No. 868,930. PATENTED OCT. 22, 1907.

A. E. KIRK.

ROOFING.

APPLICATION FILED OCT. 20, 1906.

Fig. 1.

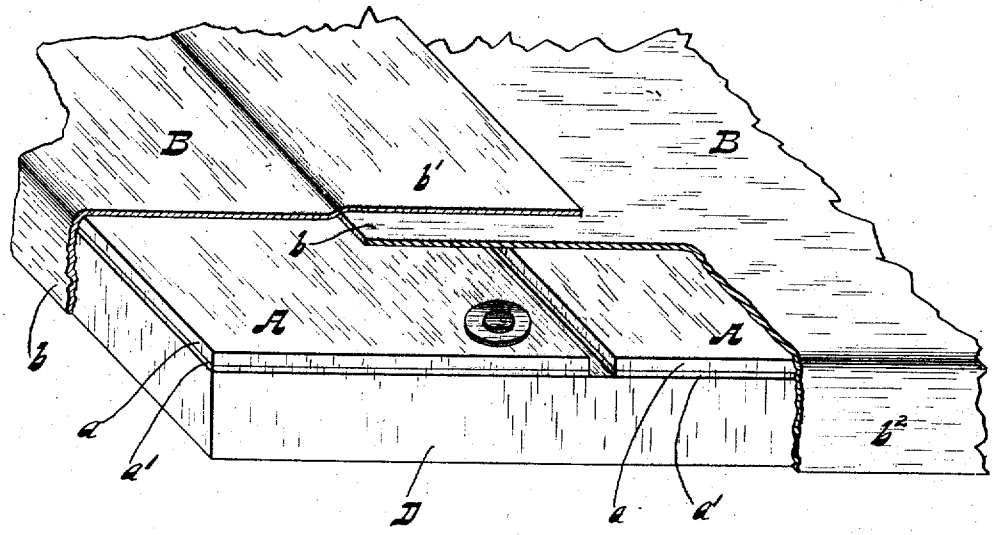
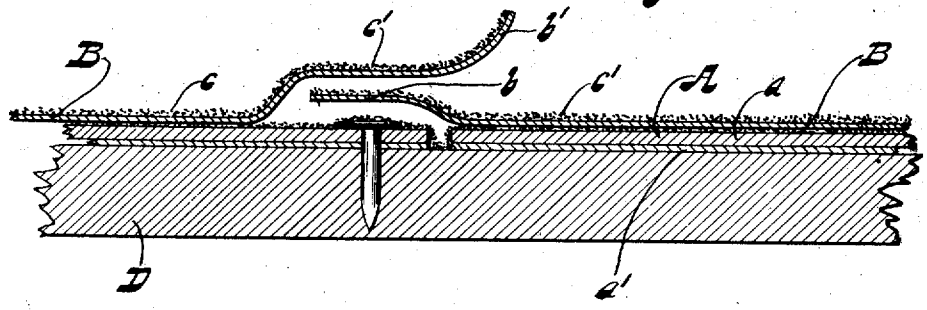


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ROOFING.

No. 868,930. Specification of Letters Patent. Patented Oct. 22, 1907.

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To all whom it may concern:

Be it known that I, ALBERT E. KIRK, a citizen of the United States, and a resident of Rensselaer, county of Jasper, and State of Indiana, have invented a new and useful Improvement in Roofing, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to improvements in roofings of the prepared or ready-made class which are put up in rolls of a size permitting their ready transportation to the place where they are to be applied. The method of such application, while varying slightly with different forms of the roofing, has generally involved simply the spreading successive sheets of the paper or felt out upon the roof so as to overlap at the joint, driving rows of nails or tacks along such overlapping portions, and then giving the whole a final coating of tar or paint.

The present invention has regard not only to the material and structure of the roofing fabric itself, but also to its form as it leaves the place of manufacture and the manner of its application, subsequently, to the roof.

Said invention, then, consists of means hereinafter fully described and particularly set forth in the claims.

The annexed drawing and the following description set forth in detail certain means embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—Figure 1, is a perspective view of a detached portion of a roof with my improved roofing applied thereon, such roofing being broken away to disclose its structure; and Fig. 2, is a transverse cross-section of such roof and applied roofing, the section being taken at a joint in order still more clearly to show the detailed construction of the roofing material, as also the manner in which I make such joint.

