

P. H. MURPHY MANUF'G CO. v. EXCELSIOR CAR-ROOF CO.

(Circuit Court of Appeals, Eighth Circuit. August 31, 1896.)

No. 762.

1. PATENTS—LIMITATION OF CLAIMS—INFRINGEMENT.

A patent to one who has simply made a slight improvement on devices that perform the same functions before as after the improvement is protected against those only who use the very improvement he describes and claims, or mere colorable evasions of it.

2. SAME—INFRINGEMENT OF COMBINATIONS.

The absence, from a device or construction that is alleged to infringe, of a single essential element of a patentable combination of old elements, is fatal to the claim of infringement.

3. SAME—METAL CAR ROOFS.

The Murphy patent, No. 414,069, for an improvement in car roofs, is not infringed by the Jennings patent, No. 446,780, as the "angle strip," which is the chief element of all the combinations in the former, is entirely omitted from the latter. 70 Fed. 491, affirmed.

Appeal from the Circuit Court of the United States for the Eastern District of Missouri.

This is an appeal from a decree which dismissed a bill brought by the appellant, the P. H. Murphy Manufacturing Company, against the appellee, the Excelsior Car-Roof Company, for the infringement of letters patent No. 414,069, issued to Peter H. Murphy on October 29, 1889, for an improvement in car roofs. The court below dismissed the bill on the grounds that there was no patentable invention and no novelty in any of the combinations claimed in the patent to Murphy, and that none of them had been infringed by the appellee. 70 Fed. 491. The following is a copy of the specification, claims, and drawings which form a part of the patent to Murphy:

United States Patent Office.

Peter H. Murphy, of East St. Louis, Illinois.

Car Roof.

Specification Forming Part of Letters Patent No. 414,069, Dated October 29, 1889.

Application Filed August 3, 1889. Serial No. 319,684. (No Model.)

To All Whom it may Concern: Be it known that I, Peter H. Murphy, of the city of East St. Louis, in the county of St. Clair and state of Illinois, have invented a certain new and useful improvement in car roofs, of which the following is a full, clear, and exact description; reference being had to the accompanying drawings, forming part of this specification: This invention relates to a metal roof for railroad cars, the metal plates being secured to vertical metal ribs by horizontal rivets passing through upright flanges on the plates. Fig. I. is a top view of a car, illustrating the invention. Figs. II. and III. are views of the flanged sheets or roofing. Fig. IV. is a detail perspective view showing the end portion of one of the angle strips to which the metal plates are secured. Fig. V. is a detail perspective view showing the manner of folding down the flanges of the metal sheets at the eaves. Fig. VI. is a detail side view of the eaves of the car roof. Fig. VII. is a perspective view of one of the corner caps. Fig. VIII. is an enlarged detail transverse section at VIII., VIII., Fig. I. Fig. IX. is an enlarged detail longitudinal section at IX., IX., Fig. I. Figs. X. and XI. are enlarged detail transverse sections at X., XI., Fig. I. Fig. XII. is an enlarged detail transverse section at XII., XII., Fig. I. Fig. XIII. is an enlarged detail longitudinal section at XIII., XIII., Fig. I. The wooden roof or sheeting of the car is shown at 1, inclining to the eaves from the peak, 2. Upon the wooden roof or sheeting are fastened angle

