Sept. 11, 1956 G. SINGER 2,762,084

CONVERTIBLE BUILDING STRUCTURE

Filed Jan. 14, 1953 4 Sheets-Sheet 1

Fig. 1.

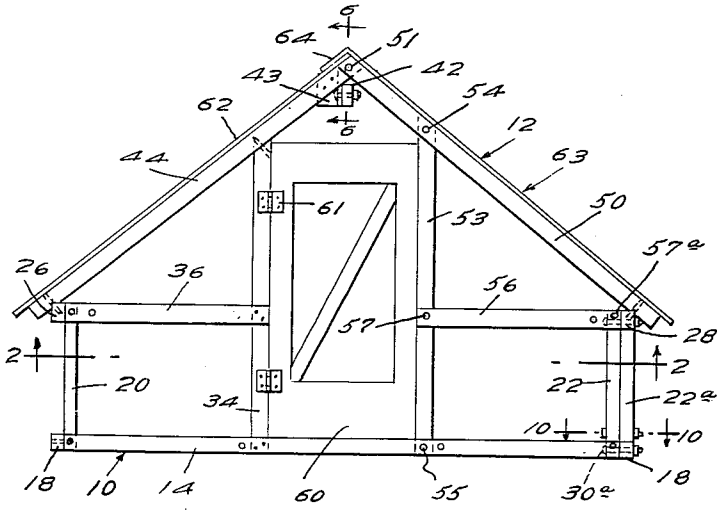


Fig. 8.

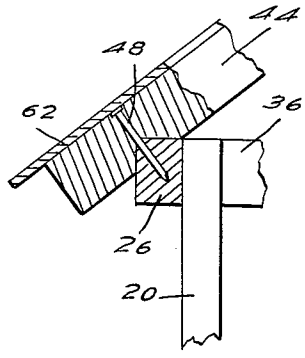


Fig. 2.

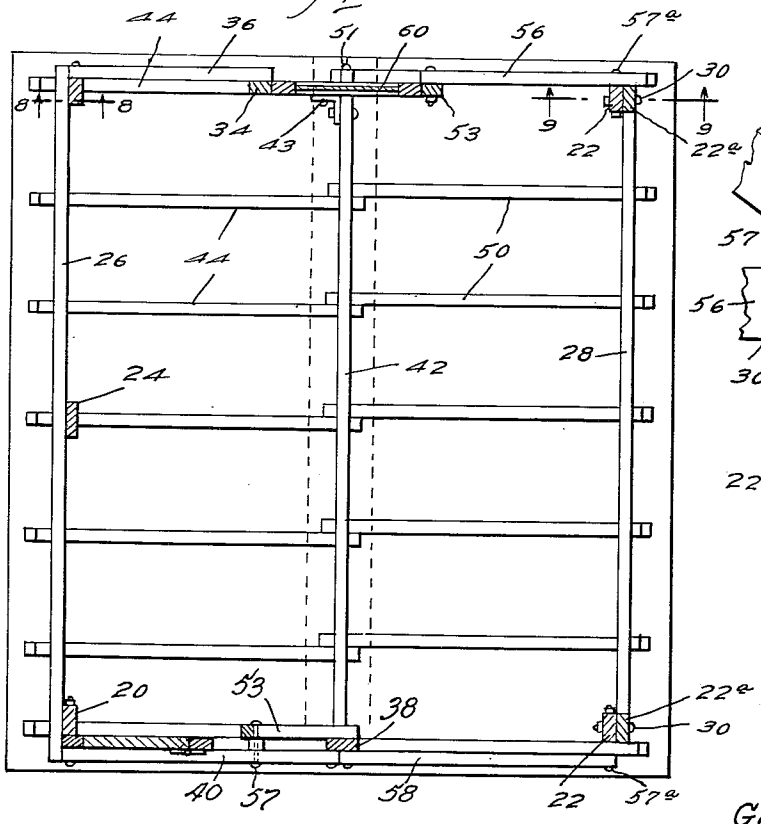
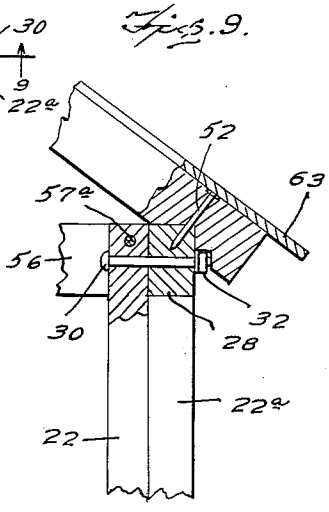


Fig. 9.



