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J. W. KEFFER

CLAMP FOR CONNECTING ANGULARLY ARRANGED PIECES OF MATERIAL

Filed June 14, 1922

Fig. 1

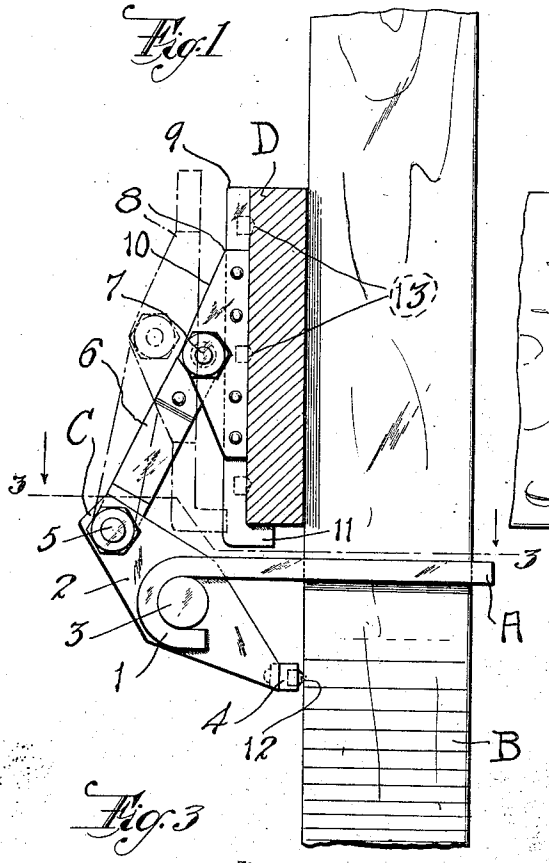


Fig. 2

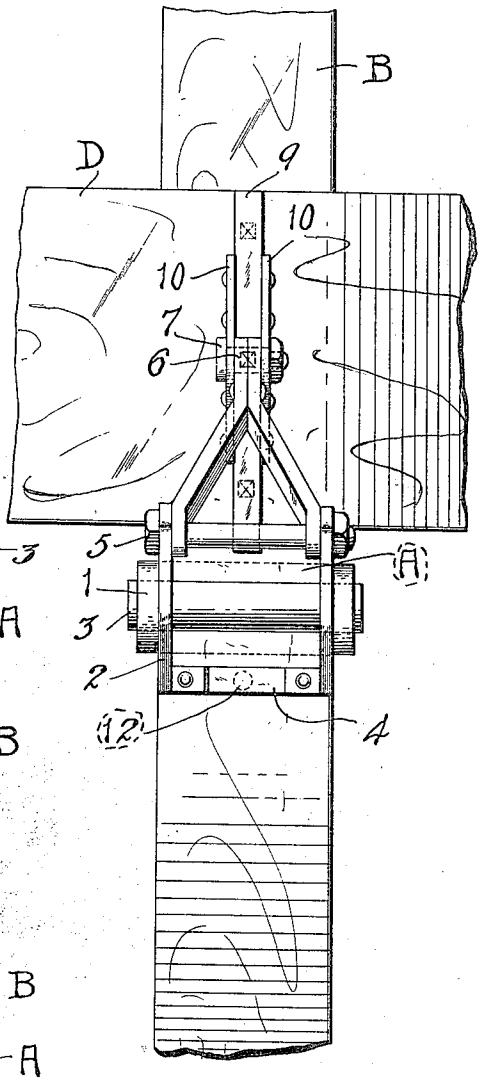
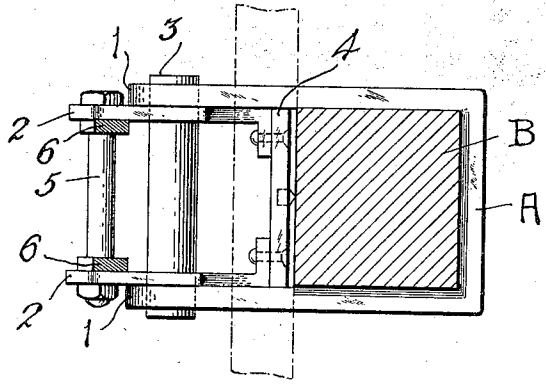


Fig. 3



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UNITED STATES PATENT OFFICE.

