June 27, 1967 R. V. GAY ETAL 3,327,443

EXTRUDED BATTEN SEAM ROOF CONSTRUCTION AND METHODS OF MAKING THE SAME

Filed July 16, 1962 3 Sheets-Sheet 1

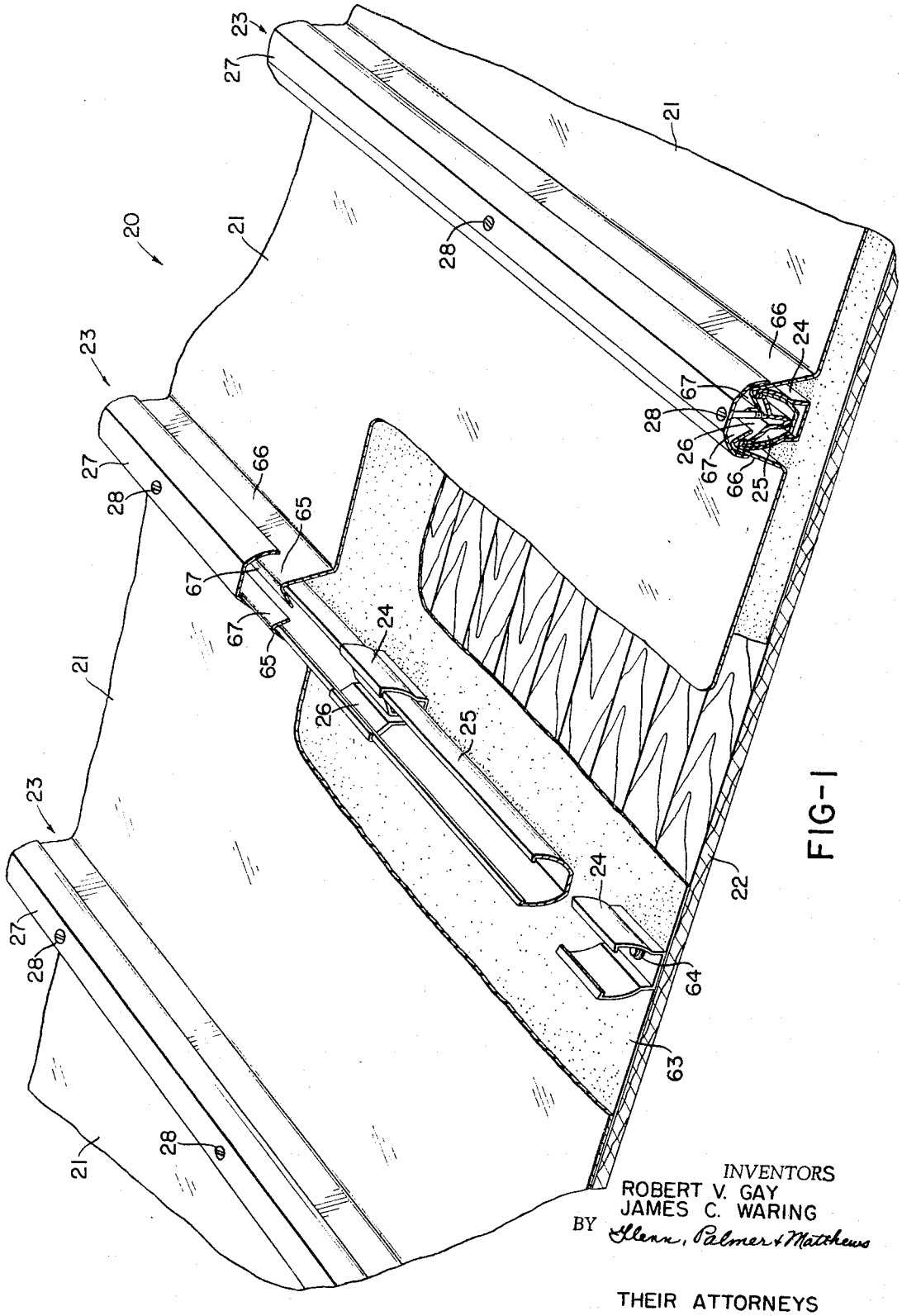


FIG-1

INVENTORS
ROBERT V. GAY
JAMES C. WARING
BY Glenn, Palmer & Matthews
THEIR ATTORNEYS

