May 12, 1936. C. TAHVONEN ET AL 2,040,110

BUILDING AND LOG CONSTRUCTION

Filed Sept. 15, 1933 2 Sheets-Sheet 1

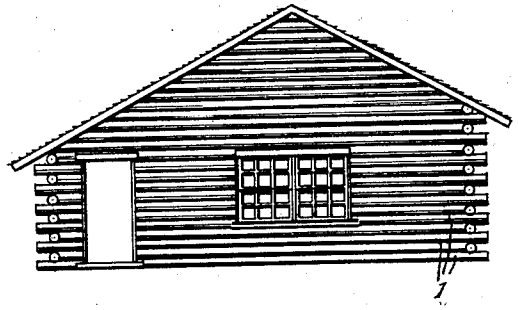


Fig. 1.

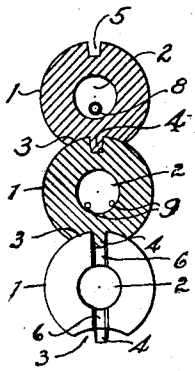


Fig. 2.

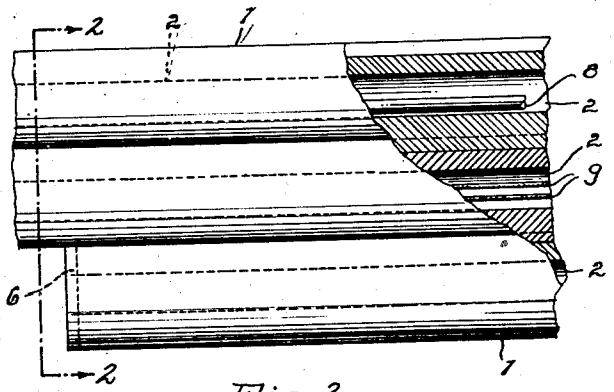


Fig. 3.

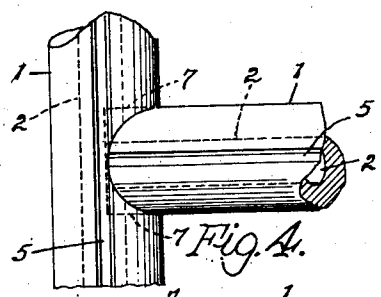


Fig. 4.

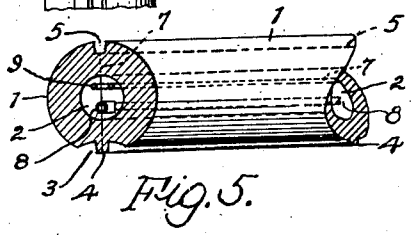


Fig. 5.

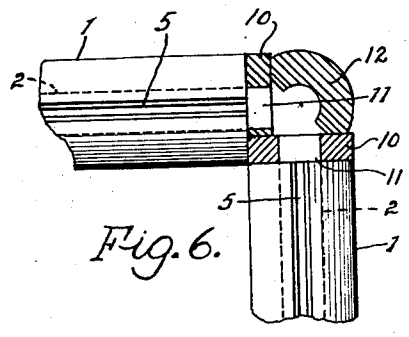


Fig. 6.

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May 12, 1936. C. TAHVONEN ET AL 2,040,110

BUILDING AND LOG CONSTRUCTION

Filed Sept. 15, 1933 2 Sheets-Sheet 2

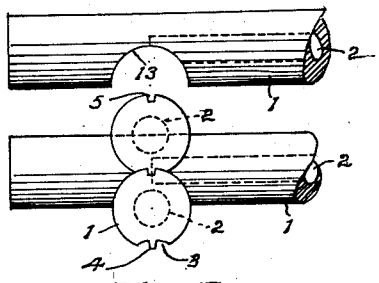


Fig. 7.

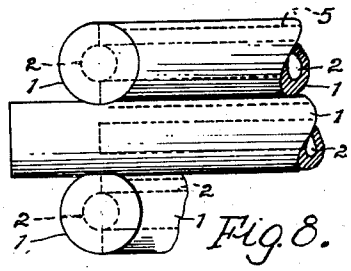


Fig. 8.

