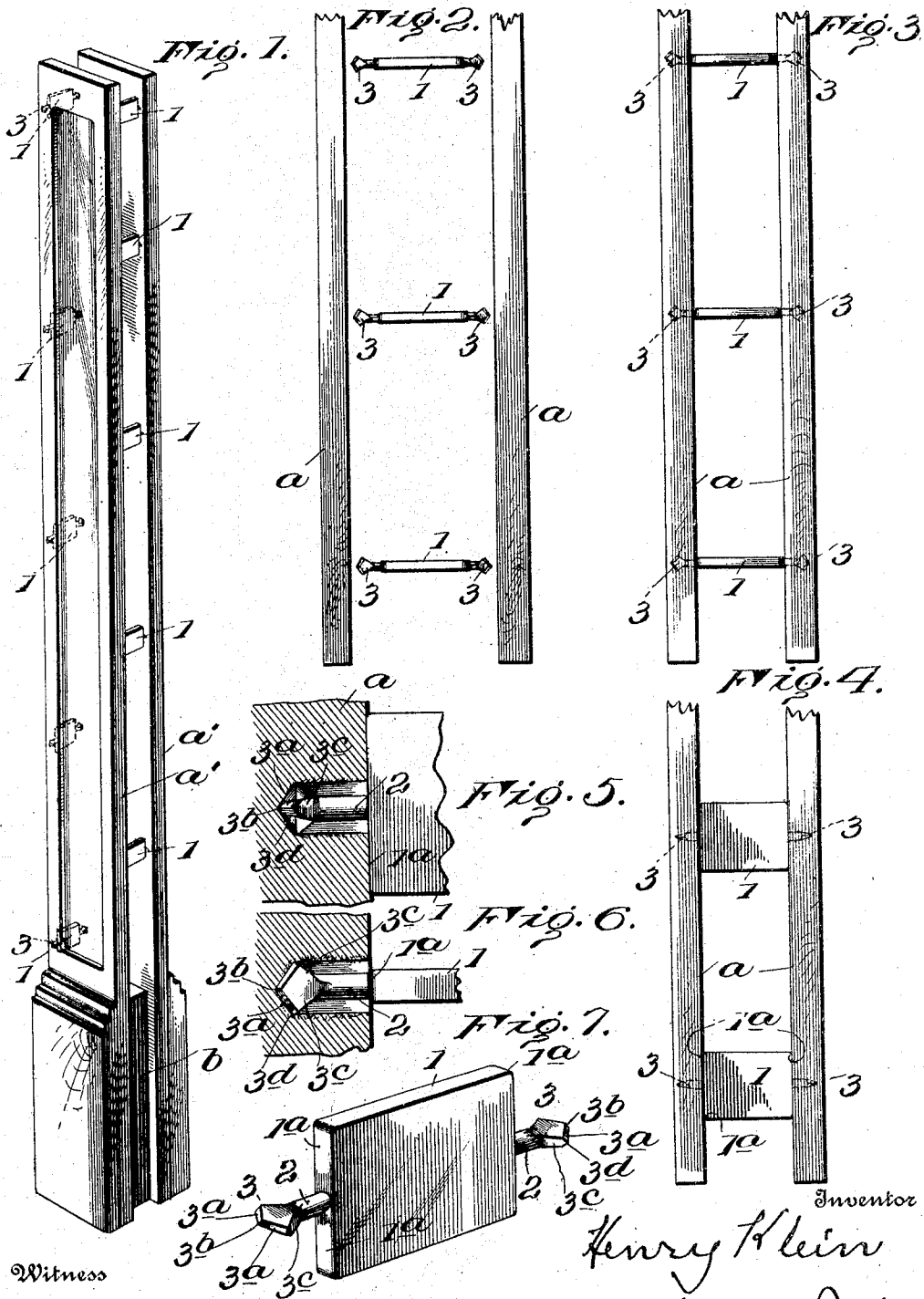


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 METAL FASTENER.
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1,237,344.

Patented Aug. 21, 1917.



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To all whom it may concern:

Be it known that I, HENRY KLEIN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Metal Fasteners, of which the following is a specification.

This invention relates to certain improvements in metal fastening devices; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what I now believe to be the preferred embodiments or mechanical expressions of my invention from among other forms, constructions, arrangements and adaptations falling within the spirit and scope of the appended claims.

An object of the invention is to provide certain improvements in metal fastening or connecting devices particularly designed for use in wood work in connecting parts thereof for the production of structural elements, or in the formation of supporting parts adapted to be fastened to wood work.

