July 8, 1969 A. C. SANFORD 3,454,292

INTERFITTING MULTIPIECE CONNECTORS

Filed June 2, 1967 Sheet 1 of 4

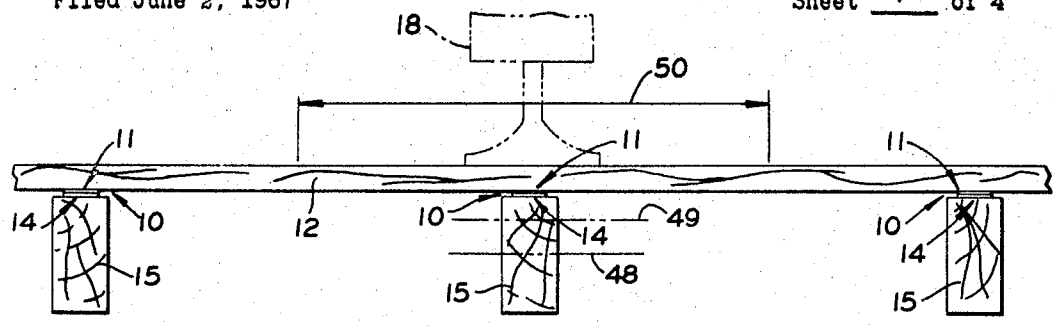

FIG. 1

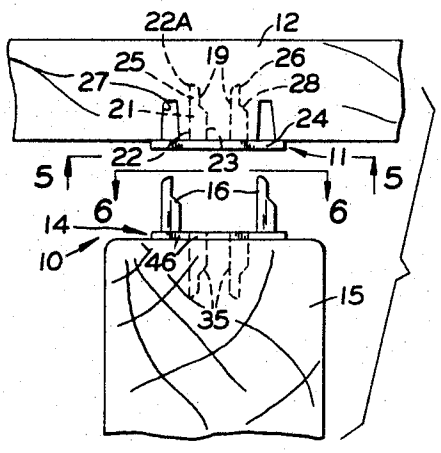

FIG. 2

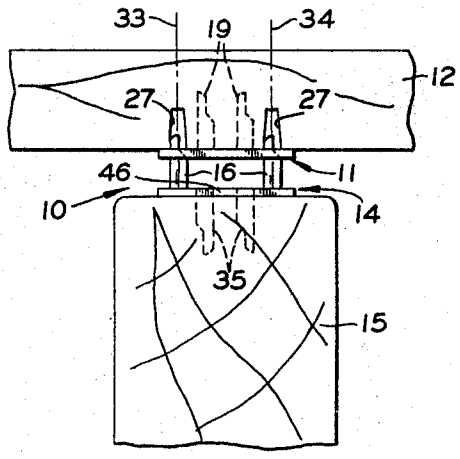

FIG. 3

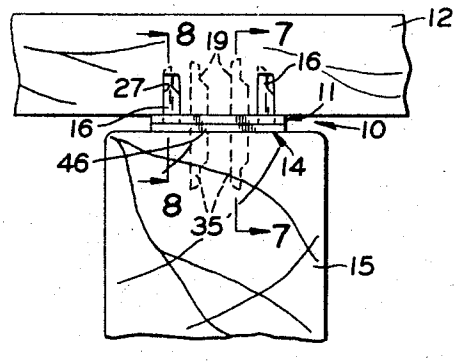

FIG. 4

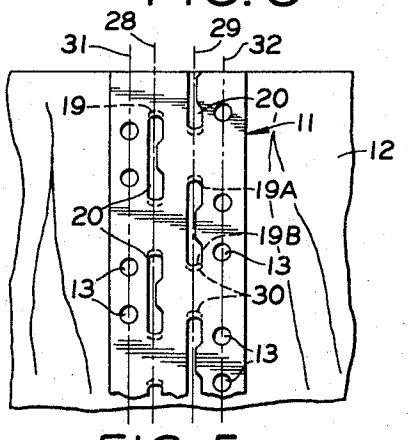

FIG. 5

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July 8, 1969 A. C. SANFORD 3,454,292

