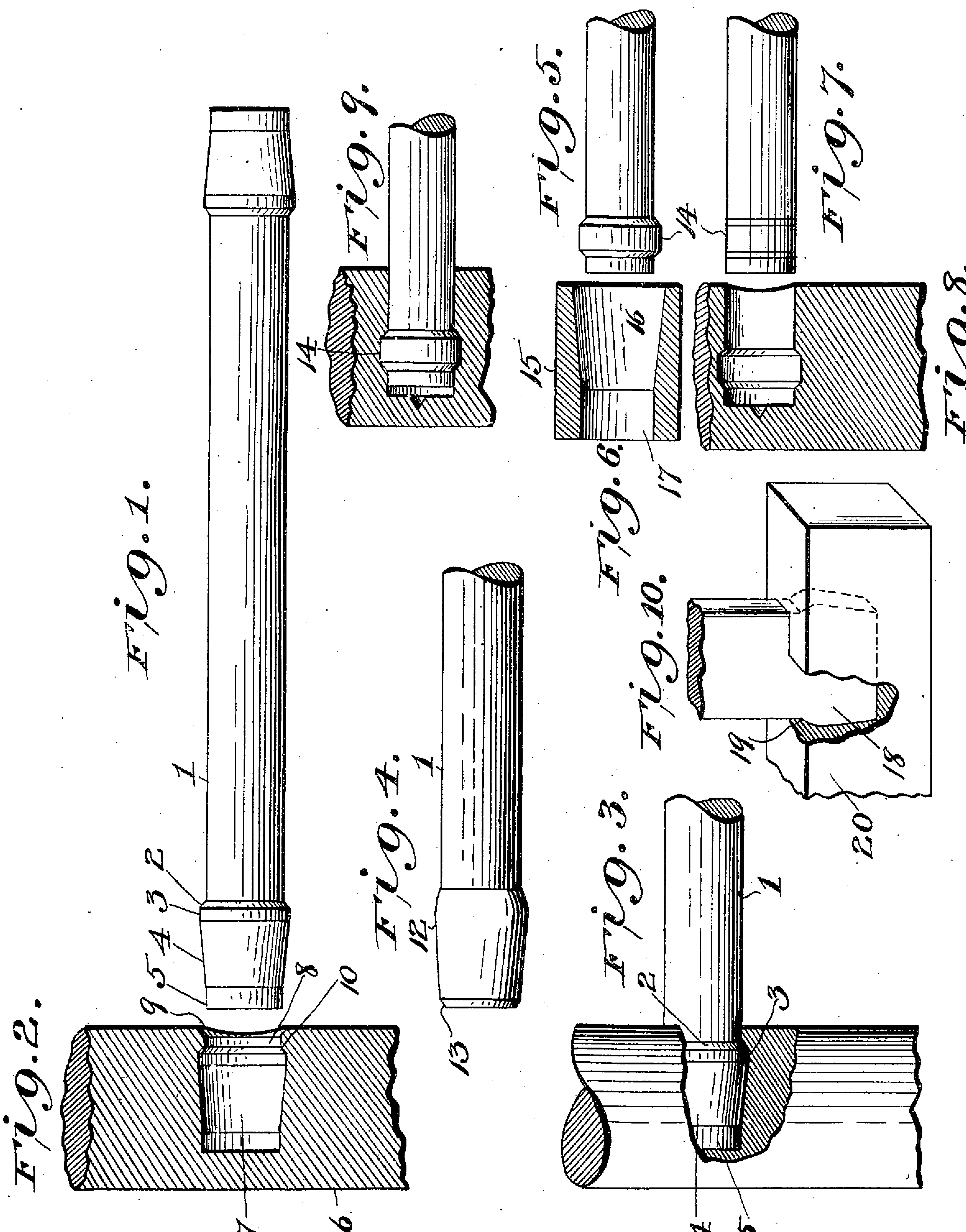
M. HOFHEIMER.

PROCESS OF MAKING WOOD JOINTS.

APPLICATION FILED MAY 5, 1908.

917,432. Patented Apr. 6, 1909.



WITNESSES

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PROCESS OF MAKING WOOD-JOINTS.

No. 917,432. Specification of Letters Patent. Patented April 6, 1909.

Application filed May 5, 1908. Serial No. 431,029.

To all whom it may concern:

Be it known that I, MAURICE HOFHEIMER, of Baltimore, in the county of Baltimore City and State of Maryland, have invented certain new and useful Improvements in Processes of Making Wood-Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved process for treating the joint-members of chairs or other wooden articles so that a firm joint may be formed by the parts themselves.

A further object is to provide a stronger and more durable joint than has heretofore been possible without the use of extraneous means.