Inventor
Gerald Singer

By Wilfred L. Lawson
ATTY.

Sept. 11, 1956 G. SINGER 2,762,084

CONVERTIBLE BUILDING STRUCTURE

Filed Jan. 14, 1953 4 Sheets-Sheet 2

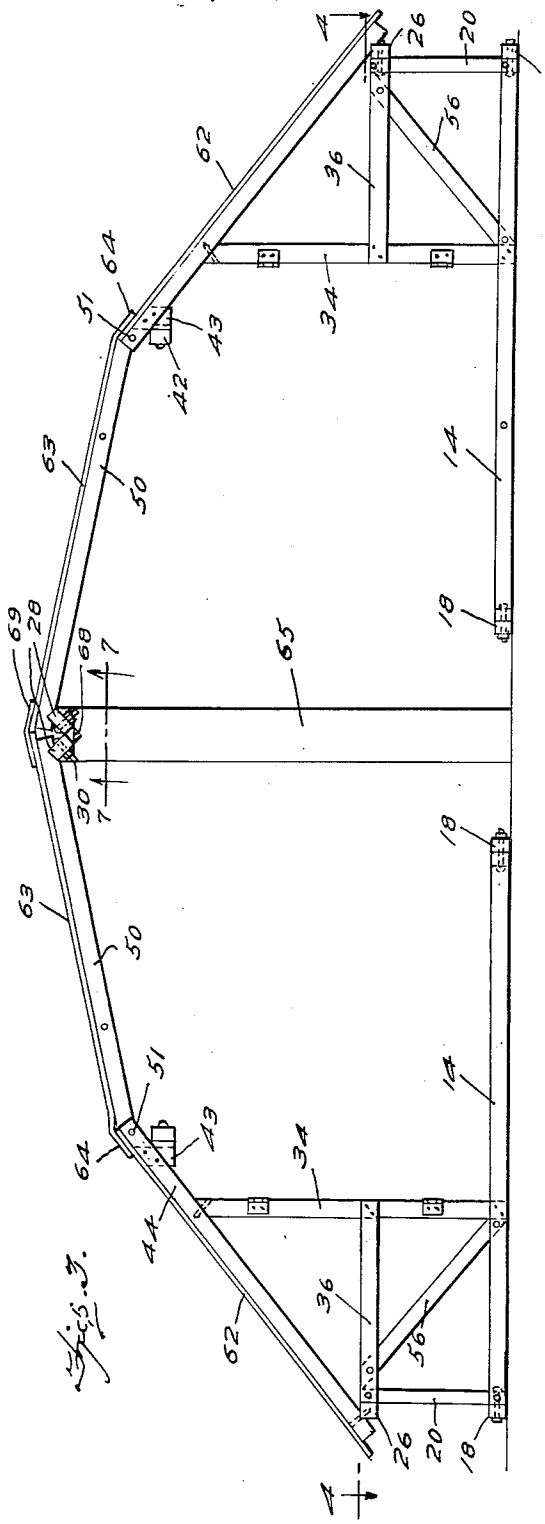


Fig. 3.

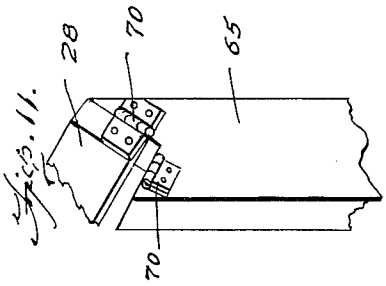


Fig. 11.

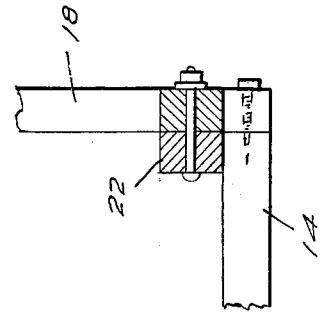


Fig. 10.

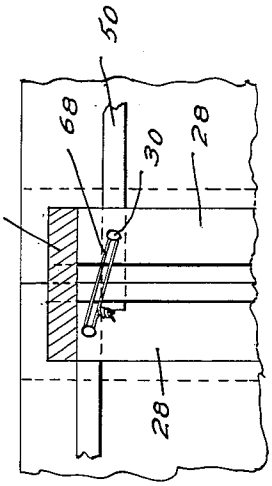


Fig. 7.

Inventor
Gerald Singer

By Wilfred L. Lawson
ATTY.

Sept. 11, 1956 G. SINGER 2,762,084

CONVERTIBLE BUILDING STRUCTURE

Filed Jan. 14, 1953 4 Sheets-Sheet 3

Fig. 4.

