

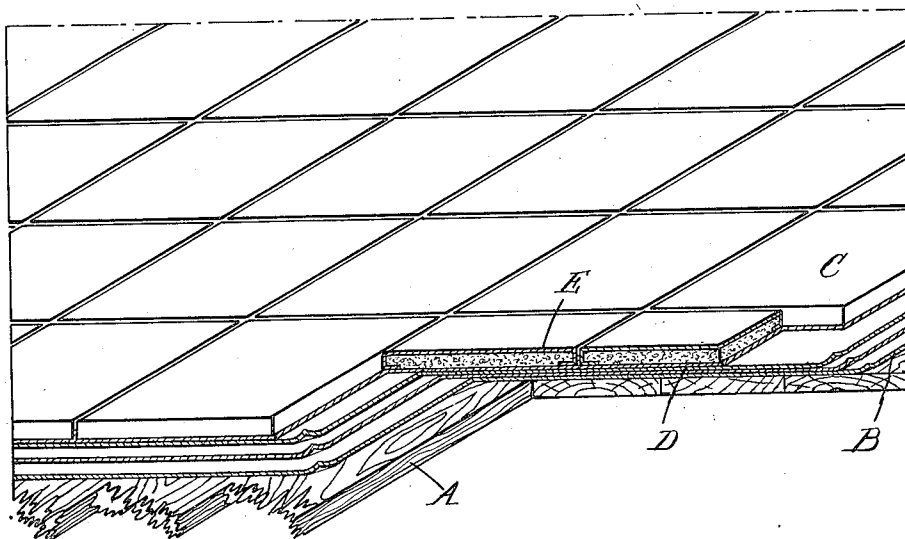
Nov. 5, 1935.

F. BASTEN ET AL

2,019,647

ROOF OF BUILDINGS

Filed March 17, 1934



FREDERICK BASTEN
EVELYN HURDEN ~
INVENTORS

BY *Haseltine, Lake & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,019,647

ROOF OF BUILDINGS

Frederick Basten, Barnes, London, and Evelyn
Hurden, Harefield, England, assignors to D.
Anderson & Son, Limited, Manchester, Eng-
land, a British company

Application March 17, 1934, Serial No. 716,026
In Great Britain March 21, 1933

4 Claims. (Cl. 108—10)

This invention relates to roofs of buildings and in particular to flat roofs.

For many years flat roofs were covered with metal, which had the disadvantage of involving considerable expense in the construction of the roof timbers and was unsuitable to withstand traffic, and further the metal roofing could not be easily applied to concrete structures. Rock asphalt was also extensively adopted for flat roof covering, but owing to its rigid nature was very liable to crack. Neither of these coverings had any heat insulating properties.

Built up layers of waterproof felt and bitumen as a waterproofing for flat roofs have also been extensively used, but to ensure reasonable durability and to comply with building laws and regulations and the requirements of fire insurance companies, some protective covering had to be provided. Various kinds of protective coverings have been applied over the felt and bitumen, which were subject to some disadvantage, either that they did not strictly comply with the building laws, or if they did, they were of such a dense nature that considerable heat was transmitted to the sub-structure. In many cases the protective coverings were not suitable for traffic, and invariably they absorbed heat from the sun and transferred it to the supporting structure, which expanded and contracted, thereby disturbing the walls of the building, and also the temperature of the space below the roof was liable to excessive variations.

The object of the invention is to provide a protective covering which will (1) comply strictly with all building by-laws and fire insurance regulations, (2) give the maximum external insulation by reflection of the sun's rays, (3) present a surface which can be used for balconies, sun balconies of hospitals, tea pavilions and like structures where chairs and tables or beds can be freely used, (4) have a pleasing and attractive appearance.

According to the invention, the protective covering consists of flat tiles of rigid insoluble and incombustible material such as porous concrete with a facing of asbestos cement, which tiles when applied to the roof are bedded in bitumen. The asbestos cement is preferably turned round the edges of the tiles and carried on the underside of the tiles, say for about one inch, to prevent the percolation of water from the edges into the concrete, permitting the tiles to be laid with slightly open joints to allow for expansion without disturbance. The tiles are preferably grooved on their underside to take up any excess of bitumen.

