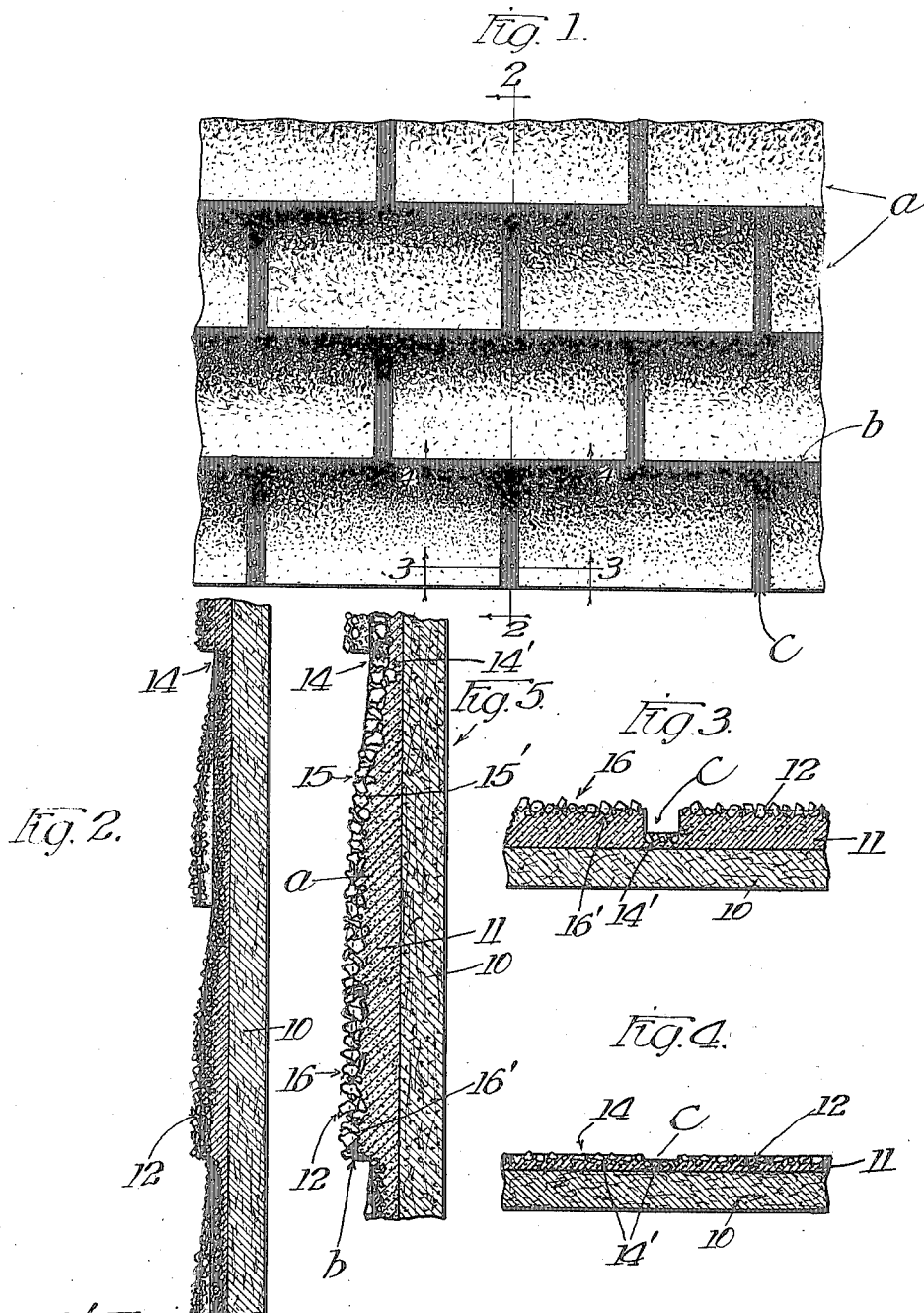


1,208,595.

Patented Dec. 12, 1916.
3 SHEETS—SHEET 1.