INTERFITTING MULTIPIECE CONNECTORS

Filed June 2, 1967 Sheet 2 of 4

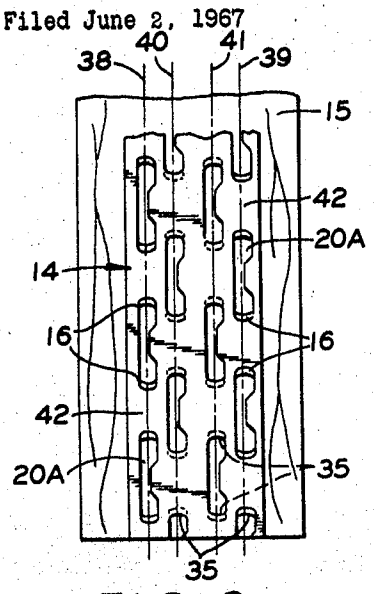

FIG. 6

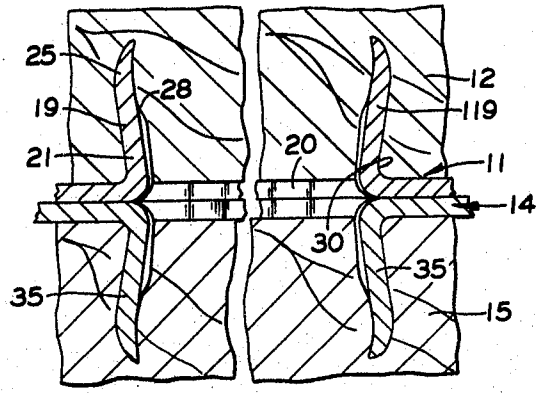

FIG. 7

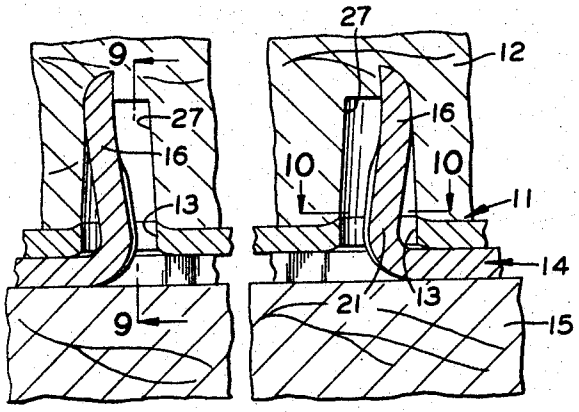

FIG. 8

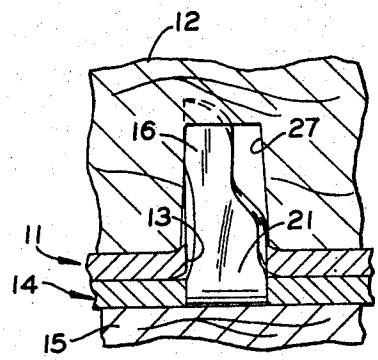

FIG. 9

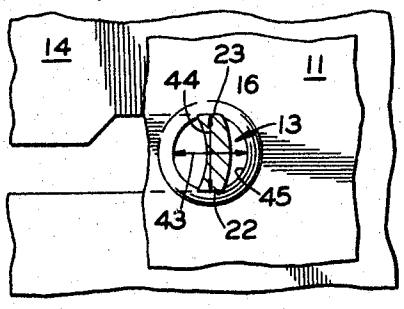

FIG. 10

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July 8, 1969 A. C. SANFORD 3,454,292

INTERFITTING MULTIPIECE CONNECTORS

Filed June 2, 1967 Sheet 3 of 4

FIG. 11

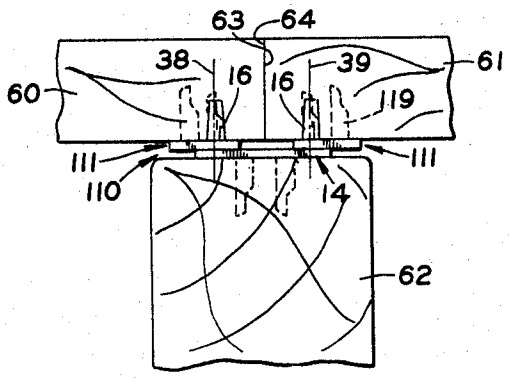


FIG. 12

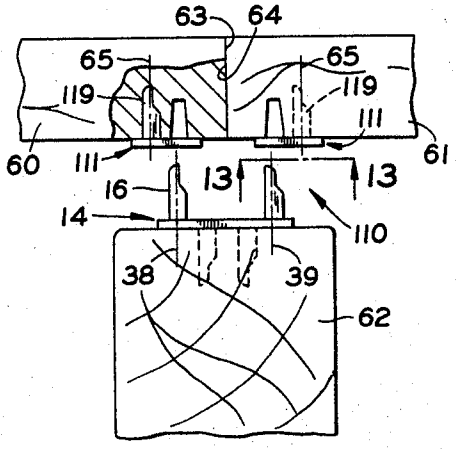
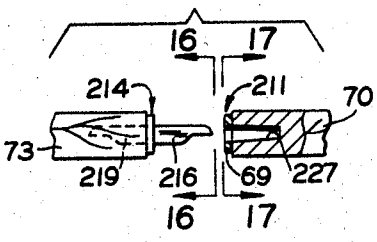