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CLAMP FOR CONNECTING ANGULARLY-ARRANGED PIECES OF MATERIAL.

Application filed June 14, 1922. Serial No. 568,152.

To all whom it may concern:

Be it known that I, JOSEPH W. KEFFER, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Clamps for Connecting Angularly-Arranged Pieces of Material, of which the following is a specification.

One object of this invention is to provide a clamp for connecting or joining pieces of material at angles to each other without the use of nails, bolts, screws or similar fastening members, and more particularly to provide a clamp of this character for connecting the ledgers or horizontal pieces to the uprights, poles, or standards of scaffolds and the like, whereby the time consumed in erecting and removing a scaffold is reduced and the lumber saved from injury so that it can be repeatedly used.

Another object of the invention is to provide a clamp of the character described with which the weight of the horizontal piece or ledger automatically actuates the clamp so that the said horizontal piece is forced tightly into frictional engagement with and supported upon the vertical piece or pole.

Further objects are to provide a clamp including a member to be mounted on one of the pieces to be connected, and lever mechanism mounted on said member and adapted to be interposed between the pieces being connected so that movement of the other of said pieces in one direction longitudinally of the first-mentioned piece actuates the lever mechanism to force said second-mentioned piece into tight engagement with the first-mentioned piece; to provide such a clamp including a member to be mounted on an upright or pole, and lever mechanism mounted on said member and adapted to engage at one end the upright and to receive at its other end a horizontal piece or ledger so that the weight of said horizontal piece actuates said lever mechanism to clamp said horizontal piece between the upright and the lever mechanism and support said horizontal piece on said upright and restrain movement of said horizontal piece laterally away from said upright; to provide such a clamp which is simple, inexpensive and durable in construction, and which can be easily and quickly operated, and to obtain other results and advantages as may be brought out by the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate the same parts throughout the several views,

Figure 1 is a side elevation of a clamp embodying my invention, showing the manner of using the same;

Figure 2 is a front elevation thereof, and

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 1.

For the purpose of illustrating the principles of my invention, I have shown the same embodied in a clamp for connecting a ledger or horizontal piece to the pole or upright of a scaffold. The reference character A designates a member adapted to be secured to the pole B and support a lever mechanism C which clamps the ledger D against the pole B. The member A is preferably formed of metal and U-shaped so as to be capable of slipping over the pole B from one side thereof, and the extremities of the arms of said member are hooked as at 1.

The lever mechanism C comprises a pair of levers 2 arranged in spaced and parallel relation on a shaft 3 which is adapted to be inserted in the hooked ends 1 of the member A. The said levers 2 are secured together at one end by a transverse bar 4 which is adapted to engage the pole B, and are connected at their other ends by a bolt 5. A link 6 has one end thereof bifurcated with the arms of the bifurcation pivotally connected to the bolt 5 adjacent the levers 2, and the other end of said link is pivotally connected by a bolt 7 to another link or member 8 which receives the ledger D. The said member 8 may be in the form of a bar 9 having a pair of plates 10 secured to opposite sides thereof and receiving between them the end of the link 6. Said bar 9 also has one end thereof bent at an angle, as indicated at 11.

In connecting a ledger D to a pole B, the member A is applied to the pole at the elevation which it is desired to place the ledger. The shaft 3 is then placed in the hooked ends 1 of the member A and the bar 4 brought into engagement with the pole B. The member 8 is then swung outwardly from the pole B on the link 6 a distance sufficient to permit the ledger D to be placed between said member 8 and the pole, as indicated by dot and dash lines in Figure 1. The ledger is then placed upon the end 11 of the member 8 and allowed to fall by gravity. As the ledger descends, its weight draws the mem-

ber 8 downwardly and inwardly toward the pole B and swings the bar 4 connecting the levers 2 against the pole B, it being understood that movement of the levers 2 is limited by engagement of the bar 4 with the pole. The ledger is thus securely clamped between the pole and the member 8, and the more weight placed upon the ledger, the tighter will be the clamping thereof against the pole. The ledger is thus supported on the pole against downward movement, and it will be noted that in order to move the ledger laterally away from the pole it is necessary to raise the ledger to swing the link 6 outwardly, as indicated in dot and dash lines. To cause positive engagement of the bar 4 and the member 8 with the pole B and ledger D, the said bar and member 8 are preferably provided with pointed projections 12 and 13, respectively, which bite into the pole and ledger.