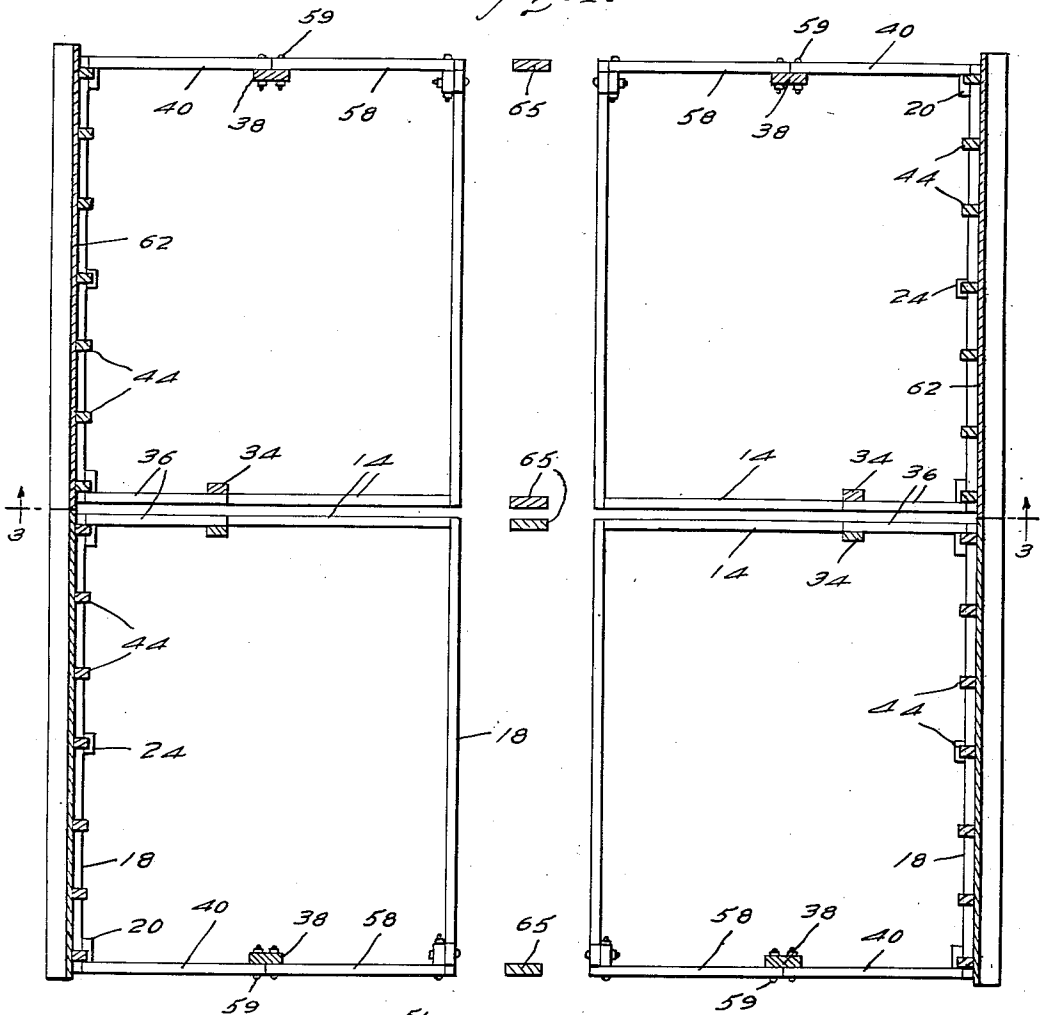


Fig. 5.

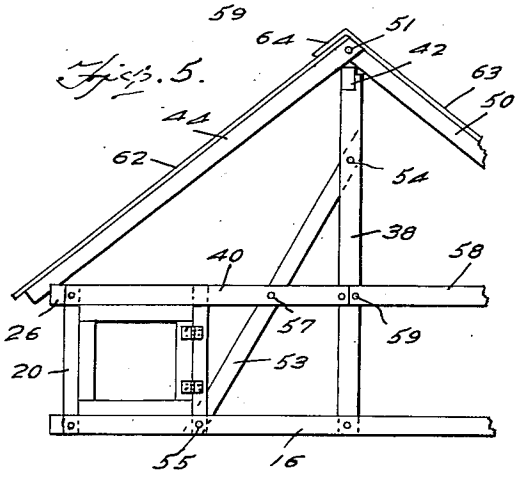
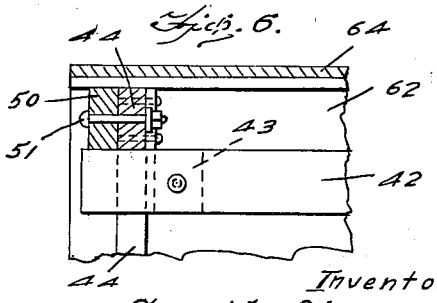


Fig. 6.



