No. 662,262. Patented Nov. 20, 1900.

C. A. GALVIN.

METALLIC SHINGLE.

(Application filed Apr. 2, 1900.)

(No Model.)

Fig. 1.

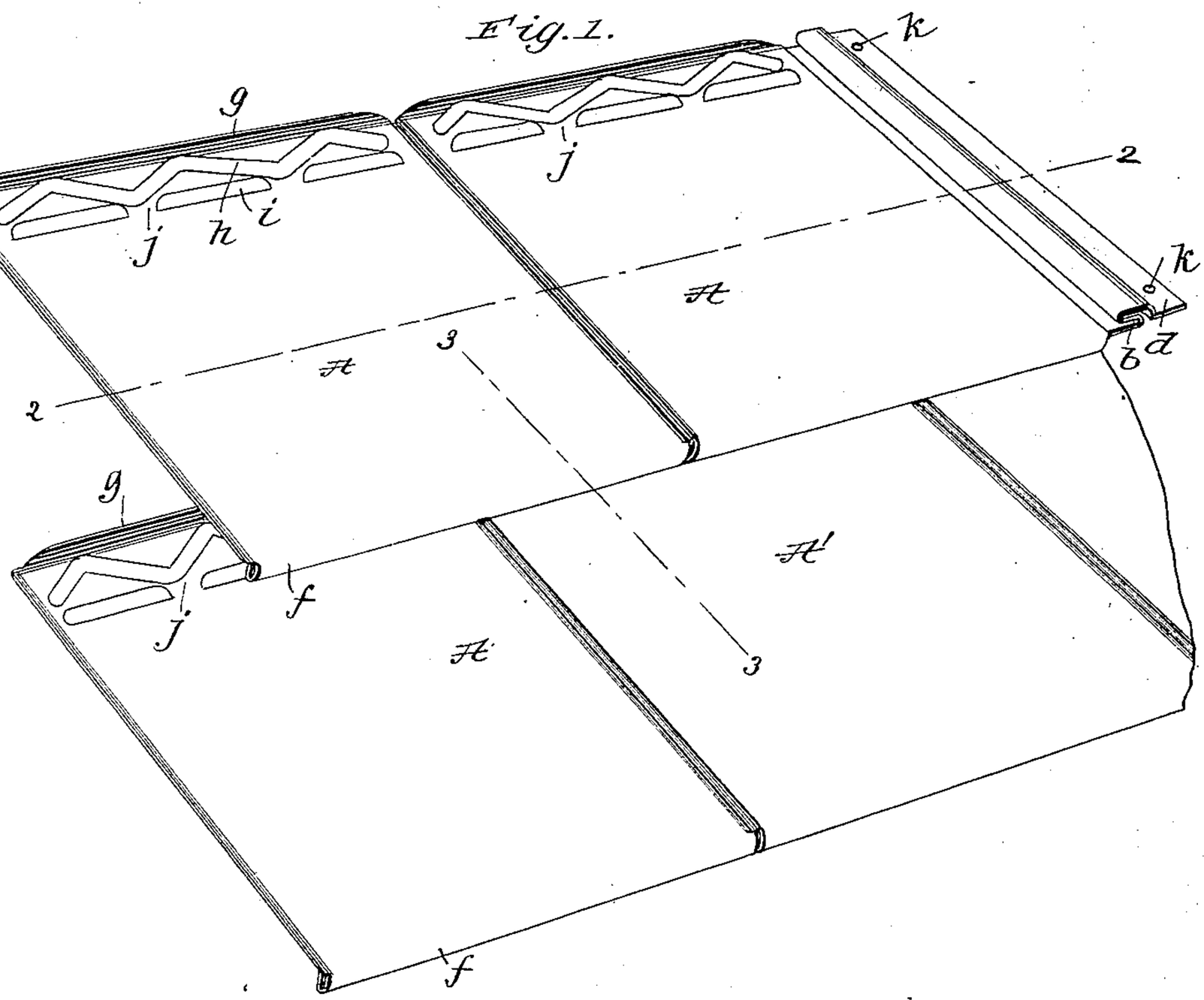


Fig. 2.

