

[54] **INTERLOCKING PANEL HAYSTACK COVER**

[76] Inventor: **Harold V. Austin**, P.O. Box 26,
Beatty, Oreg. 97621

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Primary Examiner—John E. Murtagh
Attorney, Agent, or Firm—Kolisch, Hartwell,
Dickinson & Stuart

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[58] Field of Search..... 52/3, 4, 5, 90, 748, 537

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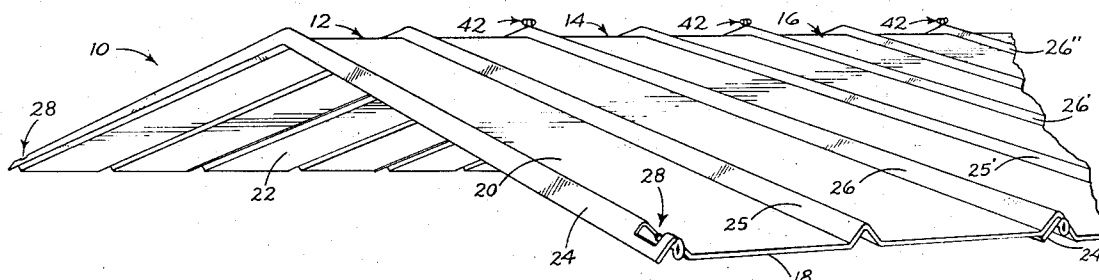
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[57] **ABSTRACT**

A gable roof for a stack of hay bales, formed from a multiplicity of corrugated panels, each having an inverted-V configuration. The panels are disposed side-to-side on the stack with their adjacent edges overlapping, and are interconnected adjacent each corner and at one or more intermediate locations along each side. Tie-down rings are also provided on each panel for securing the assembled roof to the stack.

1 Claim, 5 Drawing Figures



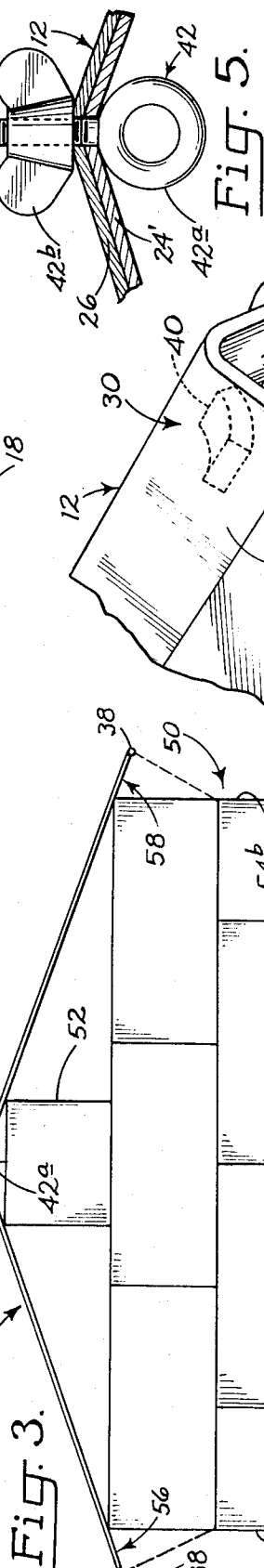
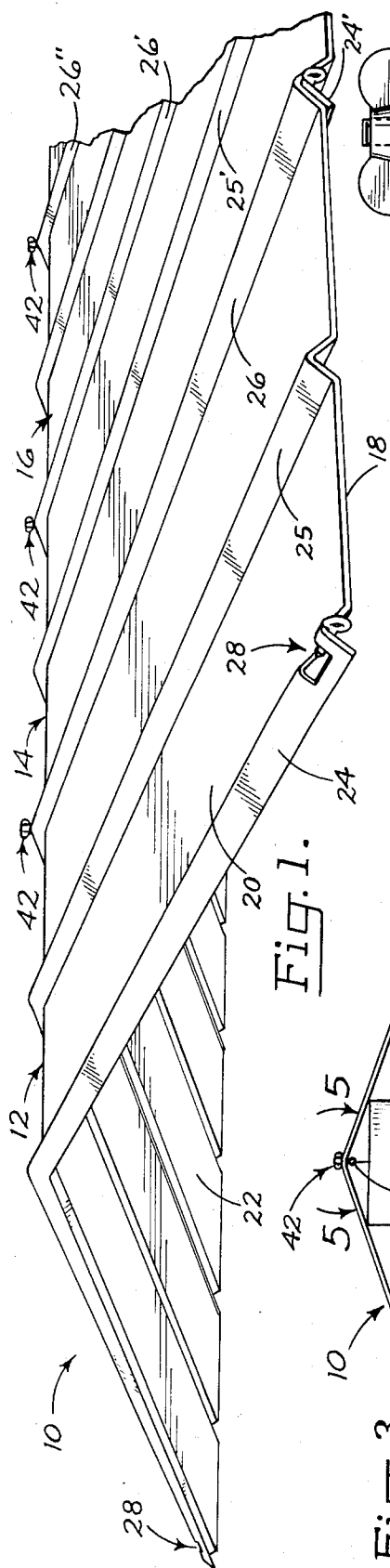


