No. 772,149. PATENTED OCT. 11, 1904.

J. B. HUNT.

JOINT STIFFENER OR CLAMP.

APPLICATION FILED JULY 1, 1903.

NO MODEL

Fig. 1.

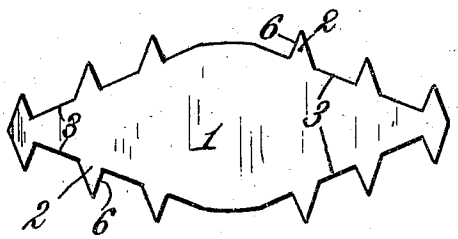


Fig. 2.

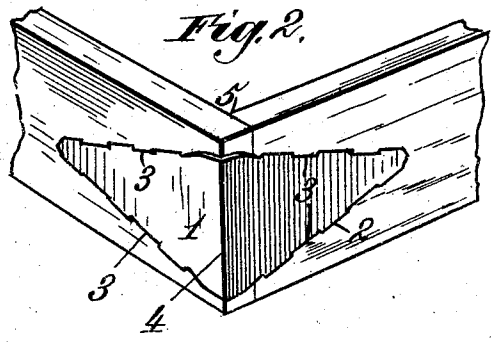


Fig. 3.

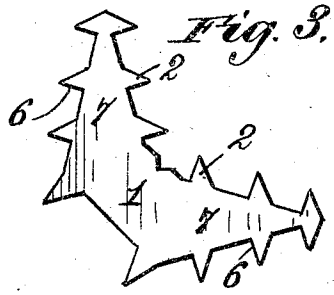


Fig. 4.

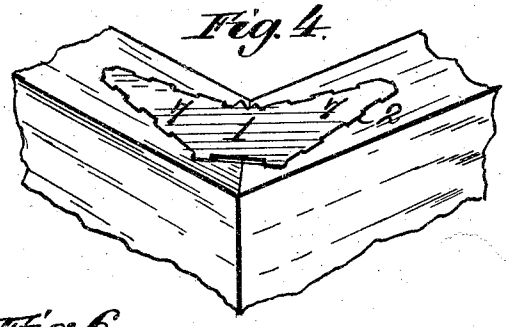


Fig. 5.

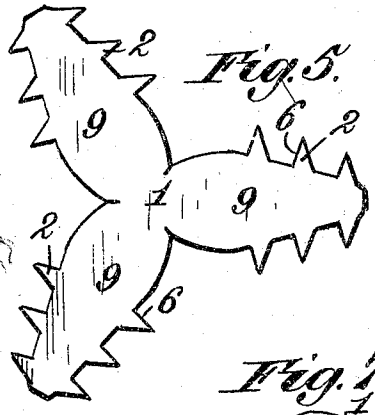


Fig. 6.

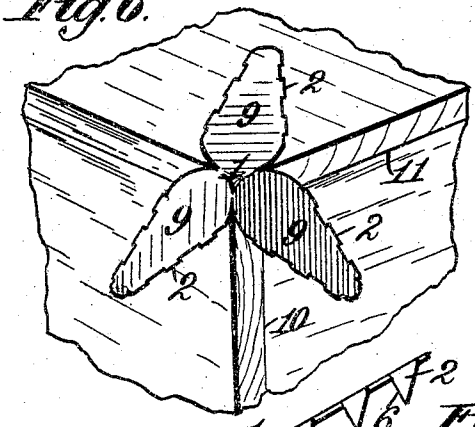


Fig. 7.