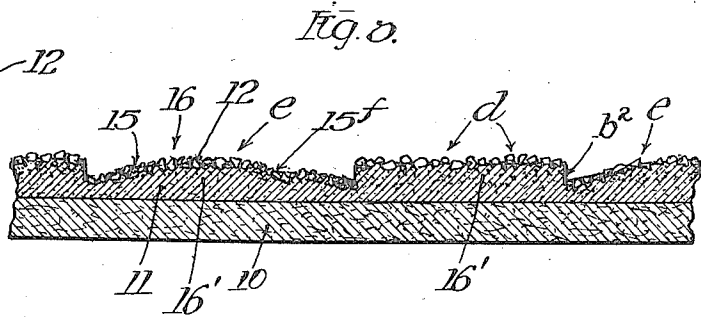
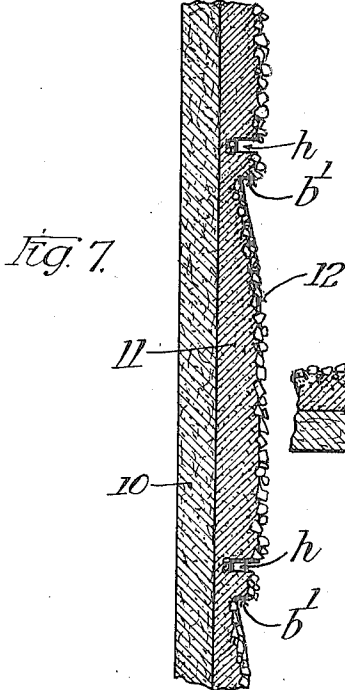
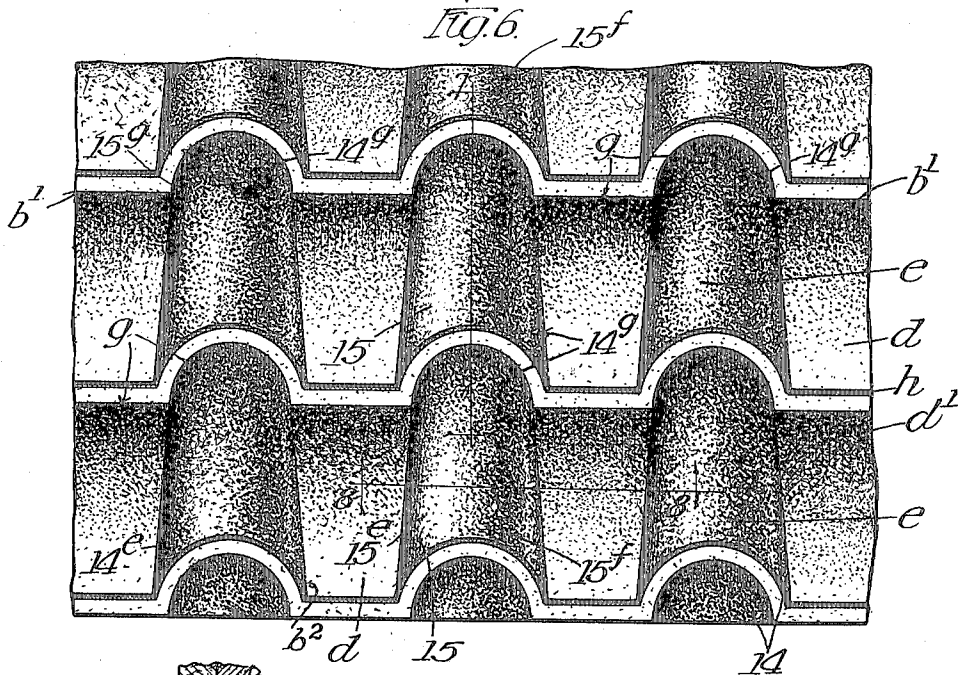
witnesses:
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Inventor
William F. McKay
Forie Dainaway, Attys.

W. F. McKAY.
PREPARED ROOFING.
APPLICATION FILED DEC. 7, 1915.

1,208,595.

Patented Dec. 12, 1916.
3 SHEETS—SHEET 2.



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Atty.

1,208,595.

Patented Dec. 12, 1916.

3 SHEETS—SHEET 3.

Fig. 10.