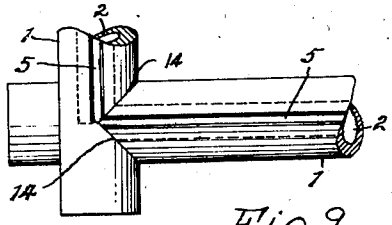


Fig. 9.

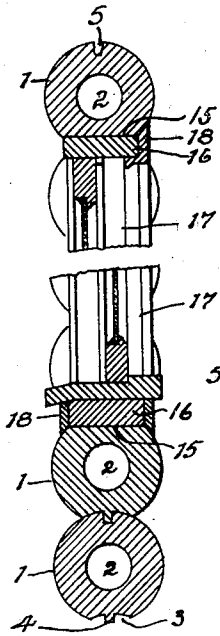


Fig. 10.

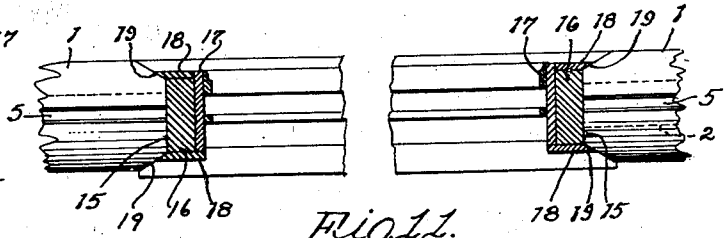


Fig. 11.

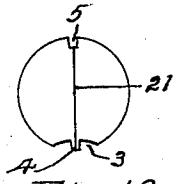


Fig. 13.

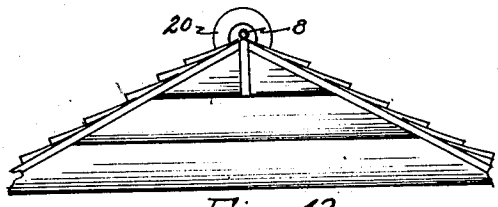


Fig. 12.

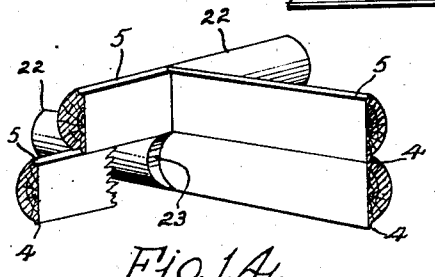


Fig. 14.

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UNITED STATES PATENT OFFICE

2,040,110

BUILDING AND LOG CONSTRUCTION

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Application September 15, 1933, Serial No. 689,544

14 Claims. (Cl. 20—1)

This invention relates to a log cabin construction or to a log construction for building purposes; an object of the invention is to so form the logs as to prevent cracking or splitting and to assist in the drying out or seasoning of the logs, and further to provide air spaces in the building wall formed by such logs for the purpose of insulation and which air spaces are adapted to be utilized to conceal wiring, water pipes and the like.

A further object is to so form the logs that they may be laid, one upon another, in a wall and will accurately fit together to form tight joints therebetween, requiring no chinking or filling, and so that all the logs will lie in the wall in a level position and may be formed with interlocking means.

It is also an object to provide a log for the purpose which is of uniform diameter throughout its length so that it may be accurately formed with interlocking means or with sides adapted to accurately fit the sides of adjacent logs, and to provide a log having a smooth exterior displaying the grain of the wood to give an attractive appearance.

A further object is to provide a construction wherein the logs are so formed as to interlock at the corners of the building and to have alternately projecting round ends at these corners, simulating the old log cabin appearance; and further, to provide certain new and useful features in the assembly of the logs and the securing of the same around the door and window framing and within the interior walls, roof and other parts of the structure.