June 27, 1967 R. V. GAY ETAL 3,327,443

EXTRUDED BATTEN SEAM ROOF CONSTRUCTION AND METHODS OF MAKING THE SAME

Filed July 16, 1962 3 Sheets-Sheet 2

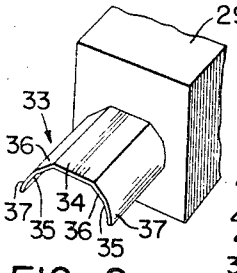


FIG-2

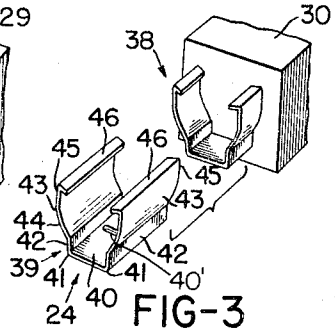


FIG-3

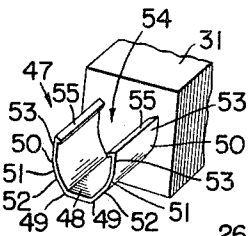


FIG-4

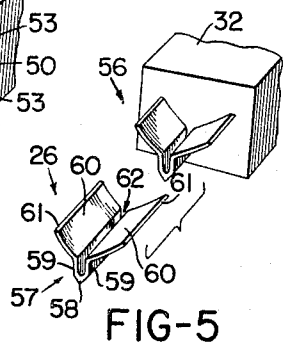


FIG-5

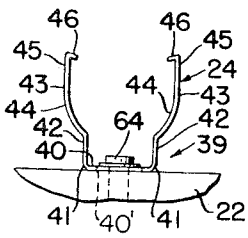


FIG-6

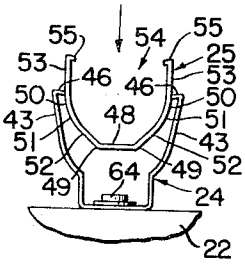


FIG-7

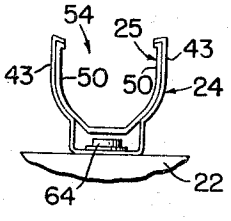


FIG-8

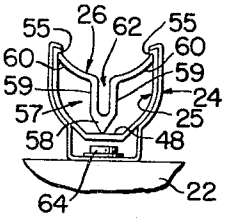


FIG-9

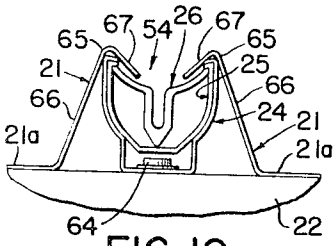


FIG-10

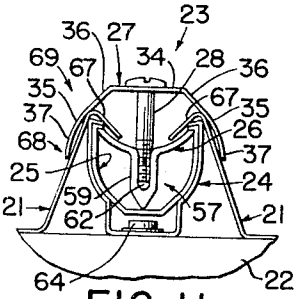


FIG-11

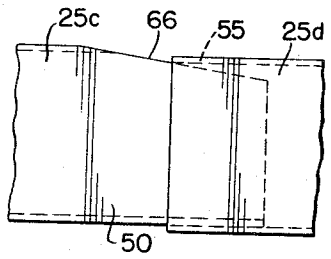


FIG-13

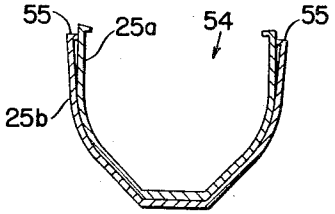


FIG-12

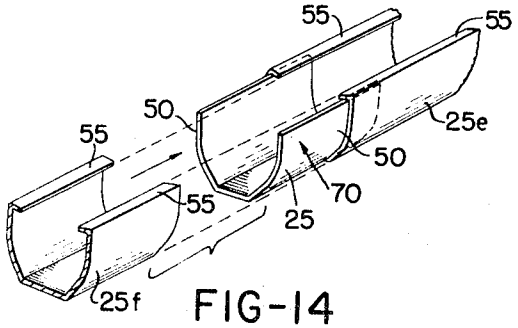


FIG-14

INVENTORS
ROBERT V. GAY
JAMES C. WARING
BY Glenn, Palmer & Matthews
THEIR ATTORNEYS

June 27, 1967 R. V. GAY ETAL 3,327,443

EXTRUDED BATTEN SEAM ROOF CONSTRUCTION AND METHODS OF MAKING THE SAME

Filed July 16, 1962 3 Sheets-Sheet 3

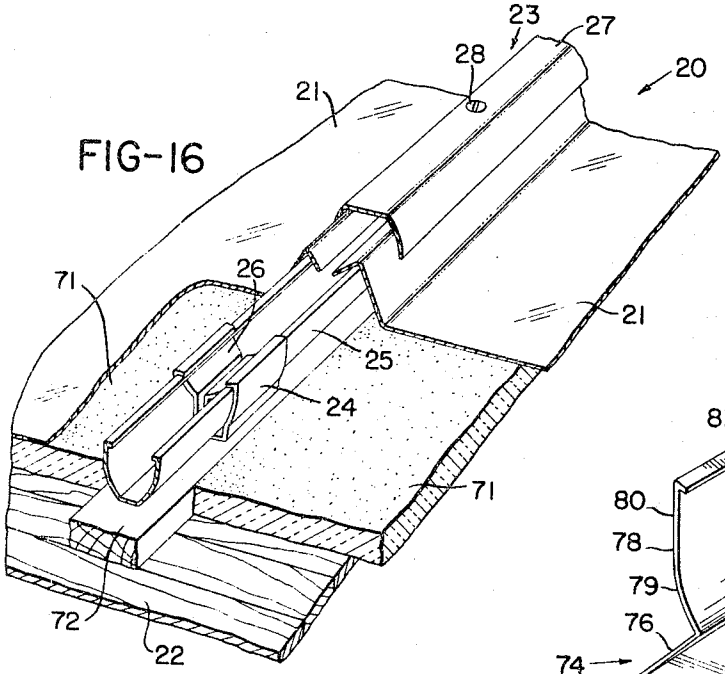


FIG-16

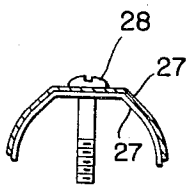


FIG-15

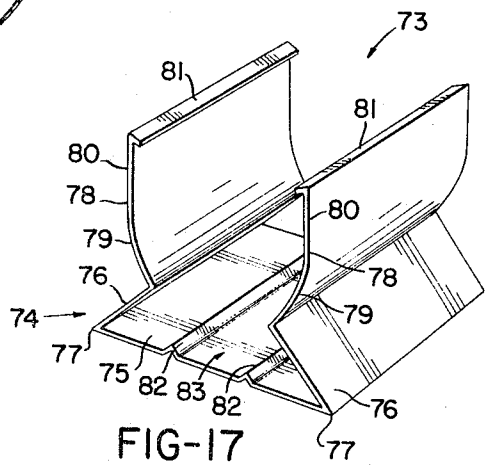


FIG-17

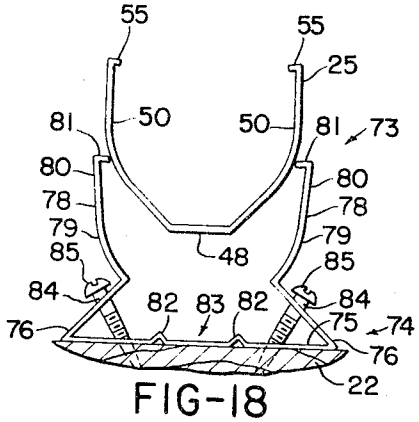


FIG-18

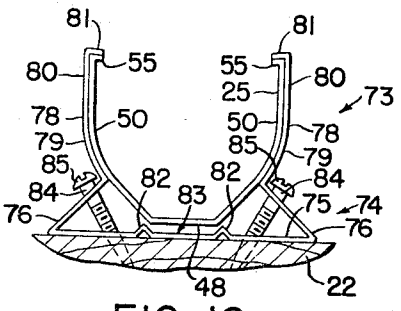


FIG-19

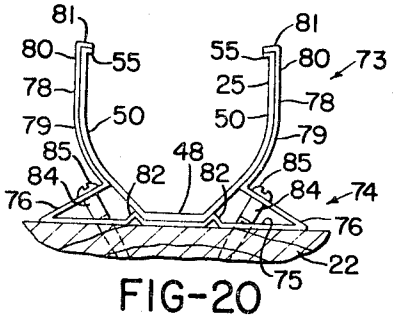


FIG-20

INVENTORS
ROBERT V. GAY
JAMES C. WARING
BY Glenn, Palmer & Matthews
THEIR ATTORNEYS

United States Patent Office 3,327,443
Patented June 27, 1967

3,327,443

EXTRUDED BATTEN SEAM ROOF CONSTRUCTION AND METHODS OF MAKING THE SAME

Robert V. Gay, Henrico County, and James C. Waring, Richmond, Va., assignors to Reynolds Metal Company, Richmond, Va., a corporation of Delaware

Filed July 16, 1962, Ser. No. 210,649
11 Claims. (Cl. 52—460)

This invention relates to improved surfacing constructions and to improved methods of making the same or the like.