strips, 3, of metal, consisting of a base, 4, with a central flange, 5. The base, 4, is laid flat on the sheeting, 1, and secured by screws or nails; the flange, 5, extending upward and forming a ridge. A row of the angle strips is run along the center or peak of the roof, and transverse strips extend from the central line of strips to the eaves upon each side. The metal plates, 6, forming the surface of the roof, are made with flanges all around the edges. Some of these flanges, as the side flanges, 7, and the end flanges, 8 and 9, are flat, while others of them, as the side flanges, 10, and end flanges, 11, are rebent into a U form; the U-formed flanges serving to cover the flat flanges and the flanges, 5, of the angle strips. See Figs. XII. and XIII. The flanges, 9, extend downward and overlap the edges of the sheeting, 1, and thus form the eaves of the roof. The flanges, 9, have an end extension, 12, overlapping or underlapping the end of the flange, 9, of an adjoining plate. The wooden roof or sheeting is separated by the angle strips, 3, into spaces, 13, each of which equals in size one of the plates, 6, so that, when the plate is laid in position, its upper end flange and side flanges fit tightly against the flanges, 5, of the angle strips, while the corners, 14, of the plate lie upon the bases, 4, of the angle strips. In putting the plates, 6, in position, two of the plates, 6, are first laid at one end of the car; one of these plates, as 6a, having an overlapping or U flange at its upper end, and the other, 6b, having a flat flange at the upper end. The latter plate is laid first, with the flat upper end flange, 8, against the flange, 5, at the peak, while the side flange, 7, is laid against the flange, 5, of the transverse angle strip. Then the plate, 6a, is placed in position, with the U-flange, 11, embracing both the longitudinal flange, 5, and the flange, 8, of the other metal sheet. These end plates, 6a, 6b, are preferably turned down at the edges over the ends of the sheeting, 1, in the same manner as the flanges, 9, are turned down over the eaves. After the end plates, 6a and 6b, have been put in place, the plate shown in Fig. III. is put in place, with the U-shaped flange, 10, embracing the side flange of the plate, 6b, and the flange, 5, of the transverse strip, 3, making a tight joint. The flange, 7, is in close contact with the flange, 5, of the next transverse strip, and the flange, 8, in contact with the flange, 5, of the longitudinal or middle strip. The plate shown in Fig. II. is now placed in position, with its U-shaped flange, 11, embracing the flanges, 8, of the other plate, and the flange, 5, of the middle strip, 3, and the U-shaped flange, 10, embracing the flange, 7, of the other plate, and the flange, 5, of the transverse strip, 3. In this manner the plates, 6, are put down; each one breaking the joints by means of the U-shaped flanges, 10, and 11. The outer ends of the flanges of the transverse strips are sloped off at 15, and the flanges, 7, 10, are folded down at this point, so that the outer ends of the flanges lie down flat at the eaves. It will be seen that the roof will now be water-tight, except at the intersections of the longitudinal and transverse strips, 3, as the corners of the plates do not overlap at the exact corners. To cover these corners, I provide caps, 16, made of conical form, and having channels, 17, which receive the U-shaped flanges, 10 and 11; the cap fitting tightly on these flanges, and extending some distance from the corners along all of the four flanges or ribs. The caps are secured in position by bolts or rivets, 18, which pass horizontally through the extensions, 19, and the parts, 10, 7, 5, or 11, 8, 5, as the case may be. One or more rivets also, 19a, pass horizontally through the parts, 10, 7, 5, near to the eaves. It will be seen that there are no nails, screws, or other fastenings passing through the plates, 6, in a downward direction, and thus a fruitful cause of leakage is avoided; for it is found that the expansion and contraction of metal roof-plates will loosen a nail or screw passing through the plate into the wood beneath, and that water finds entrance through the nail hole, rusting the nail and rotting the wood. In order to give means for the attachment of the walk, 20, along the top of the car, certain of the caps have upon them a screw stud, 21, which passes through the sleepers, 22, to which the walk is secured, and receives a nut, 23, which is countersunk in the sleeper. 24 is a hand bar fixed to the ribs or flanges, 10.

I claim as my invention: (1) The combination, in a roof, of the angle strips, 3, adapted to be secured to the sheeting, 1, and having a flange, 5, and the plates, 6, having flanges, 7 and 10, substantially as and for the purpose set forth. (2) The combination, in a roof, of the angle strips, 3, with upright flanges, 5, and the plates, 6, having flanges, 7, 8, 10, and 11, adapted for attachment to the angle strips, substantially as set forth. (3) The combination, in a car roof, of the angle strips, 3, the plates, 6, having the flanges, 7, 8, 10, and 11, and the corner caps, 16, all constructed and adapted to each other substantially as set forth. (4) The combina-

tion, in a roof, of the angle strips, 3, adapted for attachment to sheeting, 1, and the plates, 6, having marginal flanges adapted for engagement with the angle strips, substantially as set forth. (5) The combination, in a car roof, of the angle strips, 3, adapted for attachment to the sheeting, 1, the plates, 6, with marginal flanges adapted for engagement with the strips, 3, and the corner caps, 16, having the studs, 21, for engagement with the walk sleepers, substantially as set forth.