The above and other objects of the present construction, arrangement and combination of parts within a building structure, will more fully appear by reference to the accompanying description and drawings, wherein

Figure 1 is an elevation of a cabin or building illustrative of an embodiment of the several features of the present invention;

Fig. 2 is a cross sectional detail substantially upon the line 2—2 of Fig. 3, showing a plurality of logs as assembled in a wall;

Fig. 3 is a side elevation of Fig. 2;

Fig. 4 is a detail showing the manner of securing the end of one log to the side of another log extending transversely thereof;

Fig. 5 is a sectional elevation of Fig. 4;

Fig. 6 is a plan view of logs meeting at a corner of the building and showing one form of corner finish in section;

Fig. 7 is an elevational detail showing another form of corner construction;

Fig. 8 is a detail of a corner construction wherein alternate logs have round projecting ends;

Fig. 9 is a plan view of Fig. 8;

Fig. 10 is a transverse vertical sectional detail of a wall formed of these particular logs and cutting vertically through a window and frame in said wall;

Fig.11 is a horizontal section of Fig. 10;

Fig. 12 is an end elevation of the gable end of a building showing a log ridge pole;

Fig. 13 is a detail showing the end of a formed log and illustrating the manner in which the same is split longitudinally to form two half logs; and

Fig. 14 is a perspective detail of a corner formed by half logs, alternate ones of which are formed with round projecting ends.

Log cabins or buildings as commonly constructed are formed of natural logs laid in the wall of the building, one upon another, but due to the irregularity of the surface and diameter of these logs, they do not fit closely one upon another and chinking or other filling must be employed to fill these spaces between the logs.

It is proposed to form the adjacent sides of the logs with interfitting or interlocking means so that when the wall is laid up the cracks between the logs will be closed by such interfitting and the air and moisture excluded from the joints; but where natural logs are used, it becomes impossible to so form the engaging sides of the logs that they will accurately interlock due to the fact of the irregularity of these sides and due to the taper of the natural logs. When laid in the wall all of the logs must, in order to form a symmetrical and tight wall, be laid so that all of the logs shall extend in a perfectly horizontal position and this cannot be easily effected where the logs have their natural taper.

To overcome the above pointed out defects and to produce a pleasing wall surface appearance, it is proposed to turn all of the logs, removing the exterior surface and bark therefrom and making each log of uniform diameter, throughout its length, such turning exposing the grain of the wood and at the same time providing logs which may be accurately formed with interfitting or interlocking adjacent sides to close the cracks in the wall between the logs, these interfitting portions of the logs being so formed that rain or other moisture cannot enter these joints and cause the logs to rot.

Logs in their natural state, when laid in a wall are not properly seasoned and are subject to cracking and splitting, and to overcome this defect, it is proposed to bore each log axially throughout at least the main portion of its length. This provides an air space or channel within each log to assist in the seasoning or drying out of the log and this will be accomplished without cracking or splitting. Further by providing the logs with these longitudinal bores, the house wiring and/or water pipes may be concealed within these bores. Further by forming the logs with these longitudinal bores, the shaping of the logs for various purposes in the building construction is greatly facilitated.

In the old log house construction, the corners of the building were usually formed by overlapping the ends of the logs, alternate logs having projecting ends, and to simulate this old construction in a building formed of turned logs, the end portions of the logs may be readily formed to interlock with alternate logs engaged at their ends within properly formed recesses in the logs extending at right angles thereto with their ends projecting beyond the outer surface of the wall to give the effect of the old log cabin corner construction.

Further such bored logs may be readily halved or split longitudinally to form, if so desired, a wall having a flat inner surface, and at the same time certain of such half logs may be left with round ends to project at the corners of the building; and such turned logs may be readily split longitudinally for interfitting to form a flat interior wall surface and a half-round exterior presenting a pleasing finish and displaying the grain of the wood.