A further object of the invention is to provide a double end fastening or connecting device so formed and constructed as to be capable of rigidly connecting two wood members against separation while maintaining them spaced a fixed distance apart and which can be readily forced into the wood members and then locked or anchored therein against separation therefrom.

The invention consists in certain novel features in construction and arrangement as more fully and particularly set forth and pointed out hereinafter.

Referring to the accompanying drawings: Figure 1, is a perspective view of a structural element embodying my invention.

Figs. 2, 3, and 4, are views illustrating steps in the method followed in connecting the wood members by the fasteners to form a structural element.

Figs. 5 and 6, are detail views.

Fig. 7, is a detail perspective view of a fastener embodying my invention.

The metal fastener of my invention embodies a body or shank of any suitable shape, form and dimensions having a relatively reduced penetrating and anchoring portion projecting therefrom and integral therewith and consisting of a comparatively small straight cylindrical neck having a

chisel-like penetrating end head laterally enlarged to constitute an anchor. The body portion provides a square or flat edge or shoulder to limit the distance said penetrating portion extends into the wood member and to tightly abut the surface of the wood member and brace the fastener against lateral play or looseness with respect thereto and to aid in maintaining the fastener in its fixed perpendicular position with respect to the surface of the wood member.

In the particular embodiment illustrated, the body 1, is formed integral with the aligned similar opposite end penetrating and anchoring portions. Each such portion consists of the straight cylindrical comparatively short neck 2, terminating in a tapered beveled or chisel-like driving or penetrating extremity which is laterally extended to produce an anchoring or arrow head 3. This head is formed with two opposite flat or beveled side faces terminating in the converging chisel or cutting edges 3^a, that meet to form the central penetrating point 3^b. The two diametrically-opposite flat wings which form the lateral enlargement at the end of and with respect to the neck to provide the anchoring barbs of the head, preferably taper outwardly; *i. e.* their top and bottom edges 3^c, 3^a, converge outwardly and meet at points 3^d. The top edges 3^c, are comparatively wide or blunt to resist retrograde or outward movement through the wood when the device has been anchored therein. These edges 3^c, also provide cutting edges or comparatively sharp corners extending approximately from the neck to the opposite points 3^d, to facilitate the action of the heads in forcing their way through the wood to anchoring positions when the fastening devices are partially rotated after their penetrating and anchoring portions have been forced into the wood members. The neck of each penetrating and anchoring portion is preferably of a reduced diameter with respect to the thickness or narrowest width of the body and the ends of the body form square or flat end shoulders 1^a, approximately at right angles to the axis of the necks and adapted to squarely and tightly abut the adjacent surfaces of the wood members. The two necks of the fastener are in alinement and hence the common axis thereof constitutes or is in alinement with the axis of the body, in the particular embodiment illustrated.

Also, in the example illustrated, the planes of the wide flat side faces of the body are approximately at right angles to the planes of the side faces of the anchoring and penetrating heads of the necks. These fasteners are peculiarly adapted for coupling together and rigidly holding wood members in parallelism and spaced a distance apart. In applying the fasteners to such members, suitable means are provided to hold the desired number of fasteners properly spaced, parallel and alined and in similar positions (see Fig. 2) with their anchoring heads exposed, and in driving or penetrating positions with respect to the wood members *a*. The wood members *a* (by suitable mechanism) are then forced toward each other under the necessary pressure or blows to drive them onto the penetrating portions of the fasteners and tightly up against the stop and bracing shoulders 1^a, of the fasteners, to the positions illustrated by Fig. 3. The penetrating anchoring portions of each fastener will then be completely buried in the two wood members with the ends of the fastener bodies tightly pressed against the adjacent surfaces of the wood members. The fasteners are then permanently locked to and in the wood members by rotating each fastener on its longitudinal axis (which is coincident with the axis of each neck) a quarter turn or through an arc of approximately ninety degrees. When the fasteners are thus rocked, their necks partially rotate in the holes in the wood members formed by the penetrating heads, while the lateral enlargements of said heads cut, compress and wedge into said wood laterally from said holes and form lateral anchoring sockets or cavities with uncut or unbroken portions of the wood interposed between the blunt rear edges of the anchoring heads and the exterior side faces of the wood members that lock the wood members against separation from the fasteners.

Figs. 4 and 5, show the fasteners after they have been turned in the wood to anchoring position, while Figs. 3 and 6, show the fasteners after driving into the wood but before being locked or anchored therein by partial rotation. Of course, the fasteners and the wood members can be driven together by hand applied power or blows and the fasteners can be turned to anchoring position by hand tools or suitable implements, and one or more fasteners can be employed, to couple together wood members, according to the circumstances of each instance in view of the many uses to which different forms of fasteners embodying my invention can be applied, and according to whether fasteners embodying my invention are formed with one neck and head, or with necks and heads at both ends as herein illustrated.