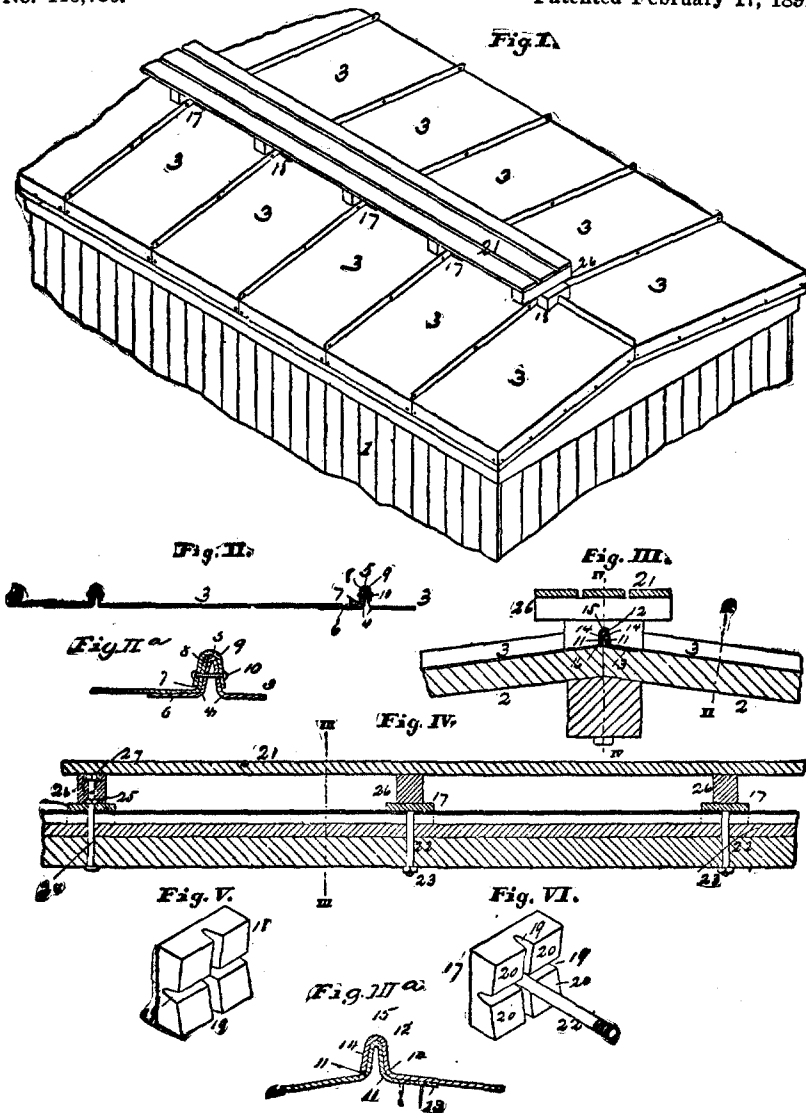
Peter H. Murphy.

In presence of
 Saml. Knight,
 Benjn. A. Knight.

C. M. Jennings.
 Car Roof.

No. 446,780.

Patented February 17, 1891.



The car roofs made and sold by the appellee, which are claimed to be infringements upon the letters patent to Murphy, were constructed in accordance with the description contained in the specification of letters patent No. 446,780, issued to Curtis M. Jennings on February 17, 1891, for an improvement in car roofs. The following are copies of the specification, claims, and drawings which form a part of those letters patent:

United States Patent Office.

Curtis M. Jennings, of St. Louis, Missouri.

Car Roof.

Specification Forming Part of Letters Patent No. 446,780, Dated February 17, 1891.

Application Filed August 30, 1890. Serial No. 363,490. (No Model.)