Inventor
Gerald Singer

By Wilfred Lawson
ATTY.

Sept. 11, 1956 G. SINGER 2,762,084

CONVERTIBLE BUILDING STRUCTURE

Filed Jan. 14, 1953 4 Sheets-Sheet 4

Fig. 12.

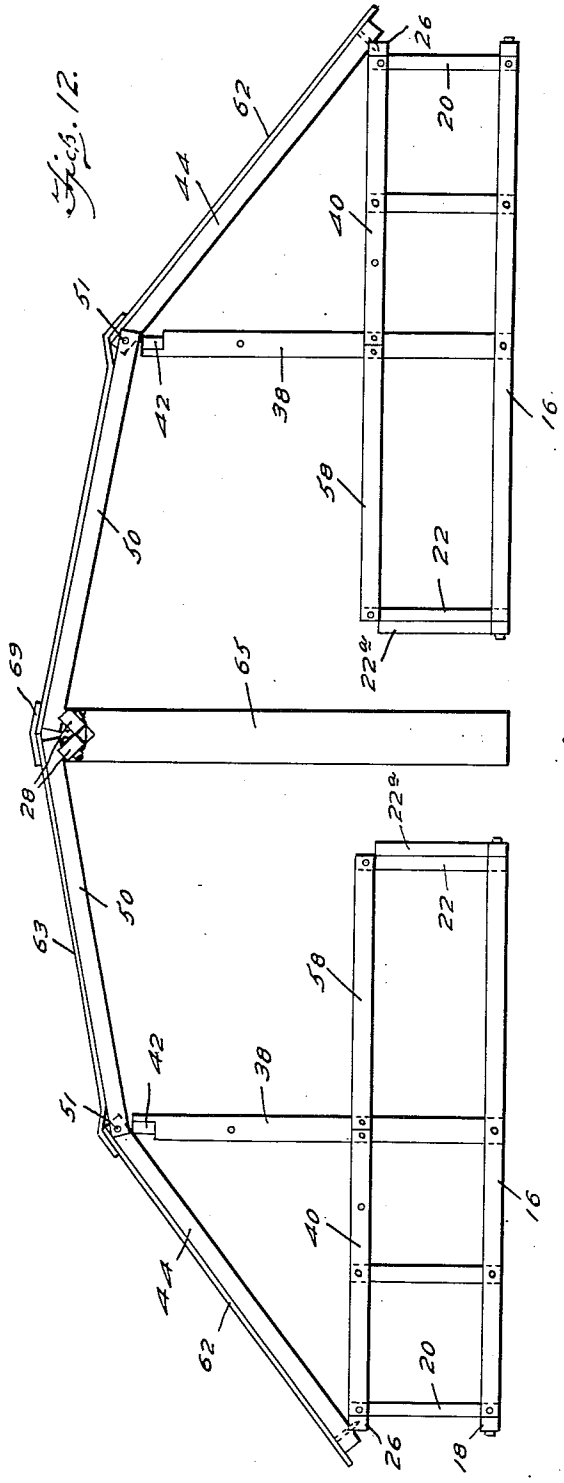
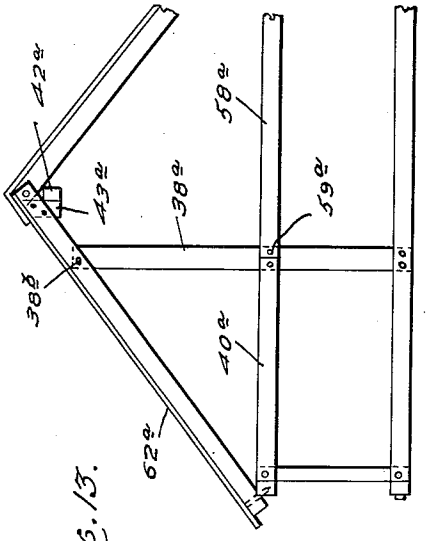


Fig. 13.



INVENTOR.
Gerald Singer
BY
Wilfred E. Lawson
ATTY.

United States Patent Office 2,762,084 Patented Sept. 11, 1956

2,762,084

CONVERTIBLE BUILDING STRUCTURE

Gerald Singer, Toms River, N. J.

Application January 14, 1953, Serial No. 331,134

5 Claims. (Cl. 20—2)

This invention relates generally to the class of buildings and is directed particularly to certain improvements in building framing structures.

