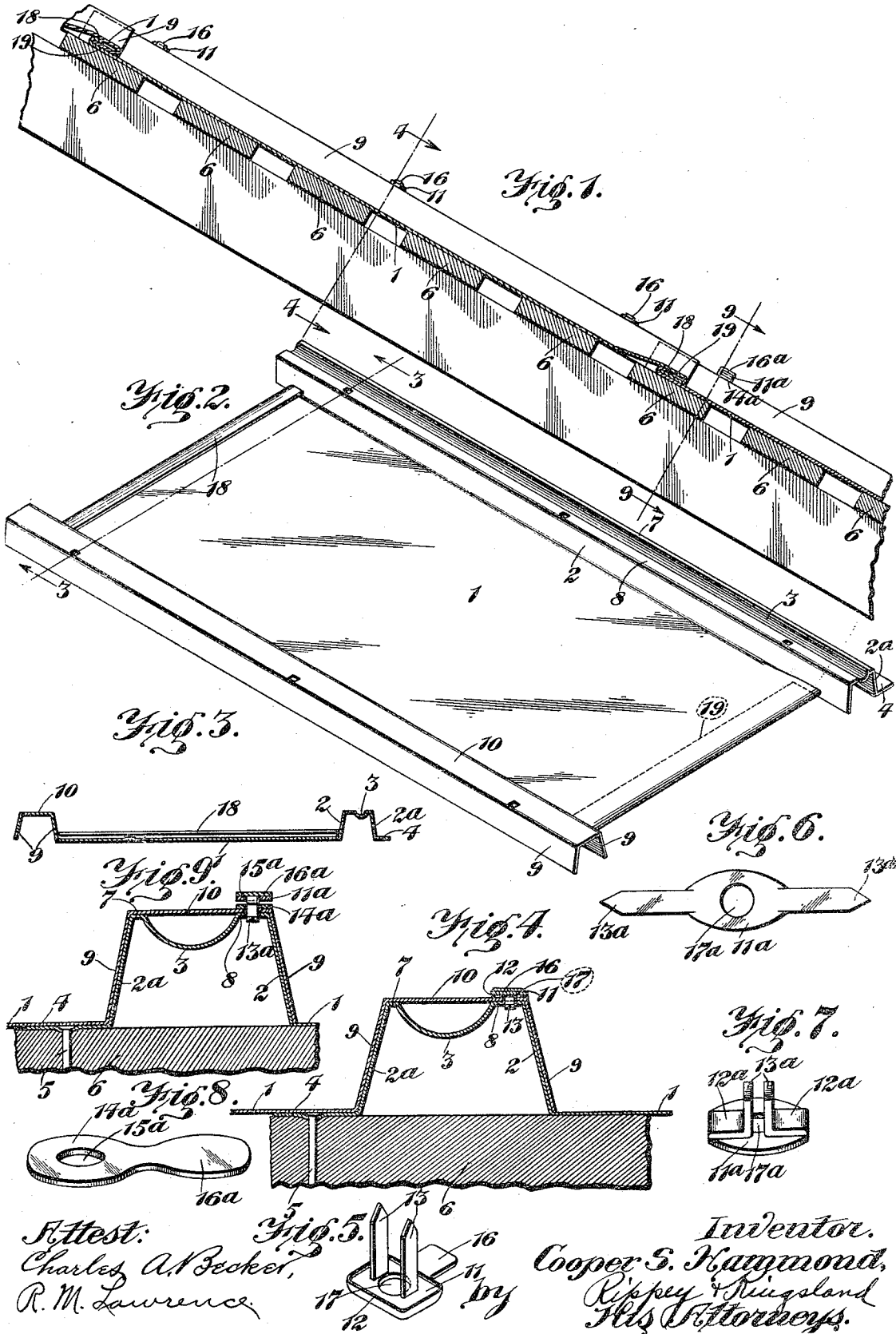


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 ROOF.
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UNITED STATES PATENT OFFICE.

