UNITED STATES PATENT OFFICE.

JOHN W. KINGMAN, OF NORTH BRIDGEWATER, MASSACHUSETTS.

IMPROVED MODE OF MAKING BUILDINGS WATER-PROOF.

Specification forming part of Letters Patent No. **35,526**, dated June 10, 1862.

To all whom it may concern:

Be it known that I, JOHN W. KINGMAN, of North Bridgewater, in the county of Plymouth and State of Massachusetts, have invented a certain new and useful Mode of Rendering Buildings, &c., Water-Proof; and I do hereby declare that the following description is a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention consists in a new and useful mode of rendering roofs and other parts of buildings water-proof, which mode is also applicable to waterproofing almost every article exposed to the attacks of water and moisture, including vessels, boats, receptacles for liquids, &c.

No material or composition of materials has heretofore been used for roofing which could be applied equally well to all localities and to various inequalities of surface. The tin, zinc or other metallic roofings are extremely expensive and require frequent repairs on account of the giving way of their joints, and are not flexible enough to be readily adapted to sharp irregularities of outline. Thick fibrous substances and cloths saturated with water-proof materials have also been used, but they are so stiff and inflexible that they can not be closely fitted to the surfaces to be covered, and consequently water will soon work its way under them and between them and the surface they are designed to protect. This latter kind of roofing has necessarily been fastened down by nailing.

In experimenting with a view to practically developing the present invention it became evident that a water-proof covering should possess the following essentials: First, it should be so closely fitted and firmly fastened to the surface to be protected as to be practically a part of such surface itself in order that no moisture could possibly get under it; secondly, it should be sufficiently flexible to be easily adapted to every variety of surface; and thirdly, it should be rendered water-proof and of a moderate cost. In attempting to carry out the first requisite it was clear that any mode of fastening—such as nailing—that did not entirely exclude and exhaust the air between the material to be applied and the surface to be covered would prove inoperative, as the presence of air or "air-bubbles" under the thick fibrous sheets that have sometimes been used has invariably caused them to peel off. For the second essential I determined that a thin sheet of fibrous material—like cotton-cloth, for instance—would answer the necessary requirements. Even if a thick sheet of fibrous substance, like felt, could be employed, its previous saturation by water-proof materials would render it too stiff to fit close enough to the surface to be covered, and therefore I determined that the fibrous sheet must be first accurately and closely fitted to its surface before it was saturated by the water-proof substance or substances to be used. It then only remained to render it water-proof and cheap, which could be readily done if the first two requirements were obtained.

To accomplish, then, the objects of my invention I have adopted the following method, which combines all the requirements hereinabove stated, as essential, and which has stood the test of repeated trials. I first take thin sheets of porous fibrous materials—like coarse cotton cloth, for example—and cover one side of it with any adhesive material, like common flour-paste, but the paste must be of such a nature as to allow the water-proof material to be afterward applied, as will be explained in the sequel, to pass through it. Thus any anti-absorbent cement, like glue, varnish, &c., can not be successfully used, as such are partially impervious to such water-proof liquids as must be employed. The cloth thus coated is then applied to the surface to be covered and thoroughly rubbed upon the same until all the air under it is entirely exhausted. The paste then holds the cloth firmly and evenly upon every portion of the material it is applied to, however irregular its surface may be. This result, it is evident, could not be accomplished by the ordinary method of nailing or by the use of thick and comparatively inflexible fibrous substances or by the use of metal plates, as it is absolutely essential in order to successfully practice my invention that there should be no air-space between the sheets and the surface they cover. The fibrous sheets thus securely fastened are then saturated with any suitable water-proof liquids—such as oil-

paints, &c.; and such liquids, when applied, penetrate entirely through the cloth and also through the coating of paste, because the cloth is porous and the paste is of such a nature as to allow the liquids to pass through it. The result is that the paint or other similar liquid applied acts not only as water-proof material which fills the pores of the cloth, but also as a strong binding-cement that firmly glues the cloth to the surface that it covers. Any desired number of coats of paint may be applied; but enough should be used to entirely fill the pores of the fibrous sheet; and any desired number of sheets can be successfully applied and saturated in a precisely similar manner.

By this method I have found that the fibrous sheets being first so closely fitted to the parts they cover, and, moreover, by a paste that is easily penetrated by water-proof liquids, become, when such liquids have passed through them, entirely incorporated with the surface they are upon, so much so as to require great force to remove them. Moreover, the fibers of the cloth, when saturated, become so many holding and clinging points to bind it securely upon whatever it is so applied to, and thus can be easily fastened by my method to any kind of material, like wood, metal, slate, stone, brick, glass, &c.

It is evident from the above description that one or more coats of the paste may be applied to the cotton cloth or other fabric used, and that one or more coats of the same may be also applied to the surface to be covered previous to the application of the water-proof liquid.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

The new mode of rendering surfaces, &c., water-proof, the same consisting in applying by rubbing to such surfaces thin sheets of fibrous materials first coated with such a paste or cement as will permit water-proof liquids to pass through them and then saturating them with such water-proof liquids as will pass through both the cloth and the paste, substantially as described.

JOHN W. KINGMAN.

Witnesses:
JOSEPH GAVETT,
ALBERT W. BROWN.