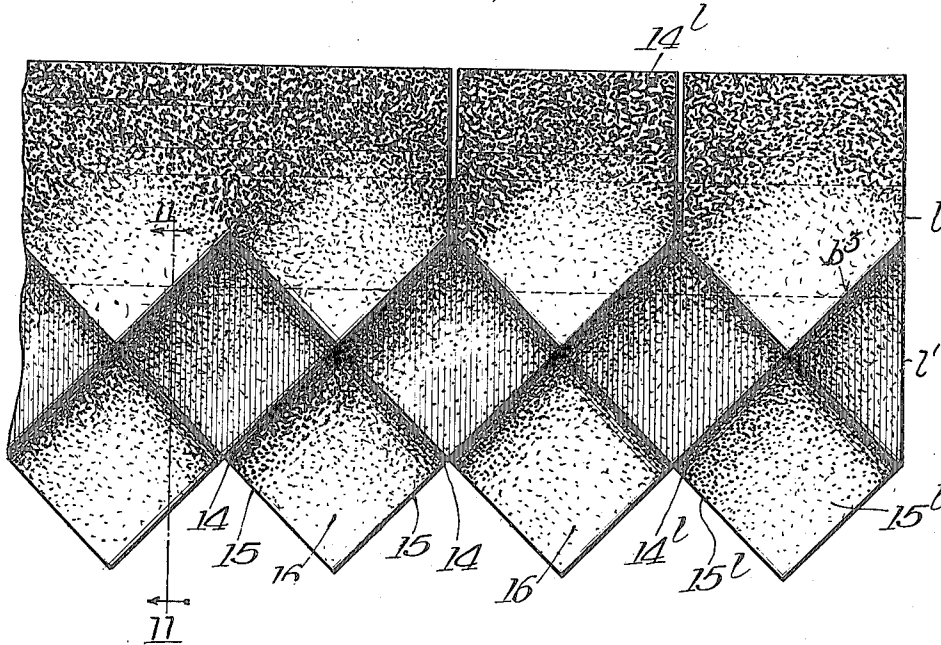


Fig. 9.

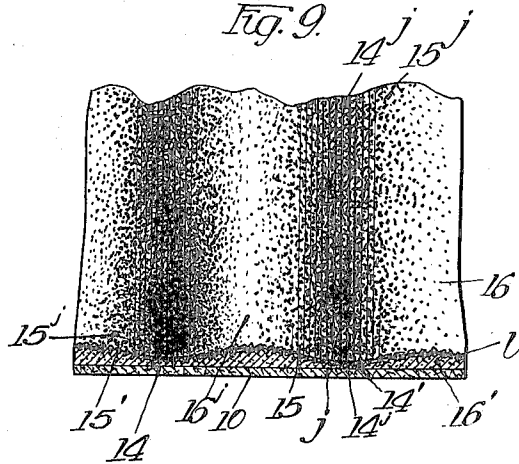
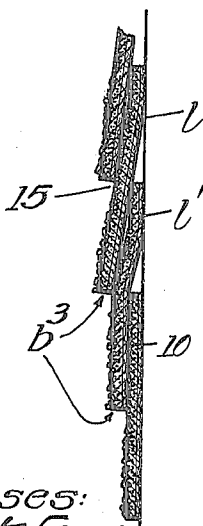


Fig. 11.



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UNITED STATES PATENT OFFICE.

WILLIAM F. MCKAY, OF LA GRANGE, ILLINOIS.

PREPARED ROOFING.

1,208,595.

Specification of Letters Patent.

Patented Dec. 12, 1916.

Application filed December 7, 1915. Serial No. 65,614.

To all whom it may concern:

Be it known that I, WILLIAM F. MCKAY, a citizen of the United States, residing at La Grange, in the County of Cook and State of Illinois, have invented certain new and useful Improvements in Prepared Roofing, of which the following is a specification.

My invention relates to plastic-coated building material, which I may briefly term "prepared-roofing," adapted for use in making roofs or other parts of buildings.

An important object of my invention is to provide a prepared-roofing construction giving, when laid, ornamental effects pleasing to the eye and, if desired, simulating the appearance of well-known forms of built-up or separate-unit styles of roof construction such as shingle, flat tile, ribbed tile, etc., that I may generically term "ordinary roofs" as distinguished from "prepared-roofing."