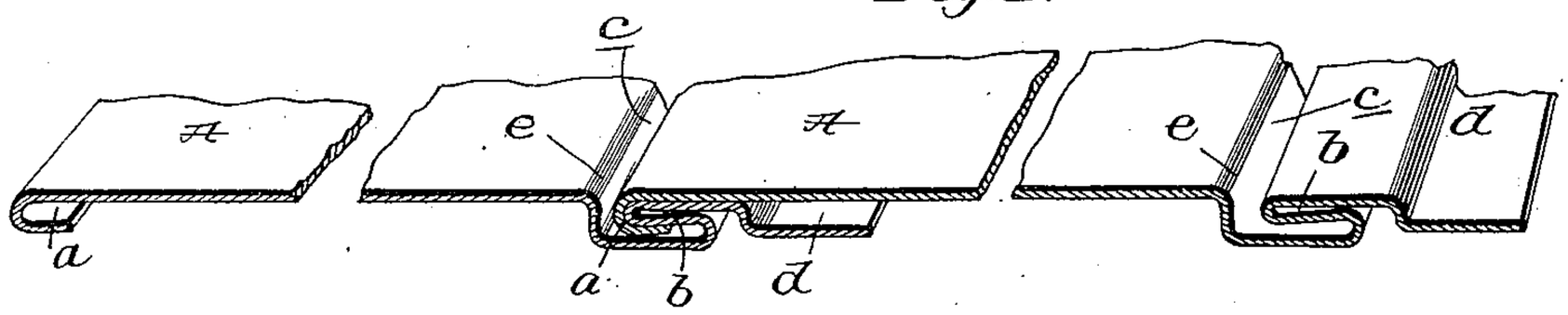
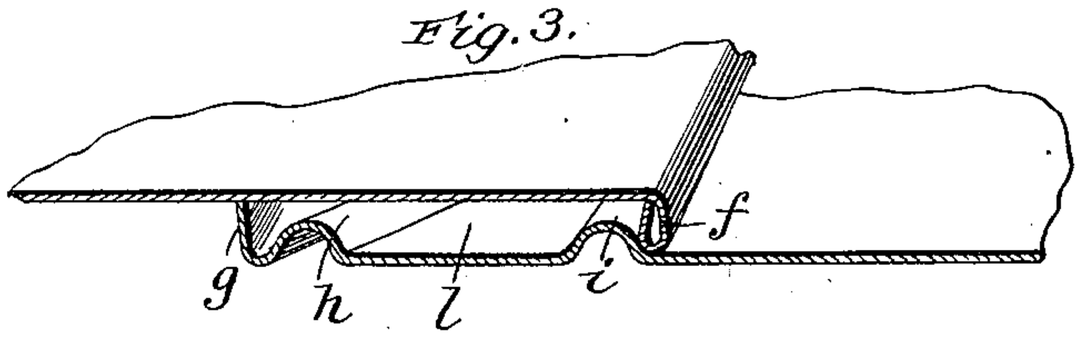


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES A. GALVIN, OF MODESTO, CALIFORNIA.

METALLIC SHINGLE.

SPECIFICATION forming part of Letters Patent No. 662,262, dated November 20, 1900.

Application filed April 2, 1900. Serial No. 11,163. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. GALVIN, a citizen of the United States, residing at Modesto, in the county of Stanislaus and State of California, have invented new and useful Improvements in Metallic Shingles, of which the following is a specification.

My invention relates to improvements in metallic shingles—*i. e.*, shingles or roofing-plates such as are formed of sheet metal; and it consists in a certain peculiar construction the novelty, utility, and advantages of which will be fully understood from the following description and claims, when taken in conjunction with the accompanying drawings, in which—

Figure 1 is a broken perspective view illustrating the manner in which a plurality of my improved shingles are relatively arranged on a roof. Fig. 2 is a broken section taken in the plane indicated by the broken line 2 2 of Fig. 1. Fig. 3 is a detail section taken at right angles to Fig. 2 and in the plane indicated by the broken line 3 3 of Fig. 1.

In the said drawings similar letters of reference designate corresponding parts in all of the views, referring to which—

A A are plates or shingles comprised in one horizontal course on a roof, and A′ A′ are the shingles comprised in the next lower course. These shingles are each made of one piece of sheet metal and by preference are rectangular in outline and of the proportional size illustrated. They are each provided at one of their side edges with a downwardly and inwardly directed hook-flange *a*, and adjacent to their opposite side edges they are respectively bent so as to form an upwardly and laterally directed hook-flange *b*, a trough *c* below and at one side of the flange *b*, and a nail-flange *d* at the opposite side of said flange *b*. The flanges *a* and *d* extend throughout the length of the shingle, as does also the flange *b* and the trough *c*, and the latter is bounded at the left of and about the proportional distance illustrated from the flange *b* by a shoulder *e* for a purpose presently pointed out. Each shingle is also provided at its lower end with a downwardly-directed flange *f* and at its upper end with an upwardly-directed flange *g*, while below said flange *g* it has the upwardly-pressed corrugations *h* and *i*, as illustrated in Figs. 1 and 3. The corrugations *i* extend in the direction of the width of the shingle and are arranged about the proportional distance illustrated apart, so as to afford passages *j* between them, while the corrugation *h* is zigzag in form and is arranged between the line of corrugations *i* and the flange *g*, with the lower apices of its angles above and opposite to the passages *j* between said corrugations *i*, as best shown at the top of Fig. 1.