A principal object of the present invention is to provide an improved building structure, or building framing, wherein such building may be used as an individual unit or a plurality of buildings may, by a simple conversion or rearrangement of a portion of each, be assembled or joined together to form a larger building or a building covering a larger area and having a larger roof area.

More specifically the invention has for an object to provide a novel type of building which can be made in small size and wherein a number of such individual buildings may be used, as, for example, in connection with poultry raising, to raise spring pullets, and after the need for the small individual building units has passed, such units may be brought together and united under a single large roof, comprising assembled portions of the roofs of the smaller buildings, to form a larger building both as to width and length, or as to width only as desired.

A further object of the invention is to provide a building unit of the character stated, adapted, when employed in multiple, to form a larger building, wherein such building unit is so designed that an ordinary layman can, at a small expenditure of time and without needing to use any special tools, convert or shift portions of the roofs of the smaller buildings and assemble them together so as to provide a larger building all under a single roof made up of the roofs of the smaller buildings.

Many other objects and advantages of the present invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

In the drawings:

Figure 1 is a view in front elevation of a single building unit or building framing structure constructed in accordance with the present invention, the structure being shown devoid of wall parts or siding.

Figure 2 is a horizontal section taken substantially on the line 2—2 of Figure 1 looking upwardly as indicated by the arrows.

Figure 3 is a view in elevation of the front of two assembled units of a four unit group such as is shown in Figure 4, the section line 3—3 on the latter figure designating the viewing plane.

Figure 4 is a view in horizontal section through a structure corresponding to that shown in Figure 3 and illustrating the assemblage of four of the individual units into a single building structure.

Figure 5 is a view in elevation of a portion of the rear of the unit shown in Figure 1, showing a center supporting post and a bracing method.

Figure 6 is a sectional view taken substantially on the line 6—6 of Figure 1.

Figure 7 is a detail view illustrating the manner of tying together two plates supporting the rafters for the movable halves of two roofs, the view being in section taken substantially on the line 7—7 of Figure 3.

Figure 8 is a detail section taken substantially on the line 8—8 of Figure 2, showing one manner of securing together the rafters and supporting plate on the fixed or stationary side of the roof.

Figure 9 is a detail section taken substantially on the line 9—9 of Figure 2, showing one manner of joining the movable rafter plate to supporting corner posts of the base of the frame structure on the movable side of the roof.

Figure 10 is a sectional view taken substantially on line 10—10 of Figure 1.

Figure 11 shows another method of coupling together center studs and movable roof plates.

Figure 12 is a view in elevation of either end of the four unit building shown in Figure 4.

Figure 13 is a view in elevation of the rear end of a modified form of a unit of a type designed for use in a larger building structure made up of more than four units.

Referring now more particularly to the drawings, particular reference being had to Figure 1, wherein a single building unit is shown, the numeral 10 generally designates the base portion of the building framing structure, which supports the gable roof and the roof structure is generally designated 12.

In the preferred form of the invention the base part 10 of the building comprises the front and rear or transverse foundation sills 14 and 16 and the side sills 18 which are joined to the front and rear sills as shown.

The foundation sills of the bottom or base portion of the building may be set directly upon the ground or may be placed upon suitable foundation of a desired character, such as cement, stone or the like. No foundation structure is here illustrated, as this forms no part of the present invention.

Rising from each corner of the rectangular sill portion is a short post and these posts on the left side of the building structure, as viewed in Figure 1, which side will be referred to as the fixed or permanent side, are designated 20, while at the opposite side of the structure, which will be referred to as the movable side, both as to the base portion and the hereinafter described roof, the corner posts are designated 22.

On the fixed side of the building structure the front and rear posts, with any suitable intermediate post or studding such as that indicated at 24 in Figure 2, and which is secured to the adjacent side sill 18, have disposed across their top ends and secured thereto, the fixed side or rafter plate 26.

Upon the opposite side or movable side of the building is a corresponding horizontal rafter plate 28 which is removably secured to the supporting posts 22 by the removable nuts and bolts 30 and 32 as illustrated in Figure 9 and the bottom ends of both corner posts are secured to the side sill 18 with removable nuts and bolts 30*a*, permitting either or both posts 22 to be removed entirely in a multiple unit structure.

Positioned against the outer side of each corner post 22 is a rafter plate supporting post 22*a*, which stands on the sill 18 and terminates at its top end at the level of the under face of the face plate 56. This post 22*a* supports the ends of the rafter plate 28, and is secured to the post 22 by bolts or other suitable securing means.

