Feb. 17, 1931. J. A. JOHNSON 1,792,987

CONCRETE COLUMN CLAMP

Filed April 1, 1930

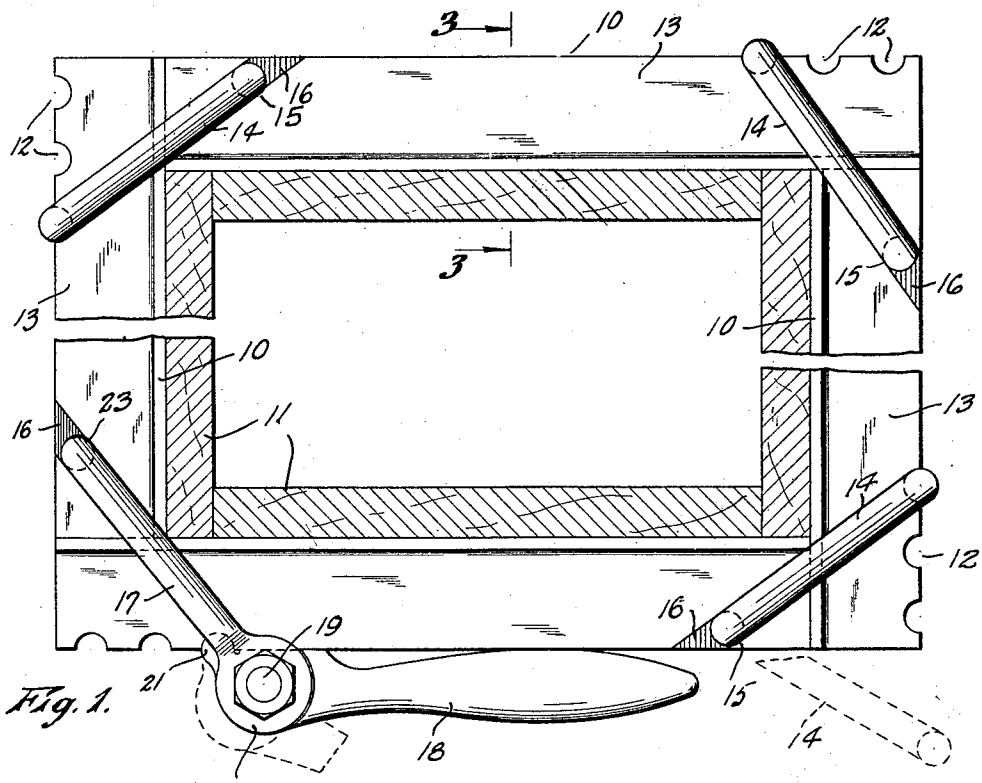


Fig. 1.

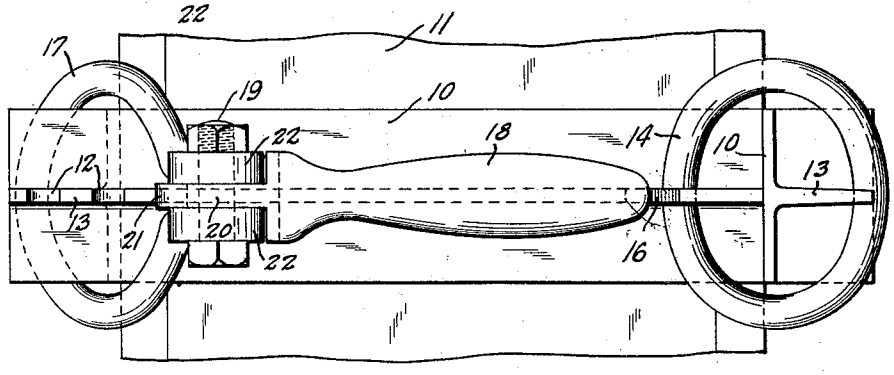


Fig. 2.

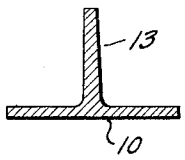


Fig. 3.

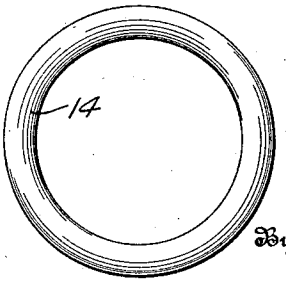


Fig. 4.

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UNITED STATES PATENT OFFICE

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CONCRETE-COLUMN CLAMP

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This invention relates to clamps for the mold forms for concrete columns, and has for an object to provide an improved clamp for this purpose which will be very simple in construction and can be manufactured at low cost; which is easy to apply to and remove from the forms; which have no parts which can be separated and lost, and which when in position will firmly clamp the form and hold it to proper shape.

With the foregoing and other objects in view, the invention consists in certain novel combinations and arrangements of parts, one form of which is illustrated in the accompanying drawing forming a part of this specification. In this drawing

Fig. 1 is a transverse section through a concrete column form showing my improved clamp applied thereto.

Fig. 2 is a side elevation thereof looking from the bottom of Fig. 1.

Fig. 3 is a transverse section of one of the bars taken substantially on line 3—3 of Fig. 1, and

Fig. 4 is a plan view of one of the links for connecting the bars.

The clamp comprises four bars 10 to be clamped against the sides of the wooden mold 11 in which the concrete is poured and held until set for forming the concrete column. It will be evident that to properly hold the mold to shape, the clamps must be strong and rigid so as to prevent spreading or bulging of the mold so that the finished column will have the proper size and shape, and in order to reduce labor cost should be easily and quickly manipulated, both to apply them to the mold and to remove them therefrom. Also, as a large number of clamps are used on a job of any size they should be of a construction which can be manufactured at relatively low cost, and also to save time they should not have parts which can become loose or detached and thus lost during transportation or storage. These requirements are all met in my improved clamp.