FIG. 14



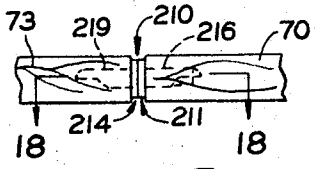


FIG. 15

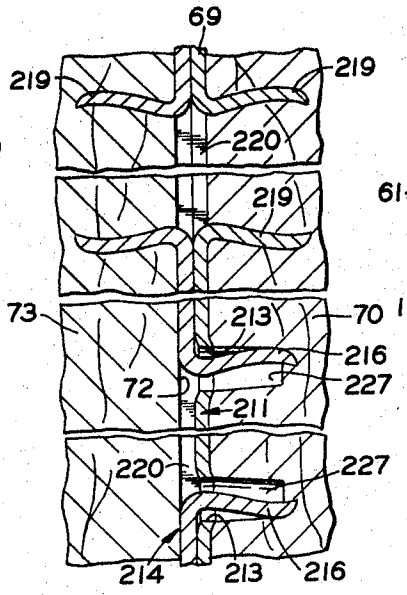


FIG. 18

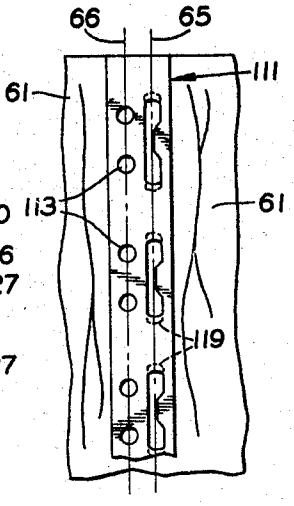


FIG. 13

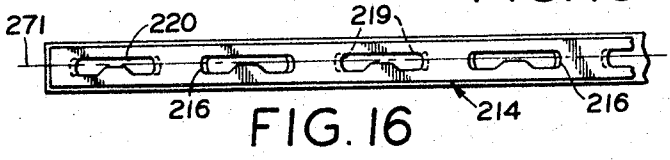


FIG. 16

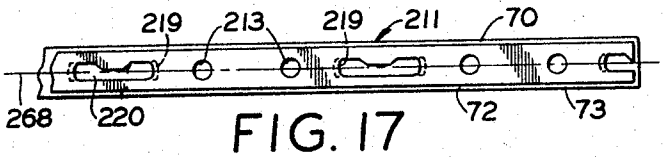


FIG. 17

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FIG. 19

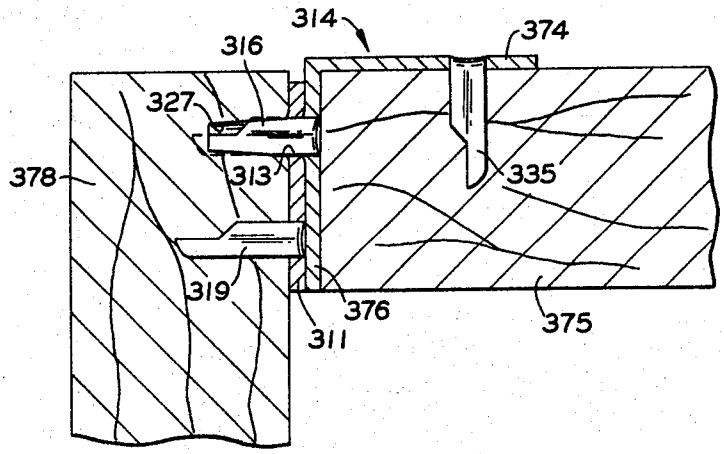
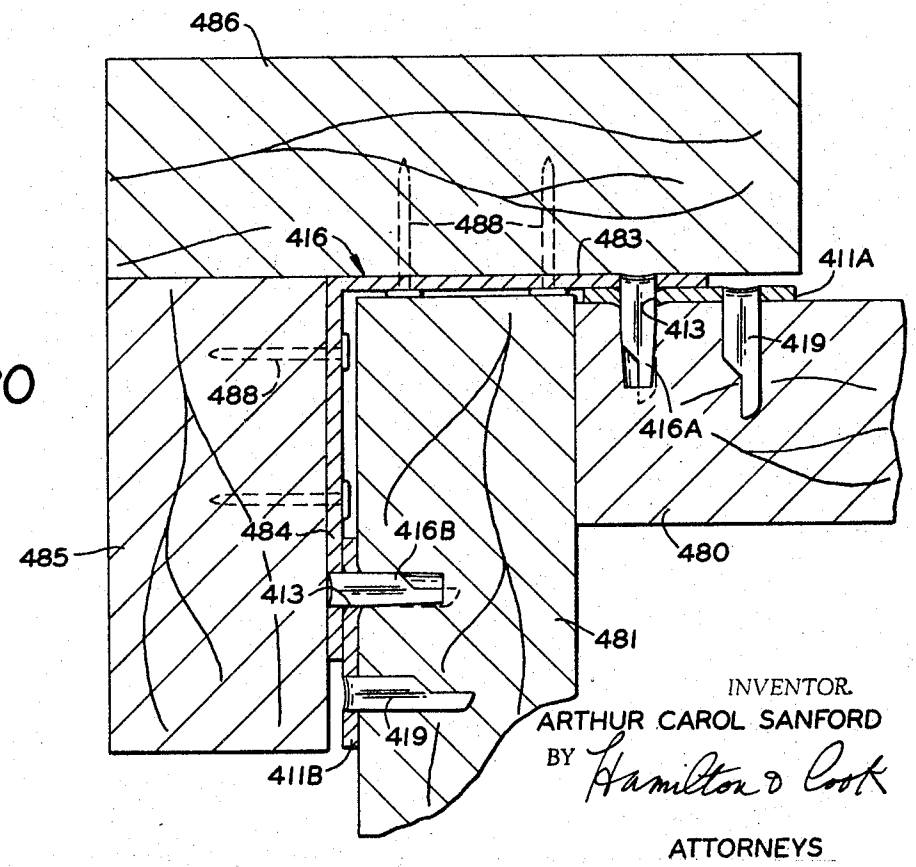


FIG. 20



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United States Patent Office

3,454,292

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3,454,292

INTERFITTING MULTIPIECE CONNECTORS

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Filed June 2, 1967, Ser. No. 643,156
Int. Cl. F16b 7/20
U.S. Cl. 287—20.92 15 Claims

ABSTRACT OF THE DISCLOSURE

A connector for joining at least two members together which utilizes at least one anchor plate and at least one bayonet plate. A plurality of embedment teeth extend generally perpendicularly outwardly from the body of the anchor plate and are fixedly received in the first of the members to be joined by the connector. A plurality of spaced engaging apertures are also provided through the anchor plate, and, while those apertures are positioned adjacent the first member, the material of which the first member is comprised is recessed, indented, or otherwise removed from behind these apertures. A plurality of embedment teeth also extend generally perpendicularly outwardly from the body of the bayonet plate and are fixedly received in the second of the members to be joined by the connector. A plurality of bayonet teeth extend perpendicularly outwardly from the body of the bayonet plate oppositely of the embedment teeth. The bayonet teeth are spaced in conformity with the spacing of apertures into which they are interfittingly received. Full seating of the bayonet teeth through their corresponding apertures locks the anchor and bayonet plates, and thus the first and second members, together.