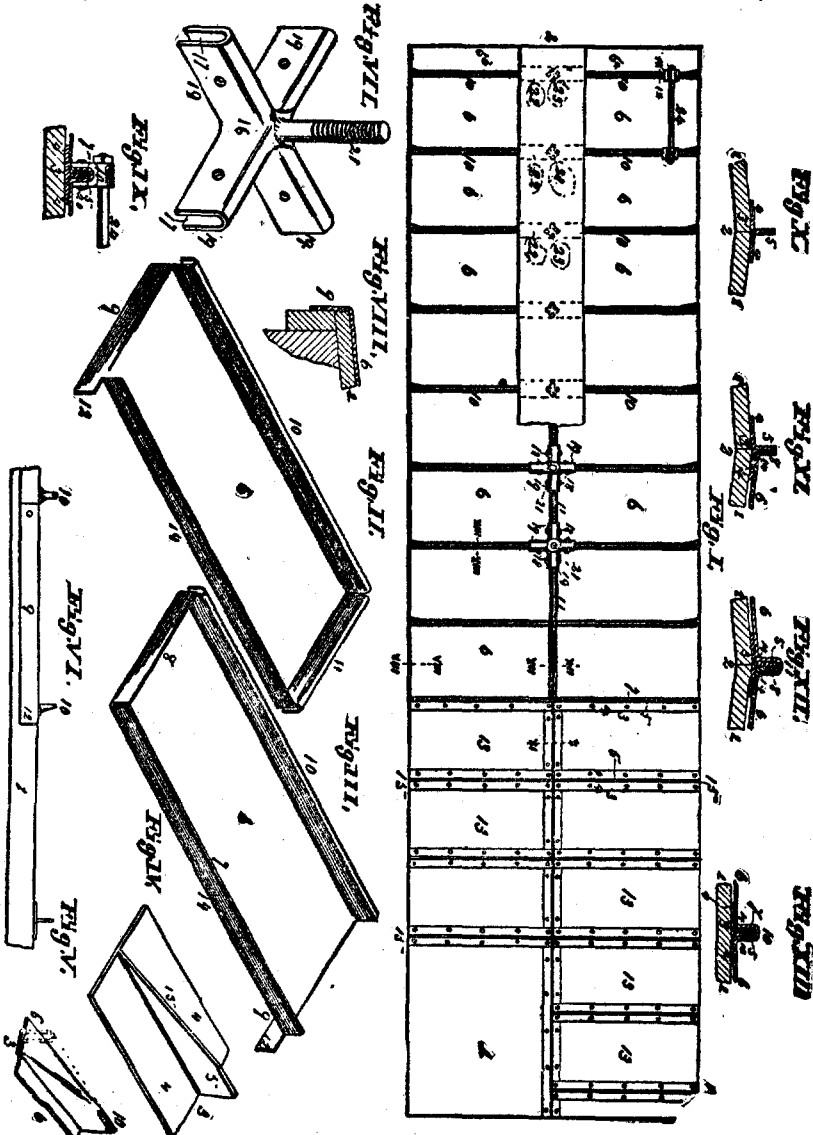
To All Whom it may Concern: Be it known that I, Curtis M. Jennings, of the city of St. Louis, in the state of Missouri, have invented a certain new and useful improvement in car roofs, of which the following is a full, clear, and exact description; reference being had to the accompanying drawings, forming part of this specification: My invention has for its object to produce a car roof which will be simple in construction and easily applied, and which will be durable and perfectly watertight. My invention consists in features of novelty hereinafter fully described, and pointed out in the claims. Fig. I. is a perspective view showing a portion of the body of a car provided with my improved roof. Fig. II. is a vertical longitudinal section of the roof, taken on line II., II. Fig. III., the supporting frame or timbers being omitted. Fig. II.a is an enlarged view of a portion of Fig. II. Fig. III. is a transverse section taken on line III., III., Fig. IV. Fig. III.a is an enlarged view of a portion of Fig. III. Fig. IV. is a vertical longitudinal section taken on line IV., IV., Fig. III., but made on a smaller scale. Fig. V. is a perspective view of one of the corner caps, and Fig. VI. is a perspective view of the other form of corner cap. Referring to the drawings, 1 represents the body of a freight car, having the usual framework, 2, for supporting the roof to which my invention relates. The roof is composed of a number of sheets, 3, of any desired size. The adjacent sides of the sheets are joined together as follows: One of the sheets is provided at its edge adjacent to the next sheet with a double bend, 4, forming a vertical rib, 5, from which protrudes a nailing flange, 6, by which the sheet is held to the frame of the roof. The adjacent edge of the next sheet covers the nailing flange, 6, and is provided with a single bend, 7, forming a vertical flange, 8, fitting up against the side of the rib, 5. The rib, 5, and flange, 8, are then covered by a V-shaped strip, 9, secured to the rib, 5, and flange, 8, by rivets, 10, thus securely holding the strip in place, and holding the flange, 8, and rib, 5, firmly together. The joint thus formed is thoroughly water proof and durable, and has sufficient rigidity to prevent its being mashed or crushed if stepped upon. The adjacent sides of all the sheets of the roof are thus formed. The section shown in Fig. II. illustrates two of the joints. The ends of the sheets at the ridge or peak of the roof are joined as follows: The sheet on one side of the car has its upper end formed with a double bend, 11, forming a rib, 12, from which extends a nailing flange, 13. See Fig. III. The adjacent end of the sheet on the other side of the roof is formed with a double bend, 14, forming a rib, 15, which fits over the rib, 12, and terminates at the base of the bend, 11, as shown at 16. This joint is thoroughly waterproof, and is sufficiently strong, owing to the fact that it cannot be trod upon, for the reason that the running board is placed over or covers it. The adjacent ends of all the sheets are joined together in the manner I have described. The corners of the sheets are joined and covered by heavy, flat-headed caps, 17 and 18, formed with the grooves, 19, to receive the ribs of the roof which I have described. The grooves form projections, 20, which rest upon the surface of the sheets, and their flat heads form the support for the running board, 21. The caps, 17, are interspersed between the caps, 18, and have downwardly extending shanks, 22, which extend through the framing of the car roof, as shown in Fig. IV, where they are provided with nuts, 23, by which the caps are clamped firmly down upon the sheets, and securely hold the sheets to the framing of the roof; the grooves, 19, being of the proper size to fit snugly over the ribs of the sheets, and thus serve to clamp and hold the layers of the ribs together. The

caps, 18, are perforated to receive bolts, 24, passing up through the framing of the car roof, and having nuts, 25, over the caps, and by which the caps are held down firmly upon the roof, the same as the caps, 17. The bolts, 24, extend up beyond the caps, forming a means for connecting the cross strips, 26, of the running board to the car roof, the bolts having nuts, 27, above the cross strips. It will thus be seen that the bolts, 24, perform the function of holding the running board, in addition to holding the caps, 18. A sufficient number of the caps, 18, and bolts, 24, are used to hold the running board, and in between them are placed the caps, 17,

P. H. Murphy.
Car Roof.

No. 414,069.

Patented October 29, 1889.



upon which the cross strips of the running board may rest, but to which they are not secured; thus cheapening the construction, as it is unnecessary to have the running board attached to the car roof at all of the joints of the corners of the sheets. A car roof thus formed is cheap and durable, is easily made, and can be put together without the use of skilled labor.