More specifically, this invention relates to surfacing constructions having batten type joints between adjacent surfacing elements or sheathing members, the surfacing constructions being utilized to surface walls, decks, roofs and the like.

While many different types of such surfacing constructions have been provided in the past, the various parts of the surfacing constructions of this invention are simply and inexpensively manufactured and are adapted to be assembled together in a rapid and effective manner by the teachings of this invention to provide surfacing constructions which are not only attractive in design but are also rugged, long lasting, and substantially weatherproof.

In particular, the various parts of this invention are cut from lengths of stock that are extruded in a simple manner, the extrusions being formed into the desired configurations to permit rapid assembly of the desired surfacing construction with a minimum of parts and with a minimum of time and effort.

In order to form one surfacing construction of this invention, a plurality of brackets are cut from a length of appropriate stock, each bracket having a mounting portion and a pair of spaced legs connected to the mounting portion and extending outwardly therefrom.

A plurality of the brackets are secured to the desired supporting structure, such as the sub-flooring of a roof structure or the like, in spaced and aligned relation at the locations where pairs of adjacent sheet-like sheathing or surfacing elements are to be joined together. Each bracket has the mounting portion thereof secured to the supporting structure in the desired manner, with the legs thereof extending away from the supporting structure.

Thereafter, gutter-like members are cut from the appropriate stock and respectively disposed between the legs of each bracket of each row thereof in a simple and effective snap-fit relation, the gutter-like members having the channels thereof facing away from the supporting structure and being held to the brackets by inwardly facing flanges carried at the free ends of the legs of the brackets.

Subsequently, a plurality of retainers are cut from the appropriate stock and placed in the desired location in the channels of the gutter-like members, the retainers being held in the channels by a snap-fit relation.

The surfacing elements are then placed on the supporting structure in such a manner that the adjacent end edges of adjacent surfacing elements are disposed on opposite sides of a particular gutter-like member and can be hooked over the respective gutter-like member.

A plurality of cover members are then cut from the appropriate stock and are respectively placed over the end edges of the surfacing elements to completely cover the channels in the gutter-like members.

Thereafter, the cover members are operatively interconnected to the retainers by suitably threaded fastening members to draw the cover members, end edges of the surfacing elements, brackets, gutter-like members, and retainers in stacked relation to provide batten type joints between the surfacing elements and complete the surfacing construction.

Not only is such a surfacing construction of this invention relatively easy to manufacture and install, but also the batten type joints provided thereby are substantially weatherproof and unique in design.

Accordingly, it is an object of this invention to provide an improved surfacing construction having one or more of the novel features set forth above or hereinafter shown or described.

Another object of this invention is to provide an improved method for making such a surfacing construction or the like.

Another object of this invention is to provide improved parts for such a surfacing construction or the like.

Other objects, uses and advantages of this invention are apparent from a reading of this description, which proceeds with reference to the accompanying drawings forming a part thereof and wherein:

FIGURE 1 is a fragmentary, perspective view, partially broken away and illustrating an improved surfacing construction of this invention.

FIGURE 2 is a schematic, perspective view illustrating the method of making the cover member stock of this invention.

FIGURE 3 is a view similar to FIGURE 2 and illustrates the method of making the bracket stock of this invention.

FIGURE 4 is a view similar to FIGURE 2 and illustrates the method of making the gutter member stock of this invention.

FIGURE 5 is a view similar to FIGURE 2 and illustrates the method of making the retainer stock of this invention.

FIGURE 6 is a fragmentary, end view illustrating the method of securing one of the brackets of this invention to the desired supporting structure.

FIGURE 7 is a view similar to FIGURE 6 and illustrates the method of assembling the gutter-like member of this invention to the bracket of FIGURE 6.

FIGURE 8 is a view similar to FIGURE 7 and illustrates the gutter-like member fully assembled to the bracket of FIGURE 6.

FIGURE 9 is a view similar to FIGURE 8 and illustrates the method of disposing a retainer member of this invention in the channel of the gutter-like member.

FIGURE 10 is a view similar to FIGURE 9 and illustrates the method of hooking the adjacent ends of adjacent surfacing elements over the assembly illustrated in FIGURE 9.

FIGURE 11 is a view similar to FIGURE 10 and illustrates the method of completing the batten type joint of the surfacing construction illustrated in FIGURES 1 and 10.

FIGURE 12 is an enlarged, axial, cross-sectional view illustrating one method of joining together aligned sections of the gutter-like members of this invention.

FIGURE 13 is an enlarged, fragmentary, side view illustrating another method of this invention for joining together aligned gutter-like members.

FIGURE 14 is a fragmentary, perspective view illustrating still another method of this invention for joining together aligned gutter-like members.

FIGURE 15 is a cross-sectional view illustrating the method of securing together aligned cover members of this invention.

FIGURE 16 is a fragmentary, perspective view, partially broken away and illustrating another method of forming a surfacing construction of this invention.

FIGURE 17 is a perspective view illustrating another anchor clip or bracket of this invention.

FIGURES 18–20 are respectively end views illustrating the method of securing the gutter-like member of this

invention to a supporting structure by the bracket illustrated in FIGURE 17.

While the various features of this invention are hereinafter described as being particularly applicable to forming exterior surfacing constructions, it is to be understood that such surfacing constructions can be ultilized for other purposes, as desired. Therefore, this invention is not to be limited to only the embodiment thereof illustrated in the drawings, as the drawings are merely utilized to illustrate one of the many uses of this invention.

Further, while certain specific dimensions and materials are hereinafter set forth for the various parts of this invention, it is to be understood that such dimensions and materials are only examples of structures that have been found to be satisfactory and are not to be a limitation of this invention, as any dimensions and materials can be utilized.

Referring now to FIGURE 1, an improved metallic surfacing construction of this invention is generally indicated by the reference numeral **20** and comprises a plurality of substantially rectangular, metal sheathing or surfacing elements **21** disposed in aligned relation against a supporting structure **22** and joined together at the adjacent end edges thereof by batten type joints **23** of this invention, which are hereinafter described.