These objects are accomplished by so forming the parts to be joined that they will effectively interlock, the wood being first rendered soft and pliable by artificial means so that it may be deformed to permit the parts to be brought together, the wood thereafter resuming its natural form and becoming hard, making separation difficult, if not impossible.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 shows the rung or stretcher of a chair with a tenon at each end. Fig. 2 is a fragmentary sectional view of a chair leg having a socket to accommodate the rung tenon. Fig. 3 is an elevation, with parts broken away and in section, of the leg and rung joined together. Fig. 4 shows a slightly modified form of tenon. Fig. 5 shows another modified form of tenon. Fig. 6 is a sectional view of a tenon deforming device. Fig. 7 shows the tenon after being deformed. Fig. 8 shows in section a chair leg socket corresponding to the form of tenon shown in Fig. 5. Fig. 9 is a sectional view showing the tenon within the socket. Fig. 10 shows another modification.

Referring to the drawings, 1 designates a rung or stretcher formed with an enlarged shoulder 2, a narrow cylindrical portion 3, a relatively long tapered portion 4, and a second cylindrical portion 5. The leg 6, Fig. 2, is formed with a socket 7 corresponding in shape to the tenon. The throat 8, at the entrance to the socket, is cylindrical and corresponds in size to the body of the rung, and just outside of such throat the socket is beveled, as at 9, to facilitate the insertion of the tenon. Beyond the cylindrical throat 8 the socket is formed in correspondence to the contour of the tenon.

In order to join or assemble the parts the tenons are first made soft by artificial means, preferably by soaking them for a time in water, the best results being obtained with hot water. The effect of this treatment is to soften the gum and rosin in the pores of the wood, which thereupon becomes very elastic in directions transverse to the grain or length of the rung. While in this condition the tenon is subjected to pressure transverse to the grain so that the enlarged portion thereof will be compressed. Thus according to the tenon and socket formations so far described, this is accomplished by pressing or driving the tenon into the socket, and the cylindrical throat 8 thereof will readily compress the circumferential enlargement 3 and tapered portion 4 of the tenon. When the tenon has been driven home the wood immediately expands to its natural form as indicated in Fig. 3, with the shoulder 2 of the tenon locked against the corresponding shoulder 10 of the socket immediately adjoining the throat. When now the wood again becomes dry and hard it is impossible to pull the tenon from the socket. The elasticity of the wood may be increased by first crushing it, while soft, in a suitable vise or press.

In Fig. 4 the tenon has a curved shoulder 12, and the tip 13 is slightly beveled to facilitate its insertion into the socket.

In certain cases it may be desirable to prepare a great many rungs at one time and to then have the chairs made up a few at a time, or as required. Under these circumstances, the tenon is preferably formed as shown in Fig. 5, that is, a circumferential boss or enlargement 14 is formed on a cylindrical tenon. The latter is first treated by subjecting it to the action of hot water, as before described, and is then driven into a compressor or deformer, which is shown in the form of a tube 15, having a tapered entrance bore 16 which terminates in a cylindrical bore 17 of about the same diameter as the body of the tenon. When the latter is driven into the tube the boss 14 is compressed to the size of the cylindrical part of the former so that the entire tenon assumes

a uniform cylindrical shape, as shown in Fig. 7. The tenon is allowed to remain in the deformer until the wood becomes dry, when it may be withdrawn and handled without detriment to the deformed tenon which retains its cylindrical shape as long as the wood remains dry. When it is desired to join the parts the tenon is dipped in water and inserted in the socket, which latter has a conformation corresponding to that of the tenon. In a few moments the water, penetrating the wood, causes the deformed or compressed boss 14 to expand to its original or natural form so that the tenon will be locked in the socket, as shown in Fig. 9. If glue is used in the joints the water therein, as it is absorbed by the wood, will be sufficient to cause the return of the deformed or compressed boss to its natural shape. The idea here present, however, is not claimed in this case, as it forms the subject matter of my application for patent Serial No. 467,636, filed December 15, 1908.

In Fig. 10 I have shown a rectangular tenon 18 with a shoulder 19 fitted into the mortise of a block 20. The tenon may be differently formed if desired.

This invention may be adapted to table legs, dowel pins, chair seats, tongue and groove joints, and many other forms of furniture and cabinet work.

The advantages of the invention are obvious. Much trouble has been heretofore experienced by reason of chair rungs coming out of place, resulting in the chairs falling apart. Glue alone is generally insufficient to maintain the integrity of the joints under rough usage or by reason of the drying out and contraction of the wood. In order to meet this difficulty rods and other braces have been used, but these add materially to the cost of the chairs. The present invention provides a practically inseparable joint, with but little if any additional cost in the completed article. While glue may be used in the joints if desired, yet it is not indispensable.

I claim as my invention:—

1. The herein-described process of making wood-joints, which consists in forming one member or section with a tenon having an enlarged portion to fit in a corresponding socket in another member, softening the tenon and then compressing the enlarged portion thereof while being inserted into said socket.

2. The herein-described process of making wood-joints, which consists in forming one member or section with a tenon having an enlarged portion to fit in a corresponding socket in another member, softening the tenon by subjecting it to the action of hot water and then compressing the enlarged portion of the tenon while being inserted into said socket.

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

MAURICE HOFHEIMER.

Witnesses:

M. B. FREIDENRICH,

FRANK J. SINNOTT.