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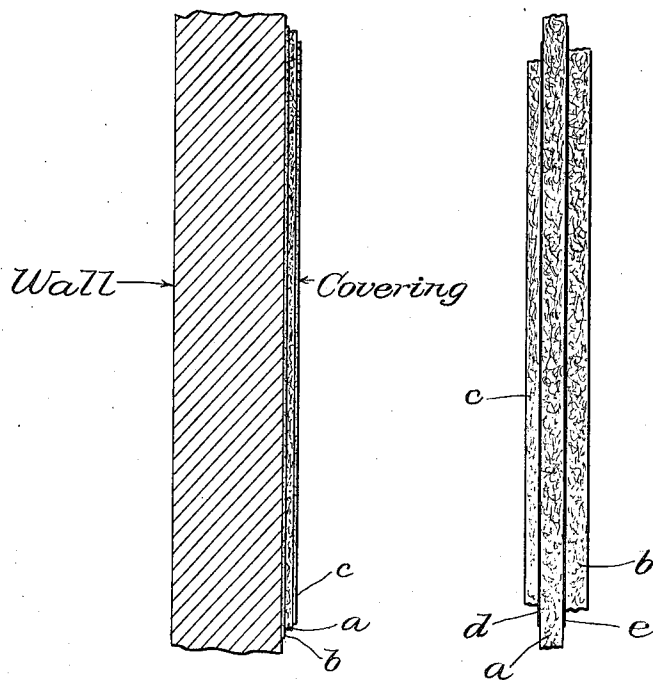
J. C. SHERMAN

WALL AND ROOF COVERING

Filed July 28, 1919

Fig. 1.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN C. SHERMAN, OF PORTLAND, MAINE, ASSIGNOR TO BROWN COMPANY, OF BERLIN, NEW HAMPSHIRE, A CORPORATION OF MAINE.

WALL AND ROOF COVERING.

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To all whom it may concern:

Be it known that I, JOHN C. SHERMAN, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented new and useful Improvements in Wall and Roof Coverings, of which the following is a specification.

The subject matter to which the present invention has reference is a covering for the outside walls and roofs of buildings, a sheathing between timbers and clapboards, and a finished surfacing for interior walls. Its main object is to provide a material of the nature and for the purposes indicated which is resistant to fire and to the effects of weather, and can be given an ornamental colored finished appearance by the application of paint, stains, and wall paper or other customary wall hangings. It is especially useful and a protection for the outer walls and roofs of wooden buildings as a resistance to the communication of fire to the building by sparks or the radiant heat and blasts of hot gases from neighboring fires; but in thus mentioning one use I have not intended to limit in any way the utility of the invention or the scope of the protection which I claim herein.

The advantage of the invention and the principles embodied in it appear from the following detailed description of one form or embodiment which I have found satisfactory, to which description and to the drawings illustrating the same reference is now directed.

In the drawings, Figure 1 is a sectional view of a fragment of wooden wall having my improved fire- and weather-resisting covering applied to one surface thereof. Figure 2 is a sectional view on a much enlarged scale of a fragment of the sheathing or covering material.

Like reference characters designate the same parts in both figures.

The basis of the covering material, to which its fire-resisting quality is largely due is a layer or sheet *a* of asbestos paper or equivalent non-inflammable fabric. This layer is adhesively secured or doubled to a backing layer *b* to secure strength. The backing layer is preferably paper of a strong and tough grade, such as the impregnated sheathing papers already known and used in the construction of wooden buildings.

I may use any standard make of such sheathing paper, for instance, that which is made of tough wood fiber and sized with resin.

For adhesively uniting the layers *a* and *b* I may use bitumen or silicate of soda, or equivalent cement or glue, the nature of which is sufficiently indicated by the known characteristics of the substances specifically named.

On the opposite side of the asbestos layer *a* is placed and adhesively secured a surfacing or facing sheet *c* preferably made of relatively thin paper which is adhesively secured to the asbestos layer by a waterproof glue, a film of which is indicated in Figure 2 and is designated by the letter *d*. The adhesive between the layers *a* and *b* is likewise indicated in Figure 2 and is designated *e*. The water-proof glue which I prefer to use at *d* is a substance which has been developed at the Forest Products Laboratory conducted by the United States Government at Madison, Wisconsin, and is made of casein, lime, and silicate of soda, with water, more or less closely according to the following formula:

100 parts casein.....	} soak 15 minutes...	} mix	} mix
130 to 280 parts water			
15-22 parts hydrated powdered lime	} mix	} mix	} mix
90 parts water.....			
70 parts silicate of soda.....			

The glue composition last described is not my invention but is public property and therefore I do not claim it except in combination as the waterproof adhesive element of my new composite structure for a fire-resisting, weatherproof roof and wall covering. I have found that this particular glue is both waterproof and fire retarding, and that paper upon which it has been spread will not freely burn. Other waterproof glue may, however, be used for this purpose, and within the definition of "waterproof glue" I include the well known admixture of linseed oil and hydrated lime, and all equivalents thereof; and I may indeed use an adhesive which is not entirely waterproof, such as silicate of soda alone, and depend upon an external coating of waterproof paint or oil upon the outer layer *c* to give weather-proofing qualities.