The material character or make-up of my roofing will most readily appear from a description of one method of its manufacture, this method being the one which I approve as producing the best product. In such manufacture I utilize as the body of my roofing a sheet of roofing felt or straw board to the under side of which has been pasted a lining of Manila paper or ordinary newspaper. The thickness of such body layer may vary considerably with the particular use for which the roofing is designed. This felt or straw board sheet, of course, is for reasons of convenience in the form of a roll. Such roll, then, is mounted on a reel or other suitable support from which it can be unwound so as to have the paper lining on the under side of the sheet. A roll of canvas duck or drilling is similarly mounted above such first roll so that when unrolled the strip of the latter material will be superimposed upon the strip of felt or straw board. This canvas or drilling should be shrunk or fulled by being immersed in water just previously to the operation here described and will hence be still wet. Such canvas or drilling is furthermore somewhat wider than the body layer upon which it is to be placed; for example, assuming the latter to have a width of 27 inches, the textile covering should be about 30 inches wide. It is thus seen that the covering layer will overlap the body layer, such over-lap being made about twice as great on one side as on the other. The disposition of the two rolls just described is made such as to bring the edge of the sheet of canvas, as it is unwound, about two inches beyond the right-hand edge of the sheet of felting and about one inch beyond the left-hand edge. The sheets thus assembled are next cemented or bound together and at the same time rendered impervious to water by being passed through a tank of suitable water proofing paint such paint being of a composition rendering it elastic even when dry. Both layers are thoroughly saturated with this paint and in addition a sufficient amount is left between them to firmly cement or paste them together. Any surplus of the paint is removed as the strip of roofing leaves the tank by passing the same between squeeze rolls as will be readily understood. These rolls are so constructed, however, as to leave a thicker layer of the paint on the overlapping portions of the canvas sheet. As the sheet, built up of the component parts specified, leaves the squeeze rolls, the wider over-lapping edge, in this case the right-hand one, is turned back from the edge of the body layer so as to expose a strip of the latter an inch in width. Such exposed surface is brushed with graphite or other antiadhesive material that will prevent the two layers from sticking together, and the flap of canvas returned to its proper place.

The roofing may now be made into rolls while still damp in the usual way, suitable material being dusted between the successive layers of the rolls to prevent their adhering to each other; or if desired it may be cut into straight strips of convenient length instead of being rolled, and be thereupon dried by being passed between steam rollers or through a baking oven. I desire to call particular attention to this last form of the roofing. Before baking the sheets, I cut away a narrow strip of the body layer at one end of the sheet and a wider strip at the other, whereby flaps of the cover layer of a corresponding width are formed. The baking process causes the body layer of felting to become hard and stiff, and the covering layer to adhere to it very tenaciously. The latter, however, because of the before described character of the paint which I employ does not lose its pliability. The strips thus formed are quite conveniently bound up in bundles for

shipment or storage. The finished product when spread out upon the roof in order to be applied thereto, Figs. 1 and 2, is hence seen to comprise a portion A, that comprises a sheet of roofing felt or straw-board *a* and a sheathing of Manila or newspaper *a'* on its under side, and a cover layer B of canvas duck or drill. Such body and cover layers as has been explained are thoroughly saturated with paint of the kind described, but this paint appears in appreciable quantities only between the two layers, as at *c* and as a light coat *c'* on the upper surface of the cover layer, Fig. 2. The two flaps of unequal widths formed by the overlapping portions of the cover layer appear as *b b'*, respectively.

In applying the roofing it is immaterial whether the sheets be disposed transversely or longitudinally of the roof, and in laying the sheets transversely one can indifferently begin at either end of the roof, just as, in laying them longitudinally, one can commence at either the comb or the eaves. For the purpose of the following description it is assumed that the first method of disposing the sheets is being followed. It is furthermore assumed that the roofing is put up in the roll form. Such roll, then is unwound, and cut into sheets several inches longer than the distance from the comb to the eaves of such roof, designated by D, and the canvas or cover layer is separated from the body layer at each end and the exposed portions of the latter cut away so as to leave the body layer of just the right length. In addition to the lateral flaps *b b'* formed in the process of manufacture, flaps of the textile cover layer are thus formed at each end, of the several sheets, only one b^2, however, appearing in the figures.