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ROOF.

1,179,523.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, COOPER S. HAMMOND, a citizen of the United States, residing at the city of St. Louis and State of Missouri, have invented a new and useful Roof, of which the following is a specification.

This invention relates to metallic roofing.

An object of the invention is to provide an improved sheet metal roof composed of sections of sheet metal secured to the supporting roof structure by nails or other fastening devices which are completely covered by overlapping portions of the sections of sheet metal whereby corrosion of the fastening devices is prevented, a trough formed in the inner overlapped portions of the sheet metal sections for receiving and discharging the water which may pass under the edges of the superimposed sections, thus preventing the water from reaching the fastening devices or the supporting portions of the roof, and improved fastening or clamping elements by which the overlapped portions of the sheet metal are secured together without the necessity of securing said last-named fastening devices to the supporting portions of the roof.

Another object is to provide an improved sheet metal roof comprising sections of sheet metal provided with raised overlapping portions with fastening devices for the under sections entering the roof support and wholly covered by the upper sections, non-corrosive fastening devices binding together the raised overlapping portions of the sheet metal sections without engagement with the roof supporting structure, and troughs formed in the under overlapping portions for receiving and discharging whatever moisture may pass between said sections, thus preventing the moisture from reaching the roof supporting structure or the fastening devices binding the roofing thereon.

Another object is to provide an improved non-corrosive fastening device for fastening together the overlapping portions of the sheet metal, without the necessity of engaging said fastening devices with the roof supporting structure.

There are other objects and advantages all of which are attained by my invention and which do not require specific mention

at this point, but which will become apparent from the following detail description, reference being made to the accompanying drawing in which I have illustrated one embodiment of the invention, and in which—

Figure 1 is a sectional view of a roof constructed in accordance with my invention. Fig. 2 is a perspective view of one of the sheet metal sections. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a sectional view enlarged with respect to the preceding views of the drawing and illustrating the novel features of the invention, being approximately on the line 4—4 of Fig. 1. Fig. 5 is a perspective view of one form of fastening device by which the overlapping sections are secured together. Fig. 6 is a view of a blank from which another form of fastening device or clamp is formed. Fig. 7 is a perspective view of the clamp formed by folding the blank illustrated in Fig. 6. Fig. 8 is a perspective view of the non-corrosive protecting device by which the clamp is protected. Fig. 9 is a sectional view on the line 9—9 of Fig. 1, illustrating the sheet metal sections held together by the clamp shown in Figs. 6, 7 and 8.

My invention comprises a number of sections 1 of sheet metal folded to provide near one edge a raised portion consisting of two obliquely disposed walls 2 and 2^a, which are integrally united by a connecting portion which is shaped to provide a trough or channel 3. The trough or channel 3 is of suitable depth, and is wholly supported by the side walls 2, being thus maintained entirely out of contact with the roof support, so that the portions of the sheet metal section which extend laterally from the walls 2 may press directly against the roof support throughout their length. Laterally from the wall 2^a extends a base flange 4 which is thus enabled to bear against the roof support and is provided with holes for the reception of the fastening nails 5 which are driven through the holes and into the sheathing 6 constituting a part of the roof support. By reference to Fig. 4 it will be seen that a narrow flat portion 7 connects the wall 2^a with the wall of the channel 3, and that a wider flat portion 8 is between the channel 3 and the wall 2. The opposite edge of each

section of sheet metal is formed with a raised portion consisting of the two obliquely disposed walls 9 connected by a flat portion 10. Thus a channel is formed which is adapted to receive the raised portion of an adjacent sheet metal section including the walls 2 and 2^a and the trough or channel 3 formed therebetween.