Background of the invention

Connectors which can be readily applied in-the-field have traditionally been of limited selection. For example, on-the-job joining of wooden members has historically been limited to the province of nails, screws, bolts or, in some situations, even glue.

In order both to distribute the load more uniformly across the joint and to alleviate the high labor cost incident to in-the-field assembly, metal connector plates were devised by which structural wooden components could be strongly, yet economically, prefabricated and shipped to the building locus. An example of such a connector plate can be found in my U.S. Patent No. 3,211,043.

As is shown in the aforesaid U.S. patent, such connector plates can be categorized as being either of the "exterior" or "sandwich" type. An "exterior" type connector plate has teeth extending outwardly from only one side of the plate and is, therefore, used to connect structural members that are joined in abutting relation. On the other hand "sandwich" type connector plates have teeth extending oppositely outwardly from both sides thereof and are thus adapted for connecting structural members that are joined in overlapping relation.

Nevertheless, after the prefabricated components were erected to their ultimate use position, they still require in situ connection with additional components by the time-weary methods available to the construction tradesmen, as enumerated above. Abortive attempts were made to join members in-the-field by the now traditional "exterior" or "sandwich" type connector plates. However, the sophisticated apparatus, such as shown in my U.S. Patent No. 3,255,943, that has been devised to mass produce prefabricated components in a factory are not readily adapted to custom assembly of components by connector plates at the building site.

Summary of the invention

The present invention represents an entirely new concept to the connector art which is not only eminently suitable to the joinder of wooden members on the job but also has applications which far transcend that art.

This and other objects and advantages which will become apparent from the following specification are accomplished by means hereinafter described and claimed.

The present invention employs at least one anchor plate which is preferably prefixed to one of the members to be joined and at least one interlocking bayonet plate which is preferably prefixed to the second of the members to be joined. The bayonet and anchor plates may be lockingly interfitted with considerable facility on the job and yet impart not only the load distribution but also the strength incident to the traditionally factory applied connector plates so successful in the prior art.

The anchor plate is affixed to the first of the members to be joined by suitable fastening means and presents a series of spaced apertures. That material of the first member which lies behind the apertures in said anchor plate is at least partially recessed or removed—if the member is wooden, or wood-like, the member may simply be indented.

The bayonet plate is affixed to the second of the members to be joined, also by suitable fastening means, and presents a series of bayonet teeth intermeshingly lockable with the apertures in said anchor plate. Locking is preferably accomplished by having the span of each aperture substantially equal the width of at least that portion of the bayonet tooth lockingly interfitted therein.

Five variations of the preferred embodiment are shown by way of example in the accompanying drawings and described in detail without attempting to show all of the various forms and modifications in which the invention might be embodied; the invention being measured by the appended claims and not the details of the specification.

Description of the drawings

FIG. 1 is an end elevation of a panel member connected to a dimensional supporting member by one form of an interfitting multiple piece connector embodying the concept of the present invention;

FIG. 2 is an enlarged area of FIG. 1 with the panel and dimensional members separated to represent the poising of the connector plates prior joinder;

FIG. 3 is a view similar to FIG. 2 depicting the connector plates in positioning interengagement;

FIG. 4 is an enlarged partial area of FIG. 1 depicting the connector plates lockingly intermeshed;

FIG. 5 is an enlarged face view of the anchor plate used in that form of the invention represented in FIGS. 1–4, taken substantially on line 5—5 of FIG. 2;

FIG. 6 is an enlarged face view of the bayonet plate used in that form of the invention represented in FIGS. 1–4, taken substantially on line 6—6 of FIG. 2;

FIG. 7 is an enlarged cross section taken substantially on line 7—7 of FIG. 4;

FIG. 8 is an enlarged cross section taken substantially on line 8—8 of FIG. 4;

FIG. 9 is a further cross section taken substantially on line 9—9 of FIG. 8;

FIG. 10 is a further cross section taken substantially on line 10—10 of FIG. 8;

FIG. 11 is an end elevation of a pair of abutting panel members joined to a single supporting member positioned along the abutment by a second form of an interfitting multiple piece connector embodying the concept of the present invention;

FIG. 12 is a view similar to FIG. 11 with the abutted panel members separated from the supporting member to represent the poising of the connector plates prior joinder;

FIG. 13 is a face view of the anchor plate used in that form of the invention represented in FIGS. 11 and 12, taken substantially on line **13—13** of FIG. 12;

FIG. 14 is an end view, partly in section, of a third form of multiple piece connector embodying the concept of the present invention depicted in poised position preparatory to joining two panels along an edge;

FIG. 15 is a view similar to FIG. 14 with the third form of multiple piece connector lockingly intermeshed;

FIG. 16 is a face view of the bayonet plate used in that form of the invention represented in FIGS. 14 and 15, taken substantially on line **16—16** of FIG. 14;

FIG. 17 is a face vieew of the anchor plate used in that form of the invention represented in FIGS. 14 and 15, taken substantially on line **17—17** of FIG. 14;

FIG. 18 is an enlarged cross section taken substantially on line **18—18** of FIG. 15;

FIG. 19 is a cross section through the joinder of two members at an angled corner by a fourth form of the subject connector; and

FIG. 20 is a view similar to FIG. 19 depicting a fifth form of connector embodying the concept of the present invention, this too for use as a corner connection.