The bars 10 may be of various shapes in cross section, but preferably are of substantially T shape as illustrated, as this is a simple shape, is strong and rigid, is easily handled and has a wide base to rest against the surface of the form for clamping it. Adjacent one end of each bar 10 is provided one or more shoulders for engagement with a connecting element. These shoulders are preferably provided by means of notches 12 and may be of any desired number. In the present instance, they are formed in the edge of the central rib 13 of the bars. Adjacent to the other end of each of three of the bars 10 of the clamp is secured a connecting link 14. This link is pivotally connected to the bars and is adapted to swing over the opposite end of an adjacent bar and seat in one of the notches 12. It will thus connect the two bars together. These links 14 are preferably substantially circular rings as shown and may be of any suitable material. They should preferably be of a metal which will have a certain amount of resilience so as to yield somewhat when the bars are clamped to the form and so that this action will tightly and continuously hold the bars against the sides of the form. They may be made of steel, malleable iron or other suitable material. They are pivotally connected to their respective bars at the point 15 so that they can swing to and from engagement with the next adjacent bar. The pivots may be formed by openings in the ribs 13. In the present arrangement, these openings are formed by notching the rib and then after the link is in position, filling in the open side of the notch as shown at 16 by any suitable means such as welding.

The fourth link indicated at 17 is pivoted to its bar 10 at 23 in the same manner as the links 14, but at its opposite side is pivoted to toggle lever 18 by any suitable means such as a transverse bolt 19. In the present construction the lever 18 has a central tongue 20 provided with a rounded projection or lug 21 adapted to seat in one of the notches 12, and the link 17 has ears 22 located on opposite sides of the tongue 20, while the pivot pin 19 passes through these ears and the tongue. The projection 21 is so located that when the lever 18 is swung on its pivot, the line joining the centers of pivot 19 and the pivot 23 of the link 17 will pass by the center

of the projection 21. It will thus secure a sort of toggle action which will give a great clamping force and will also automatically hold the lever in clamping position.

In operation, the bars 10 are placed about the form on the four sides thereof and the links 14 are swung to position to seat in their proper notches 12. The link 17 is then swung to position to permit seating of the extension 21 in one of the notches 12 and the lever 18 is swung inwardly toward the form about the pivot 19, the movement being counterclockwise as viewed in Fig. 1. The elements are so proportioned that as the lever 18 approaches the full line position of Fig. 1, the line joining the centers of pivots 19 and 23 passes over the projection 21 to secure a sort of toggle action which gives a great clamping force and tightly clamps the bars about the form 11. During this clamping action, the links 14 and 17 yield somewhat due to their resiliency and then after the lever has reached the clamping position, this resiliency automatically maintains the clamping bars tightly against the sides of the form. After the concrete has properly set, the clamps are easily and quickly removed by swinging outwardly the lever 18 which thus loosens the clamp, and the various bars can then be easily and quickly taken off. As the links 14 and 17 are permanently attached to the bars, they are always in position for immediate use and will not drop off and be lost.

It will be apparent that while I have shown and described my invention in the preferred form, many changes and modifications may be made in the structure disclosed without departing from the spirit of the invention defined in the following claims.

Having thus set forth the nature of my invention, what I claim is:

1. A concrete column form clamp comprising bars to engage the sides of the form and each having one or more notches at one end, a link pivoted to each bar adjacent the other end, a lever pivoted to one of said links having a projection to seat in one of the notches of an adjacent bar and so arranged that when the lever is moved to clamping position the line joining the pivots of the connected link will pass said projection, and the other links being adapted to engage the notches of the adjacent bars.

2. A concrete column form clamp comprising bars to engage the sides of the form and each having one or more spaced shoulders adjacent one end, a link pivoted adjacent to each bar adjacent the other end, a toggle lever pivoted to one of said links and having means to engage one of the shoulders of the adjacent bar, and each of the other links being adapted to engage one of the shoulders of the respective adjacent bars.

3. A concrete column form clamp comprising a plurality of T-bars to engage the sides of the form, each of said bars having one or more notches in the edge of the central rib adjacent one end, a link pivoted to said rib adjacent the other end, a toggle lever pivoted to one of said links and having means to seat in one of the notches of the adjacent bar, and the remaining links being adapted to each seat in a notch of the respective adjacent bar.

4. A concrete column form clamp comprising bars to engage the sides of a form, links detachably connecting the adjacent ends of the respective bars, and a toggle lever pivoted to one of said links and having means to engage the bar adjacent the bar to which said link is connected to clamp the bars against the form.

5. A concrete column form clamp comprising a plurality of T-bars to engage the sides of the form, a substantially ring shaped link pivoted to each bar adjacent one end thereof, means for detachably connecting each link to the next adjacent bar, the latter connection for one of the links comprising a toggle lever pivoted to the link and having means connected to the adjacent bar to cooperate therewith to clamp the device on a form.

6. A concrete column form clamp comprising a plurality of T-bars to engage the sides of the form, a substantially ring shaped link pivoted to each bar adjacent one end thereof and having one or more notches adjacent its other end to detachably receive the links of the link of the next adjacent bar, a toggle lever pivoted to one of the links and having an extension to seat in one of said notches to detachably connect the lever to the bar and cooperate therewith to clamp the device about a form.

In testimony whereof I affix my signature.

JOHN A. JOHNSON.