrous layer for the metal sheet

a under conditions of use for a long period of time, and one whose adhesion to the metal sheet is not materially diminished by granulation of the asphalt due to improper solubility and evaporation, but is such as to resist contraction of the fibrous or felt layer and exposure of the edges of the metal sheet, and also when the metal sheet *a* is a corrugated sheet, resists separation of the felt layer from the bottom and side walls of the valleys of the corrugations of said metal sheet, and avoids injury to the protected metal sheet under conditions of use.

The protected metal sheet having its felt or fibrous layer *c* saturated with the improved fire-resisting and substantially non-granulating asphalt affords superior fire protection for long periods of use, and the fire-protection may be increased by incorporating the chlorinated poly-phenyl with the asphalt forming the inner layer *b* or the outer layer *d*.

The fire-resisting asphalt has the property of localizing the flame to that area of the protected metal sheet, which is heated and does not carry the flame to parts of the surface outside of the heated zone and in this sense the saturant does not support combustion and is fire-resisting.

In addition, the improved fire-resisting asphalt does not deteriorate on exposure for long periods of time and the adhesive qualities of the asphalt is not weakened by granulation of the asphalt due to evaporation or to slow precipitation of component parts. The term "poly-phenyl" as used herein is employed to designate not only diphenyl but also those higher-boiling point products, which are produced when diphenyl is formed by passing benzol vapors over heated catalysts under pressure, and which are commonly known to the industry as "high boilers" or poly-phenyls, the exact composition of which is at present unknown but which react with chlorine to form chlorinated products similar to chlorinated diphenyl.

By the term "asphalt" as used in the claims I desire to include bituminous products of similar nature to asphalt, such as stearin pitch and the like.

What is claimed is:

1. A protected metal article comprising a metal article having a coating of asphalt, a layer of felt impregnated with a fire-resisting asphalt composed of asphalt and chlorinated di-phenyl, and a layer of asphalt applied to said felt layer.

2. A protected metal article comprising a metal article provided with a layer of felt adhesively affixed thereto and impregnated with a fire-resisting asphalt composed of asphalt and chlorinated poly-phenyl.

3. A protected metal article comprising a metal article provided with a protective layer of fire-resisting asphalt composed of asphalt and chlorinated poly-phenyl.

In testimony whereof, I have signed my name to this specification.

JAMES HOWARD YOUNG.