At the front of the building the sill 14 has secured thereto the lower end of the upright door stud 34 which

is positioned to one side of the longitudinal center of the building as shown, and secured horizontally above the sill **14** is the fixed front plate **36**, one end of which is secured to the stud **34**, while the other end is secured to the adjacent corner post **20**, as shown.

At the rear of the building there is fixed at its lower end to the back sill **16** at the transverse center of the latter, the upright ridge pole supporting studding **38** and also secured to this studding, above the sill **16**, is one end of a back plate **40**, the other end of which extends laterally and is secured to the adjacent fixed corner post **20** as shown in Figure 5.

The upper end of the stud **38** is cut out or recessed as indicated at **41** to receive an end of the roof ridge pole **42** and at its front end, this ridge pole is secured to an angle hanger plate **43** which in turn is fixed to the upper end of a rafter **44** which is fixed to and supported upon the top end of the door stud **34** and extends downwardly across the adjacent fixed plate **26** where it is secured by nailing as indicated at **48** in Figure 8, or in any other suitable manner.

In addition to the two front and rear rafters **44** any suitable number of intermediate rafters, also designated **44**, are arranged to extend in the conventional manner from the ridge pole **42** downwardly to the fixed sill **26** to which they are permanently secured as well as being permanently secured to the ridge pole.

At the movable side of the roof structure **12** a corresponding number of movable rafters **50** are located and each of these rafters at its upper end extends across but is free of connection with the ridge pole **42** but is pivotally coupled to the upper end of a fixed rafter **44** by means of a pivot bolt or pin **51** as illustrated particularly in Figure 6 so that such rafter **50** can be swung upwardly on the pin.

At their lower ends the rafters **50** are permanently secured by nailing as indicated at **52** in Figure 9, or in any other suitable manner, to the movable plate **28**. Thus it will be seen that when the plate **28** is detached from its supporting posts **22***a* it, with the rafters **50**, may be swung as a unit upwardly on the aligned pivot bolts **51**.

At the front of the building in spaced parallel relation with the door stud **34** is a removable door stud **53** which is upon the opposite side of the longitudinal center of the building as shown and is detachably coupled at its top and bottom ends respectively to the front rafter **50** and to the front sill **14** as indicated at **54** and **55**, use being made of nuts and bolts for this purpose.

In addition to the removable door stud **53** there is provided a removable front plate **56** which is secured by a bolt **57** to the stud at one end and at its other end it is removably secured by a bolt **57***a* to the adjacent corner post **22**.

At the rear of the building there is a plate **58** which corresponds to the plate **56** and is secured by a removable bolt **59** to the back stud **38** while its opposite end is secured by suitable means, not shown, to the back corner post **22**.

Within the area between the door studs **34** and **53** is mounted a suitable door **60**, the hinges **61** of which have removable pintle pins and are connected between the door and the stationary or fixed stud **34** as shown.

Any suitable type of roofing may be applied to the rafters **44** and **50**, such for example, as corrugated aluminum material, composition board or the like. On the fixed side of the roof the roofing is designated **62** and as shown the top edge of the material is brought only as far as the upper ends of the rafters **44**, while the bottom edge extends a substantial distance beyond the lower ends of these rafters to form suitable eaves. The roofing on the fixed and movable sides will also extend forwardly and rearwardly beyond the front and rear rafters **44** and **50**, so that in a multiple unit, the units situated one directly behind the other can have their side eaves overlap.

On the opposite or movable side of the roof the roofing material is designated **63** and here the upper portion of the material is extended a substantial distance across the hip and across the top edge of the roofing **62** on the fixed side, as indicated at **64** and is bent at an angle greater or sharper than the angle between the rafters of the two sides of the roof so as to provide the extension portion **64** which overlies the upper part of the roof part **62** and thus when the movable side of the roof is swung upwardly as shown in Figure 3, this extended portion **64** will lie closely against the top surface of the portion **62** of the roof structure and maintain a tight joint and also such tight joint will be maintained when the movable part of the roof is again swung down to the position in which it is shown in the single unit structure forming Figure 1.

No illustration is made of any wall structure for closing the front, back and sides of the building as it is contemplated that any one of a number of different kinds of walls might be employed according to the use to which the buildings are put. For example, while the invention is not intended to be confined to use in chicken farming, the building was designed primarily for such use, and when so used it is contemplated that the front, back and sides of the building would be closed by suitable wire netting which might be applied directly to the base structure and other parts or might be a part of frame work which would be removably secured to the building framing.

Where the buildings might be employed by campers mosquito netting would be substituted for the chicken wire and this also could be applied directly to the frame structure or could be set up on removable frames.

In addition to the foregoing suitable flooring may be employed if desired, or the structure may be set directly upon the open ground where it is to be used as a poultry structure.