I claim as my invention: (1) In a car roof, the combination of the sheets united at their sides by means of joints consisting of double bends forming a rib and a nailing flange on one of the sheets, a single bend forming a flange on the other sheet, and a cap covering said rib and flange, and riveted thereto, substantially as shown and described. (2) A car roof consisting of sheets united at their sides by joints consisting of double bends in one of the sheets, forming a rib and a nailing flange, a single bend in the other sheet, forming a flange fitting against said rib, a cap covering said flange and rib, and riveted thereto, and such sheets being further united at their ends by joints consisting of double bends in one of the sheets, forming a rib and a nailing flange, and a double bend in the other sheet, forming a rib covering the rib having a nailing flange, substantially as set forth. (3) In a car roof, the combination of the sheets united at their sides and ends by suitable joints, and caps covering the corners of the sheets and bolted to the framing of the car roof, said caps having grooves to receive the joints of said sheets, and projections between the grooves, which rest upon said sheets, and having flat upper surfaces to support the running board, substantially as set forth. (4) In a car roof, the combination of the sheets having joints at their sides and ends, and caps being covering the corners of the sheets, part of said caps being perforated for the passage of bolts by which the running board is secured to the car, and the remainder of said caps having downwardly projecting stems by which they are clamped upon the sheets, and all of said caps having grooves to receive the joints of the sheets, substantially as and for the purpose set forth.

Curtis M. Jennings.

In presence of

Thos. Knight,

Benjn. A. Knight.

To illustrate the state of the art when the patent to Murphy was issued, and to establish the defense of want of patentable invention and of novelty in the combinations claimed in that patent, letters patent issued at the dates specified below to the parties whose names follow were introduced in evidence:

To Peter Naylor, No. 1,321, on September 11, 1839, for an improvement in the manner of covering the roofs of buildings with sheets of metal. To Franklin Roys, No. 95,732, on October 12, 1869, for an improvement in metallic roofing. To Rollin A. Smith, No. 143,471, on October 7, 1873, for improvements in metal roofing. To Samuel T. G. Morsell, No. 165,113, on June 29, 1875, for improvements in sheet-metal roofing. To Griffith B. Thomas, No. 218,085, on July 29, 1879, for improved iron roofing. To Samuel R. Hawthorne, No. 336,316, on July 17, 1888, for improvements in roofing. To Charles A. Scott, No. 146,555, on January 20, 1874, for an improvement in metallic roofing. To John W. Hoyt, No. 187,140, on February 6, 1877, for an improvement in fireproof roofing. To John F. Currier, No. 214,027, on April 8, 1879, for improvements in sheet-metal roofing. To L. Lewis Sagendorph, No. 237,133, on February 1, 1881, for improvements in metal roofing. To John Walter, No. 236,877, on October 16, 1883, for an improvement in car roofs. To John H. Dellmon, No. 302,113, on July 15, 1884, for improvements in metal roofing. To John C. Wands, No. 302,453, on July 22, 1884, for improvements in metal car roofs. To Amos A. Cushman, No. 385,408, on July 3, 1888, for improvements in metal roofing. To Alexander T. De Puy, No. 114,273, on December 14, 1875, for an improvement in type cases. To Henry Adler, No. 158,881, on January 19, 1875, for an improvement in the method of constructing metallic ceilings. To Albert Northrop, No. 330,916, on November 24, 1885, for improvements in metallic ceilings. To Frank Mesker, No. 361,438, on April 19, 1887, for an improvement in sheet-metal ceilings. To Charles Thuener, No. 376,926, on January 24, 1888, for an improvement in metal ceilings.

Paul Bakewell, for appellant.

Benjamin F. Rex, for appellee.

Before CALDWELL, SANBORN, and THAYER, Circuit Judges.

SANBORN, Circuit Judge, after stating the facts as above, delivered the opinion of the court.

