

Sept. 30, 1924.

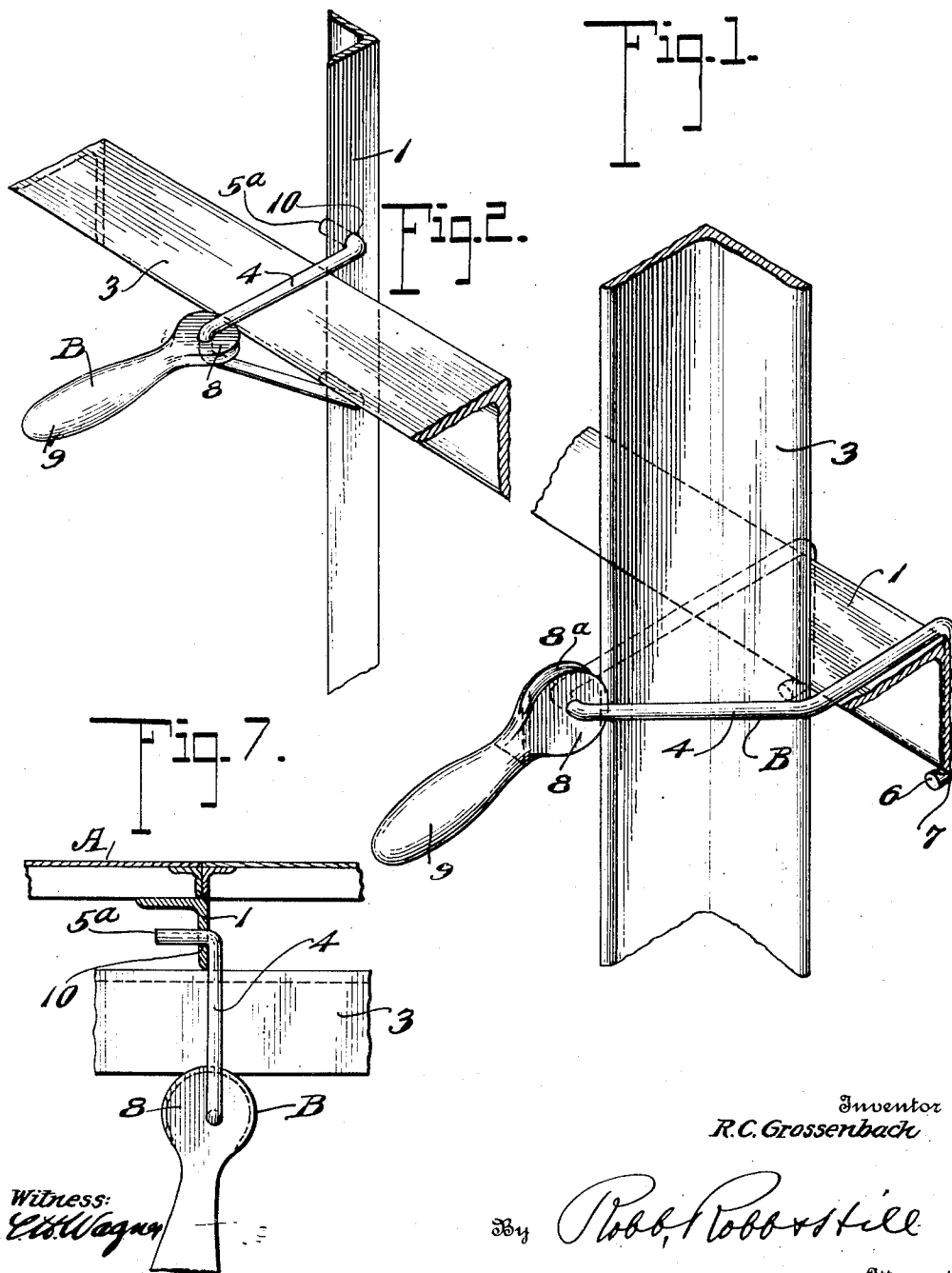
R. C. GROSSENBACH

1,509,835

ALIGNER CLAMP

Filed April 23, 1921

2 Sheets-Sheet 1



Sept. 30, 1924.