In the practice of my invention the shingles are applied to a roof after the manner illustrated in Fig. 1—that is to say, one of the shingles A′ is connected to the roof by one or more nails *k* driven through its nail-flange *d*, and the adjoining shingle A′ is connected to the first-mentioned one by sliding its hook-flange *a* upwardly into engagement with the hook-flange *b* of said first-mentioned shingle until the ends of the shingles are flush, as shown in Fig. 1. When the shingles are thus arranged, it will be seen that the nails driven through the flange *d* of one will secure both in position on the roof, and also that the nail-flange and the apertures therein are covered, and that the joint between the hook-flange *a* of one shingle and the hook-flange *b* of the other is broken in such manner as to effectually preclude the entry of water between the meeting portions of the two. Moreover, it will be observed that the joint between the two shingles admits of free expansion and contraction, due to heat and cold, without impairing the ability of the joint to exclude water, and that the trough *c* tends to drain water from the joint and thereby lessens the liability of the same working its way between the members of the joint and beneath the shingles. After a course of the shingles A′ are relatively arranged and connected together and to the roof in the manner described a course of the shingles A is laid, said shingles A being connected together and to the roof in the same manner as the shingles A′. The shingles A, however, are arranged so that their lower portions overlap the upper portions of the shingles A′, and so that the joints between them are arranged at a suitable distance from the joints between the shingles A′. When the

shingles A are arranged to overlap the shingles A′, it will be seen that the flanges *f* of the former will rest immediately below and in engagement with the corrugations *i* of the latter, and that the flanges *g* of the latter will bear against the under sides of the former. From this it follows that a dead air-space *l* will be formed between the lapped portions of the shingles A A′, as best shown in Fig. 3, said dead-air space being calculated to effectually prevent water being drawn up between the lapped portions of the shingles by the force known as "capillary" attraction. If by stress of weather water is driven past the joint between the flanges *f* and the corrugations *i*, it will be stopped by the continuous corrugations *h*, and by virtue of the formation of the latter will be drained toward the openings *j*, through which it will pass. From this it follows that it is practically impossible for water to be driven or to work its way between the lapped portions of the shingles A A′ to the roof beneath the same, and it will also be observed that the ability of the lapped portions of the shingles A A′ to resist the passage of water is not in any way impaired by expansion or contraction of such shingles.

While there is ample space between the shoulders *e* and the hook-flanges *b* of the joined shingles to permit of free expansion and contraction of the latter, it will be noticed that the said shoulders *e* are calculated to effectually prevent casual disengagement of the hook-flanges *a* from their complementary flanges *b*, and consequently there is no liability of the shingles of a course being casually disconnected from each other.

It will further be noticed that the upper sides of the hook-flanges *b* are arranged such a distance below the plane of the upper sides of the main portions of the shingles that when the hook-flanges *a* of other shingles are placed in engagement with said hook-flanges *b* the upper sides of all the shingles of a course will rest in the same plane and present a smooth surface.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A sheet-metal shingle or roofing-plate, having a nail-flange at one edge, a downwardly and inwardly directed hook-flange at its opposite edge, the hook-flange *b*, formed by a fold of the metal, adjacent to the nail-flange, a shoulder *e* arranged adjacent to and extending above the plane of the hook-flange *b*, a downwardly-directed flange at its lower edge, an upwardly-directed flange at its upper edge or end, corrugations extending in the direction of the width of the shingle and arranged at intervals apart so as to afford passages between their ends, and a continuous zigzag corrugation arranged between the line of corrugations and the upper end of the shingle and having the lower apices of its angles arranged opposite the spaces between the corrugations of said line, substantially as specified.

2. A sheet-metal shingle or roofing-plate, having a downwardly-directed flange at one end, an upwardly-directed flange at its opposite end, a line of upwardly-pressed corrugations extending in the direction of the width of the shingle adjacent to the upwardly-directed flange thereof; the corrugations of said line being arranged at intervals apart so as to afford passages between them, and a continuous, zigzag, upwardly-pressed corrugation arranged between the upwardly-directed flange and the line of corrugations, and having the lower apices of its angles arranged opposite the spaces between the corrugations of the line, substantially as specified.

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