In constructing the roof the sections 10 of the sheet metal are placed upon the supporting structure 6 and the lateral extensions 4 are secured to the roof by the nails 5 passing through holes in said extensions and being driven into the roof support. Duplicate sections are then placed in position with the raised portions consisting of the walls 2 and 2^a and the channel 3 of the first-laid sections received within the overlapping portions 9-10 of the super-imposed sections. Thus, the trough or channel 3 of the under sections are covered by the overlapping of the adjacent sections which bear against the flat surfaces of the flat portions 7 and 8, and thus form close joints to prevent the moisture from passing farther between the overlapping portions of the sheet metal. The nails 5 are completely covered by the sheet metal, and it is practically impossible for the moisture to reach the nails, so that they do not deteriorate by corrosion, as occurs in roofing of ordinary construction, or of any construction in which the nails are exposed and are accessible to the moisture.

For the purpose of securing together the overlapping portions of the lateral adjacent sections I have provided fastening devices of novel construction. The clamp which I have devised, and which is adjustable in connection with the overlapping portions of the sheet metal sections effectively to bind and secure them together without engaging the roof supporting structure or sheathing, comprises a central head portion 11 provided with a flange 12 around its lower edge, and with integral extensions or arms 13. The arms 13 are extended through holes in the overlapping portions of the sheet metal sections and are clamped against the inner surfaces of the subjacent sections, thus securing the parts together. As illustrated the clamp device is applied to the overlapping raised portions by pressing the arms 13 through holes in the part 10 of the outer section and through holes in the flat portion 8 of the lower section. Thus the fastening devices are supported above the plane of the main portion of the roofing so that water is not enabled to pass through the holes through which the fastening elements extend. The arms 13 may be passed through the holes as the different sections of sheet metal are placed, and said arms may be spread apart and clamped by any suitable or known device applicable to such purpose. In connection with this

clamping device I provide a non-corrosive protector or shield. The head 11 is provided with an extended portion 16 adapted to be folded upon the upper surface of the head, thus completely covering the central part of the fastening device. The head 11 is provided with a hole 17 through which the tool may be passed for spreading and clamping the arms 13 as above explained. After the clamp has been secured in position the extended portion 16, constituting a protecting shield is folded upon the head or body 11 of the clamp, thus closing the hole 17 and also protecting the outer surface of the clamp.

In Figs. 6 to 9 I have illustrated another form of clamp for securing together the overlapping portions of the sheet metal sections. This alternative form of clamp comprises a central head portion 11^a provided with integral extensions which may be folded against the central portion as indicated at 12 in Fig. 7 and bent to provide laterally extending portions or arms 12^a projected at right-angles from the central head portion 11^a. This form of the clamp is secured to the overlapping portions of the sheet metal sections by passing the arms 13^a through holes in the sections and clamping the arms against the inner surfaces of the subjacent sections, thus clamping the parts together. In connection with this clamping device I provide a separable non-corrosive protector or shield which consists of a flexible plate 14^a, composed of lead or other suitable non-corrosive material and having a hole 15^a through which the arms 13^a are passed, so that the plate is interposed between the head portion 11^a of the clamp device and the roofing. The plate 14^a is provided with an extended portion 16^a adapted to be folded upon the upper surface of the head 11^a, thus covering the head of the clamp, and preventing it from deterioration by corrosion. The head 11^a is provided with a hole 17^a through which the clamping tool may be passed for spreading and clamping the arms 13^a in the same manner that the arms 13 of the previously described clamp are spread and clamped. After the clamp has been secured in position the extended portion 16^a, constituting a protecting shield, is folded upon the head or body 11^a of the clamp, thus closing the hole 17^a and also protecting the surface of the clamp.

The upper end of each of the sheet metal sections is folded to provide a transverse engaging portion 18 between the overlapping portions at the sides of the section adapted to engage with an under folded portion 19 formed at the lower end of the upwardly adjacent section. I prefer to form the folded extensions 19 somewhat longer than the extensions 18 in order to afford sufficient material and space for slight vari-

ation in adjusting and placing the roofing sections.