Another important object of my invention is to provide an advantageous prepared-roofing that, when laid, gives structural illusory shadow-effects in relation to relief patterns, optically accentuating the relief effects so as to simulate higher relief than that physically present.

Another object of my invention is to provide an ornamental prepared-roofing in a form and construction that may easily and cheaply be manufactured; that, when made in large sheets, is structurally adapted to be rolled, laid, and otherwise handled with ease and without injury; and that conforms to high requirements of permanency of superficial appearance, resistance to the action of the elements, and ease of laying.

Other and further objects of my invention will become apparent to those skilled in the art from the following description taken in conjunction with the accompanying drawings and the appended claims.

Prepared roofing usually consists of a base or foundation element of so-called felt or stout, pervious, fibrous material, that has been rendered highly resistant to moisture by saturation with a water-resisting compound, and that is overlaid with an adhering weather-proof layer of a plastic compound, generally butiminous in composition. Usually the asphaltic layer is superficially coated with a cover-coat or dressing adhering to the asphaltic layer and completely covering its top surface. In most instances,

such dressing is a thin superficial coating of powdered material, such as powdered talc, slate, soapstone or the like, of some desired color, substantially uniformly covering the black asphaltic surface to give desired superficial appearance and to avoid stickiness; and in some instances the said dressing is an exposed thicker layer of adhering coarse granules or flakes of slate, flint, or the like, pebbling the surface of the roofing, increasing its resistivity to the elements, defining the superficial color, and giving a uniform appearance of slate-like texture.

In matter of shape, the prepared roofing which is generally cheapest and most advantageous to manufacture, ship, and apply, is that in the form of long sheets, several feet in breadth, that may be sold in rolls. Usually these sheets are plane-surfaced, but the effect of large building surfaces covered with such plain roll-roofing is so monotonous as to be distinctly displeasing to the eye and to cheapen the looks of the building. To overcome this drawback, various other shapes of prepared roofing have been devised, and more or less used, in the effort at ornamentation. Thus, roofing is sometimes made in long narrow strips, with marginal edges variously shaped to simulate the ends of shingles, tiles, etc. and to be laid in overlapping courses, sometimes built-up multiples of such narrow strips are made into rolls, and sometimes individual units of prepared roofing, shaped to simulate tiles, shingles, and other well known roofing units are employed. Also, ornamentation has been supplied by the use of contrasting colors of the surface-dressing in different successive courses of material or by contrasting colors presented in sharply defined patterns simulating various forms of ordinary roofs and also development of relief shingle-patterns upon the uniformly colored plastic layer has been accomplished as shown in my prior Patent No. 1,080,647.

These varied advances in the roofing material art, all aiming to relieve the monotonous appearance that is normally characteristic of prepared roofing and to give the more pleasing appearance of ordinary roofs, have all been subject to one positive limitation that has seriously militated against attainment of the intended artistic appearance. That limitation is the absence, in the prepared roofing, of a depth of material comparing with that of an ordinary shingle

butt, or tile butt, or tile rib, or other characteristic elevations of the ordinary roofs most sought to be imitated. In all prepared roofing units, whether in sheet form, or in strips, or sheets compounded of strips, or smaller units, it is, from a practical standpoint, imperative that relative thinness of the completed material be preserved throughout for many and obvious reasons affecting cost, weight, shipping expense, ability to roll, facility of lay, stability in use, etc., that give commercial value to prepared roofing. Hence, no exposed edge or relief, (whether formed by cutting clear through the roofing or by formation of the plastic coat only) that is presented in the prepared roofing structure as laid, can have, in practice, depth sufficiently truly to simulate the most-copied forms of ordinary roofs, as shingle and tile, without sacrificing the very advantages that chiefly give commercial value to prepared roofing. And therefore, prior to my present invention, the best efforts at simulation of ordinary roofs that have been worked in prepared roofing are readily distinguishable from the ordinary roofs sought to be imitated by their thin appearance and by the absence of the shadow-areas that characterize and give artistic value and distinction to the ordinary roofs.