Each batten type joint **23** comprises a plurality of brackets or anchor clips **24**, a gutter-like or channel-defining member **25**, a plurality of retainers **26**, a cap or cover member **27**, and a plurality of fastening elements **28** assembled together in a manner hereinafter described to provide the unique batten type joint **23** to hold the surfacing elements **21** to the supporting structure **22** and provide waterproof seams therebetween.

In this manner, the surfacing construction **20** provides a weatherproof covering for the supporting structure **22**.

While the brackets **24**, gutter-like members **25**, retainers **26**, and cover members **27** can be formed in any suitable manner and of any suitable material, the embodiments thereof illustrated in the drawings are formed from metal extruded in a manner well known in the art. For example, the cover members **27** may be formed by extruding aluminum alloy 6063–T4 in a conventional extruding apparatus **29**, illustrated in FIGURE 2. The brackets **24**, gutter-like members **25**, and retainers **26** can be formed by extruding aluminum alloy 6063–T5 in conventional extruding apparatus **30**, **31**, and **32**, respectively illustrated in FIGURES 3–5.

Therefore, when the surfacing elements **21** and the various parts of the batten type joints **23** of the surfacing construction **20** are formed of aluminum-containing metallic material, the surfacing construction **20** subsequently formed therefrom is light-weight and rust-proof and, thereby, long lasting and maintenance free.

As illustrated in FIGURE 2, the conventional extruding apparatus **29** extrudes the desired material to form a length of cover member stock **33** from which the cover members **27** can be subsequently cut therefrom.

The cover member stock **33** includes a substantially flat base or middle section **34** having a pair of opposed legs **35** connected thereto and extending outwardly therefrom. Each leg **35** comprises a straight section **36** extending at an angle of approximately 45 degrees with respect to the flat section **34** and interconnected to an arcuate section **37** at the outer end thereof.

While the cover member stock **33** can have any desired dimension, the embodiment thereof illustrated in the drawings is approximately 2.262 inches between the free ends of the legs **35**, with the flat portion **34** thereof having a width of approximately 1.000 inch. The legs **35** extend from the flat portion **34** a distance of approximately 1.105 inches. The legs **35** may have a thickness of approximately 0.051 of an inch, while the thickness of the flat portion **34** is approximately 0.075 of an inch.

Further, while the cover member stock **33** is illustrated and described as being formed by an extruding operation, it is to be understood that the same can be formed by stamping or suitably shaping sheet material, if desired.

As illustrated in FIGURE 3, each bracket **24** is cut to the desired length from bracket stock **38** extruded by the conventional extruding apparatus **30**. While the brackets **24** can be of any desired length, the embodiment thereof illustrated in the drawings is approximately 2.000 inches in length.

Each bracket **24** includes a mounting portion **39** comprising a flat base section **40** having a pair of opposed side edges **41**. A pair of straight parallel sections **42** are respectively connected to the side edges **41** of the flat section **40** and extend outwardly therefrom to provide a substantially U-shaped mounting portion **39**.

A pair of spaced legs **43** are respectively connected to the free ends of the sections **42** of the mounting portion **39** of the bracket **24** and extend outwardly therefrom, each leg **43** having an arcuate portion **44** connected to its respective section **42** at one end thereof and to a straight portion **45** at the other end thereof. The arcuate portions **44** are so constructed and arranged that the straight portions **45** of the legs **43** are disposed parallel to each other.

A pair of inwardly facing flanges or lips **46** are respectively carried at the outer free ends of the legs **43** and slope inwardly toward the mounting portion **39** of the respective bracket **24** at angles of approximately ten degrees.

While the brackets or anchor clips **24** can have any desired dimensions, the embodiment thereof illustrated in the drawings is approximately 1.677 inches high and 1.614 inches wide at the free ends of the legs **43** thereof, with the flat section **40** of the mounting portion **39** being approximately 1.125 inches wide and the straight sections **42** being approximately 0.500 of an inch wide. The flanges **46** are approximately 0.102 inch wide, and the entire cross-sectional thickness of the bracket **24** is approximately 0.051 of an inch.

The gutter member stock **47** illustrated in FIGURE 4 includes a flat base section **48** having a pair of opposed side edges **49**. A pair of opposed, spaced legs **50** are respectively connected to the side edges **49** of the base section **48** and extend outwardly therefrom, each leg **50** having an intermediate arcuate portion **51** connected to a straight portion **52** at one end thereof and to a straight portion **53** at the other end thereof.

The legs **50** of the gutter member stock **47** cooperate with the base section **48** to define a channel **54**, the channel opening away from the base section **48** and being utilized for a purpose hereinafter described.

A pair of inwardly facing flanges or lips **55** are carried at the free ends of the legs **50** and slope inwardly toward the base section **48** at angles of approximately ten degrees in the same manner as the flanges **46** of the brackets **24**.

The gutter-like stock **47** is so constructed and arranged that the gutter-like member of channel-defining member **25** cut therefrom is adapted to be nestable within the brackets **24** in the manner illustrated in FIGURE 8, whereby a snug fit is provided between the exterior surface of the gutter-like member **25** and the interior surface of the brackets **24** when the gutter-like member **25** is assembled thereto in the manner illustrated in FIGURE 8.

Therefore, when the brackets **24** have the dimensions set forth above, the gutter member stock **47** has an overall height of approximately 1.325 inches and a width of approximately 1.514 inches between the free ends of the legs **50** thereof, while the width of the base section **38** thereof is approximately 0.500 of an inch. The flanges **55** are approximately 0.051 of an inch wide. The base section **48** of the gutter-like member stock **47** is approximately 0.075 of an inch thick, while the remainder of the stock **47** is approximately 0.051 of an inch thick.

As illustrated in FIGURE 5, the conventional extruding apparatus 32 extrudes the retainer stock 56 from which the retainers 26 can be subsequently cut in desired lengths. While the length of the retainers 26 can be any desired dimension, the retainers 26 illustrated in the drawings are approximately 2 inches long.

Each retainer 26 comprises a U-shaped attaching portion 57 having a triangular-shaped base portion 58 and a pair of straight parallel sections 59 connected thereto and extending outwardly therefrom. A pair of legs 60 are respectively connected to the free ends of the straight sections 59 of the attaching portion 57 and extend outwardly therefrom, each leg 60 being curved throughout the length thereof and terminating at a beveled edge 61 disposed at an angle of approximately 15 degrees relative to the horizontal, for a purpose hereinafter described.

Each retainer 26 is so constructed and arranged that the same is adapted to be disposed in the channel 54 of a gutter-like member 25 in the manner illustrated in FIGURE 9, whereby the triangular portion 58 of the attaching portion 57 thereof is adapted to be disposed closely adjacent the base section 48 of the gutter-like member 25 with the beveled flanges 61 of the legs 60 disposed adjacent the flanges or lips 55 of the gutter-like member 25, for a purpose hereinafter described.