Descriptions of several variations of the preferred embodiment

One of the most common joinder situations occurring in construction jobs in the affixing of plywood panels to dimensional lumber. Examples include: the joinder of plywood wall sheathing to the studs; the joinder of plywood subflooring to floor joists, or trusses; and, the joinder of plywood roof sheathing to rafters, or roof trusses. Aside from using nails and screws, either alone or in combination with glue, no other prior known joinder method is satisfactory.

Moreover, the use of nails or screws alone serves, for the most part, solely as an attaching means but does not fully utilize the beam, or column, potential which would be provided were the plywood panel integrally joined to the dimensional lumber.

It is well known that if the stresses at the joints between wooden members are distributed over a relatively large area the strength of the joints can be greatly increased without causing failure of the wood fibers due to concentrated loads imposed by the connecting means. Distribution of the stresses has been attempted by using glue between the wooden members in conjunction with nails, screws or the like. However, not only is it impractical to apply glue in the field but the life of glue is also uncertain, especially under adverse weather conditions, and building codes in many localities have disapproaved the use of glue in load bearing joints. Moreover, the surface joinder effected by glue does not increase the horizontal, or interply, sheath strength of the plywood.

The improved connector, indicated generally by the numeral **10**, when used to join a plywood panel to dimensional lumber, as shown in FIGS. 1–4, effects a distribution of the stresses between the members joined thereby over a relatively large area. At the same time the connector **10** increases the horizontal shear strength of the plywood by transferring stresses deeply into the panel.

A connector **10** embodying the concept of the present invention employs at least one anchor plate **11** prefixed to one of the members **12** to be joined thereby. The anchor plate **11** is provided with a plurality of apertures **13** spaced longitudinally therealong.

At least one bayonet plate **14** is prefixed to the second of the members **15** to be joined by connector **10**, and the bayonet plate **14** is provided with a plurality of bayonet teeth **16** spaced longitudinally therealong so as to be interfittingly received in the apertures **13** of said anchor

plate **11**. The material of the member **12** behind the apertures **13** is preferably indented, as by punching. However, the nature of the material, for convenience in fabricating may dictate that the material behind the apertures be removed, as by drilling or, if the apertures are aligned, even by kerfing.

Without removing, or otherwise indenting, at least a portion of the material behind apertures **13** insertion of the bayonet teeth **16** through corresponding apertures corresponds to setting the teeth of a standard connector plate into a wooden member. In a factory this could be readily accomplished, but on-the-job the required embedment pressures are too great to be practical.

With the material compressed, indented or removed from behind apertures **13** to form recesses, the bayonet teeth **16** can be lockingly seated within the apertures **13** upon the application of as little as one-tenth ($\frac{1}{10}$) the pressure required to seat teeth of the same configuration within the wooden member **12** itself. This greatly reduced pressure can easily be applied with the members in situ at the construction site by a vibratory compactor **18**, as represented schematically in FIG. 1. The vibration imparted to both members **12** and **15** being joined in situ by the compactor **18** has been found not to be deleterious to the interlocking of the anchor and bayonet plates **11** and **14** of the improved connector **10** with the material at least partially recessed behind apertures **13**. However, if the material is not recessed, the vibration of members **12** and **15** effectively prevents entry of the teeth into the wooden member **12**.

In more detail, the member **12** represents a plywood panel to be attached to one or more wooden dimensional members **15**. The anchor plate **11** for such use is preferably a strip of 16–22 gauge metal from which a plurality of embedment teeth **19** are struck, or punched, preferably in opposed pairs from a single opening **20**. The embedment teeth **19** constitute the means by which the anchor plate **11** is prefixed to the plywood panel **12**.

One configuration for the embedment teeth **19** which has been found to work quite well is best seen in FIGS. 2–4. Each tooth **19** has a thickness substantially equal to the thickness of anchor plate **11** because it was struck therefrom, and each tooth has a base portion **21** the side edges **22** and **23** of which are generally parallel and extend substantially perpendicularly outwardly from the body portion **24** of the anchor plate **11**. Each tooth **19** also has a tip portion **25** of lesser width than the base portion **21** which is formed integrally outwardly thereof with one edge **22A** being preferably a continuation of edge **22** on base portion **21**. The opposite edge **26** of the tip portion **25** is preferably parallel to edges **22** and **22A** but is spaced more closely thereto than the corresponding edge **23** of the base portion **21**. The edges **26** and **23** are joined by an inclined transitional shoulder **28**.

The preferred proportions for this type embedment tooth **19** can also best be seen from FIGS. 2–4. The width of the base portion **21** is approximately one-third ($\frac{1}{3}$) the length of the tooth **19**, and the length, or extent, of the base portion, including the transitional shoulder **28** which is itself approximately one-sixth ($\frac{1}{6}$) the length of the tooth **19**, measured perpendicularly outwardly from the body portion **24**, is approximately one-half ($\frac{1}{2}$) the length of the tooth. The width of the tip portion **25** is approximately one-half ($\frac{1}{2}$) the width of the base portion **21**.