The bill in this case charges an infringement of the five claims of letters patent No. 414,069, issued to Peter H. Murphy on August 3, 1889, for an improvement in car roofs. The roofs which the appellee made and sold, and which, the bill charges, infringe the claims of this patent, were constructed in accordance with the specification which forms a part of letters patent No. 446,780, issued to Curtis M. Jennings on February 17, 1891, for an improvement in similar roofs. The object which each of these patentees sought to attain was the construction from sheets of metal of a covering for a roof that would be impervious to, and would shed, water. The special evil which they were trying to remedy was the leakage likely to result from joining the sheets, and from fastening them to the boarded roof by nails or screws which would pass through punctures in the exposed surface of the metal. Murphy asserts by his patent that he accomplished this purpose and remedied this evil by constructing his metal covering in this way: He fastened upon the boarded or sheathed roof metal strips shaped like an inverted letter T. He placed one of these strips along the ridge of the roof, and others on its sides, so that they would extend from the ridge to the eaves. He placed those upon the sides of the roof at such distances apart that the sheets of metal, when prepared for laying, would exactly cover the space between them. He fastened these strips securely to the roof by nails or screws driven through the flanges into the roof. He made his sheets of suitable lengths to extend from the ridge to the eaves of the car, and bent their respective edges into the form of flanges, so that, when laid, the upturned edge of one sheet would lie against, extend to the top of, and closely fit one side of, each strip, and the flange, in the form of an inverted U, upon the plate upon the opposite side of each strip, would slip over and completely cover the upright flange of the metal strip, and the upturned edge of the sheet on the other side of it. He fastened the sheets by rivets which passed through the flanges of the sheets and the upright flanges of the strips. He covered the openings at the points of intersection of the joints upon the sides of the roof with that upon the ridge with a cap provided with four channels, which received, and closely fitted over, the intersecting flanges. In order to provide means for the attachment of the running board to the ridge of the car, he provided some of these caps with screw studs, which passed through the sleeper to which the board is ordinarily secured, through the cap, and through the running board. Jennings, in his construction, discarded the metal strips entirely, and they are not found in the roofs made and sold by the appellee. He made the joints between his sheets of metal at the ridge and on the sides of the roof, and fastened them to it in this way: He bent one edge of his sheets into the form of an inverted V, so that a portion of the sheet protruded beyond the bend, and formed a nailing flange. He fastened this sheet directly to the boards of the roof by nails or screws which extended through this protruding flange and into the roof. He bent the edge of the adjacent sheet so that it would

lie against, extend to the top of, and closely fit the side of, the V-shaped flange upon the sheet adjoining, and in this way completely covered the nailing flange. Over the flanges of these adjacent sheets he placed a metal cap in the form of an inverted V-shaped strip, which completely covered these flanges, and was fastened in its place by rivets through its sides, and through the rising flanges of the adjacent plates. He covered the points of intersection of the joints upon the sides of the roof with that upon the ridge with four-way caps, and provided for fastening the running board upon the caps with bolts.

It may be conceded that if Murphy had been the first to invent a covering of sheets of metal for a roof, or the first to construct and describe a joint between such sheets impervious to water, or the first to cover the intersecting joints of such sheets with a water-tight metal cap containing channels to receive and cover the joints, or the first to invent screw studs or bolts to fasten together detached pieces of wood and metal, and if he had properly claimed any of these inventions in his application for his patent, the construction of Jennings would have contained a mechanical equivalent of such an original invention, and would have been an infringement upon it. On the other hand, if coverings for roofs constructed of sheets of metal had been described and used time out of mind before this patent was issued to Murphy; if devices for joining metal sheets, for fastening them to the roof, for covering the intersections of the joints, and for fastening a board upon a metal surface by a screw or bolt, which together accomplished the object of making a tight and durable roof, and which differed from those described by Murphy only in slight details of construction,—had been known and used for years before he had applied for his patent, then so radical a departure from the construction he described and claimed, as the entire omission of the metal strips by which he secured his covering to the roof; and over which he made his joints, may relieve the appellee from the charge of infringement. The claims and specifications of every patent must be read and construed in the light of a knowledge of the state of the art when it was issued. A patent to the original inventor of a machine or construction, which first performs a useful function, protects him against all machines and constructions that perform the same function by equivalent mechanical devices. But a patent to one who has simply made a slight improvement on devices that perform the same function before as after the improvement is protected against those only which use the very improvement he describes and claims, or mere colorable evasions of it. *McCormick v. Talcott*, 20 How. 402, 405; *Stirrat v. Manufacturing Co.*, 27 U. S. App. 13, 42, 10 C. C. A. 216, 217, and 61 Fed. 980, 981. The question of infringement or noninfringement in this case, as in every case, must be determined under this rule by the limitations placed upon the patent by the state of the art when it was issued, and by the specification and claims of the inventor. It is common knowledge that roofs were made impervious to water by covering them with sheets of metal, and that screw studs and bolts were used for fastening together wood and metal long prior to the year 1889.

A metal cap with channels to receive and cover the jointed flanges of metal sheets upon roofs at the points of their intersection appears from the evidence to have been an old device. One of the witnesses testified that when he learned his trade, in 1849 or 1850, he was taught to use a four-way cap of this character to cover the point of intersection where four standing seams came together at the ridge of a sheet-iron roof. Such a cap was found on the St. Louis courthouse, where it had been in use for this purpose since 1882. Fourteen patents for improvements in the method of constructing metal roofs of buildings, and two for improvements in the construction of metal car roofs, all issued anterior to the date of Murphy's patent, illustrate the state of the art in this case. The suggestion that patents for improvements in the construction of metal roofs of buildings are immaterial here, and do not illustrate the state of the art of constructing metal roofs of cars, is not persuasive. The art of covering the roof of a car with sheets of metal is so nearly if not completely identical with that of covering a house with the same metal, that there could be no invention in appropriating the method or improvement found in the one to use in the other, unless some radical modification was required to adapt it to the new use. All the anterior patents for improvements in metal roofs, whether of buildings or of cars, fairly illustrate the state of this art, and are entitled to consideration in this case. They portray many devices for forming the joints between the sheets of metal, and for securing the sheets to the wooden sheathing of the roof without the use of nails or screws that pass through the exposed surface of the covering. In some of them metal strips are described, and their use is recommended. In others they are not mentioned or used. In the specification of letters patent No. 1,321, issued on September 11, 1839, to Peter Naylor, for an improvement in the manner of covering the roofs of buildings with sheets of metal, he describes, as a part of his invention, bars of metal which, he says, may be placed edgewise directly upon the planking or sheathing of the roof, and should extend from the ridge to the eaves. He describes a method of making the joints between the sheets so difficult to distinguish from that portrayed in the patent to Murphy that we quote it:

