

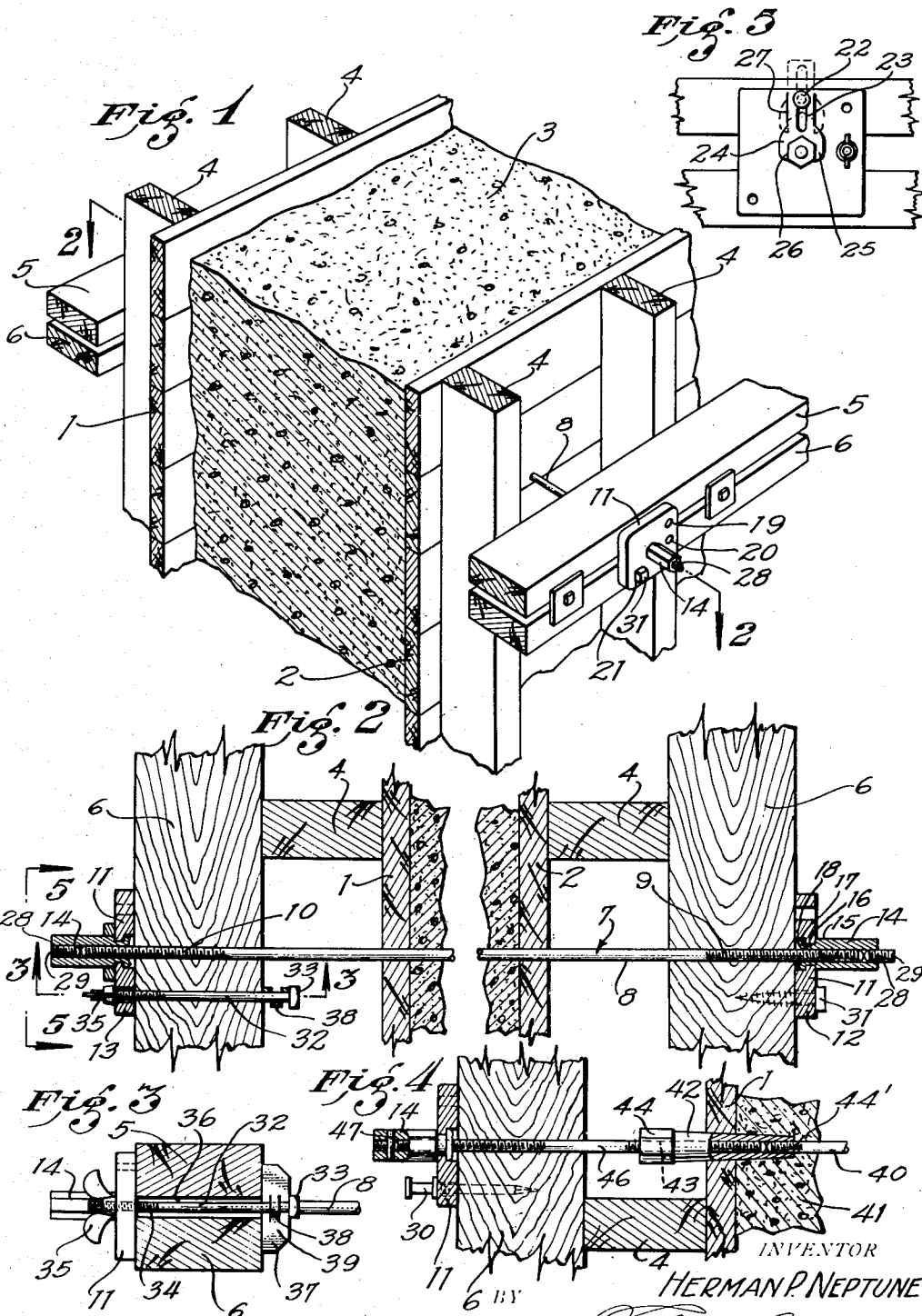
June 6, 1939.

H. P. NEPTUNE

2,161,379

FORM CLAMP

Filed May 29, 1936



INVENTOR  
HERMAN P. NEPTUNE  
*Calvin Brown*  
ATTORNEY

# UNITED STATES PATENT OFFICE

2,161,379

## FORM CLAMP

Herman P. Neptune, Los Angeles, Calif.