My present prepared roofing structure attains fictitious or illusory shadow-values by the graduated blending or merging of a lighter-colored color-layer into the darker mass of a plastic main layer, and by co-ordination of the resultant illusory "deep shadow" areas and "shadow-blends" with the physical elevations and depressions of the prepared roofing surface I attain, in practice, the optical illusion of depth of relief greatly exceeding the physical depth of the material, and thereby I relieve the roofing of its unsatisfactory thin appearance and add greatly to the artistry and commercial value or ornamental prepared-roofing. By my invention I am able artistically to simulate, in commercially-thin prepared roofing material, structures that, in ordinary roofs, require such thickness that imitation of their appearance has, prior to my invention, never been satisfactorily attained, nor even seriously attempted, for by my invention, I am enabled fictitiously to represent in the roofing, curvatures, prominences and recesses that either vastly exaggerate corresponding, but relatively-slight, surface-conformations, actually provided in the roofing-surface, or that are the result of outright optical illusions due only to the presence of the "shadow-effect" areas in the roofing material.

As far as I am aware, I am the first to provide and utilize graduated shadow-effect areas for simulation of or exaggeration of relief in prepared roofing.

In the accompanying drawings, for pur-

poses of full disclosure, I have particularly shown a few available embodiments of my invention, but it will be understood that in so doing I merely seek to acquaint those skilled in the art with some acceptable forms of application of the invention, without intent to limit my invention to the few selected exemplifications. Further I have, of course, not attempted to develop the drawings in accurate proportions but have conventionally accentuated or decreased sizes, angles, etc., in some instances, for clearness of illustration. In general, in the drawing, shade lines are used conventionally in accordance with Patent Office rules and stippling is employed to represent fictitious shadow-values due to color-mingling.

In the drawings, Figure 1 represents in plan a sheet roofing bearing multiplied patterns of shingles in relief and embodying my invention. Fig. 2 shows the same exaggerated in section on line 2—2 of Fig. 1. Figs. 3 and 4 show sections on line 3—3 and 4—4 of Fig. 1. Fig. 5 is an enlarged illustration of surface, in section. Fig. 6 is a plan view of a sheet roofing simulating rubber tile. Figs. 7 and 8 are sections on lines 7—7 and 8—8 of Fig. 6. Fig. 9 illustrates a roofing sheet simulating corrugated roof. Fig. 10 shows in plan a bi-colored tile-imitation roof built up of narrow strips or separate units. Fig. 11 is a section thereof on line 11—11 of Fig. 10.

In the drawings 10 indicates the base or foundation, preferably a piece of saturated paper or roofing felt, which for illustrative purposes may specifically be a full width long sheet to be rolled when completed, but which may generically, be any piece of a suitable contour and size adapted when completed to present one or more pattern units.

11 represents a plastic layer of suitable weather-resisting compound, preferably asphaltic, adhering to the base layer and such compound being of a dark color, preferably black.

12 indicates a color-body of separate particles adhering to the plastic layer in arrangement such that, as to selected areas of product, the dark asphaltic layer may be so completely overlaid by the color layer as practically to conceal the darker asphaltic layer, as to other selected "deep shadow" areas, the darker plastic layer may be so preponderantly displayed as to give the effect of deep shadow, and, as to areas intermediate those above mentioned, the two layers may be so blended as mergingly to graduate the color of the color coating into the dark appearance of the deep shadow area in these resultant "shadow blend" areas.

In the roofing structure, the layers may be of properly proportioned thickness to give to the completed sheet a maximum thickness of say from one-eighth to one-

sixth of an inch, and the material of the color layer should preferably be composed of coarse, firm particles of irregular conformation; that is to say, they should be of sufficient firmness to withstand pressure without crushing or materially spreading by change of shape; they should be of contour such that, when laid so close together as to constitute a color-defining covering, they present relatively large and extensive surface-voids, or surface-recesses between their outermost points or crests; and they should comprise such a large portion of non-powdered particles as to make the predominance of such voids or recesses characteristic of the surface afforded by the color layer when resident on the outer surface of the plastic layer. One specifically suitable material for use in such a color coating is a granulated mineral, as slate or sand-stone, having a preponderating quantity of particles that will not pass through a 40 mesh screen and that will pass through a 10 mesh screen.