Fig. 5.

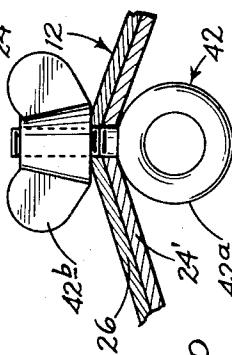


Fig. 2.

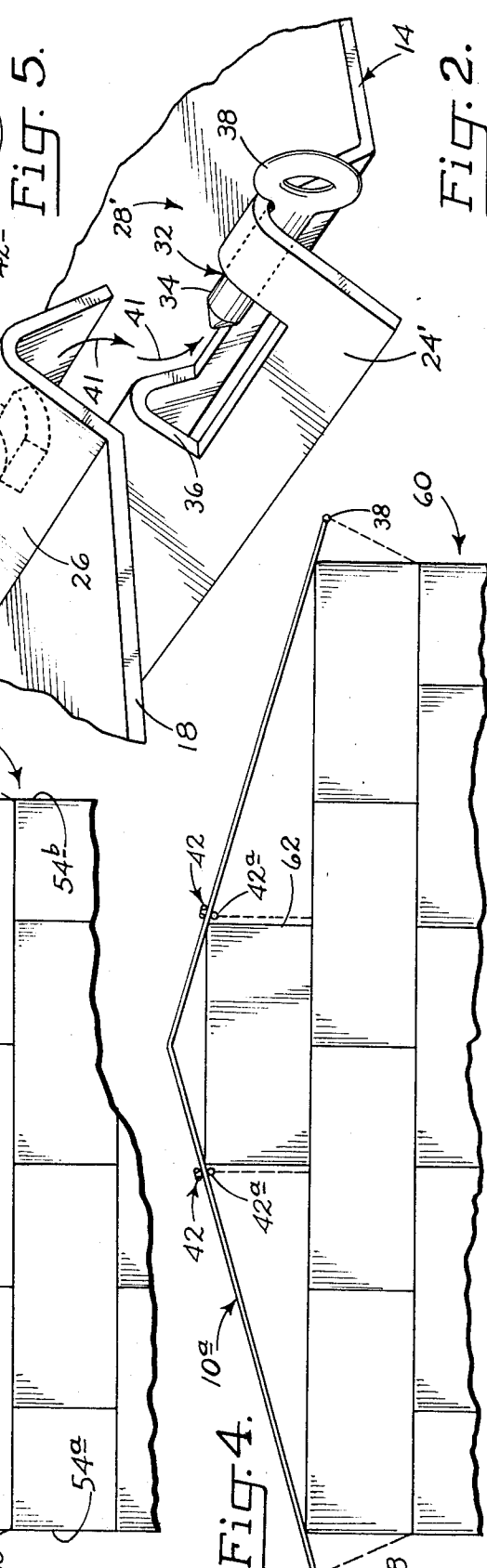
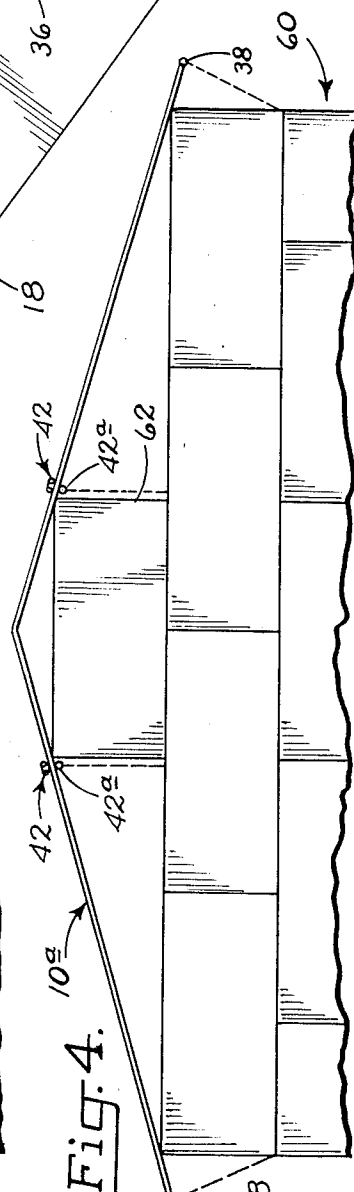