In Figs. 2 and 3 a portion of a wall as shown is formed of turned logs 1 of uniform diameter throughout their lengths and with each log bored axially as at 2, and preferably the lower side of each log is formed with a concave groove 3 of a cross sectional curvature to fit the curvature of the upper side of an adjacent log. Such groove may be accurately formed to fit the side of the adjacent log throughout the lengths of these logs, due to the forming of the logs with uniform diameters throughout their lengths by the turning of the logs. This turning operation removes the exterior surface of each log together with its bark and gives a smooth uniform surface with the grain of the wood exposed so that by the use of a suitable stain, this grain may be brought out and the surface of the wall will have a very pleasing appearance.

Further as shown in Figs. 2 and 3 each log is formed with a longitudinal rim 4 at a longitudinal center of its groove 3, and in the upper side of each log is formed a groove 5 to receve the rib 4 on the log next above. Due to the transverse curvature of the groove 3 which receives the upper curved side of the log below, all rain and moisture is prevented from getting into the joints between the logs as the water in order to get into the groove 5, would have to run up-hill. Further a very tight joint is formed between adjacent logs not only by the interfitting of one log within the groove 3 of the adjacent log, but also by the rib 4 fitting within the groove 5, these ribs accurately centering one log upon the other and holding them firmly in place. The laying up of the wall is facilitated by reason of this construction as the adjacent sides of the logs will accurately interfit because all of the logs are of uniform diameter throughout their lengths, and each log will extend in the wall in a perfectly horizontal position, one upon the other, due to the accurate shaping of the logs.

As shown in Figs. 2 and 3, where it is desired to abut the ends of logs within the wall, these ends may be formed with transverse grooves 6 which aline vertically with the ends of the ribs 4 and by placing a suitable spline, not shown, within this groove 6 to fit within the like groove in the adjacent log end, the logs are secured together in perfect axial alinement. If found desirable the groove 6 may be formed in one only of the abutting ends and a tongue formed upon the other abutting end to engage such groove.

Where the walls of a building are formed of these bored and turned logs, and where the ends of the logs of one wall are to abut the logs of the wall extending transversely thereof, it is preferable to so form the logs of one wall that they will interlock with the logs of the other wall and to do this the logs of the transverse wall are bored inwardly as at 7 at one side and the bore is of a diameter equal to the diameter of the logs of the abutting wall so that the ends of these abutting logs may enter these bores and be firmly anchored to the transverse wall. Further when the logs meet in this manner, the bores of the logs of one wall open into the bores of the logs of the other wall so that when water pipes 8 or electric conduits 9 are placed in these bores these pipes or conduits may be readily extended through the bores in both walls. The abutting wall may be an inside partition wall or an outside wall of the portion of the building and the logs of both walls will preferably be formed with the longitudinal concave grooves in their lower sides together with the interlock formed by the tongues within these grooves projecting into the grooves in the upper sides of the adjacent logs.

As shown in Fig. 6 a corner finish may be formed by forming the adjacent ends of the logs with flat ends and securing to these ends flat wooden strips 10 which strips are preferably formed with openings 11 to register with the ends of the bores in these ends of the logs. To provide a rounded corner finish, a turned log which is bored axially is split longitudinally along its axis and the half-log 12 thus formed is bevelled slightly at its edges to abut the strips 10 and then is secured within the angle between these strips, closing this angle and providing a vertical air space within the corner into which space the bores of the logs forming the walls, open to give free circulation of air and to also provide for the running of water pipes or electrical conduits within this corner space and through the bores of the logs.

As shown in Fig. 7 the corners of the building may be formed by interlocking the end portions of the logs which overlap the end portions extending transversely thereto and this interlocking is accomplished by boring each log transversely at its lower side to form a half round seat 13 of a diameter to closely fit over the log directly below and extending transversely thereto. Preferably in this construction the bores 2 of the logs will stop at the center of the seat or notch 13 in each log so that the projecting end portions of the logs will be solid and it will not be necessary to plug up the end of the bore as it otherwise would if the bore runs completely through the projecting

ends. In this construction the logs may be formed with the tongue and groove interlocked as previously described.