A tooth **19** three-eighths ($\frac{3}{8}$) of an inch long has been found most adequate for prefixing an anchor plate **11** to three-quarter ($\frac{3}{4}$) inch plywood **12**. Applying the preferred proportions to obtain the dimensions for a typical tooth **19** which is three-eighths ($\frac{3}{8}$) of an inch long, the base portion **21** would be approximately one-eighth ($\frac{1}{8}$) of an inch wide by three-sixteeths ($\frac{3}{16}$) of an inch long, of which the transitional shoulder **28** would extend for approximately one-sixteenth ($\frac{1}{16}$) of an inch. The width

of the tip portion would also be approximately one-sixteenth (1/16) of an inch.

For attaching the plywood panel **12** to two-inch dimensional lumber excellent results are obtained by the use of two rows **28** and **29** of longitudinally aligned openings **20**, laterally staggered, as best seen in FIG. 5. The die by which the opposed pair of teeth **19A** and **19B** were punched from each opening causes the teeth to draw along a cleavage line transversely inclined to the parallel sides of the teeth to sharpen (FIG. 7) and to bevel (FIGS. 2–4) the tip of each tooth. The die not only crimps, or dishes, each tooth so that the outer surface **30** of the base portion **21** tends to be arcuate but also forms each tooth with a rearward arching about its base portion **21** so that the tip portion **25** is inclined away from the opening from which the tooth was struck in the direction of their longtiudinal alignment (FIG. 7).

With these teeth embedded in the plywood panel **12**, the anchor plate **11** is securely prefixed thereto.

The plurality of longitudinally spaced apertures **13** are aligned in two rows **31** and **32**, one row on each side of the two rows **28** and **29** of openings **20**. As shown, each aperture **13** may be of circular configuration although other workers in the art may select other configurations after acquiring knowledge of the present concept. In any event it is necessary to the facile on-the-job joinder of anchor and bayonet plates that at least a portion of the wood behind apertures **13** be recessed. As best shown in FIG. 3, a plurality of cavities **27** aligned in two rows **33** and **34** may be punched into the surface of the plywood panel **12** before the anchor plate **11** is fixed thereto. The rows **33** and **34** of cavities **27** lie coincident to the rows **31** and **32** and are of a depth and width commensurate with the particular bayonet tooth employed, as more fully hereinafter described. Equally satisfactorily, particularly with materials other than wood, the cavities may be provided by drilling or kerfing.

Turning now to the two inch dimensional wooden member, represented by the numeral **15**, the bayonet plate **14** may be prefixed thereto by embedment teeth **35** which are of exactly the same configuration as the embedment teeth **19** on anchor plate **11**.

The bayonet teeth **16** are longitudinally aligned in rows **38** and **39** (FIG. 6) which are laterally spaced a distance equal to the lateral spacing of the aperture rows **31** and **32**. This allows for two rows **40** and **41** of embedment teeth **35** to be provided therebetween. Moreover, the same configuration which works so well for the embedment teeth also does superbly well as the bayonet teeth **16**. The bayonet teeth are thus also punched in opposed pairs from the same opening **20A** with the bridge, or span, **42** between adjacent teeth of successive openings defining the dimension between correspondingly aligned apertures **13**.

It has also been found quite satisfactory with circular apertures **13** to have their diameter **43** (FIG. 10) equal the width **44** of the base portion **21** of the bayonet teeth **16**. The narrow tip portion **25** facilitates insertion of bayonet tooth **16** into its respective aperture **13**, and, so aligned, the bayonet teeth **16** enter without further pressure until the base portion **21** is positioned adjacent the aperture **13** (FIG. 3). Then, even though the diameter of the aperture **13** is equal to the width of the base portion **21** further entry is not possible without the application of an external force. At least one explanation as to the requirement for joinder pressure is the fact that although the diameter of the aperture **13** equals the width of the base portion **21**, the diameter is measured in a plane having no thickness. To the contrary, the base portion, or at least the edges **22** and **23** thereof having contact with the boundary wall **45** of the aperture does have some thickness—an amount equal to the thickness of the body **46** of the bayonet plate **14** from which it was struck. Thus the bayonet tooth **16** must be force-fitted into the aperture **13**. With teeth of the dimension and configuration shown this joinder force may be readily applied by a hand operated compactor **18**.

From this explanation it should be apparent that the interfitting of the bayonet teeth ad their corresponding apertures may be the sole means of locking the bayonet plate **14** to the anchor plate **11**. The kerfs **33** and **34** may, therefore, be of such width and depth as to provide no holding power againt extraction of the bayonet teeth. The interlocking provided solely by this engagement of the teeth and their apertures provides a structural integrity between the plywood panel and the dimensional member to which it is joined such that the neutral axis of the load bearing member is not the neutral axis **48** (FIG. 1) of the dimensional member alone but rather the neutral axis **49** of the T-shaped section formed by the dimensional member **15** and the proximal portion **50** of the plywood panel **12**.

Hence, by using a beam and panel combination having this increased load carrying characteristic, as is now feasible with the improved connector **10**, far greater overall load carrying characteristics are possible from any given combination of dimensional lumber and plywood sheathing than heretofore deemed possible.

Nor is the use of the connector **10** for increased load carrying characteristics limited to the joinder of plywood to dimensional lumber. Such a connector can also be used integrally to join pieces of dimensional lumber together; trusses can be connected to dimensional lumber or to plywood—all manner of structural connections being possible by varying the number of rows of embedment teeth and/or bayonet teeth and connecting apertures.