"Over these bars or plates, the edges of the covering of sheet metal is to be lapped, the edge of one sheet rising up on one side of said bars so as to reach the upper edge, and the edge of the next sheet constituting a saddle which laps over on both sides of the bar, embracing the first-described bent edge of the next contiguous sheet. The sheets so placed are to be united firmly to the bars, e, e, e, by rivets passed through the whole, at suitable distances apart."

In the specification of letters patent No. 165,113, issued June 29, 1875, to Samuel T. G. Morsell, for improvements in sheet-metal roofing, there is a description of ribs of wood extending from the ridge to the eaves of the roof, fastened to the sheathing by screws or other suitable means; sheets of metal with upturned edges lying flat against, and extending to the top of, the vertical sides of the ribs; caps of sheet metal bent to fit over and cover the ribs and the upturned edges of the sheets on their sides; and screw bolts which pass completely through the sides of the caps, the upturned edges

of the sheets lying against them, and the ribs themselves, and thus secure them all in place.

In the specification of letters patent No. 386,316, issued on July 17, 1888, to Samuel R. Hawthorne, for improvements in roofing, there is a description of a metal rib, in the shape of an inverted T, fastened to the roof by nails driven through the flanges. This specification so nearly describes the "angle strips" of Murphy, that we quote from it, omitting the letters of reference:

"This rib is made of sheet metal folded in the manner shown, so as to give a dovetailed shape to the upright portion, and with side flanges, by aid of which the rib is securely fastened to the roof boarding by screws or nails driven through holes punched in said flanges."

This specification describes a joint between the sheets of metal, made by fitting their upturned edges closely to the sides of these ribs, and covering both the ribs and the upturned edges with metal caps made of dovetailed form to fit the ribs, slid longitudinally over them and the upturned edges of the plates, and made to hold them all firmly in place by tightening strips driven in between the tops of the ribs and the caps.

In the specification of letters patent No. 143,471, issued on October 7, 1873, to Rollin A. Smith, for improvements in metal roofing, there is a description of triangular strips nailed firmly to the roof of the building, lengthwise thereof, and at a distance apart equal to the width of the plates, and a description of joints between the sheets of metal made by bending their edges in the same way described by Murphy. According to this specification, the edge of the plate adjacent to one side of each of these strips is bent at an obtuse angle, so that it will fit closely and extend to the top of the strip, while the edge of the sheet upon the other side of it is bent in the form of an inverted V, which covers the strip and the upturned edge of the plate which lies against it upon the opposite side. The sheets are held firmly in place by nails driven through their edges where they lap over each other into the strips.

In letters patent No. 218,085, issued July 29, 1875, to Griffith B. Thomas, for improvements in roofing, there is a description of a covering of sheet metal, which is attached to the roof by clips of metal, without the use of strips of any kind. The joints are formed by turning up one edge of a sheet, and covering it by a cap made by bending the edge of the adjoining sheet over it in the form of an inverted U.

In the specification of letters patent No. 95,732, issued on October 12, 1869, to Franklin Roys, for an improvement in metallic roofing, there is a description of a joint between the metal sheets formed by bending the edge of one of the plates into an angle shape with a protruding flange, through which nails are driven to fasten it in place, and covering the nailed flange, and fastening the next adjacent plate by sliding its correspondingly bent edge over the edge of the preceding plate.

Perhaps the testimony and the antecedent patents to which reference has now been made sufficiently disclose the state of the art when the patent to Murphy was issued to enable us to reach a cor-