It will be understood that there may be variations in the construction and arrangement of the part of the invention without departing from the principles thereof. I do not restrict myself to exact features of construction, but

What I claim and desire to secure by Letters Patent of the United States is:

1. A roof, comprising sections of sheet metal each having adjacent to one edge thereof upwardly extending converging portions, a flat bearing portion on each of said converging portions, a trough connecting and wholly supported by said flat bearing portions, a channel portion at the opposite edge of each section composed of upwardly extending converging portions and a flat portion connecting them, said converging portions of said channel bearing against the converging portions of an adjacent section and a flat portion of said channel overlapping and bearing upon the flat portion of the adjacent section, said two flat portions being provided with registering holes, and clamping elements comprising legs passing through said holes in said overlapping flat portions and engaging against the inner surfaces thereof and also comprising integral heads bearing upon the outer flat portion and closing said holes, whereby said elements prevent moisture from coming into contact with said legs.

2. A roof, comprising sections of sheet metal having their adjacent edges superimposed one upon the other, and the under section having a flat edge portion bearing upon the roof support and also having a raised portion composed of two upwardly extending converging walls provided with a connection comprising a flat bearing portion and a trough, and the upper section bearing upon the flat portion at the edge of the under section and having converging walls bearing against the converging walls of the under section, and also having a flat portion bearing upon the flat bearing portion of the under section, the said overlapping portions being provided with registering holes, and clamping devices comprising legs passing through said holes and clamping together the flat overlapping portions, and also comprising integral heads bearing upon the outer flat portions around said holes and wholly closing the same, whereby said clamping devices prevent moisture from coming into contact with said legs and are wholly supported by and will accompany the overlapping portions in their expanding and contracting movements.

3. In a roof, a plurality of overlapping sheet metal sections having overlapping raised portions and lateral extensions therefrom adapted to be fastened to the roof sup-

port, clamping devices passing through and wholly supported by said raised portions and moving therewith when said sheet metal sections expand and contract in heat and cold, each of said clamping devices comprising legs passing through said sections and clamping against the under side of the lower section and a head in connection with said legs bearing upon the upper section, and having a passage therethrough between said legs for the purpose mentioned, and a device for closing said passage and preventing corrosion of said head.

4. A roof comprising a plurality of sheet metal sections having raised overlapping portions provided with registering holes, lateral extensions from the lower sections below the upper sections adapted to receive the fastening devices for securing said sections to the roof support, clamping devices wholly supported by and binding said overlapping portions together and each composed of legs passing through said holes and clamping against the under section and a head in connection with said legs having a passage therethrough between said legs and bearing upon the upper section to close the hole through which said legs pass and to prevent moisture from coming into contact with said legs, and a device for closing said passage.

5. A roof, comprising a plurality of sheet metal sections having raised overlapping portions and provided with registering holes in the raised overlapping portions thereof, clamping devices wholly supported by and binding said raised overlapping portions together, and each composed of a head having a hole therethrough and clamping arms extending through the registering holes in the raised portions of said sheet metal sections and clamped against the under side of the under section, and a non-corrosive device in connection with said head closing the hole therethrough.

6. A roof, comprising a plurality of overlapping sheet metal sections having overlapping raised portions, clamping devices passing through and wholly supported by said raised portions and each comprising legs passing through said sections and clamping against the under side of the lower section, and a head integral with said legs bearing upon the upper section, a passage through each head between said legs and a closure for said passage.

7. A roof, comprising a plurality of overlapping sheet metal sections having overlapping raised portions, clamping devices passing through and wholly supported by said raised portions and each comprising legs passing through said sections and clamping against the under side of the lower section, and a head in connection with said legs bearing upon the upper section, a pas-

sage through each head between said legs
for the purpose mentioned, a closure for
said passage in connection with and bearing
upon said head, and a rib on the under side
5 of said head encircling said legs and said
passage and bearing upon the upper sur-
face of the upper section.

In witness whereof, I have signed this
specification in the presence of two subscrib-
ing witnesses.

COOPER S. HAMMOND.

Witnesses:

L. C. KINGSLAND,
BERNIE M. WATSON.