One variation, particularly adaptable as an end, or edge, connector **110** across a supporting member, is shown in FIGS. 11–13. In this construction two panels **60** and **61** are abuttingly engaged and rest across a supporting member **62**. A bayonet plate **14** is prefixed to the supporting member **62** with the two rows **38** and **39** of bayonet teeth **16** extending outwardly therefrom.

A modified anchor plate **111** is attached to each panel **60** and **61** in proximity to the abutting edges **63** and **64** respectively. Each anchor plate **111** has one row **65** of embedment teeth **119** and a row **66** of connecting aperture **113** parallel thereto. The row **38** of bayonet teeth **16** interfit with the row **66** of apertures **113** on that anchor plate **111** fixed to panel **60** to connect that panel to the supporting member **62**, and the row **39** of bayonet teeth **16** likewise lockingly interfits with the row **66** of apertures **113** on that anchor plate **111** fixed to panel **6** to connect that panel to the supporting member **62**.

Another form of abutting connection embodying the present concept is shown in FIGS. 14–18. This connector **210** employs a connector plate **211** with a single row **268** of alternate openings **220** and paired apertures **213**. The embedment teeth **219** struck from the openings **220** are preset into the edge **69** of a panel-like member **70**. In this form of the connector kerfing parallel to the row of apertures will not suffice inasmuch as that would remove the material into which the embedment teeth must be seated. Hence, here too the material is preferably recessed from behind the apertures **213** by drilling, or punching, the cavities **227**.

The bayonet plate **214** also has a single row **271** of openings **220**, the teeth punched therefrom extending from alternate sides of the plate **214** from alternate openings. Hence, embedment teeth **219** extend from every other opening **220**, and bayonet teeth **16** extend from the alternate openings **220**. The embedment teeth are set into the edge **72** of a panel-like member **73**. The members **70** and **73** are connected by lockingly inserting the bayonet teeth **216** into the apertures **213**.

The fourth embodiment depicts the use of the present concept for joining members at corners. As shown in FIG. 19, the bayonet plate **314** has an angular cross section with two legs. The embedment teeth **335** extend generally perpendicularly from the first leg **374** so as to

connect the angular bayonet plate **314** to the member **375**.

The bayonet teeth **316** extend generally perpendicularly outwardly of the second leg **376** of the angular plate **314** to engage the apertures **313** through the anchor plate **311** attached to the second member **378**, as by embedment teeth **319**. The anchor plate **311** may be constructed identically with anchor plate **111** (FIG. 13). Here too, the cavities **327** behind the apertures **313** permit a facile entry of the bayonet teeth **316** to lock the anchor and bayonet plates together and thus join the members **375** and **378**.

A variation of the construction used to join members angularly disposed to each other is depicted in FIG. 20. In this configuration both members **480** and **481** are provided with an anchor plate. The anchor plate **411A** attached to member **480**, and the anchor plate **411B** attached to the member **481** may also be of the variety shown in FIG. 13. In each case, the embedment teeth **419** join the plates **411** to their respective members.

A linking member in the shape of an angled bayonet plate **416** connects the two members toegther by a plurality of bayonet teeth **416A** extending outwardly from one leg **483** of plate **416** which lockingly engage the apertures **413** through the anchor plate **411A** and a plurality of bayonet teeth **416B** extending outwardly from the second leg **484** of plate **416** which lockingly engage the apertures **413** through anchor plate **411B**.

The anchor plate **416** may be attached to the hidden structural members **485** and **486** by embedment teeth or other suitable means such as the nails **488** shown. With wooden members the means for connecting the anchor and bayonet plates to the members to be connected are preferably embedment teeth, particularly when they can be applied at the factory. For on the job connections, as exemplified by the fifth embodiment depicted in FIG. 20, nails, or screws, may well be used. However, should the members not be wooden, the means by which the plates are connected to the members to be joined should be varied to suit the materials.

The above description of several forms of connector plates embodying the concept of the present invention has oriented the disclosure of the connector plates in the environment of the construction industry, particularly with respect to the joinder of wooden members for improved structural characteristics. Although the connector does have extensive use in this primary field of endeavor, it should also be now apparent that this concept could as well be adapted to join many other objects in and out of the construction industry. For example, in the construction industry finished ceiling as well as exterior and interior wall panels can readily be affixed to supporting members; trim and cabinetry can be assembled and mounted with ease.

Outside the construction industry even furniture can be fastened together in this way to allow less expensive shipping and subsequent assembly. Even the shipping crates and boxes can be assembled by such connectors. Nor is the application of this connector concept limited to use with wooden members. For example, many plastic materials can be so joined and even heels can be attached to shoes in this fashion.

The present invention thus not only provides a connector which is eminently suitable for joinder for wooden members in situ but also has applications which far transcend that art.

I claim:

1. A connector for joining first and second members, said connector comprising, at least one anchor plate, means for securing said anchor plate to the first of said members to be joined, said anchor plate having a plurality of spaced apertures, at least one bayonet plate, means for securing said bayonet plate to the second of said members to be joined, a plurality of bayonet teeth having penetrating ends and projecting outwardly from said bayonet plate spaced in conformity with said anchor plate apertures, a portion of said bayonet teeth adjacent their inner ends having a width at least equal to the span of the corresponding aperture in said anchor plate, said portion having a substantial axial extent sufficient to define a force fit between said bayonet teeth and said apertures, whereby interfitting of said bayonet teeth with said apertures normally is the sole means for lockingly joining the anchor plate to said bayonet plate.

2. A connector, as set forth in claim **1**, in which that portion of each bayonet tooth lockingly fitting an anchor plate aperture has straight parallel sides.