When the gutter-like members 25 are formed with the above dimensions, the retainers 26 each have a height of approximately 1.190 inches with the height of the attaching portion 57 being approximately 0.875 of an inch. The width of the retainer 26 between the free ends of the legs 60 is approximately 1.412 inches while the slot 62 defined between the straight sections 59 is approximately 0.144 of an inch wide.

While the brackets 24, gutter-like members 25, retainers 26 and cover members 27 have been described as being formed from extrusions, it is to be understood that the same can be formed from sheet material suitably bent into the desired configuration, if desired.

For example, a cover member 27 has been made from .050" sheet material consisting of 3003–H154 aluminum alloy. Such a cover member may be lapped with no swaging required and may be made with a simple die on a power brake press or may be roll formed.

After the stock 33, 38, 47 and 56 have been extruded in the above manner, the surfacing construction 20 can be formed in the following manner.

The supplier of the surfacing constructions need only maintain a space saving supply of extruded stock 33, 38, 47 and 56, surfacing elements 21 and fastening members 28 because he can fabricate the necessary parts for a particular surfacing job either at his plant or on the job with simple sawing and boring operations in a manner hereinafter described.

For example, the supplier can pre-cut the brackets 24, retainers 26, gutter-like members 25, cover members 27 and surfacing elements to the desired lengths for a particular job at his shop and thereafter transport the cut parts to the job site whereby the surfacing construction can be assembled as follows.

As illustrated in FIGURES 1 and 6, the pre-cut brackets 24 are placed along the supporting structure 22, suitably covered by tar paper 63 or the like if desired, in aligned rows spaced apart a distance slightly less than the overall width of the surfacing elements 21, for a purpose hereinafter described. Each bracket 24 is fastened to the supporting structure 22 by a suitable anchor bolt 64 or the like passing through the flat base 40 thereof in the manner illustrated in FIGURE 6, whereby the legs 43 of each bracket 24 extend outwardly away from the supporting structure 22. The brackets 24 in each row thereof are spaced a uniform distance apart, if desired, whereby the installer can properly locate the same even though the brackets 24 are subsequently covered by the surfacing elements 21 and cover members 27.

If desired, each batten type joint 23 can be completed before the next joint 23 is formed rather than attempting to place all of the brackets 24 on the structure 22 at one time.

After the brackets 24 for a particular joint 23 have been so placed and secured to the supporting structure 22, a gutter-like member 25 is assembled to the aligned brackets 24 in the manner illustrated in FIGURE 7.

In particular, the gutter-like member 25 is forced downwardly between the flanges 46 of the aligned and secured brackets 24 by camming the legs 43 of the brackets outwardly, while the legs 50 of the gutter-like member 24 are forced inwardly until the flanges 55 of the gutter-like member 25 have passed beyond the flanges 46 of the brackets 24 in the manner illustrated in FIGURE 8. As the flanges 55 of the gutter-like member pass beyond the flanges 46 of the brackets 24, the flanges 46 of the brackets 24 snap over the flanges 55 of the gutter-like member 25 because of the resiliency of the legs 43 of the brackets 24 and hold the gutter-like member 25 in the position illustrated in FIGURE 8 with the major portion of the legs 50 of the gutter-like member 25 disposed snugly against the legs 43 of the brackets 24.

Such a snug fit relation between the brackets 24 and the gutter-like member 25 prevents accidental axial shifting of the gutter-like member 25 relative to the brackets 24, even though the supporting structure 22 is disposed at a large angle relative to the horizontal.

As illustrated in FIGURE 8, the base portion 48 of the gutter-like member is disposed above the fastening members 64, whereby the fastening members 64 do not interfere with the assembling operation of the gutter-like member 25 into the brackets 24.

Thus, it can be seen that the gutter-like members 25 can be assembled to the brackets 24 in a simple and effective snap-fitting operation with a minimum of time and effort.

Should it be found that a gutter-like member 25 is not exactly straight, so that the alignment of two or more brackets 24 must be changed to accept such non-straight gutter-like member 25 in the above manner, each bracket 24 can have the lower portion 40 thereof initially provided with an elongated slot 40', FIGURES 3 and 6, disposed laterally relative thereto and adapted to receive the fastening member 64.

In this manner, the brackets 24 can be initially disposed in true alignment to receive a straight gutter-like member 25. However, should it be found that the gutter-like member 25 is not straight, one or more brackets 24 can be shifted laterally within the limits of the elongated slots 40' thereof to accept the non-straight gutter-like member 25.

For example, the fastening member 64 of a particular bracket 24 can be loosened and the bracket 24 shifted laterally in the desired direction on the supporting structure 22. Thereafter the fastening member 64 can be tightened to secure that particular bracket 24 in its new position to accept the non-straight gutter-like member 25.

Thereafter, the pre-cut retainers 26 are snapped into the channel 54 of the gutter-like member 25, as illustrated in FIGURE 9, in the same manner that the gutter-like member 25 is snapped into the brackets 24. The retainers 26 can be placed anywhere along the channel-like member 25 and need not be placed in the same location as the brackets 24, as illustrated in the drawings. However, it is preferred that the retainers be placed in the same location as the brackets 24 to not only permit the installer to know where the same are when subsequently covered by the cover members 27 but to also provide a more intimate stacked relation between the joint parts in a manner hereinafter described.

When each retainer 26 is pressed into the channel 54 of the gutter-like member 25, the base portion 58 of the retainer 26 makes contact with the base section 48 of the gutter-like member 25 when the flanges 55 thereof spring over the free edges 61 of the retainer 26. In this manner

the retainer 26 is held in its desired position in the channel 54 by a press-fit relation so that axial shifting thereof is prevented even though the supporting structure 22 is disposed at a steep angle relative to the horizontal.

After the retainers 26 have been placed in the channel 54 of the gutter-like member 25, the surfacing elements are adapted to be assembled thereto in the following manner.

As illustrated in FIGURES 1 and 10 each opposed side edge 65 of each surfacing element 21 has been formed by bending or the like to define a first straight section 66 disposed at an obtuse angle of approximately 110° relative to the main flat portion 21*a* of the surfacing element 21. The free end of the bent edge 65 comprises a second straight section 67 bent at an angle relative to the straight section 66, the bent edge 65 being so constructed and arranged that when the main body portion 21*a* of a surfacing element 21 is placed flush against the supporting structure 22, the straight section 67 hooks over the brackets 24 and projects downwardly into the channel 54 of the gutter-like member 25 as illustrated in FIGURE 10.