These tiles having a practically impervious asbestos cement facing with a porous backing are light in weight and of high insulating qualities. They will withstand any ordinary traffic on the roof and retain their light grey surface permanently, presenting the maximum reflection of the sun's rays at all times—even after rain—thus giving perfect insulation to the substructure and the rooms beneath. Although the tiles, which are of relatively small size, say 12 inches in diameter, are practically impervious unless exposed to very heavy and long-continued rain, they are not intended for the purpose of increasing the weather-resisting qualities of the roof, this being the function of the existing bituminous layer or layers underneath them, which they protect and insulate. The filling must be rigid and strong enough to support the asbestos cement facing against traffic, for which purpose wood is unsuitable but porous concrete is suitable.

In order that the said invention may be clearly understood and readily carried into effect, the same will now be further described with reference to the accompanying drawing, which is a perspective view of a portion of a flat roof exemplifying the invention.

A indicates wood planks forming a part of a flat roof, B layers of waterproof fabric, C tiles each comprising a porous back D of any desired thickness, for example of porous concrete, and a facing E of asbestos cement, which gives a hard tough wearing surface practically impervious to moisture, and at each of its four edges is turned in underneath the concrete or other incombustible and insoluble porous backing material. Grooves, not shown, may be provided in the said backing material, not for keying purposes, but to receive any surplus bitumen that may be squeezed up. Although the invention is described and illustrated as applied to a flat roof of wooden construction, it will readily be understood that the invention can be equally well applied to concrete or hollow tiles or any other form of flat roof.

What we claim and desire to secure by Letters Patent of the United States is:—

1. A flat heat insulating rectangular tile of uniform thickness adapted for covering flat roofs to withstand traffic thereon, said tile consisting of a filling of a uniformly solid and rigid insoluble incombustible material of great inherent strength such as porous concrete, and a facing of asbestos cement on the upper side of said filling, the asbestos cement being turned down at all the four edges of the filling and turned inward for a short

distance underneath the filling at all the said four edges, which asbestos cement facing serves to protect the filling and forms a heat insulation preventing passage of heat to said filling.

- 5 2. A flat heat insulating roofing tile of uniform thickness adapted for covering flat roofs to withstand traffic thereon, said tile consisting of a filling of a uniformly solid and rigid insoluble incombustible material of great inherent strength
10 such as porous concrete, and a facing of asbestos cement on the upper side of said filling, the asbestos cement being turned down at the peripheral edges all around the filling and turned inward for a uniformly short distance beneath
15 said filling at said peripheral edges, which asbestos cement facing serves to protect the filling and forms a heat insulation preventing passage of heat to said filling.

- 20 3. A heat insulating flat roof comprising, in combination, a support, waterproof fabric laid on said support, a bituminous coating over said fabric, and a plurality of tiles embedded in said coating and slightly spaced apart to permit of expansion and contraction, each of which tiles is
25 of flat rectangular form and of uniform thickness, and comprises a filling of a uniformly solid and rigid insoluble incombustible material of great inherent strength such as porous concrete, and a heat insulating facing of asbestos cement on the
30 upper side of said filling, serving to insulate and protect said filling from radiant heat the asbestos cement being turned down at all the four edges of the filling and turned inward for a short distance underneath the filling at all the said four
35 edges so as to expose the interior filling of con-

crete of each tile within the edges upon the bottom thereof directly to the underlying bituminous coating, said bituminous coating extending a limited distance upward in the spaces between the tiles and serving to seal the same and the filling of said tiles against the atmosphere and other influences. 5

4. A heat insulating flat roof comprising, in combination, a support, waterproof fabric laid on said support, a bituminous coating over said fabric, and a plurality of tiles embedded in said coating and slightly spaced apart to permit of expansion and contraction, each of which tile is flat and of uniform thickness, and comprises tile of uniform thickness adapted for covering flat
15 roofs to withstand traffic thereon, said tile consisting of a filling of a uniformly solid and rigid insoluble incombustible material of great inherent strength such as porous concrete, and a heat insulating facing of asbestos cement on the upper
20 side of said filling, serving to insulate and protect said filling from radiant heat the asbestos cement being turned down at the peripheral edges all around the filling and turned inward for a uniformly short distance beneath said filling at
25 said peripheral edges so as to expose the interior filling of concrete of each tile within the edges upon the bottom thereof directly to the underlying bituminous coating, said bituminous coating extending a limited distance upward in
30 the spaces between the tiles and serving to seal the same and the filling of said tiles against the atmosphere and other influences.

FREDERICK BASTEN.
EVELYN HURDEN.