The first sheet to be laid, *i. e.* along the outer edge of the roof is disposed so as to bring the narrower flap *b* of the lateral flaps along such edge and the corresponding end flap along the eave, the body layer being just flush with the roof in each case. These flaps are then turned over and tacked fast, a coat of the same kind of paint as that with which the roofing is saturated being first spread along the roof's edge. From the disposition of the outer sheet of roofing as just described it will be noted that the wide flap *b'* of the cover layer, the one that is separated from the body layer all along the edge of the latter, will lie adjacent to the narrow flap of the next sheet of roofing. When this second sheet is spread out such wide flap of the first sheet is turned back and the second sheet then moved up until the edge of its body layer approaches, but does not touch by some little distance, the edge of the body layer of the first sheet. The two flaps *b* and *b'* are then folded over each other in the manner clearly shown in the figures of the drawing. A liberal coat of paint or roofing cement being spread between the several layers of the joint thus formed, it will be evident that not only is a perfectly water and air-tight joint or seam formed but one that will be just as strong as the body of the roofing itself and no more liable to tear. Successive sheets or strips are applied in the same fashion the end flaps along the eaves being tacked down just as in the case of the first strip. The end flaps at the ridge of the roof are, on one side of the roof, turned back from the body layer of the roofing just as the wider lateral flap *b* is turned back, and the joint or seam along such ridge is designed to be made in the same way as such lateral seams. By following this method of laying the roof it will be seen that aside from the outer edges of the roof no nail whatever needs be used. If, however, it be thought desirable to employ nails, as on a steep roof or one of considerable expanse, they are driven along the strip of the body layer that is exposed when flap *b* is turned back, Figs. 1 and 2. The flaps are folded over and pasted down in this event in the same manner as before. The nails are thus entirely covered over and there is no possibility of a leak being developed at the points where they puncture the roofing as is the case in the types of roofing at present in use. The advantage in thus laying the roof, which is made feasible so far as I am aware by my roofing alone, is that all contraction and expansion of the sheets will be taken up by the space provided between the several body layers without injuriously wrinkling or doubling the latter since, even when the latter is nailed, the nailing is confined to one side. The wrinkling of the textile cover layer at the joint will be slight in any event and have no harmful effect whatever due to the elasticity of the paint or cement used.

When the baked sheet form of roofing is employed the manner of forming seams between adjacent sheets is exactly the same as has been described in connection with the application of the continuous sheet to the roof. Such seam will be formed not only at the meeting lateral edges of the sheets but between their ends as well, which, it will be remembered, are formed with similar flaps. It will ordinarily be advisable, however, to tack down these baked sheets across the appropriately formed end as well as along one side. In fitting the sheet to an irregular corner a flap is improvised by cutting away a portion of the body layer in the same fashion as with the continuous sheet.

My improved roofing by its structure presents all that can be desired in the matter of ease of manufacture and durability. The principal function, it will be obvious, of the body layer A is to form a backing to the waterproofed canvas duck or drilling which latter is the essential feature of the roofing so far as its weather resisting qualities are concerned. By the arrangement of the lateral and end flaps of this cover layer I am able to form a tight seam or joint without overlapping the felt or body layer at all. The latter is thus allowed to rest perfectly flat upon the roof surface and by leaving space between the edges of adjacent layers provision for expansion is made and the wrinkling of the felt done away with.

It will of course, be understood that the particular method of manufacture herein described is not contemplated as being a limitation but merely an illustration of how my roofing can be made. Also the use of such roofing for siding, or in fact anywhere that prepared roofing has heretofore been employed, is equally advantageous with its use for roofing strictly. This last remark applies particularly to the use of the baked sheet form of the roofing, which, by virtue of its stiffness and the manner in which the sheets are nailed down and cemented together, adapts siding thus formed to not only withstand the weather but also air pressure from within which latter is frequently encountered where open sheathing is used to side up a building.

Having thus described my invention in detail, that which I particularly point out and distinctly claim, is:—

1. As an article of manufacture, a sheet of roofing comprising a body layer and a covering layer, said covering layer extending beyond said body layer along both sides and being cemented thereon save for a strip along one side.

2. As an article of manufacture, a sheet of roofing comprising a body layer of roofing felt or similar material and a covering layer of waterproofed textile material, said covering layer extending beyond said body layer along both sides and being cemented thereon save for a strip along one side.