After the pair of surfacing elements 21 have been so placed on each side of the gutter-like member 25, the precut cover is placed over the end edges 65 of the surfacing elements 21 in the manner illustrated in FIGURE 11 to completely cover the channel 54 of the gutter-like members 25.

The cover-like member 27 is then operatively interconnected to the retainers 26 by the fastening members 28, in the following manner, the fastening members 28 can be standard No. 10–24 type 23 stainless steel screws or the like.

Since the installer of the surfacing construction 20 has placed the retainers 26 in selected locations along the length of the gutter-like member 25, he is able to drill holes in the base portion 34 of the cover member 27 in the proper positions so that the fastening members 28 can be inserted through such holes and be adapted to threadedly engage the U-shaped attaching portions 57 of the retainers 26 in the manner illustrated in FIGURE 11.

If desired, the slot 62 of the retainer 26 can be previously threaded throughout the length of the walls 59 thereof, or the fastening elements 28 can be self-threading, so that when an element 28 is rotated, the same will cut its own thread into the attaching portion 57 of a particular retainer 26.

When the fastening members 28 are self threading, the installer need not be accurate in the positioning of the holes in the cover member 27 because the retainers 26 are relatively long and are uniform throughout the length thereof. Thus, the fastening members 28 could be offset relative to the retainers 26 and still perform their function.

As each fastening member 28 is tightened, the same draws the respective retainer 26 and cover member 27 toward each other, whereby the legs 60 of the retainer 26 snugly engage under the flanges 55 of the gutter-like member 25 and cause the cover member 27, end edges 65 of the surfacing elements 21, brackets 24, gutter-like member 25, and retainer 26 to be disposed in a compact stacked relation, in the manner illustrated in FIGURE 11. In this manner the various parts of the batten joint are frictionally held in fixed positions relative to each other.

The thus secured cover member 27 securely interconnects and overlaps the adjacent surfacing elements 21 to provide a weatherproof joint therebetween, as each leg 35 of the cover member 27 makes line contact with the respective end edge 65 of the surfacing element 21 at two spaced points thereof, as represented by the reference numerals 68 and 69 in FIGURE 11 and as provided by the curved portions 37 of the legs 35.

Thus, should any moisture tend to enter under the cover member 27, the same will not reach the substructure 22, as the channel 54 of the gutter member 25 provides means for draining such moisture to one end thereof in a manner well known in the art, the straight sections 67 of the surfacing elements 21 directing such moisture into the channel 54.

After one batten type joint 23 has been completed the next adjacent batten type joint 23 can then be completed. In this manner the entire surfacing construction 20 can be assembled together with a minimum of time and effort and without special tools or the like.

When large surfacing constructions 20 are formed in the above manner, it may be desired to connect two or more gutter-like members 25 together to form a particular batten-type joint 23.

One method of effectively interconnecting a pair of aligned gutter-like members 25 is illustrated in FIGURE 12, wherein one end of the gutter-like member 25*a* is merely press fitted into the channel 54 of the adjacent end of the gutter-like member 25*b*, whereby the gutter-like members 25*a* and 25*b* are disposed in overlapping and substantially aligned relation. The gutter-like member 25*a* is held in the channel 54 of the gutter-like member 25*b* because the flanges 55 of the gutter-like member 25*b* are being continuously urged inwardly toward the gutter-like member 25*a* and tend to dig into the same to hold the gutter-like members 25*a* and 25*b* in their assembled position.

Another method for interconnecting aligned gutter-like members 25 together is illustrated in FIGURE 13, wherein the legs 50 of the gutter-like member 25*c* is cut away at 66 to form a tapered joint which is insertable under the flanges 55 of the gutter-like member 25*d* to permit the gutter-like members 25*c* and 25*d* to be disposed in substantially aligned relation.

However, such tapering operation of FIGURE 13 is optional, because it has been found that the mating extrusions 25*c* and 25*d* will snap together without tapering the legs 50 of the gutter-like member 25*c*.

Alternately, a short length of the gutter-like member 25 can have the flanges 55 and part of the free ends of the legs 50 thereof cut away in the manner illustrated in FIGURE 14 to provide a sleeve 70 insertable under the flanges 55 of the gutter-like member 25*e*, so that the other gutter-like member 25*f* can be telescoped over its adjacent half of the sleeve 70 to the position illustrated in dotted lines to form a coupling between the sections 25*e* and 25*f*.

Also, the cover members 27 are so constructed that a pair of cover members 27 can be aligned by merely overlapping adjacent ends thereof to provide a relatively long cap member for the batten type joint 23 without swaging or upsetting because the same are readily nestible one within the other, as illustrated in FIGURE 15.

Therefore, when a relatively large surface area is being covered by the surfacing construction 20 of this invention, relatively long batten joints 23 can be formed without swaging or special shop trimming by merely aligning adjacent gutter-like members 25 in overlapping relation in the manner illustrated in FIGURE 12 and, similarly, aligning adjacent cover members 27 in overlapping relation in the manner illustrated in FIGURE 15. The aligned and overlapping gutter-like members 25 are held together by the flanges 55 of the outer member 25 while the aligned and overlapping cover members 27 are held together by a common fastening member 28 passing therethrough, as illustrated in FIGURE 15.

Thus, the gutters and covers for each batten-type joint 23 can be installed at a relatively rapid rate by relatively unskilled labor, because no swaging or special shop trimming operations are required and the aligned parts readily nest together without requiring critical workmanship. Therefore, random length extrusions of the gutter-like members 25 and cover members 27 can be pieced together in a minimum of time and effort to form the batten type joints 23 whereby scrap loss is held to a minimum.

While the surfacing elements 21 can be formed of any suitable material, the embodiment thereof illustrated in

the drawings comprises sheets of aluminum alloy having one or both sides thereof covered or clad with an aluminum alloy having a high percentage of aluminum, each sheet being approximately 0.032 of an inch thick.

In addition, the surfacing elements **21** can have enamel coatings baked or otherwise secured on the exterior surface thereof to provide surfacing elements **21** having any desired exterior color. Similarly, the cover members **27** can be covered by such coloring medium to complement or be the same as the surfacing elements **21** when the surfacing construction **20** is formed in the above manner, the remainder of the parts of the batten-type joints **23** being completely covered over by such cover members **27** and surfacing elements **21** and, thereby, need not be colored. Alternately, the surfacing elements **21** and cover members **27** can have any other type of finish, as desired, such as natural aluminum stucco, double embossed, plain or mill.

Further, while the surfacing construction **20** is illustrated as covering a flat supporting means, it is to be understood that the supporting means could be curved or have any desired configuration whereby the surfacing construction **20** will suitably cover the same.