Fig. 4.



INTERLOCKING PANEL HAYSTACK COVER

FIELD OF THE INVENTION

The present invention relates generally to portable coverings for stacks of hay, straw or similar material, and more particularly to a stack covering formed of a multiplicity of frameless, interlocking panels supported by the stack itself.

BACKGROUND AND OBJECTS OF THE INVENTION

It is a common practice to store bales of hay and other similar agricultural feed materials in the open, in generally rectangular stacks. To protect the hay from rain, wind or other deteriorating elements, it has been the practice to cover such stacks with temporary covers such as canvas tarpaulins or plastic sheets, or with more permanent covers formed of metal panels joined together in various ways. Canvas and plastic covers have a number of drawbacks. While canvas can be used for relatively short periods of time, it weathers rapidly and can become torn or otherwise damaged during handling. Plastic coverings are particularly unsatisfactory because they trap moisture within the stack and prevent the hay from drying, and because they are easily damaged.

Prior art metal coverings, generally constructed from corrugated sheet metal attached to a supporting metal framework, are relatively expensive because of their complex construction. In addition they are difficult to assemble in the field because of their weight and the methods used to assemble them.

A general object of the present invention, therefore, is to provide a durable, easily assembled haystack cover which is free from the drawbacks inherent in prior art covers.

Another object of the invention is to provide a reusable cover which is relatively economical to manufacture. Still another object of the invention is to provide a portable cover or roof which can be transported or stored in compact form as nestable sections.

Yet another object is to provide interlocking, frameless roof sections which can be connected together to form a gable roof for a stack of bales with a minimum expenditure of time and effort.

These and other objects and advantages are realized in a practical and satisfactory manner by the interlocking panel haystack cover of the invention.

According to a preferred embodiment of the disclosed invention, there is provided a frameless, portable cover or roof for a stack of hay bales. The roof is formed from a multiplicity of corrugated panels, each having an inverted-V configuration. The panels are disposed side-to-side on the stack with their adjacent edges overlapping, and are interconnected adjacent each corner, and at one or more intermediate locations along each side. Tiedown rings are provided on each panel for securing the assembled roof to the stack.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the novel haystack cover of the invention will become apparent as the description which follows is read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a fragmentary perspective view of an assembled haystack cover according to the invention;

FIG. 2 is a fragmentary perspective view illustrating means by which adjacent sections of the cover are interlocked together;

FIG. 3 is an end elevation showing the cover of FIG. 1 in place on a stack of hay bales;

FIG. 4 is an end elevation illustrating a similar cover in place on a larger stack of bales; and

FIG. 5 is an enlarged detail view, partially in section, of typical panel securing and the tie-down means, as indicated at 5-5 of FIG. 2.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings, and first to FIG. 1 thereof, indicated generally at 10 is an assembled gable roof for a stack of haybales, formed of a multiplicity of identical, interconnected roof sections 12, 14, 16, etc. Each section, section 12 for example, comprises an elongate, corrugated panel 18 having an inverted-V configuration. Panel 18 thus includes a pair of oppositely inclined gable expanses 20, 22 with a multiplicity of ridges or corrugations extending the length of the panel along the slope of expanses 20, 22.