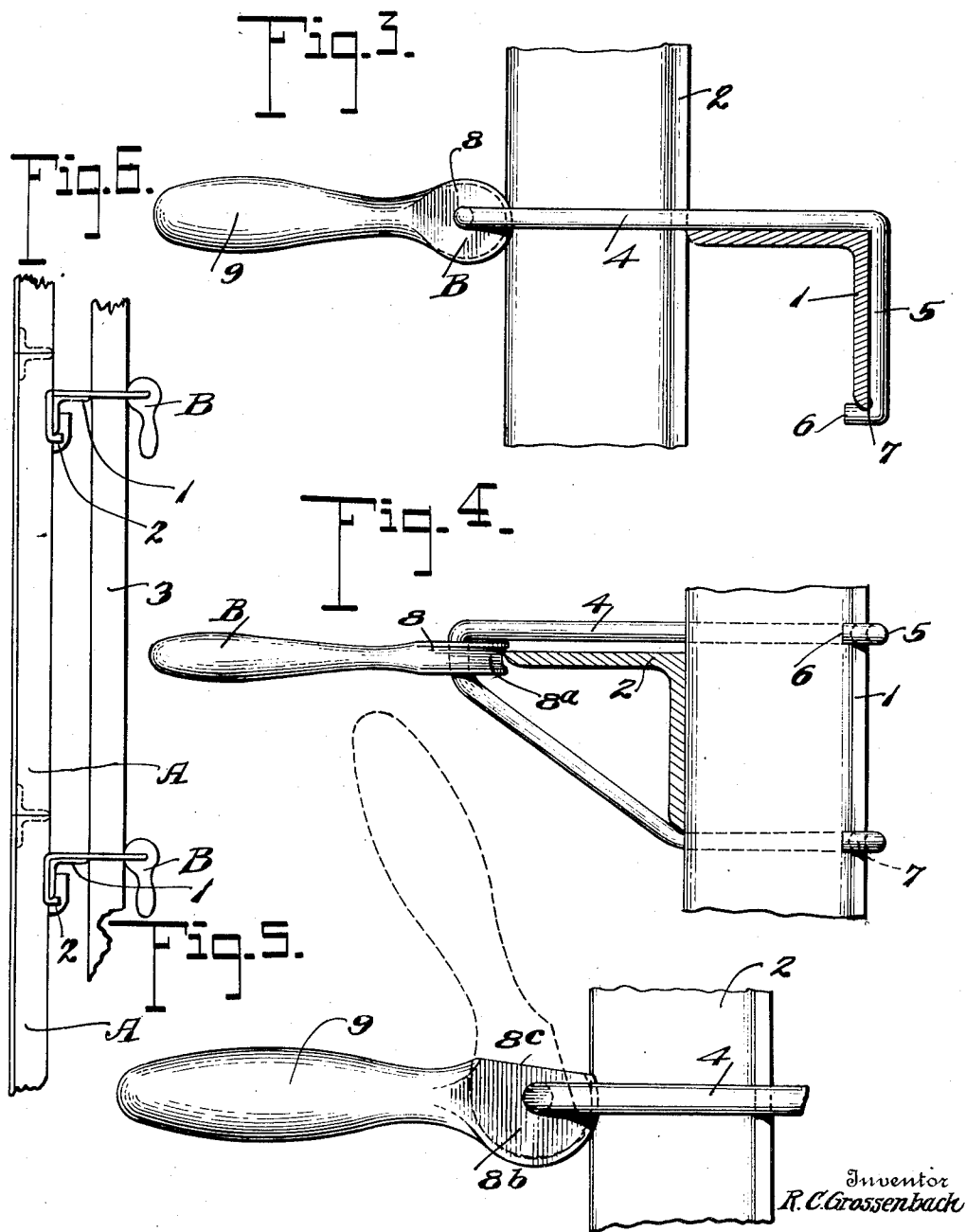
R. C. GROSSENBACH

1,509,835

ALIGNER CLAMP

Filed April 23, 1921

2 Sheets-Sheet 2



Inventor
R. C. Grossenbach

Witness:
W. Wagner.

By Robt. Robb & Hill
Attorneys

UNITED STATES PATENT OFFICE.

RUDOLPH C. GROSSENBACH, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO METAL FORMS CORPORATION, OF MILWAUKEE, WISCONSIN, A CORPORATION.

ALIGNER CLAMP.

Application filed April 23, 1921. Serial No. 464,044.

To all whom it may concern:

Be it known that I, RUDOLPH C. GROSSENBACH, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Aligner Clamps, of which the following is a specification.

In concrete construction work the use of wooden forms has been largely superseded by standardized metal forms which are constructed in interchangeable units so that they can be used repeatedly and assembled in many different relations. The different units of such a metal form are ordinarily provided with some means for connecting the units together, although where a large panel of units has been assembled it is frequently desirable to reinforce and stiffen the entire panel of assembled units by intersecting brace bars extending along the outer face of the panel in different directions. Ordinary angle irons are used extensively as such brace bars, and these brace bars are fastened together at their points of intersection by suitable clamps so that a firm and rigid construction is obtained when all of the parts are properly assembled.

The object of the present invention has been to provide a clamp for fastening the brace bars at their points of intersection, said clamp embodying novel features of construction whereby it can be produced at a comparatively small cost and will hold the brace bars rigidly together when it is applied thereto. The clamp is also constructed in such a manner that it can be quickly placed in position or removed therefrom without any loss of time, thereby enabling the brace bars to be removed from one position and placed in another position along with the form units as the pouring or placing of the concrete advances.

With this and other objects in view the invention consists in certain combinations, arrangements and associations of the parts, as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a perspective view of a clamp

which is constructed in accordance with the invention, together with fragmentary portions of two intersecting brace bars which are held together by the clamp.

Figure 2 is a similar view showing a modified form of the invention.

Figures 3 and 4 are detail views of the clamp shown by Figure 1.

Figure 5 is a detail view showing a slightly modified form of cam member.

