Feb. 10, 1925.

A. A. GILMORE

GOTHIC ROOF FOR BARNs

Filed July 10, 1923

2 Sheets-Sheet 1

INVENTOR

WITNESSES

Alfred A. Gilmore

ATTORNEY
To all whom it may concern:

Be it known that I, ALFRED A. GILMORE, a citizen of Canada, residing at Preston, in the Province of Ontario and Dominion of Canada, have invented a new and useful Gothic Roof for Barns, of which the following is a specification.

This invention relates to the construction of a roof which is particularly adapted for barns, and which is a modification of the type generally termed "Gothic."

The general object of the invention is to provide a construction for the roof which will be artistic in appearance, which will provide a maximum storage space for the ground area which the barn covers, and which will be of maximum strength for the amount of material used.

It is a special object of the invention to provide a construction by which roofs of any size may be built up from units carried in stock, so that the greater part of the cutting may be done at the mill, thus saving expense in transportation, as well as in the framing, and making it possible to complete the building with a minimum amount of labor.

It is also an object of the invention to provide improved means for securing and bracing the roof so as to leave the interior of the barn practically free of obstructions, without in any way weakening the structure.

The detailed construction of which the invention is carried out will be best understood from a consideration of the following description taken in connection with the accompanying drawings, which illustrate the invention in its preferred form.

In the drawings:

Figure 1 is an end view, half in section and half in elevation, of a barn constructed in accordance with the invention.

Figure 2 is a side elevation of the barn, showing portions of the same completed and other portions with merely the framing.

Figure 3 is a side elevation of a pair of rafters, illustrating the method of cutting the same for barns of different widths.

Figure 4 is a view looking from the right hand side of Figure 3.

Figure 5 is a perspective view of one of the rafters.

Figure 6 is a perspective of one of the units from which the rafters are built up.

The frame of the barn includes side studs 10 and end studs 11, suitably spaced and supported by sills 12 and 13, respectively, which rest on suitable foundations 14. At a suitable distance above the ground the studs 10, on opposite sides of the barn, are connected by tie-beams or joists 15, the intermediate portions of which rest on longitudinal girders 16, which are supported by posts 17. The side and end studs are connected by a series of girders 18 and 19, respectively, which support the siding.

The rafters 20, which are arched, extend from the ends of the joists 15 upwardly and inwardly and meet to form a ridge 21, the upper ends of each pair of rafters being connected by a short tie-bar 22. Each rafter is made up of a series of units 23 of uniform size and shape, and are uniformly bored at 24 to receive bolts 24 for splicing the units together in overlapping relation, with the joints between the units staggered as shown in Figure 5. In this manner a rafter of any desired length may be built up from these units. The rafters are thus made of sufficient length to form an arch, as shown in Figures 1 and 3. Each arch is formed of two rafters with their bases coinciding with the side walls of the barn, and with their upper ends meeting at the apex 21 and joined by the tie bar 22. In Figure 3, the line B represents the total height of the roof, and the line W represents the total width.

If it is desired to make the barn two feet narrower than shown, the upper ends of the rafters are cut off, as indicated at c by vertical cuts, one foot in horizontal distance from the apex 21, thus making the height of the roof as indicated by the line B'. If a still narrower barn is desired, the upper ends of the rafters may be cut, as indicated at c" and c', making the height of the roof as indicated at the lines B" and B', respectively.

In order to brace the roof and secure the same rigidly to the main part of the frame, the studs 10 are extended some distance above the joists 15, and the upper ends connected to the lower portions of the rafters by side ties 30 and 31. The upper ends of certain of the studs 10 and the rafters 20 are also braced from the tie-beams 15 by braces 26, which are secured to each by bolts. It will be noted, however, that the side ties 30 and 31 rigidly connect the studs to the rafters, and consequently make it possible to omit the greater portion of the braces 26,
thus leaving the interior of the barn unobstructed except at intervals, which may run from six to twelve feet on centers. Short lookout rafters 27 rest on the wall plates 25 and are inclined upwardly and inwardly, and secured at their upper ends to the rafters 20. Any suitable roofing, as indicated at 28, may be laid over the rafters 20 and 27 extending down over the cornice 29, so as to form an artistic and serviceable roof.

It is to be understood that the rafters 20 are all made up of standard pieces of material 23 cut to exactly the same radius, and all exactly the same length, built together to form arches. By cutting the upper ends of these rafters, as indicated, a roof of any desired width may be obtained having a proper slope to give it an artistic appearance, and suitably braced and finished as described to constitute a strong and durable construction.

Various Gothic roof structures have been heretofore proposed, some consisting of laminated pieces of boards, spliced together, but these have but little stability, and warp out of shape. Moreover it has been difficult for the carpenters to build up the same of the proper shape and size for the particular building being constructed, but with the standard units, built up and cut in the manner herein proposed all such labor and loss of time is eliminated.

While I have shown and described the specific features of the invention and the principles embodied therein, it will be understood that various modifications may be made in the size and proportion of the parts and their relation to each other, such as is required by the particular construction in which it is to be used, without departing from the spirit of the invention.

What is claimed is:

1. In a barn, the combination of opposed series of side studs transversely connected by joists, arcuate rafters extending upwardly and inwardly from the ends of the joists and meeting at the apex of the roof, said studs being extended upwardly above the ends of the joists and their upper ends connected to each other by wall plates, ties connecting the upper portions of the studs to the rafters, and lookout rafters resting on the wall plates and connected to the intermediate portions of the arcuate rafters.

2. In a barn, the combination of opposed series of side studs, a roof made of two oppositely sloping sides, each having arcuate rafters made up of sections of standard uniform size spliced together in overlapping relation, said rafters being supported with their lower ends intermediate the ends of the respective studs, means for holding the studs and rafters against spreading, and comparatively short lookout rafters above the ends of the studs and joined to the intermediate portions of the arcuate rafters.

3. In a barn, the combination of a series of side studs, joists connecting the studs at a point between the top and bottom thereof, arcuate rafters extending upwardly and inwardly from the studs where the joists are connected thereto, said rafters meeting at the apex of the roof, and inclined braces extending from the upper ends of the studs to the joists and secured to and crossing the rafters at an intermediate point of their length.

4. In a barn, the combination of a series of studs arranged at each side of the barn, joists connecting the studs intermediate their ends, arcuate rafters extending upwardly and inwardly from the studs where the joists are connected thereto, said rafters meeting at the apex of the roof, side ties connecting the upper portions of the studs to the rafters, and inclined braces intermediate bolted to certain of the rafters and having their ends bolted to adjacent studs and joists respectively.

5. In a barn the combination of a series of studs arranged at each side of the barn, joists connecting the studs intermediate their ends, arcuate rafters extending upwardly and inwardly from the studs where the joists are connected thereto, said rafters meeting at the apex of the roof, inclined braces connecting the upper ends of the studs to the joists and secured to and crossing the rafters at an intermediate point, wall plates connecting the upper ends of the rafters and lookout rafters resting on the wall plates and connected to intermediate portions of the arcuate rafters.

6. In a barn, the combination of opposed series of side studs arranged at each side of the barn and transversely connected by joists, arcuate rafters extending upwardly and inwardly from the ends of the joists and meeting at the apex of the roof, said studs being extended upwardly above the ends of the joists and their upper ends connected to each other by wall plates, ties connecting the rafters to the studs above the joists, inclined braces extending from the upper ends of the studs to the joists and secured to and crossing the arcuate rafters at an intermediate point, and lookout rafters resting on the wall plates and connected to intermediate portions of the arcuate rafters.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ALFRED A. GILMORE.