As will be appreciated, the exact number and configuration of the corrugations is not important. Preferably, however, each panel is provided with at least a pair of longitudinally extending corrugations, including one extending along each lateral margin or side of the panel. Thus, for example, section 12 includes marginal corrugations 24, 26 extending along each side of panel 18, with an additional corrugation 25 disposed intermediate the others.

The individual sections comprising roof 10 are disposed side-by-side with their adjacent marginal corrugations overlapping. As shown at the right in FIG. 1, for example, corrugation 26 of section 12 overlies corrugation 24' of section 14, with the sections interconnected adjacent their adjoining corners.

Referring now to FIG. 2 in conjunction with FIG. 1, each roof section includes means defining a male connector 28 disposed adjacent either end of one marginal corrugation, with complementary female connector means 30 adjacent either end of the other. Thus, as shown in FIG. 2, roof section 14 includes a male connector 28' disposed adjacent an end of marginal corrugation 24'. Connector 28' includes an elongate member 32 having a pointed inner end 34 which projects into a notch 36 formed adjacent the end of the corrugation as shown. The opposite end of member 32 includes a ring 38 for a purpose which will be described later on.

Female connector means 30 comprises a curved band 40 extending between and secured to the inner walls of corrugation 26 as shown. As should be evident, band 40 and the walls of the corrugation define a recess accommodating a member 32 upon engagement of means 30 by a male connector through outwardly directed relative longitudinal movement as indicated by arrows 41. Thus, with corrugations 26, 24' overlapped as shown in FIG. 1, connectors 30, 28' serve to interlock roof sections 12, 14, respectively.

Adjacent sections of roof 10 are also secured with one or more fasteners 42 extending through matching bores in their overlapping marginal corrugations. Thus, referring to FIGS. 1 and 5, a fastener 42 comprising an eyebolt 42a and a wing nut 42b secures section 12 to section 14.

Referring now to FIG. 3, roof 10 is shown in profile, supported in place on a stack 50 of hay bales. Stack 50 is three bales wide with the bales stacked in alternating fashion as shown. Stack 50 includes a row 52 of bales forming a ridge extending along the top of the stack intermediate its lateral edges 54a, 54b. As shown in the drawing, roof 10 rests directly on the bales comprising stack 50 and spans the lateral edges of the stack and the ridge-forming row, with the apex of the roof disposed above row 52. Portions of roof 10 extend out beyond edges 54a, 54b to form eaves 56, 58, respectively.

The sections of roof 10 are maintained in a stable or fixed position relative to the stack by tying them directly to the hay bales. Thus, roof 10 is tied down by wires (shown as dashed lines) extending from each ring 38 and each eyebolt 42a to adjacent hay bales. Preferably, the tie-down wires are tied directly to the haybale wires (not shown).

FIG. 4 shows an alternate version 10a of roof 10 in place covering a four bale wide stack 60. Stack 60 includes a row of bales 62 forming a ridge extending along the top of the stack. Because of the stack's greater width, the bales forming ridge 62 are oriented 90° from those forming ridge row 52 of stack 50. As should be evident, this allows roof 10a to have a greater pitch than it would with the bales disposed end-to-end as in row 52. In addition, each section of roof 10a is provided with a pair of securing means or fasteners 42 spaced on either side of the roof's apex.

As will readily be appreciated, a gable roof according to the invention is formed by laying one section in position on a stack and then disposing a second section side-by-side with the first, with their marginal corrugations overlapping. In assembling roof sections having interlocking connector means of the type shown in FIG. 2, the second (and each succeeding) section is first lifted at or near its center or apex, causing its oppositely-inclined gable expanses to droop or come together somewhat. Then, after placing the lifted section alongside one previously laid in position with the adjacent marginal corrugations of the two overlapping, the center of the second section is lowered. This produces engagement of the male and female connector pairs adjacent either end of the overlapped corrugations as the previously drooping expanses flex away from each other. The sections are then secured together by inserting a fastener 42 through the matching holes provided adjacent the apex of the overlapped edges. Obviously, after the roof has been assembled, it may be lengthened or shortened as rows of bales are added to or taken from the stack.