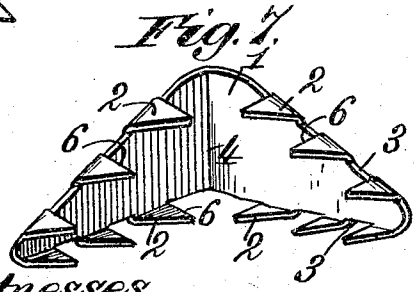
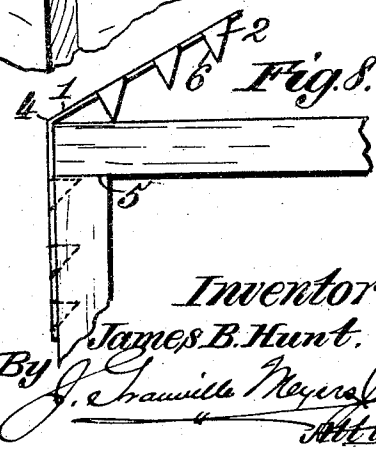


Fig. 8.



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No. 772,149. Patented October 11, 1904.

UNITED STATES PATENT OFFICE.

JAMES B. HUNT, OF GREENWICH, NEW JERSEY.

JOINT STIFFENER OR CLAMP.

SPECIFICATION forming part of Letters Patent No. 772,149, dated October 11, 1904.

Application filed July 1, 1903. Serial No. 163,903. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. HUNT, a citizen of the United States, residing at Greenwich, in the county of Cumberland and State of New Jersey, have invented new and useful Improvements in Joint Stiffeners or Clamps, of which the following is a specification.

My invention relates to joint-stiffeners or wood-clamps in which prongs or retainers are bent or projected from a body portion in such manner as to be driven or forced into the object to which the device is applied.

The prime object of the invention is to make a joint without the use of glue or nails and at the same time make a joint very much more secure than could be made with either of them.

Another object of the invention is to provide a joint-clamp that can be applied without the liability of damage to the object, such as splitting, when the object is of a woody or parallel-fiber nature. This is accomplished by arranging the prongs or retainers on converging lines relatively to the base or main portion of the clamp.

A further object is to form the inner or facing edges of the retainers in such manner that they will have a tendency to draw the parts of the object close together as the clamp is being secured in position.

With these and other objects in view my invention consists in the improved construction of a joint-stiffener, as will be hereinafter more particularly set forth.

In the accompanying drawings, in which each reference character indicates the same part in each of the views in which it occurs, Figure 1 is a plan view of a blank from which one form of my stiffener is formed. Fig. 2 is a perspective view of the same applied to a joint. Figs. 3 and 4 are plan and perspective views, respectively, of another form of stiffener and the method of its application. Figs. 5 and 6 are similar views of another form of stiffener. Fig. 7 is a perspective view of a stiffener formed from the blank shown in Fig. 1 ready for use, and Fig. 8 is an elevation showing how it is applied to the object or joint to be stiffened or strengthened.

Referring more particularly to the drawings, 1 designates the body or main portion of my improved stiffener and which is preferably formed from a flat piece of suitable material, as sheet metal, although it is evident that it could be formed from cast metal, such as malleable iron. Projecting from the body, preferably from one side and along its edges, are retaining prongs or teeth 2. These teeth are arranged on lines inclined to a line drawn transversely across the body and which I shall designate as the "base."

In Fig. 1 I have shown the body as of diamond or lozenge shape in which the edges 3 of the two ends converge toward each other and in which case the base becomes the line of bend, as shown at 4 in Fig. 2. In applying this form, as by covering or overlapping a butt-joint 5 in Fig. 2, the prongs are each caused to enter the material on a different line relatively to the length or longitudinal arrangement of the fiber of the same. This will avoid the liability of splitting the material, which would be more apt to occur if the prongs were arranged to stand in a line with each other along substantially the same longitudinal line of the material. It also avoids the possibility of the more remote prongs, or those farther from the base, from being drawn into the recesses formed by the nearer ones in case the joint should be forced apart or open. With the prongs arranged in the same line longitudinally of the material as soon as the joint should be opened the distance between any two teeth or prongs all of them, except the innermost one of the line, becomes substantially useless, as it has nothing except lateral friction to hold it, the material in front of it having been removed or displaced by the tooth or prong in front of it as the joint was being opened. To further add to the value and utility of the clamp, the inner face of the teeth, or the edge 6, facing the base, is cut at such an angle, preferably substantially at a right angle, to the base 4 of the body that when they are being driven into the material the tendency will be for them to force or draw the piece of material toward the base of the clamp. This will cause the joint between two pieces of material to be closed or made tight as possible. When the clamp is to be used upon the exterior of the joint being strength-