In order to remove the ledger from the pole, it is merely necessary to raise the ledger vertically along the pole, which tends to swing the link 6 outwardly and relieves the pressure on the ledger. It will be observed that the device is adapted for use within certain limits with various sizes of poles and ledgers. The clamp enables scaffolding to be easily and quickly erected and removed without in any way injuring the lumber of which the scaffolding is built and the lumber can thus be repeatedly used.

While I have shown and described a clamp for use in building scaffolds, it will be understood that the invention is capable of use for other purposes, and that the details of construction of the clamp can be modified or changed without departing from the spirit or scope of the invention. Therefore, I do not desire to be understood as restricting myself in the construction and use of the invention, except as required by the following claims when construed in the light of the prior art.

Having thus described the invention, what I claim is:

1. A clamp for joining pieces of timber or the like, including a member adapted to be applied to one of a plurality of pieces of material to be joined, a lever pivotally mounted between its ends on said member and formed at one end to engage one of said pieces of timber, and a second member having one end pivotally connected to one end of said lever and the other end formed to engage a piece of timber.

2. A clamp for joining pieces of timber or the like, including a member adapted to be applied to one of a plurality of pieces of material to be joined, a lever pivotally mounted between its ends on said member, and a pair of pivotally connected links one end of one of which is pivotally connected to one end of said lever and the other end of the other of said links being adapted to engage another of said pieces of material to be joined.

3. A clamp for joining pieces of timber or the like, including a substantially U-shaped member adapted to be applied to one of a plurality of pieces of material to be connected, a lever pivotally mounted between its ends on said U-shaped member and having one end formed to engage one of said pieces of timber, and a pair of pivotally connected links one end of one of which is pivotally connected to the other end of said lever while the other end of the other of said links is formed to engage a piece of timber.

4. A clamp for connecting a horizontal piece of material to an upright, including a lever, means for pivotally mounting said lever on said upright piece so that one end of said lever engages said upright, and a member connected at one end to said lever and adapted to receive said horizontal piece between its other end and said upright piece.

5. A clamp for connecting a horizontal piece of material to an upright or vertical piece, including a lever, means for pivotally mounting said lever intermediate its ends upon said upright piece so that one end of said lever engages said upright, and a member pivotally connected at one end to the other end of said lever and adapted to receive said horizontal piece between its other end and said upright.

6. A clamp for connecting a horizontal piece of material to an upright, including a lever formed with pivot means intermediate its ends, a member adapted to be mounted on said upright and receive said pivot means with one end of said lever engaging said upright, and a member pivotally connected to the other end of said lever and adapted to receive said horizontal piece between itself and said upright.

7. A clamp for connecting a horizontal piece of material to an upright, including a lever formed with pivot means intermediate its ends, a substantially U-shaped member adapted to be applied to said upright from one side thereof and embrace the same, the arms of said member being formed with hooked ends to receive said pivot means of said lever with one end of said lever engaging said upright, and a member pivotally connected to the other end of said lever and adapted to receive said horizontal piece between itself and said upright.

8. A clamp for connecting a horizontal piece of material to an upright, including a lever, means for pivotally mounting said lever on said upright piece so that one end of said lever engages said upright, a link pivotally connected at one end to the other end of said lever, and a member pivotally conneted to the other end of said link and

adapted to receive said horizontal piece between itself and said upright.

9. A clamp for connecting a horizontal piece of material to an upright, including a lever, means for pivotally mounting said lever on said upright piece so that one end of said lever engages said upright, a link pivotally connected at one end to the other end of said lever, and a member pivotally connected to the other end of said link and adapted to be arranged substantially parallel to said upright to receive said horizontal piece between itself and said upright.

10. A clamp for connecting a horizontal piece of material to an upright, including a lever, means for pivotally mounting said lever on said upright piece so that one end of said lever engages said upright, a link pivotally connected at one end to the other end of said lever, and a member pivotally connected to the other end of said link and adapted to receive said horizontal piece between itself and said upright, said member being formed with a projection extending toward said upright to support said horizontal piece.

JOSEPH W. KEFFER.