For example, the surfacing construction **20** can be utilized to cover dome-shaped or other geometric shaped roofs for field houses, hangars, academic or office buildings, churches and the like, or other commercial or monumental roofs pitched more than 1½ inches in every 12 inches in length thereof.

In any event, the straight seams provided by the batten joints **23** of this invention permit thermal movement of the surfacing elements **21** relative to each other without permitting leaking at the joints **23** and without utilizing costly gaskets or caulking, as in prior-known constructions. Further, it has been found that such surfacing constructions of this invention weigh less per unit length thereof than prior-known batten type surfacing constructions and still meet current government specifications.

While the surfacing construction **20** illustrated in FIGURE 1 is secured directly to the supporting deck **22**, it is to be understood that the surfacing construction **20** can be utilized in any manner to cover the exterior surface of the deck **22**. For example, as illustrated in FIGURE 16, the surfacing construction **20** is utilized to support insulation means **71** between the surfacing construction **20** and the supporting deck **22**.

In particular, a plurality of wood supports **72** are fastened in any suitable manner to the supporting deck **22** in the regions where the batten type joints **23** are to be formed. Thereafter, slabs or other types of insulation means **71** are disposed between adjacent support blocks **72** and extend substantially to the height thereof. The brackets **24** are then secured to the support blocks **72** in the manner previously described whereby the surfacing construction **20** can be completed with the surfacing elements **21** being disposed on the insulation **71**, as illustrated, to sandwich the insulation means **71** between the supporting deck **22** and the surfacing elements **21**.

Another type of anchor clip or bracket of this invention is illustrated in FIGURE 17 and is generally indicated by the reference numeral **73**, the brackets **73** being utilized to form the surfacing construction **20** previously described in substantially the same manner as the brackets **24** previously described.

Each bracket or anchor clip **73** is formed from extruded stock in the same manner as the brackets **24** and comprises a mounting portion **74** having a flat base **75** and a pair of straight sections **76** interconnected to the side edges **77** of the flat base **75** and extending outwardly therefrom, the sections **76** converging toward each other in the manner illustrated in FIGURE 17.

A pair of spaced legs **78** are respectively connected to the free ends of the sections **76** and are formed in substantially the same manner and have substantially the same configuration as the legs **43** of the brackets **24** previously described, each leg **78** having an arcuate portion **79** interconnected to its respective section **76** and an outer straight portion **80** disposed substantially parallel to the straight section **80** of the other leg **78**. A pair of inwardly facing flanges **81** are respectively connected to the free ends of the legs **78** and are formed in the same manner as the flanges **46** of the brackets **24** previously described.

The flat base **75** of the mounting portion **74** of the bracket **73** has a pair of inwardly directed, parallel, V-shaped flanges **82** extending throughout the length thereof for a purpose hereinafter described and defining a channel **83** therebetween, the channel **83** having a width slightly wider than the bases **48** of the gutter-like members **25**.

The brackets **73** can be formed by simply extruding bracket stock in substantially the same manner as the bracket stock **38** previously described, or the bracket **73** can be suitably formed by stamping or bending sheet metal or the like.

The gutter-like or channel-defining members **25** for each batten type joint **23** can be secured to the supporting structure **22** by the brackets **73** in the following manner, as illustrated in FIGURES 18–20.

In particular, the brackets **73** are first secured to the supporting structure **22** in the proper location by having screws **84** respectively passing through the sections **76** and the flat mounting base **75** thereof into the supporting structure **22** in the manner illustrated in FIGURE 18. Such screws **84** can pass through suitable apertures preformed in the mounting portions **74** of the brackets **73** or can form their own apertures by a simple threading operation, as desired.

Preferably, each bracket **73** is temporarily fastened to the supporting structure **22** in the manner illustrated in FIGURE 18 whereby the enlarged head **85** of each fastening means **84** merely abuts the respective section **76** of the bracket **73** without biasing the section **76** toward the supporting structure **22**.

Thereafter, the gutter-like member **25** is forced downwardly between the inwardly facing flanges **81** of the brackets **73** in the manner illustrated in FIGURE 18 until the flanges **55** of the gutter-like member **25** passes beyond the flanges **81** of the brackets **73** to permit the flanges **81** of the brackets **73** to spring over the flanges **55** of the gutter-like member **25** in the manner illustrated in FIGURE 19. Thus, the legs **78** of the brackets **73** snugly engage the exterior surface of the legs **50** of the gutter-like member **25** in the same manner as the legs **43** of the brackets **24** to frictionally hold the gutter-like member **25** in place.

When the gutter-like member **25** has been initially assembled to the brackets **73** in the manner illustrated in FIGURE 19, the base portion **48** of the gutter-like member **25** is disposed slightly spaced above the flat bases **75** of the brackets **73** and intermediate the flanges **82** thereof.

Subsequently, the fastening means **84** are tightened in order to draw the sections **76** of the brackets **73** downwardly toward the bases **75** and support means **22** in the manner illustrated in FIGURE 20 whereby the legs **78** of the brackets **73** are drawn downwardly and carry the gutter-like member **25** therewith until the base portion **48** thereof is compacted against the bases **75** of the brackets **73** intermediate the flanges **82** thereof.

In this manner, the brackets **73** firmly fix the gutter-like member **25** in a fixed position relative to the supporting structure **22** whereby axial movement of the gutter-like member **25** is prevented. Further, such tightening operation of the fastening members **84** causes the legs **78** of the brackets **73** to move toward each other and, thereby, positively engage or clamp the legs **50** of the gutter-like member **25** throughout the length thereof to increase the frictional fit therebetween.

Alternately, the brackets **73** can be assembled to the gutter-like members **25** at a point remote from the support means **22**, and, thereafter, the assembled brackets

73 and gutter-like members 25 can be placed on the supporting structure 22 and fastened thereto by the fastening means 84, if desired.

Therefore, it can be seen that the brackets 73 permit rapid assembly of the gutter-like members 25 to the supporting structure 22 in a minimum of time and effort, the gutter-like member 25 being firmly fixed relative to the support member 22 by the brackets 73.

The surfacing elements 21, retainers 26 and cover members 27 can be assembled to the brackets 73 and gutter-like members 25 to complete the particular batten type joints 23 provided by the gutter-like members 25 and the brackets 73 in the above manner whereby the resulting surfacing construction performs its function in substantially the same manner as the surfacing construction 20 of FIGURE 1.