3. As an article of manufacture, a sheet of roofing comprising a body layer of roofing felt or similar material, a covering layer of water-proof textile material, said covering layer extending beyond said body layer along both sides and being cemented thereon save for a strip along one side, and anti-adhesive material interposed between said body layer and overlapping portion of said covering layer.

4. As an article of manufacture, a sheet of roofing comprising a body layer of roofing felt or similar material, a covering layer of water-proofed textile material, said covering layer extending beyond said body layer along both sides and being cemented thereon save for a strip along one side, and powdered graphite interposed between said body layer and overlapping portions of said covering layer.

5. As an article of manufacture, a sheet of roofing comprising a body layer of roofing felt or similar material, a sheathing of paper on the under side thereof, and a covering layer of closely woven textile material cemented upon said body layer by means of an elastic waterproof paint, wherewith said layers are also saturated and said covering layer coated, said covering layer extending beyond said body layer along both sides and being freed from the latter for a strip along one side of a width equal to that of the extending portion on the other side.

6. As an article of manufacture, a sheet of roofing comprising a body layer of roofing felt or similar material and a covering layer of closely woven textile material cemented upon said body layer by means of an elastic waterproof paint, wherewith said layers are also saturated and subsequently hardened by the application of heat, whereby said sheet is rendered stiff and inflexible said covering layer overlapping said body layer on both sides and being freed from the latter for a strip along one side of a width equal to that of the overlapping portion on the other side.

7. As an article of manufacture, a sheet of roofing comprising a body layer of roofing felt or similar material and a covering layer of closely woven textile material cemented upon said body layer by means of an elastic waterproof paint, wherewith said layers are also saturated and subsequently hardened by the application of heat, whereby said sheet is rendered stiff and inflexible said covering layer overlapping said body layer on all sides and being freed from the latter for a strip along two adjoining sides of a width equal to that of the overlapping portions on the other sides.

8. Roofing consisting of a plurality of adjacent strips, each comprising a body layer and a covering layer, said covering layer overlapping said body layer laterally so as to form flaps, and being cemented thereon save for a strip along one side, the joint between adjacent strips of the roofing being formed by inserting the attached flap of the one between the body layer and such freed flap of the other.

9. Roofing consisting of a plurality of adjacent strips, each comprising a body layer of roofing felt or similar material and a covering layer of waterproofed textile material, said covering layer overlapping said body layer laterally, so as to form flaps, and being cemented thereon save for a strip along one side, the joint between adjacent strips of the roofing being formed by inserting the attached flap of the one between the body layer and such freed flap of the other, said flaps and strip of body layer being firmly cemented together.

10. Roofing consisting of a plurality of adjacent strips, each comprising a body layer of roofing felt or similar material, a sheathing of paper on the under side thereof, and a covering layer of canvas cemented upon said body layer by means of an elastic waterproofed paint wherewith said layers are also saturated and said covering layer coated, said covering layer overlapping said body layer laterally, so as to form flaps, and being cemented thereon save for a strip along one side, the joint between adjacent strips of the roofing being formed by inserting the attached flap of the one between the body layer and such freed flap of the other, said flaps and strip of body layer being firmly cemented together.

11. Roofing consisting of a plurality of adjacent strips, each comprising a body layer of roofing felt or similar material and a covering layer of waterproofed textile material, said covering layer overlapping said body layer laterally, so as to form flaps, and being cemented thereon save for a strip along one side, the joint between adjacent strips of the roofing being formed by inserting the attached flap of the one between the body layer and such freed flap of the other, said flaps and strip of body layer being firmly cemented together, and a relatively narrow open space being left between the adjacent edges of the body layers of successive sheets.

12. Roofing consisting of a plurality of adjacent strips, each comprising a body layer of roofing felt or similar material, a sheathing of paper on the under side tiereof, and a covering layer of canvas cemented upon said body layer by means of an elastic waterproof paint wherewith said layers are also saturated and said covering layer coated, said covering layer overlapping said body layer laterally, so as to form flaps, and being cemented thereon save for a strip along one side, the joint between adjacent strips of the roofing being formed by inserting the attached flap of the one between the body layer and such freed flap of the other, said flaps and strip of body layer being firmly cemented together, and a relatively narrow open space being left between the adjacent edges of the body layers of successive sheets.

Signed by me, this 8th day of October 1906.

ALBERT E. KIRK.

Attested by—
SCHUYLER C. IRWIN,
CHARLES G. SPITLE.