A. B. RUSSELL.

FURNITURE BRACE.

APPLICATION FILED JULY 1, 1912.

1,066,421.

Patented July 1, 1913.

Fig. 1.

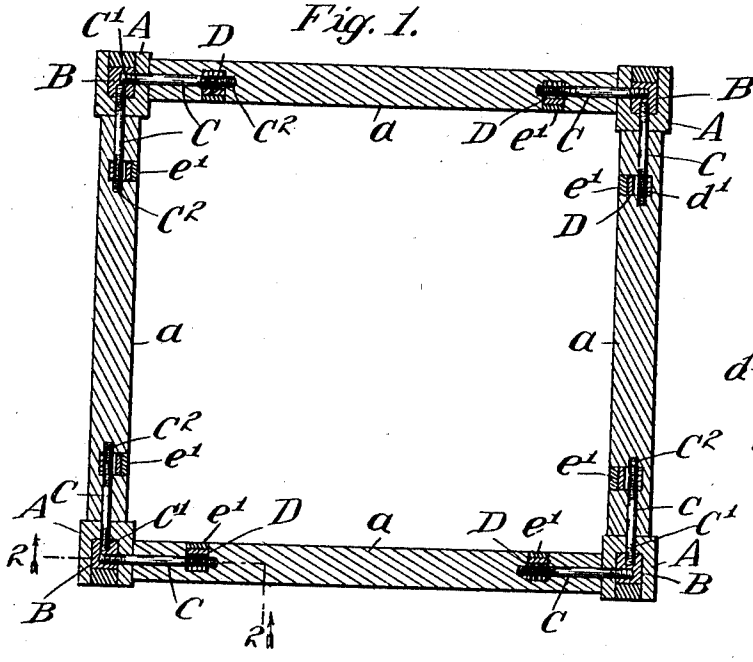


Fig. 5.

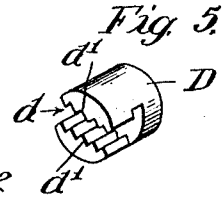


Fig. 4.

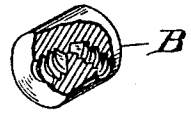


Fig. 2.

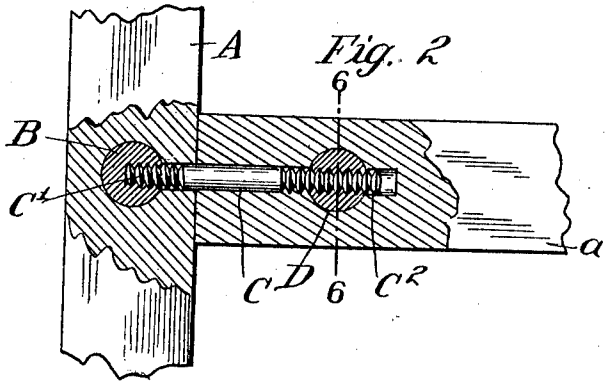


Fig. 3.

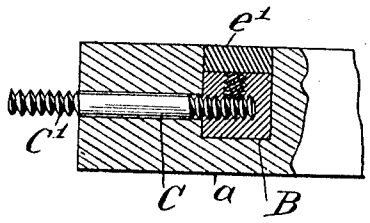


Fig. 6.

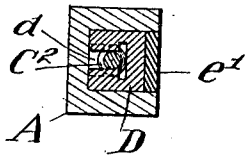
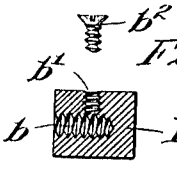


Fig. 7.



Witnesses

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FURNITURE-BRACE.

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To all whom it may concern:

Be it known that I, ARTHUR B. RUSSELL, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Furniture-Braces, of which the following, taken in connection with the drawing, is a description.

My invention has for its object the production of a joint and brace designed to be used in various arts connected with the manufacture of building materials, furniture, etc., and may be utilized in carpentry, joinery, wood turning, wood carving, etc.

My invention is especially desirable in forming joints and braces in furniture, such as tables, chairs, and the like, in which the supporting members of the furniture are firmly tied together and prevented from loosening and pulling apart.

A further object of my invention is to provide a bracing and coupling device of this kind which shall be entirely concealed from the outside of the article of furniture, one in which each support is braced separately, utilizing a minimum amount of material, and when the supporting members of the article of furniture are assembled, the braces are embedded within the structure, and any separate movement thereof is impossible.

In the accompanying drawings I have illustrated what I now consider the preferred form of my construction, although as is obvious, the details thereof may be carried out in different ways without departing from the spirit of my invention, which consists essentially in providing a furniture brace which shall be very precise in its adjustment, and when once locked in position, becomes a fixed and integral part of the structure.