In the use of the building structure in poultry farming, in the spring a number of the individual units set up as shown in Figure 1 would be used to raise pullets on range.

In late summer or fall when room must be made to house the late flock of replacement pullets, a number of the individual shelters can then be employed and assembled into one large and convenient working room where the old hens can be housed, such large room being used as a laying shelter.

In the late fall when the old hens go into a molt they can then be disposed of and the large room can be disassembled and the individual units then set up as separate or individual shelters ready for the spring housing of pullets on range.

In setting up a larger room or building two, four, six, or more units are employed. For this purpose use is made of units wherein the left hand half of the roof may be raised to cooperate with units designed to have the right hand half of the roof raised, like the structure shown in Figure 1.

Figures 3, 4 and 12 show the multiple unit structure and while these figures show units having right hand and left hand halves of the roofs raised, the same reference characters have been employed for the units, since the structural elements are exactly the same, but reversed.

The two selected units are brought into spaced side by side relation with the removable roof portions or halves adjacent to one another. The bolts **54**, **55**, **57**, and **57***a* are removed so as to detach the door stud **53** and the front plate **56**.

The rear plate **58** is likewise removed from its connection between the rear stud **38** and the rear corner post **22**.

Also the bolts **30** are removed so as to disconnect the rafter plate **28** from the supporting corner posts **22**.

The rafters **50**, the plate **28** and the roof section **63**, can then be swung upwardly to the desired angle as shown in Figure 3. This then brings the movable rafter plates **28** of the two adjacent roof sections into close parallel rela-

tion and for the purpose of supporting these movable plates and the free edges of the movable roof sections in the desired position or at the desired elevation there are provided the auxiliary front and rear studs **65** which are of substantial width and each of which has its top edge cut out to form a V-notch **66** against each side of which notch an end of the movable plate **28** is rested as shown in Figure 3.

The securing bolts **30** may be replaced in the movable plates **28** so that when the plates are supported on the auxiliary studs **65**, these bolts which will extend downwardly and inwardly, can be tied together by means of suitable wire as shown in Figure 7, at **68** to thus firmly secure the roof halves together.

The eave portion on the joined halves of the movable roof sections will form a center hip in the roof and this joint may then be covered by a cap strip **69** which can be secured down in a suitable manner as by the use of bolts or other securing elements.

With this arrangement as shown in Figure 3, there is thus produced a gambrel type of roof and it will be readily apparent that the height of the middle section or slope to the roof portions **63** can be determined by the height of the auxiliary studs **65**. Of course, the higher the center part of the roof, the narrower the building will be, because the two units making up the larger building structure will have to be placed closer together for a high center roof or if the center roof portion is given only a very slight pitch, then the building units can be placed farther apart and the larger building structure can be made of greater width.

In order to further secure the movable roof portions together to insure their maintaining their positions in windy weather, a suitable locking connection can be made between the ends of the movable plates **28** and the upper end of the stud **65** by the employment of hinge elements **70** as illustrated in Figure 11. In such use one leaf of the hinge element would be secured to the stud **65** and the other leaf would be secured to the end of the movable plate **28** so that when the structure is set up and the two hinge parts brought together, they can be coupled by the employment of the pintle pin, thus forming a firm but easily set up or removed connection between the parts.

For providing additional bracing for the enlarged building structure shown in Figure 3, use is made of the removed door studs **53** and the front and rear plates **56** and **58**, as follows:

The removable stud **53** is set up as a bracing means in the back of the enlarged building as shown in Figure 5. In this arrangement the stud has its top end secured to the inner side of the back stud **38** and extends downwardly and outwardly across the rear plate **40** and the rear sill **16** as illustrated, and is secured to the stud **38** and to these latter parts by the bolts **54**, **55**, and **57** which previously secured it in its front position.

The removed plate **56** is set diagonally between the outer end of the front plate **36** adjacent to corner post **20** and the inner end of the underlying sill **14**, adjacent to door stud **34** as shown in Figure 3. The plate **36** and sill **14** are, of course, provided with suitable bolt apertures for receiving the bolts by which the plate portion **56** is secured and whereby it functions as a brace in the manner shown.

Figure 4 illustrates clearly the manner in which four of the units thus far described, would have their parts positioned when assembled to form a larger building structure. It will be seen that the door ends of the units will be in the middle of the building with the fixed studs **34** at one side of the vertical planes of the ridge poles **42** thus giving a large clear area in the middle part of the building.