For the purpose of distinctively designating the parts of this structure I may designate the asbestos sheet or layer *a* as the body

layer or the non-combustible layer; the sheet or layer *b* as the backing or strengthening layer; and the sheet *c* as the surface or face layer.

5 While not restricting myself as to the material of the face layer I will say that is preferably paper combining as far as practicable strength and thinness, as it is in the highest degree desirable, in order to diminish
10 the fire hazard, that this layer be as thin as possible consistent with durability. It should also be sufficiently absorbent to be impregnated somewhat by waterproof glue and thus made resistant to penetration by
15 water.

I have found that for these purposes the well known kraft paper is satisfactory.

The function served by the body layer of asbestos is of course to check the spread of
20 fire, as asbestos is non-combustible; that of the backing layer *b* to give strength to the sheathing, since asbestos paper in itself has not strength adequate for a sheathing material; and that of the face layer is partly
25 to give strength, but mainly to protect the asbestos paper from the effects of weather. It does this by binding the fibers of the asbestos paper together, and so preventing their disintegration by the mechanical action of wind, rain, and so forth, and is itself
30 prevented by the waterproof glue from being turned into pulp and washed away by rain. In addition it has the further function of furnishing a smooth surface which may be
35 painted, or on which wall paper or the like may be hung to give an ornamental finish. The paint also is waterproof and weather-resisting.

When attacked by fire the paper outer
40 layer with its coating of paint, if any, may be burned away, but the asbestos body will be left intact to prevent spread of flame to a wall back of it. The advantage of making the face layer as thin as possible is that it
45 will burn off quickly and not be a fire hazard. The asbestos paper, however, by reason of the protection from weather given it by the face layer, is preserved intact for an indefinite number of years in condition to prevent spread of fire. The covering will protect a wooden wall from fire up to a temperature high enough to cause softening of a steel column or that at which terra cotta will disintegrate upon impact of a stream of water.

55 A feature of the sheathing is that a pocket containing inert gas is formed by heat back of the asbestos body layer immediately behind a point where the flame impinges on its outer surface; such pocket being formed by the volatilization of the bituminous or other volatile adhesive used to attach the backing sheet. Then there is a separation of the asbestos from the backing sheet, and a further separation of the latter from the wall
65 which it covers, and these dead air spaces

serve to delay further the ignition of the covered wall structure.

Any asbestos fabric fitted for wall coverings is so loosely matted and so porous that it disintegrates and blows away under the
70 action of the weather; and on account of the same qualities, and likewise its rough surface, it can not practicably be painted. Therefore it has not been desirable prior to my invention to use asbestos as a fire-resisting wall covering in any situation where it
75 is exposed to the weather or to mechanical abrasion. But my invention has made it practicable to use asbestos for these purposes and has thus made available for buildings
80 of inexpensive construction a fireproofing equal for all intents and purposes to that afforded by more elaborate and expensive forms of construction, and one moreover
85 which can be given such as ornamental finish as painting affords. Papers, such as kraft paper, suitable for the face layer of my new material or fabric have so much power of resistance to wear that the fabric when
90 painted, is usable as an outer covering for roofs which may be walked upon.

The fabric may be produced in sheets of any dimensions and outlines including long webs or strips many yards in length.

What I claim and desire to secure by Letters Patent is:

1. A fire-resisting weather-resisting wall covering consisting of an asbestos paper body, a backing of roofing paper, a facing of thin kraft paper, an adhesive uniting film
100 of waterproof glue between the body and the facing, and a film of adhesive substance which is volatilizable by heat between the asbestos body and the backing.

2. A fire-resisting wall and roof covering comprising an asbestos sheet, a strengthening sheet adhesively united to one face thereof, and a water-resistant surface sheet having minimum fire-supporting qualities united to the opposite face of the asbestos sheet.

3. A wall and roof covering composed of a body layer of fire-resistant material, a backing layer of tough paper, and a film of bituminous adhesive which is volatilizable by heat between said layers adhesively securing them together.

4. A wall and roof covering composed of a body layer of fire-resistant material, a backing layer of tough paper, at the back of said body layer, a face layer of thin paper at the front of the body layer, a film of waterproof glue between the body and front layers adhesively securing them together, and a film of an adhesive substance which is volatilizable by heat, between the body and backing layers securing them together.

5. A fire-resisting wall covering consisting of a body of asbestos fiber and a protective outer layer of tough paper adhesively secured to said body, the paper also being
130

so thin as to have insignificant heat generating power when ignited.

6. A fire-resisting wall covering consisting of a body of asbestos fiber and a protective outer layer of tough paper adhesively
5 secured to said body, the paper also being so thin as to have insignificant heat generating

power when ignited, said paper sheet being rendered waterproof to resist the disintegrating effect of rain and wind. 10

In testimony whereof I have affixed my signature.

JOHN C. SHERMAN.