ened, as shown in Fig. 2, the clamp is preferably bent to conform to the angle before it is applied, so that when it is being applied, as shown in Fig. 8, the prongs will be held in close engagement with the surface of the material by the resiliency of the clamp, and the tips of the prongs will be thrown as far from the joint as possible, so that when they are being driven in they will have a tendency to gradually draw the pieces of material together, and thereby make a close joint. Furthermore, by forming the teeth parallel with the edges of the extension, the edges being themselves at a converging angle to the axis of the extension, the points of penetration of adjacent teeth are out of parallelism with such axis, with the result, as heretofore pointed out, when used in connection with wood having a grain in substantial parallelism with the axis of the extension that the teeth will not pass into the wood in alinement with the grain. In fact, the points of penetration of the several extensions are arranged so as to have the greatest distance between the opposing teeth nearest the center of the stiffener, the space between opposing teeth being gradually lessened toward the outer end of the extension. In other words, the arrangement gives substantially the same result as a staggered arrangement of teeth, each tooth acting as a retainer for the remaining teeth, thereby making a secure fastening for the stiffener along the grain or fiber of the wood.

In form of stiffener shown in Figs. 3 and 4 the body is formed angular in its own plane—that is, the ends 7 extend at an angle to each other—to correspond with the angle of the pieces of material forming the joint, generally a right angle; but the prongs on the edges of each end are located on converging lines, whereby the same beneficial results are secured as in the first-mentioned form. In addition to this the body always remains in the same plane, thereby adding great strength and rigidity to the joint.

In the form of clamp shown in Figs. 5 and 6 it is composed of three integral parts or sections 9, each lying in a different plane, whereby it is adapted to be applied to and stiffen a corner or strengthen a joint having two seams or openings 10 and 11. In this form, as also in the form shown in Figs. 3 and 4, the base or line forming the same is at an angle to the longitudinal central line of each end or section.

In applying my clamp to a joint it is placed in position and the teeth or prongs driven into the material in the ordinary manner. When it is in a flat shape, it is simply laid upon the material and the prongs driven in; but where it is angular or bent it is forced over the joint and the teeth of one part or section driven into place, as shown in Fig. 8, which will cause the other part to stand at an angle to the member to which it is to be fastened, with the points of the teeth or prongs standing away from the base as far as possible. Now by applying force to this part of the clamp, as with a hammer, the teeth will be driven into the material, and at the same time their points will each be swung in the arc of a circle with the base as a center, which will cause them to pull or draw this piece of material against the other one, and thereby make a close joint.

Although I have shown what I consider the best forms of constructing my clamps and of applying them, it is evident that changes and modifications can be readily made in them to adapt them to other uses—as, for instance, by making the teeth project outwardly in the forms shown in Figs. 7 and 8 to adapt them for inside work instead of outside work—and I reserve the right to make all such changes as will come within the scope of my invention.

Having described my invention, I claim—

1. A joint-stiffener comprising a body portion having a plurality of extensions, the side edges of said extension converging toward the ends thereof, and a plurality of prongs integral with said side edges and parallel therewith, whereby the prongs on each edge are out of parallelism with the axis of the extension so as to assume an oblique line when in applied position.

2. A joint-stiffener comprising a body portion formed with a plurality of extensions each having converging side edges, and a series of flat integral penetrating prongs along said edges, the last tooth in the series being positioned at the point of the extension formed by the converging lines, and closely adjacent the tooth on the opposite series, the prongs of each series being parallel to the edge of the extension on which they are formed, and each of said teeth having the edge toward the body of the stiffener at a right angle to the plane of the extension.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES B. HUNT.

Witnesses:
ROSCOE C. WARD,
ALBERT R. MCALLISTER.