Where six or more units are to be assembled, use may be made of a unit structure modified at the rear in the manner illustrated in Figure 13. In this modified structure the rear end of the ridge pole **42***a* is secured to the adjacent rear end rafter **44***a* of the fixed or stationary roof half **62***a*, by means of a hanger bracket **43***a*, as shown, and the rear center studding **38***a*, instead of supporting the rear end of the ridge pole, as in the first described form, is set over to one side and secured at its top end, as at **38***b*, to the rafter **44***a*.

The back plates **40***a* and **58***a*, in this latter structure are of different lengths as shown, the longer plate **58***a* being detachably bolted, as at **59***a*, and also at its outer end, not shown. Back plate **58** in Figures 4, 5, and 12 is also detachably bolted to center stud **38** and rear removable corner post **22**, permitting six or more units of this type of building structure to be employed in the formation of one large building should the need arise.

From the foregoing it will be seen that when six or more units are employed, where they are of the rear end modified form shown in Figure 13, the rear studs **38***a* will be set over to one side like the studs **34** and the central part of the building will be less obstructed than would be the case if the rear studs were on the center line of the unit.

From the foregoing it will be seen that there is provided by the present invention a novel type of building roof and framing unit wherein a number may be used separately or may be brought together to form a single large building.

I claim:

1. A building framing and roof structure, comprising sills arranged to form a base having a front, back and sides, upright members secured to the sills at the front and rear sides of the base, a horizontal rafter plate positioned above one side sill and secured to adjacent upright members, a gable roof overlying the base and comprising two sloping side portions, one of said portions resting at its lower end on and secured to said rafter plate, a ridge pole beneath the upper ends of the roof portions and secured to the said one roof portion only, upright studs supporting said ridge pole, pivot means coupling the upper ends of said roof portions by which the other one of said portions may be swung vertically, and a rafter plate secured to the lower end of said other one of the roof portions and engaging and supported by others of said upright members at the adjacent side of the base.

2. A building framing and roofing structure comprising in combination two building units, each unit comprising a base and a gable roof, each gable roof having two sloping portions, means supporting one roof portion of each unit, a pivot coupling between the portions of each roof at the ridge by which the other portion of each roof is vertically movable, said units being positioned in side by side relation with the movable portions of the roofs together, said movable portions of the adjacent roofs being elevated to an upward inclined position with their free eaves edges opposed, and upright studs positioned beneath said opposed eaves edges and supporting the latter.

3. A building framing and roofing structure comprising in combination two building units, each unit comprising a base and a gable roof, each gable roof having two sloping portions, means supporting one roof portion of each unit, a pivot coupling between the portions of each roof at the ridge by which the other portion of each roof is vertically movable, said units being positioned in side by side relation with the movable portions of the roofs together, said movable portions of the adjacent roofs being elevated to an upward inclined position with their free eaves edges opposed, and upright studs positioned beneath said opposed eaves edges and supporting the latter, said upright studs each having V-notches cut out on the top edges against each side of which the opposed eaves edges are supported.

4. A building framing and roofing structure comprising in combination two building units, each unit comprising a base and a gable roof, each gable roof having two sloping portions, means supporting one roof portion of each unit, a pivot coupling between the portions of each

roof at the ridge by which the other portion of each roof is vertically movable, said units being positioned in side by side relation with the movable portions of the roofs together, said movable portions of the adjacent roofs being elevated to an upward inclined position with their free eaves edges opposed, and upright studs positioned beneath said opposed eaves and supporting the latter, said upright studs each having V-notches cut out on the top edges against each side of which the opposed eaves edges are supported, and securing bolts for the movable portions and the upright studs, said securing bolts extending downwardly and inwardly and means securing said bolts to each other to firmly secure the roof halves together.

5. A building framing and roof structure, comprising sills arranged to form a base having a front, back and sides, upright members secured to the sills at the front and rear sides of the base, a horizontal rafter plate positioned above one side sill and secured to adjacent upright members, a gable roof overlying the base and comprising two sloping side portions, one of said portions resting

at its lower end on and secured to said rafter plate, a ridge pole beneath the upper ends of the roof portions and secured to the said one roof portion, upright studs supporting said ridge pole, pivot means coupling means coupling the upper ends of said roof portions by which the other one of said portions may be swung vertically, and a rafter plate secured to the lower end of said other one of the roof portions and engaging and supported by others of said upright members at the adjacent side of the base, a face plate secured above one side sill, said support means for the rafter plate comprising a supporting post extending from said sill to beneath said face plate and means removably securing said supporting post to an upright member.

References Cited in the file of this patent

UNITED STATES PATENTS

341,262	McIntyre	May 4, 1886
1,653,976	Anderson	Dec. 27, 1927
1,979,039	Johnson	Oct. 30, 1934