3. A connector, as set forth in claim **1**, in which the means for securing the anchor plate to said first member comprises a plurality of embedment teeth extending outwardly from one side of said anchor plate, and the means for securing said bayonet plate to the second member comprises a plurality of embedment teeth extending outwardly from one side of said bayonet plate.

4. A connector, as set forth in claim **3**, in which that portion of each bayonet tooth lockingly fitting an anchor plate aperture has straight parallel sides.

5. A connector, as set forth in claim **4**, in which the bayonet plate presents at least two, laterally spaced rows of bayonet teeth and in which a single anchor plate is provided with a plurality of rows of embedment teeth and at least one row of spaced apertures on each side of every two rows of embedment teeth, said apertures interengageable with the bayonet teeth on said bayonet plate.

6. A connector, as set forth in claim **4**, in which a bayonet plate presents at least two, laterally spaced rows of bayonet teeth and in which a plurality of anchor plates are each provided with embedment teeth and at least one row of spaced, connecting apertures, said apertures interengageable with at least one row of bayonet teeth on said bayonet plate.

7. A connector, as set forth in claim **4**, in which the bayonet plate presents a plurality of embedment and bayonet teeth substantially aligned in a single row and in which the anchor plate has a single row of embedment teeth and connecting apertures, said apertures spaced in conformity with and interengageable with the bayonet teeth on said bayonet plate.

8. A connector, as set forth in claim **5**, in which the embedment teeth on both said anchor and bayonet plates as well as the bayonet teeth on said bayonet plate have the same configuration.

9. A connector, as set forth in claim **8**, in which the embedment and bayonet teeth each have a base portion with straight parallel sides and a tip portion, the tip portion having a width substantially less than the width of said base portion.

10. A connector, as set forth in claim **9**, in which the apertures are of circular configuration, the diameter of which substantially equals the width of the base portion of said bayonet teeth.

11. A connection between at least two members comprising, an anchor plate fixed to one of said members, said anchor plate having a body portion adjacent said member, a plurality of spaced apertures through said body portion, said member recessed behind said apertures, a bayonet plate fixed to another of the members to be joined, a plurality of bayonet teeth spaced in conformity with the spacing of said apertures having penetrating ends and extending outwardly from said bayonet plate, a portion of said bayonet teeth adjacent their inner ends having a width at least equal to the span of the corresponding aperture in said anchor plate, said portion having a substantial axial extent sufficient to define a force fit between said bayonet teeth and said apertures, whereby interfitting of said bayonet teeth with said apertures may be the sole means for lockingly joining the anchor plate to said bayonet plate.

12. A connection, as set forth in claim **11**, in which each bayonet tooth has a base portion with straight paral-

lel sides and a tip portion, the tip portion having a width substantially less than the width of said base portion and in which the apertures are of annular configuration, the diameter of each said aperture being substantially equal to the width of the base portion of that bayonet tooth received therein.

13. A connection, as set forth in claim **12**, in which an anchor plate is affixed to a first member, a similar anchor plate is affixed to a second member, the anchor plates affixed to said first and second members each having at least one row of apertures, a bayonet plate having at least two rows of bayonet teeth affixed to a third member, one row of said bayonet teeth lockingly interfitted with the apertures in the anchor plate affixed to said first member and the second row of said bayonet teeth lockingly interfitted with the apertures in the anchor plate affixed to said second member.

14. A connection between angularly joined members comprising, an anchor plate, means for securing said anchor plate to the first of the members to be joined, said anchor plate having a plurality of spaced apertures, at least one bayonet plate, said bayonet plate having angularly extending legs, means for securing one leg of said bayonet plate to the second of the members to be joined, a plurality of bayonet teeth having penetrating ends and extending outwardly of the second leg of said bayonet plate, said bayonet teeth being spaced in conformity with said apertures through the anchor plate, a portion of said bayonet teeth adjacent their inner ends having a width at least equal to the span of the corresponding aperture in said anchor plate, said portion having a substantial axial extent sufficient to define a force fit between said bayonet teeth and said apertures, whereby interfitting of said bayonet teeth with said apertures normally is the sole means for lockingly joining the anchor plate to said bayonet plate.

15. A connection, as set forth in claim **14**, in which the means for securing said bayonet plate to said second member to be joined comprises a second anchor plate, means for securing said second anchor plate to the second of said members to be joined, a plurality of spaced apertures through said second anchor plate, and a plurality of bayonet teeth extending outwardly of the other leg of said bayonet plate, said second plurality of bayonet teeth spaced in conformity with and force fitting the spaced apertures through said second anchor plate, whereby interfitting of said second plurality of bayonet teeth with the spaced apertures through said second anchor plate normally is the sole means for lockingly joining said second anchor plate to said bayonet plate.

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U.S. Cl. X.R.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,454,292 July 8, 1969

Arthur Carol Sanford

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 3, line 17, "vieew" should read -- view --; line 32, "in", second occurrence, should read -- is --; line 55, "disapproaved" should read -- disapproved --; line 58, "sheath" should read -- shear --. Column 4, line 3, "for" should read -- or --.Column 6, line 4, "ad" should read -- and --; lines 42 and 43, "aperture" should read -- apertures --; line 44, "interfit" should read -- interfits --. Column 7, line 22, "toegther" should read -- together --; line 64, "for", second occurrence, should read -- of --.

Signed and sealed this 1st day of September 1970.

(SEAL)

Attest:

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