In Figs. 8 and 9 another form of corner construction is shown wherein the ends of the logs of the two walls have alternate projecting ends, the log of one wall abutting the transverse end portion of the corresponding log in the other wall and the log next below the abutting log, being extended beyond the outside of the wall and the corresponding log in that wall being formed to abut this extended end portion of the corresponding log in the other wall. The projecting ends of the logs of both walls thus alternating to simulate the appearance of the old log cabin. Instead of forming a round bore in the transverse log to receive the end of the log of the other wall as shown in Figs. 4 and 5, in this construction a V-shaped cut 14 is formed in one side of the transverse log to receive the end of the abutting log which end is formed V-shaped to fit this notch 14.

Where a log wall is provided with a window or door opening, the sides of the logs around the opening are preferably formed flat as shown at 15 in Figs. 10 and 11 so that flat strips 16 may be secured within the opening against these flat sides and then the window or door frame 17 set in place upon these strips 16. To form a better finish around the frame in the opening, thin strips 18 are secured to the end faces of the strips 16 and the ends of the logs which abut these strips 16, are preferably beveled as at 19 and the edges of the strips 18 are correspondingly bevelled to fit thereagainst. A very rigid mounting of the door and window frames within the walls is thus provided and a tight weather proof joint between the frame and opening in the wall is secured.

As shown in Fig. 12, a very desirable finish for the peak of the roof may be provided by taking one of the bored logs and splitting it along radial planes having an inclination corresponding to the inclination of the sides of the roof of the building, and then securing this formed hollow log over the peak of the roof as shown at 20 to form a rounded finish for the peak. With this arrangement the water pipe, which is preferably perforated with small openings along its length, is laid within the bore of this log 20 and this water pipe will be connected up with the rest of the water system so that should a fire occur water may be let into this pipe and it will escape into the hollow of the log 20 and then run down on the roof of the building.

Where it is desired that the walls of the building shall have a substantially flat interior side, these walls may be formed of half-logs as shown in Figs. 13 and 14, these logs being formed as indicated in Fig. 13 by taking a turned and formed log and splitting it axially as shown at 21 so that two half-logs will be formed from one formed log. In forming the corners of the structure having these walls formed of half-logs, these corners are preferably formed by alternately projecting round ends 22 upon the ends of the half-logs, the transverse log having integral round projecting end, being formed with the semi-circular notch or recess 23 in this round end portion at the end of the integral flat face of the log portion, this semi-circular notch 23 providing a seat for the end of the abutting half-log and preferably all of the logs will be formed with a tongue and groove construction previously described, the formed log being split through the tongue and groove, leaving a notch along one side of the half-log to be engaged by the tongue at the edge of the half-log, and thus the logs forming the walls are firmly interlocked, tight joints are provided between the logs and alternating projecting round ends are provided at the corners of the building to give the appearance of the old fashioned log construction.

Obviously other changes may be made in the construction and arrangement to vary the appearance of the structure, and such changes are contemplated.

Having thus described our invention what we claim is:

1. A wall member for buildings comprising a wooden log formed with an axial bore extending longitudinally thereof throughout a major portion of its length, the bore leading from one end of the log and terminating short of the opposite end to provide a solid end zone to the log.

2. Logs of natural wood for forming the walls of a building, each having upper and lower parallel surfaces with the bark removed to expose the grain of the wood and formed with a longitudinal axial bore extending throughout a major portion of its length only.

3. A wall formed of natural wood logs, each turned exteriorly to a uniform diameter throughout its length to expose the natural grain of the wood, said logs being laid, one upon another in said wall in a level horizontal position with the sides of adjacent logs in contact and formed to interfit, and each log being formed with a longitudinal bore to prevent checking and cracking of the wood and to provide air spaces in said wall.

4. In a building, walls formed of natural wood logs turned exteriorly to provide parallel sides throughout their lengths having longitudinal axial bores of large diameter forming air spaces in said walls, said walls meeting to form a corner of the building with the ends of the bores of the logs in one wall open into the ends of the bores of the logs of the other wall at said corner of the building, whereby continuous air passages are provided in said walls and through said corner.