Therefore, it can be seen that this invention provides improved surfacing constructions having improved batten type joints between adjacent pairs of surfacing elements, the batten type joints being formed in a simple and effective manner heretofore unattainable in the surfacing art. Further, improved methods are provided for making such surfacing constructions or the like.

While the form of the invention now preferred has been disclosed as required by the statutes, other forms may be used, all coming within the scope of the claims which follow:

What is claimed is:

1. A surfacing construction comprising a supporting means, spaced longitudinally aligned brackets each having a mounting portion secured to said supporting means and having a pair of spaced legs extending outwardly from said mounting portion, a channel-defining member extending between said brackets and being disposed between said legs of each said bracket and over said mounting portion with said channel thereof facing outwardly between said legs, a retainer disposed in said channel of said channel-defining member, a pair of surfacing elements respectively having adjacent end edges disposed against said brackets and covering at least part of said channel of said channel-defining member, a cover member covering said channel of said channel-like member, and fastening means operatively interconnected to said cover member and said retainer to hold said cover member, said end edges of said surfacing elements, said legs of said brackets, said channel-defining member and said retainer in stacked relation to provide a batten type joint between said surfacing elements.

2. A surfacing construction as set forth in claim 1 wherein each said bracket has a pair of inwardly facing flanges respectively connected to the free ends of said legs thereof, said flanges holding said channel-defining member between said legs of each said bracket.

3. A surfacing construction as set forth in claim 1 wherein said channel-defining member has a pair of spaced legs defining said channel therebetween and has a pair of inwardly facing flanges respectively connected to the free ends of said legs thereof, said flanges holding said retainer in said channel.

4. A surfacing construction as set forth in claim 1 wherein said retainer has a U-shaped attaching portion and a pair of legs connected to said attaching portion and extending thereform, said legs thereof engaging said channel-defining member.

5. A surfacing construction as set forth in claim 1 wherein said cover member has an intermediate portion and a pair of opposed legs extending from said intermediate portion, each of said legs curving toward the other leg at the outer end thereof to make contact with the respective end edge of one of said surfacing elements at two locations.

6. A surfacing construction comprising a supporting means, spaced longitudinally aligned brackets each secured to said supporting means, a channel-defining member extending between said brackets and being carried by each said bracket in spaced relation above said supporting means with said channel thereof facing away from each said bracket, a retainer disposed in said channel of said channel-defining member, a pair of surfacing elements respectively having adjacent end edges disposed against said brackets, a cover member covering said channel of said channel-defining member, and fastening means operatively interconnected to said cover member and said retainer to hold said cover member, said end edges of said surfacing elements, said channel-defining member and said retainer in stacked relation to provide a batten type joint between said surfacing elements.

7. A surfacing construction as set forth in claim 6 wherein said retainer includes a U-shaped attaching portion threadedly receiving said fastening means.

8. A surfacing construction, comprising a supporting means, spaced longitudinally aligned brackets each having a mounting portion secured to said supporting means and having a pair of spaced legs extending outwardly from said mounting portion, said legs respectively having inwardly facing flanges carried at the free ends thereof, a channel-defining member extending between said brackets and being disposed between said legs of each said bracket over said mounting portion thereof and being held thereto by said flanges of each said bracket, said channel-defining member having the channel thereof facing outwardly between said legs of each said bracket and having a pair of inwardly facing flanges at the open end of said channel thereof, a retainer disposed in said channel of said channel-defining member and being held therein by said flanges of said channel-defining member, a pair of surfacing elements respectively having adjacent end edges disposed against said brackets and covering at least part of said channel of said channel-defining member, a cover member covering said channel of said channel-defining member, and fastening means operatively interconnected to said cover member and said retainer to hold said cover member, said end edges of said surfacing elements, said legs of each said bracket, said channel-defining member and said retainer in stacked relation to provide a batten type joint between said surfacing elements.

9. A surfacing construction comprising a supporting means, spaced longitudinally aligned brackets each having a mounting portion secured to said supporting means, said mounting portion including a flat base and a pair of opposed sections extending outwardly from said base and converging toward each other, each said bracket having a pair of spaced legs respectively connected to the free ends of said sections and extending outwardly therefrom, said legs respectively having inwardly facing flanges connected to the free ends thereof, a channel-defining member extending between said brackets and being disposed between each said legs of said bracket and being held thereto by said flanges of each said bracket, said channel-defining member having the channel thereof facing outwardly between said legs of said bracket, and means operatively connected to said sections of each said bracket and to said supporting means to tend to draw said sections toward said supporting means.

10. A surfacing construction comprising a supporting means, spaced longitudinally aligned brackets each having a mounting portion secured to said supporting means, said mounting portion including a flat base and a pair of opposed sections extending outwardly from said base and converging toward each other, each said bracket having a pair of spaced legs respectively connected to the free ends of said sections and extending outwardly thereform, said legs respectively having inwardly facing flanges connected to the free ends thereof, and a channel-defining member extending between said brackets and being disposed between said legs of each said bracket and being held thereto by said flanges of each said bracket, said channel-defining member having the channel thereof facing outwardly between said legs of each said bracket, each

said flat base having a pair of spaced and outwardly directed flanges and said channel-defining member nesting between said flanges.

11. A roof batten or the like comprising, in combination, a gutter with upwardly extending sides, retainer means in said gutter, holder means separated from said retainer means and adapted to be fastened to a roof or the like and reach over the sides of said gutter and frictionally hold said retainer means at least against upward movement, the holder means having means holding down the retainer means while permitting movement of the retainer means in a direction along the gutter, and cap means fastened to said retainer means and adapted to press sheet material against said holder means, whereby said gutter and retainer means are held without direct attachment to a roof or the like and may expand and contract relatively unrestrained when said holder means is affixed to said roof or the like outside of said gutter.

References Cited

UNITED STATES PATENTS

1,656,044	1/1928	Cibulus	52—95
2,055,127	9/1936	Goodwin	52—463
2,907,287	10/1959	Trostle	52—463
2,934,180	4/1960	Hammitt et al.	52—495

FOREIGN PATENTS

214,120	3/1961	Austria.
528,947	11/1954	Belgium.
519,360	6/1921	France.
933,654	9/1955	Germany.

OTHER REFERENCES

Mouldings of Metal, Herron-Zimmers Moulding Company, 1939, page 3.

Sweet's Catalog Service Architectural File, 1956 Edition, Section 18*d/st.*, pages 10 and 12 relied on.

Sweet's Architectural File, 1960 Edition, Sec. 3*a/Ba.*, page 5.

FRANK L. ABBOTT, *Primary Examiner.*

RICHARD W. COOKE, JR., *Examiner.*

J. LISTER, R. S. VERMUT, *Assistant Examiners.*