It is my preference that the layer 12 of color-giving material shall physically be continuous and substantially uniform in thickness throughout the plan area of the sheet, although its effect as a color-imparting medium is graduated and in part substantially negated by blending or intermingling the light color of the color-coat with, and subordinating it to, the darker color of the asphaltic or plastic coat. Thus in "deep shadow" areas of the finished material, generally indicated at 14, the color-coat particles are submerged substantially to their crests in the asphaltic material, so that the surface voids or recesses between such crests are filled with asphaltic material and the black appearance of the asphaltic coat preponderates over any color effect of the color layer particles, and in "shadow-blend" areas 15 properly-graduated partially-submersion of the color coat granules or particles displays the darker asphaltic material partially filling surface-voids, and so darkens the appearance of, or gives shadow-value to, the shadow-blend areas, while continuing to a gradually decreasing extent the color-expression of the color-layer that overlies the full-color areas 16. Thus in the drawings, physically-high or "relief" surfaces generally indicated at 16', have the asphaltic coat substantially completely overlaid by, and concealed by, the color layer 12, and as a general rule, in any pattern or roofing, such areas covered by the color-layer will predominate to such an extent as to create the optical impression that the entire roofing surface is uniformly of the color presented by the color-layer material. In the physically depressed areas 14', contiguous to the relief surfaces 16', deep shadow areas 14, are created where the color-coat material is substantially submerged to the level of

the crest of the particles in the black asphaltic material, so that the optical effect is of a dark shadow mass fictitiously accentuating the relief. I find in practice that it is preferable in most instances to have the color-coat physically extend, in the stated submerged relation, into these deep shadow areas, because, while the exposed crests of the cover coat particles may, and preferably do, constitute only a relatively small portion of the deep-shadow area—a mere "speckling" thereof, so to speak—they are, wherever exposed, unchanged in actual color and have a slightly modifying or lightening effect on the black of the asphaltic coat that helps to carry the optical illusion that the patterned surface is of uniform color throughout and is merely overshadowed in the shadow-effect areas. The physical slopes or curvatures uniting the highest relief surfaces with the contiguous depressions in the laid roofing, are generally formed somewhat on the lines of the conformations sought to be expressed to the eye, but more especially they are shaped, and given area, with respect to the desired extent of the "shadow-blend" areas 15.

While physically it is true that shadows are apt to be cast in sharp outlines I find it to be true that fictitious shadow-values, even of those purporting to be shadows cast by sharp edges, can much better be attained by graduation of the shadow-value through shadow-blend areas than by any attempt at sharp delineation of a deep-shadow area, for such sharp delineation optically suggests mere dark-streaks, or cracks in the surface, and fails utterly to convey the idea of uniform color overshadowed because of depth of depression. Further I find it to be desirable to extend the deep shadow and shadow-blend areas farther from the high relief areas than true shadows thereof are apt to extend so that the optical effect is but little influenced by actual conditions of light and shade. Of course the thinness of the actual relief in the laid roofing restricts the true-shadow effects materially and makes subordination of true shadow to fictitious shadow-values easy of attainment.

In the manufacture of my improved roofing I prefer to embed the portions of the color-layer applied to shadow-effect areas in the asphaltic layer by pressure applied while the asphaltic material is hot, and so, inevitably, any shadow-effect area thus created constitutes to some extent an actual depression below the crests of the particles that are resident on the high or full color-areas of the sheet and that define the maximum thickness of the sheet, but in its broader aspects it will be understood that I do not limit my present invention to this method of production, nor to complete extension of the color layer uniformly over the area of the

sheet. However, I prefer that in the completed article or laid roofing the shadow-effect areas shall generally be so located that in the laid roof they supplement and heighten true relief areas afforded by material elevations in the physical conformation of the structure, such as are afforded by cut ends of roofing layers or by relief patterns raised in the asphaltic layer, as I find that a true elevation, even though quite slight in depth, supplemented by appropriate deep-shadow and shadow-blend areas, gives a better illusion of exaggerated depth of material and deep relief than does the shadow simulation alone or the physical elevation alone.