It will be appreciated that roof sections according to the invention may be formed for haystacks of any size. By way of example, however, a typical section is about 30 inches wide, and long enough to cover the width of a stack and provide a suitable eave on either side. For a stack 3 bales wide, such as stack 50, the length of a panel would be about 11½ feet.

The portable roof sections described herein are preferably formed from a thin, durable, relatively stiff material such as sheet metal. Aluminum alloy sheet metal is particularly preferred because of its resistance to corrosion and light weight. However, galvanized steel roofing material is also suitable, as are plastics and composite materials such as fiberglass/polymeric resin composites. With roof sections incorporating interlocking connector means of the type shown in FIG. 2, wherein en-

agement requires outwardly directed, relative axial movement of one panel with respect to another, it is important that the panels have a degree of longitudinal flexibility, i.e., that they be somewhat limber rather than completely rigid. The amount of flexibility needed to permit easy coupling of the connectors will vary with the length of the panels and the design of the connectors, but can be determined readily by routine experimentation.

It will be noted that the roof sections described above include no supporting framework, an important feature of the invention. Instead, the sections rest directly on and are supported by the bales of the stack which the roof covers. By eliminating this framework, the weight of each roof section is greatly reduced. This in turn reduces the amount of effort required to handle the sections during assembly or disassembly of a roof. In addition, manufacture of the roof sections is greatly simplified, resulting in a lower cost, yet highly effective haystack covering.

Haystack covers constructed according to the invention provide a number of advantages over prior art covers. As previously mentioned, covers of canvas or plastic sheeting material are fragile, provide relatively short service life, and may provide inadequate ventilation for the hay. Prior art metal covers for baled hay are heavy and difficult to handle, making assembly difficult and time consuming. In addition, they are relatively expensive to manufacture because of their complexity.

By contrast, the roof of the invention is durable, economical to manufacture, lightweight, and easy to assemble or disassemble. In addition, the roof is virtually weatherproof because of the overlapping engagement of adjacent sections and the elimination of joints along the roof's peak or ridge line. At the same time, the gable roof configuration of the haystack cover, with the apex region of the roof section supported on a ridge-forming row of bales on the top of the stack, provides a "breathing space" beneath the roof which permits the hay to dry properly. A further advantage of the invention is that individual roof panels may be compactly nested for storage or transportation.

Although a preferred embodiment of the invention has been described herein, it is understood that variations and modifications are possible without departing from the spirit of the invention. For example, many variations in the design of the interlocking connectors are possible. In fact, it is within the scope of the invention to construct the roof sections without such self-interlocking connectors and instead assembling them with conventional hardware such as nuts and bolts.

It is claimed and desired to secure by Letters Patent:

1. The combination of a stack of baled agricultural feed material and a frameless, stack-supported gable roof therefor, said stack including a row of bales forming a ridge extending along the top of the stack intermediate its lateral edges, with the roof resting directly on the bales and spanning the lateral edges and ridge-forming row, said roof comprising

a multiplicity of elongate flexible panels having corrugations extending along their length, each of said panels including a pair of oppositely inclined gable expanses integrally joined together at an apex in an inverted-V configuration, said panels being disposed side-to-side, transversely of said ridge, with their adjacent margins overlapped and with the

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apex of each panel disposed above the ridge-
forming row of bales,
means interconnecting the overlapping adjacent mar-
gins of the panels, each expanse of one panel in-
cluding female connector means in operative inter-
connection with male connector means on an adja- 5
cent expanse of another panel, said female and
male connector means being disposed within similar
marginal corrugations in said one and other
panels, respectively, configured and positioned to 10
interengage during an assembly sequence for said

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roof which comprises first lifting of said one panel
at its apex, whereupon its oppositely inclined gable
expanses flex toward each other, then lowering the
panel onto said other panel in marginal overlapping
relationship, whereupon engagement of the respec-
tive male and female connector means occurs as
the gable expanses flex away from each other, and
means extending between the panels and the stack,
tying them to the stack.

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