5. In a building, walls formed of natural wood logs of uniform diameter laid one upon another with one wall extending at an angle to the other wall, the logs of both walls being formed, each with a longitudinal axial bore of large diameter to prevent cracking or checking and form an air space therein and the logs of one wall being formed with lateral openings cutting into said bores thereof to receive the ends of the logs of the other wall with the bores thereof open into the bores of the logs of the other wall.

6. In a building, walls formed of round logs and meeting at an angle to form a corner of the building, the ends of said logs at said corner being flat, vertical flat strips secured flat against said ends, and a vertical, half-round log secured within the angle between said strips with its rounded side outward to form a rounded corner finish.

7. In a building, walls as characterized in claim 6, with the logs of each wall bored axially and with said strips formed with transverse openings at the ends of said bores in said logs, whereby the bores of the logs of one wall are in communication through the angular space between said strips inwardly of said half-round log, with the bores of the logs of the other wall.

8. In a building, walls each formed of a plurality of logs of uniform diameter and smooth exterior laid one upon another and meeting at a corner of the building, alternate logs of each

wall having projecting end portions and the intermediate logs having formed ends to abut alternate logs of the other wall, all of said logs being formed with longitudinal bores, with said logs having projecting end portions, formed with bores extending to said end portions only.

9. In a building, logs forming a wall of said building and formed of a plurality of turned logs of uniform diameter throughout their lengths, laid one upon another with interfitting formed sides to close the cracks between said logs, said wall being formed with an opening with said logs ending at the sides of said opening in flat end surfaces with beveled side portions ending at said end surfaces, flat strips of a width equal to the width of said flat end surfaces and secured thereto, a frame secured in said opening between said strips, and thin strips secured to said strips and having beveled edges to meet the beveled side portions of said logs.

10. A building having walls formed of logs bored longitudinally, and having a roof structure; of a ridge pole formed of a log having a longitudinal bore and split longitudinally to form radial surfaces extending at angles corresponding to the pitch of the roof and secured over the peak of said roof, water pipes in said bores of some of the logs of said walls, and a perforated pipe within said ridge pole and connected to some of said water pipes in said walls.

11. A wall member for building purposes formed of natural wood turned exteriorly to remove the outer surface thereof to expose the natural grain of the log and produce a log of uniform diameter-dimension throughout its length, said log being bored axially to aid in seasoning during service, said log having tongue and groove formations extending longitudinally of the log and positioned respectively at opposite ends of a diameter of the log, said formations lying within the normal cross-sectional contour of the turned log, said tongue being provided by a removal of log material within a zone equal to the depth of the tongue and with the bottom of the removed zone presenting a replica of the surface of a zone which includes the groove, whereby said member will co-operate with similar adjacent members to provide a section of a vertical wall of a building by engagement of the tongue of one member with the groove of the member below it to provide a surface engagement of the natural wood within the zone of contact provided by the replica surfaces of the tongue and groove zones to maintain the positions of the members and afford protection against weather conditions.

12. A member as in claim 11 characterized in that the axial bore extends throughout a major length of the log from one end to retain the opposite end zone of the log solid.

13. A wall member for building purposes formed of natural wood turned exteriorly to remove the outer surface thereof to expose the natural grain of the log, said log having tongue and groove formations extending longitudinally of the log and positioned respectively at opposite ends of a diameter of the log, said tongue being provided by a removal of log material within a zone equal to the depth of the tongue and with the bottom of the removed zone presenting a replica of the surface of a zone which includes said groove, said member being bi-sected on a line corresponding to a diameter of the log with such diameter extending symmetrical relative to said tongue and groove widths and with said bi-section extending throughout a major portion only of the length of the log to provide a solid cylindrical end zone for projection at the corner or corners of a wall structure formed of such members.

14. A wall structure formed of members as characterized in claim 13 and wherein some of said members of the wall are formed with a semi-circular notch in said solid end portion at the end of the bi-sected portion with said curved side of said notch cutting into the solid cylindrical end portion to receive the end of the bi-sected portion of a member of the wall extending in angular relation thereto and forms a seat for the rounding outer side of said bi-sected end.

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