Figure 6 is an edge view of a portion of a wall form provided with brace bars which are secured by clamps constructed in accordance with the invention.

Figure 7 is a detail view of the modification illustrated by Figure 2.

Corresponding and like parts are referred to in the following description and indicated in all of the views of the drawings by like reference characters.

The concrete form itself is intended to be constructed of a series of standardized units A which may be of any approved construction. For straight wall work, the units are ordinarily rectangular in shape so that they can be conveniently assembled in superposed horizontal rows. The abutting edges of the form units A are suitably connected, and a horizontal brace bar 1 extends across the back of each of the horizontal rows of units. These brace bars 1 may be formed of ordinary angle iron bars, and may be supported by notched webs 2 projecting from and secured to the back of the form units, as indicated by Figure 6. Upright or vertical brace bars 3 engage the outer edges of the horizontal brace bars 1 and the two sets of brace bars are rigidly connected at their points of intersection by the clamps B. The assembled form units A are thus held rigidly in horizontal and vertical alignment with each other so that they will not bulge outwardly or lose their shape under the pressure of the plastic concrete which is poured into the mold.

The clamps B have a novel construction which not only provides for a stiff and rigid joint at the brace bar intersections, but also enables the clamps to be manufactured at a very moderate cost. Each of the clamps includes a forked or U-shaped frame which straddles the outer brace bar, either the vertical brace bar or the horizontal brace bar, and detachably engages the other brace bar. The U-shaped frame may be conveniently

and inexpensively formed by suitably bending a piece of heavy wire, and this wire is preferably of such a character that it is slightly resilient. In Figure 1 the ends of the U-shaped frame are bent laterally to provide the arms 5 which extend across the back of the horizontal brace bar 1, and the extremities of the laterally bent portions 5 terminate in rearwardly extended noses 6 which hook around the edges of the brace bars. These noses 6 are preferably notched at 7 so that they will interlock with the edge of the angle iron brace. The lateral arms 5 have a length corresponding to the base of the angle iron bar and the slight resiliency of the frame permits of the hooked ends thereof being sprung around the brace bar in an interlocking engagement therewith. This is clearly indicated by Figure 3.

The looped end or bight of the U-shaped frame 4 is provided with an eccentric locking member 8, said locking member being provided with a handle 9 and having a grooved edge 8^a which engages the outer edge of the upright brace bar 3. After the U-shaped frame has been initially applied to the intersecting brace bars so that it straddles one of the brace bars and hooks around the other brace bar, the handle 9 is manipulated to bring the grooved edge 8^a of the eccentric locking member into a clamping engagement with the adjacent bar. The two brace bars are thereby positively clamped together with the result that a stiff and rigid joint is obtained.

A slight modification is illustrated by Figure 5 in which the eccentric member 8^b is provided with a flat side 8^c so that it can be quickly released. When the handle 9 is swung upwardly into the dotted line position the flat side 8^c of the eccentric is brought into such a position as to release the clamp, although when the handle is swung downwardly the eccentric is brought into operative position to clamp the brace bars.

Figures 2 and 7 illustrate a further modification in which the lateral arms 5^a constitute hook members which are inserted through suitable openings 10 in the inner brace bar. The U-shaped frame 4 of the clamp straddles the outer brace bar, as in the previous instance, and after the hooked arms 5^a have been inserted through the openings 10 of the other brace bar, the eccentric locking member 8 is actuated to forcibly clamp the brace bars together. In all of the

forms of the invention, the U-shaped frame straddles the outer brace bar and is of such a character that it can be inexpensively formed by suitably bending a length of wire or strip of similar material. It will be obvious that many changes can be made in the details of construction without departing from the spirit of the invention, and the specifications and drawings should accordingly be considered in an illustrative rather than in a restrictive sense.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A clamp for fastening intersecting bars, said clamp being formed with a U-shaped frame adapted to straddle one of the bars and having hooked end portions adapted to engage the other bar, said hooked end portions terminating in returned noses for fitting around and interlocking with the said bar, and a locking member mounted upon the frame for engaging one of the bars to clamp the bars rigidly in position.

2. A clamp for fastening intersecting bars, said clamp being formed with a U-shaped frame adapted to straddle one of the bars and provided with hooked ends terminating in returned noses to fit around the other bar, said noses being recessed to interlock with an edge portion of the said bar and assist in holding the parts together, and a locking member mounted upon the frame for engaging one of the bars to clamp the bars rigidly in position.

3. A clamp for fastening intersecting angle iron bars, said clamp including a frame having a looped portion adapted to straddle one of the bars and hooked end portions for detachably engaging the other bar, and an eccentric cam permanently mounted upon the frame and formed with a grooved edge portion for engaging an edge of one of the angle iron bars for clamping the bars rigidly in position.

4. A clamp for fastening intersecting bars, said clamp including a body portion adapted to detachably engage one of the bars and a hooked portion adapted to detachably engage the other bar, said hooked portion terminating in a nose which is recessed to interlock with a portion of the second mentioned bar, and a locking member cooperating with the body portion to force the intersecting bars tightly together.

In testimony whereof I affix my signature.
 RUDOLPH C. GROSSENBACH.