In the accompanying drawings, Figure 1 is a sectional view taken through the supports and transverse members of an article of furniture, with my inner brace device secured therein. Fig. 2 is a view taken on line 2—2 of Fig. 1; Fig. 3 is an enlarged view of the brace rod and locking member; Fig. 4 is a perspective view of a coupling member, partially broken away to illustrate the threaded openings extending at right angles to each other; Fig. 5 is a perspective view of the adjusting and locking member; Fig. 6 is a transverse sectional detail taken on line 6—6 of Fig. 2. Fig. 7 is a modified form of locking means for the ends of the inner brace rods.

My invention will be described in this instance as applied to a chair, it being understood that its application to other kinds of constructions will be carried out upon the same principles.

A, A, A, A, represent the four legs of a chair, and *a*, *a*, *a*, *a*, the rungs thereof, all of which are of well known construction.

Seated within each leg A in line with the rungs extending therefrom is a coupling member B which consists preferably of a cylindrical piece of metal having two threaded sockets therein, one of said sockets *b* extending inwardly from the end of said coupling member, and the other socket *b'* extending at right angles to socket *b* as shown more clearly in Fig. 4.

c, *c*, *c*, *c*, are inner braces or tie rods, one end of which, *c'*, is threaded, the opposite end c^2 being corrugated for a purpose hereafter explained.

D, Fig. 5, is the locking member used to engage the end of each rod *c* which extends into one of the rungs *a*. This locking member is preferably a cylindrical piece of metal having a slot *d* in one end thereof. The sides of the slot are provided with corrugations or teeth *d'* which take over and lock into the corrugations upon the ends c^2 of the inner brace rods *c*.

In assembling an article of furniture having the supports and connecting members as herein explained, a recess is bored into each leg A to receive the coupling member B, and an opening bored through the leg through which the inner brace rod *c* may be extended. An opening is bored at right angles to the first mentioned opening to receive the inner brace rod connecting therewith at right angles. A recess is also bored near each end of each rung of the chair to receive the locking member D, and an opening extending therefrom to the end of the rung through which the rod *c* projects and screws into the socket of the coupling member in the leg of the chair.

A coupling member B is placed in the recess formed in the leg of the chair with the socket *b* meeting the opening for the inner brace rod *c*, the threaded end *c'* of which engages with the socket *b*. The opposite end of the rod *c* extends into the end opening of one of the rungs, the corrugated

end thereof just passing the recess formed in the rung into which the locking member D is placed, the teeth in the slot *d* engaging the corrugations as shown in Fig. 6, thereby locking the inner brace rod securely against movement in either direction and firmly securing the rung to the supporting member. The rod extending at right angles to the coupling member is then secured into the socket *b'* through the opening provided for it and projected into the rung extending at right angles to the first mentioned rung, which is in turn engaged by one of the locking members D as previously explained. The recesses bored into the supports and the rungs to receive the coupling and locking members are then closed by blocks of wood *e*, *e'* glued or otherwise secured in the recess. The brace is then entirely concealed within the structure and absolutely locked against any separate movement.

By properly arranging the sizes of the corrugations on the inner brace rods and the interlocking teeth in the slot *d* any adjustment desired can be perfected and when once secured in place, the inner brace becomes a fixed integral part of the structure.

In Figs. 3 and 7 I have shown modified forms of locking devices to be used with the inner brace rods, the construction shown in Fig. 3 utilizing one of the coupling members B as a locking member, in which event the rod *c* is provided with threads at both ends and after being secured in position molten metal is poured into the socket *b'* which hardens over the end of the rod *c* locking it in fixed position. In Fig. 7 the coupling member B is also used as a locking member the end of the rod to be inserted in the socket *b* inside the coupling member being secured by a set screw b^2 in the socket *b*. In either of these devices the effect is the same, the opening for the locking member being closed with blocks *e'* as previously explained.

While I have illustrated and described the coupling member and the locking member as being preferably cylindrical in shape, I contemplate making them also square or angular in cross section; I also contemplate using threads in place of corrugations upon the inner brace rods, or any other friction surface capable of the necessary engagement.

I claim—

1. In combination with an article of furniture having upright supports and transverse members connecting the same, a coupling member concealed within each supporting member, said coupling member having two threaded sockets opening at right angles to each other and at least one of which is closed at one end, inner brace rods each provided with threads at one end and corrugations at the other, the threaded ends of the rods engaging the sockets of the coupling members and extending a short distance only into the transverse members contiguous thereto, and a locking member concealed within each transverse member, said locking members each having a slot in one end to receive the corrugated ends of the brace rods, the walls of said slot having teeth to engage the corrugations of the rods, substantially as described.

2. A furniture brace comprising two brace rods extending at right angles to each other, each rod threaded at one end and corrugated at the other end, a coupling member having two sockets arranged at right angles to each other and receiving the respective threaded ends of the rods, and locking members slotted at one end to straddle the brace rods at the corrugated portions thereof, said locking members having teeth to engage the corrugations of the brace rods.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ARTHUR B. RUSSELL.

Witnesses:
WELLS GOODHUE,
CHARLES I. COBB.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."