Each fastener is composed of a rigid strong piece of metal formed to drive and penetrate wood (or equivalent material) under the necessary pressure or blows, and to cut its own anchoring cavity within the wood under the necessary rotating force, so that it is not necessary to first prepare the wood by the formation of holes and sockets to receive the fastener.

These fasteners are so formed as to rigidly hold the wood members to form a structural element or unit, as the members will be rigidly held against independent looseness or twisting as well as against movement toward and from each other.

In Fig. 1, I show a structural unit in the form of a hollow post for interior trim, embodying my present invention. The two wood members *a'*, *a'*, of this unit constitute the pilasters of the post, and they are rigidly united by two rows of the fasteners 1, hereinbefore described, while a wood block *b*, is fixed between the lower ends of the two pilasters *a'*. The rows of fasteners 1, are arranged longitudinally of the post adjacent to the opposite edges thereof to provide the post with opposite edge grooves or sockets to receive the vertical edge stiles of panel sections (between the inner faces of the pilasters *a'*) while the bodies of the fasteners 1, form the floors of the grooves against which the vertical edges of the panel section stiles can abut. The post is hollow and the fasteners are so arranged that a post extension can extend down between the rows of fasteners and will be guided thereby.

The post of Fig. 1, can be economically produced according to the method hereinbefore described and will be exceedingly strong and rigid.

It is evident that various changes, modifications and variations might be resorted to without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact disclosure hereof except as required by the scope of the appended claims.

What I claim is:

1. A fastener comprising a body forming opposite-end stop shoulders and at each end provided with a projecting end extension consisting of a reduced neck having a penetrating and anchoring end head, said fastener adapted to be forced into wood members with said body in tight engagement with the surfaces thereof and with said extensions completely buried in the members and to be then partially rotated on said necks as an axis to anchor said heads in said members.

2. A fastener formed to be driven into wood and then anchored thereto by partial rotation, comprising a body having a reduced projecting neck provided with an arrow-like end head for penetrating the

wood and having a cutting edge for cutting anchoring cavities in the wood on partial rotation.

3. A fastener composed of a body provided with an end fastening projection adapted to be driven into wood and formed with a flattened laterally enlarged penetrating and anchoring point having an edge adapted to cut anchoring cavities in the wood on partial rotation of the fastener.

4. A fastener composed of a body forming a stop shoulder and provided with an end wood penetrating projection formed with a laterally enlarged chisel-like penetrating head having inclined rear edges and cutting front edges, said head being formed at its front and rear edges to cut an anchoring cavity in the wood in which it is driven when the body is partially rotated, substantially as described.

5. A fastener composed of a body provided at each end with an end fastening projection consisting of a straight cylindrical neck reduced with respect to the body and having a penetrating point embodying diametrically opposite laterally projecting wings having blunt rear edges and inclined front cutting edges.

6. A fastener composed of an elongated body angular in cross section and forming an end face and provided with an end fastening projection extending from said face and consisting of a reduced straight cylindrical neck having a penetrating point embodying diametrically opposite pointed laterally projecting cutting and anchoring wings.

7. A fastener composed of an elongated body forming a spacing and bracing member at its opposite ends formed with stop shoulders and projecting necks terminating

in fastening projections having penetrating and anchoring points, said body formed to be partially rotated after said necks and points have been driven home, said points formed to cut anchoring cavities when thus partially rotated, substantially as described.

8. A fastener composed of a body at its opposite ends provided with reduced straight cylindrical alined necks having penetrating and anchoring points, said necks and points adapted to be driven into and buried in wood and said points adapted to be anchored in the wood on partial rotation of the body.

9. A fastener composed of a body having opposite edge shoulders and alined fastening projections provided with laterally enlarged flattened penetrating and anchoring points, said body and projections being integral, said points formed to cut anchoring cavities in the wood when partially rotated therein by said body, substantially as described.

10. A device for rigidly connecting a pair of wood members and maintaining them spaced apart, consisting of a body forming opposite end stop shoulders and projections extending therefrom and forming necks and penetrating and anchoring heads, said heads and necks adapted to be forced into said members and said body adapted to be given a partial rotation, said heads constructed to form anchoring recesses in said members when the body is thus partially rotated.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY KLEIN.

Witnesses:

HENRY KURZMAN,
JOSEPH C. KADANE.

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