rect conclusion in this case. They demonstrate the fact that every element in the five combinations claimed by Murphy was old. His "angle strips" in the form of an inverted T exactly copy, and perform the function of, the metal ribs of Hawthorne. They are the mechanical equivalents of Naylor's bars of metal, Morsell's ribs of wood, and Smith's triangular strips. His method of fastening his sheets of metal to his angle strips and his joints between his sheets copy and perform the function of the method and joint described by Naylor, and are the mechanical equivalents of those described by Morsell, Hawthorne, and Smith. His four-way cap has been in notorious public use, to perform the function to which he assigns it, since 1882; and his stud screw, so long that the memory of man runneth not to the contrary. If there is anything new or patentable in the construction described by Murphy, it is not in any of the elements he has used, but in the novelty of their combination. His patent must stand, if it can be maintained at all, on the principle that a new combination or arrangement of old or well-known ingredients, by which a new and useful result is attained, may be a patentable invention. *Griswold v. Harker*, 27 U. S. App. 122, 150, 10 C. C. A. 435, 437, 438, and 62 Fed. 389, 391; *Thomson v. Bank*, 10 U. S. App. 500, 509, 3 C. C. A. 518, 520, 521, and 53 Fed. 250, 252, 253; *Seymour v. Osborne*, 11 Wall. 516, 542, 548; *Gould v. Rees*, 15 Wall. 187, 189. But the appellant is met here by the unquestioned rule that the absence from a device or construction, that is alleged to infringe, of a single essential element of a patentable combination of old elements, is fatal to the claim of infringement. *Building Co. v. Eustis*, 27 U. S. App. 693, 712, 13 C. C. A. 143, 148, and 65 Fed. 804, 810; *Hailes v. Van Wormer*, 20 Wall. 353, 372; *Bragg v. Fitch*, 121 U. S. 478, 483, 7 Sup. Ct. 978. The angle strips of Murphy are absent from the metal roof described by Jennings, and from those made by the appellee. Murphy made these strips an indispensable and chief element of each of the five combinations he claimed. His general description of his invention in the second paragraph of his specification reads:

"This invention relates to a metal roof for railroad cars, the metal plates being secured to vertical metal ribs by horizontal rivets passing through upright flanges on the plates."

The first element of his combination that is described in his specification is these angle strips, and they constitute the first element of each of the five combinations to which he has limited his claims. These claims commence thus:

"(1) The combination, in a roof, of the angle strips, 3, adapted to be secured to the sheeting, 1, and having a flange, 5, and * * *. (2) The combination, in a roof, of the angle strips, 3, with upright flanges, 5, and * * *. (3) The combination, in a car roof, of the angle strips, 3, the plates, 6, having the flanges, 7, 8, 10, and 11, and * * *. (4) The combination, in a roof, of the angle strips, 3, adapted to attachment to sheeting 1, and * * *. (5) The combination, in a car roof, of the angle strips, 3, adapted for attachment to the sheeting, 1, the plates, 6, with marginal flanges adapted for engagement with the strips, 3, and * * *."

The state of the art when this patent was issued clearly deprived the patentee of the benefit of the application of the principle of mechanical equivalents to the old elements of his combination. The

application of that doctrine to those elements would show that his use of each of them had been anticipated by prior use and prior patents. The only patentable novelty in his invention was the novelty of his combination of these elements. He made the flanged angle strips or ribs, by the use of which he formed the joints between his sheets of metal and fastened them to the roof, an indispensable element, and the principal element, of all the combinations he claimed. This element is entirely wanting in the roofs manufactured by the appellee, and in the specification forming a part of the patent to Jennings under which they were made. The roofs manufactured and sold by the appellee cannot, therefore, be held to infringe any of the claims of the patent to Murphy. This conclusion renders it unnecessary to consider the novelty or patentability of the combinations which he claimed in this patent. The decree below must be affirmed, with costs, and it is so ordered.

CAMPBELL et al. v. RICHARDSON et al.

(Circuit Court of Appeals, Third Circuit. October 16, 1896.)

No. 5.

PATENTS—CONSTRUCTION OF CLAIMS—INFRINGEMENT—GARMENT HOOKS.

The De Long patent, No. 462,473, for an improvement in garment hooks, is limited by the words, "substantially as described," to the form of hooks shown and described, namely, one in which the free end of the wire is carried to "the rear end of the shank, and there formed into an eye," giving to the hook three eyes by which to attach it, instead of two, as formerly. 72 Fed. 525, reversed.

Appeal from the Circuit Court of the United States for the Western District of Pennsylvania.

This was a suit in equity by William Campbell and J. J. Smith against Thomas De Q. Richardson and others for alleged infringement of a patent for an improvement in garment hooks. The circuit court sustained the patent, and found that defendants had infringed, and decreed accordingly. 72 Fed. 525. The defendants have appealed.

Geo. H. Christy, Wm. L. Pierce, and Allen Webster, for appellants.
Wm. C. Strawbridge and Frederick P. Fish, for appellees.

Before DALLAS, Circuit Judge, and BUTLER and WALES, District Judges.

BUTLER, District Judge. The bill charges infringement of the first claim of letters patent, No. 462,473, dated November 3, 1891, for an invention of Frank E. De Long. The claim reads as follows:

"(1) A garment-hook consisting of a shank, a hook proper, and a tongue continuous of each other, said tongue being looped and normally closing the space between the shank and hook proper and having its free end returned to the rear of the shank, substantially as described."

The respondents' hook, which is charged to infringe, is similar in construction to the complainants' except that the free end of