In the examples presented in the drawings for full disclosure, the shingle simulating effect illustrated in Figs. 1 to 4, is best attained by forming the plastic material into tapering courses *a*, (which may taper only part of their length or full-length), each terminating in an abrupt edge *b*, and each intersected by kerfs *c*, with the kerfs or different courses arranged in staggering relation after the fashion customary in the laying of shingles. The full color areas 16 completely displaying the color layer, extend over the butt end of each shingle-imitating formation for a major portion of its length, say three-quarters of its length, and then the colors merge through the color blend area 15 into the deep shadow area 14 that lies immediately adjacent to the abrupt edge *b*. In the kerfs *c*, the color coating 12 may be embedded in the asphaltic coating 11 substantially as in the deep-shadow areas, so that the kerfs appear as slits in the surface or cracks between shingles, on account of their sharp, uniform delineation. I find that in this way an excellent optical simulation of shingles may be produced, where, in fact, the actual relief or depth at the simulated butt of a shingle is only a few one-hundredths of an inch. Thus, it will be apparent, a roofing sheet may be made in imitation of a shingle roof, for example, with the actual thickness of the material so nearly uniform, and so thin at a maximum, that the ability of the sheet to roll, to be transported, and to be easily laid, is not affected materially, and so that the rolling and unrolling of the sheet will have no serious tendency to crack or "check" the comparatively minute relief edges, and so that the differences in thickness on different portions of the sheet are too slight noticeably to affect the wearing qualities of the sheet, or to result in detriment in use due to unequal expansion and contraction of portions of different thickness. Further to suggest the availability of embodiments of my invention to secure unusual ornamental effects, I have in Figs. 6 to 8 illustrated the same as applied to the imitation of a ribbed-tile roof, but also made in sheet form. The effect of the

ribbing is procured by shaping the surface to present the flat high areas *d* flanking a slightly-convexed taper-rib *e*, terminating at the sharp edges *b*² of the areas *d*, and the sides of which constitute shadow blend areas 15 and the lower extremities of which constitute deep shadow areas 14^a. The rib effect may be heightened, if desired, by the intersection of a fictitious low light at 15^c, or elsewhere, by creating a narrow shadow-blend along a line 15^c in some or all of the rib simulations. Joints of the tile courses are simulated by forming thin relief edges *b*¹ along lines that are patterned in successive straight lines and joining curves, as at *g*, to represent the line of juncture of the underlapping and overlapping tiles, and creating contiguous to these lines, deep shadow areas 14^a and shadow blend areas 15^a on the physically slightly-tapering surfaces of the rib areas *e* and flat areas *d*¹. Simulation of the upper-surface edge-line of each butt is preferably effected by kerfing at *h* on a narrow line paralleling the physical edge *g*.

In Fig. 9 I have shown a corrugated roof simulation, with slight true elevations *i* and depressions *j*, the latter supplemented by deep-shadow areas 14^j and shadow-blend areas 15^j throwing into high optical relief the elevated full color surfaces 16^j.

In Figs. 10 and 11 I have illustrated a flat tile simulation in which either long narrow strips or separate units serve respectively in making up the several courses *l*, *l'*, each course being provided along the area that will closely adjoin the physical edge or butt *b*³ of the superjacent course with a deep shadow area 14^l and a shadow blend area 15^l for conformation with the patterned shape edge of such course, and, if desired, successive courses being made as shown at *l* and *l'* with color layers of specifically different color, as, for instance, gray and red, respectively.

Many other embodiments of my invention, and variations in details of embodiment, may be made without departure from the spirit of my invention, within the scope of the appended claims.

Having described my invention, what I claim is:—

1. As an article of manufacture, a prepared roofing member comprising a piece of foundation material, a layer of dark, plastic material adhering thereto, and a body of lighter-colored material adhering to the plastic layer, covering and substantially concealing the plastic layer in predetermined areas that are adapted to appear in physical relief in the finished roof, exposing preponderatingly the dark plastic in deep-shadow areas that are predeterminedly related to said relief areas to simulate shadow cast by high-relief and exposing gradually-increasingly the plastic layer

in arbitrary shadow-blend areas lying between said high relief areas and deep-shadow areas.

2. As an article of manufacture, prepared roofing adapted to present when laid physical elevations and depressions in its surface constituting patterns in relatively-thin relief, said roofing comprising foundation material, a dark plastic layer adhering thereto, and means for optically simulating in the laid roofing the appearance of relief deeper than that physically presented, comprising a body of lighter colored material applied to and adhering to the higher relief portions of the surface to appear predominately thereon, applied to shadow blend areas arbitrarily related to the highest relief surfaces to appear graduatedly less and less thereon, and leaving predominately uncovered the color of the plastic coating in deep shadow areas appropriately related to the highest relief surfaces.

3. Prepared roofing adapted to present, when laid, a relatively thin true-relief pattern, said roofing having a plastic layer of dark material exposed preponderatingly in areas approximately conforming to the deepest depressions of the physical relief, and a body of lighter-colored relatively coarse separate particles adhering to the plastic layer, said particles overlying and substantially covering the plastic layer throughout the highest relief areas and partially submerged in the darker plastic layer to expose to a gradually increasing extent the darker color of the plastic layer in predetermined areas, thereby producing an optical illusion of shadow fictitiously giving an appearance of increased depth of relief.

4. Prepared roofing adapted to present when laid a relatively thin true-relief pattern, said roofing having a plastic layer of dark material and a color layer of lighter colored separate, relatively coarse particles adhering to the plastic layer throughout its area, said particles substantially covering the plastic layer throughout the highest relief areas, depressed increasingly into the plastic layer gradually to display increasingly the darker color of the plastic layer in intermediate shadow blend areas, and depressed substantially to their crests in deep shadow areas conforming to deepest depressions in the physical relief, thereby displaying in the deep shadow areas aggregately-extensive surfaces of the dark plastic layer, and thereby optically simulating a depth of relief greatly in excess of that physically provided.

5. Prepared roofing adapted to present when laid a relatively thin true-relief pattern having abrupt edges sharply defining areas of physical elevation, a lighter-colored body of coarse particles adheringly laid upon the high relief area substantially

to conceal the dark plastic material throughout a major area of the exposed surface, and exposed in gradually decreasing quantities upon the tapering surfaces merging from said high relief surfaces toward the bottoms of the abrupt edges, and said dark plastic material being preponderatingly displayed in the depressed areas adjacent to the bottoms of said abrupt edges, thereby to create the optical illusion of uniform color corresponding with that of the particles but overshadowed as a result of relief deeper than that physically present.

6. As an article of manufacture a prepared roofing sheet having a coating layer of plastic dark material and an adhering layer of contrastingly lighter colored particles including a material proportion of firm, coarse, irregular particles, the plastic layer being formed to present a pattern of elevations and depressions, and the granular layer graduatedly immersed in the plastic material in appropriate areas showing the dark plastic material plainly in voids between the highest points of the coarse particles in areas of greatest physical depression, showing the plastic material to gradually decreasing extent tapering away from said areas of deepest depression, and substantially completely concealing the plastic material over the physically highest levels of the plastic layer, thereby accentuating the physical relief with illusory shadow effect due to graduated display of the plastic material through the voids of the adhering layer.

7. As an article of manufacture, a prepared roofing sheet having a coating layer of plastic dark material and an adhering layer of contrastingly lighter color, firm, coarse particles, the plastic layer formed to present a pattern of abrupt edges and surfaces inclined to the lowest levels of said edges, and the granular layer graduatedly immersed in the plastic material in appropriate areas showing the dark plastic material plainly in the voids between the highest points of the granules in areas close to the abrupt edges and showing said plastic material to gradually decreasing extent tapering away from said edges, and substantially completely concealing the plastic material over the physically higher levels of the plastic layer, thereby accentuating the surface relief with illusory shadow effect due to graduated display of the plastic material.

8. Shadow effect roofing material comprising a layer of dark plastic material and a body of contrastingly-lighter colored, firm particles including a large proportion of coarse particles, said plastic material being exposed to varying degrees between the particles to form selected shadow-effect areas and substantially concealed by overlying

particles in other areas that, in the laid roof, are adapted to appear in relief.

9. Shadow effect roofing material comprising an integral base layer of plastic dark
5 material, and a body of lighter-colored particles, principally coarse and firm, overlying parts of the plastic layer substantially to conceal its color, and partially embedded in
10 tent, to display, intermingled with the color

of the particles, numerous small areas of the dark plastic material.

In testimony whereof I hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM F. MCKAY.

In the presence of—
FORÉE BAIN,
MARY F. ALLEN.