Application May 29, 1936, Serial No. 82,489

### 1 Claim. (Cl. 25—131)

This invention relates broadly to form clamps, and more particularly to a type of device generally designated as a concrete form-clamp.

The invention has for an object the provision of a form-clamp so constructed and arranged that the clamp, when positioned, is capable of acting as a spreader, to the end that sheathing or sheeting is accurately spaced, all adjustments being from the outside of said sheathing.

Another object is the provision of a form-clamp having few parts, is capable of rapid adjustment, wherein the spacers are cut to length whereby patching is unnecessary; spreaders of the usual type which normally extend between sheathing eliminated, and in which screw adjustments are entirely done away with.

In the practice of one form of my invention, I provide what may be termed a tie rod, although the said rod functions as a waler rod as well, and in which said tie rod is of a length sufficient to pass between and through two spaced-apart sheathing members, between which sheathing members is interposed concrete. The said tie rods in each instance are inwardly threaded from both ends, and I provide brackets adapted to be secured to the wales which are commonly provided in conjunction with studding for maintaining the sheathing in position, the said brackets being secured to the wales in any approved manner and which brackets are so formed as to carry a turnable nut. Two nuts and two brackets are provided, and the screw-threaded length of a tie rod is threaded between the said nuts. The nuts are of extended length and are adapted to receive in end portions thereof further screw-threaded adjusting members, which limit the screw-threaded engagement of the tie rod with the nuts. In this manner, having selected a given spacing for the sheathing, it is possible in advance of a given job to provide the stops or abutments within the respective nuts, the different tie rods being of a selected length, to the end that a turning of a single nut will function to separate the sheathing and maintain the spacing therebetween. The advantage of this construction is undoubtedly apparent to those skilled in this particular art, for the reason that few parts are utilized and, as previously stated, no separate spacer rods are necessary between the sheathing. In certain localities, it is necessary to leave the tie rod within the concrete, with ends thereof spaced inwardly from the surface of the concrete at least one inch. Where this is required, I use a short tie rod and, in addition, a waler rod adapted to

engage the tie rod, the remaining elements of the invention being the same as just stated. In the first form of the invention stated, the tie rod may be removed from the concrete. In the second form, the tie rod is left within the concrete.

A further object of the invention is the provision of a form-clamp which is simple of construction, inexpensive in cost of manufacture, may be utilized by unskilled labor and still produce accurate results in the formed wall, of few parts, and generally superior to form clamps now known to the inventor.

With the above mentioned and other objects in view, the invention consists in the novel and useful provision, formation, construction, association, and inter-relation of parts, members and features, all as depicted in certain embodiments in the accompanying drawing, described generally and more particularly pointed out in the claim.

In the drawing:

Figure 1 is a fragmentary perspective view, partly in vertical section, illustrating my improved form-clamp in the act of maintaining sheathing in position, with concrete poured between said sheathing,

Figure 2 is an enlarged fragmentary sectional view on the line 2—2 of Figure 1,

Figure 3 is a cross sectional view of certain elements of the invention on the line 3—3 of Figure 2,

Figure 4 is an enlarged fragmentary sectional view of a modified form of the invention, and,

Figure 5 is an elevation, certain parts being shown in fragment and looking in the direction of the lines 5—5 of Figure 2.

Referring now with particularity to the drawing, and specifically to Figure 1, I have shown at 1 and 2 sheathing. This sheathing comprises a plurality of wooden members between which is adapted to be poured the substance which forms the wall and, in the present instance, the drawing illustrates concrete 3. For the purpose of maintaining the sheathing in position, it is usual to provide externally of the said sheathing, studding designated generally as 4, the studding being spaced vertically relative to the sheathing. Adapted to engage the studding are what are known as wales, usually in pairs, as shown at 5 and 6. It is necessary that the wales be tied in order that the wales properly engage the studding and maintain the studding against the sheathing, as is self-evident. However, before the concrete 3 is poured, it is essential that some means

be provided for properly aligning the sheathing and maintaining said sheathing in a defined relationship whether it be parallel or angularly related. In the present instance, I have assumed that the sheathing 1 and 2 is maintained in parallel relationship during a pouring of the concrete therebetween. To maintain the sheathing in parallel relationship, it is necessary to provide some form of clamp. My invention, in the embodiment shown in Figures 1 and 2, is designated generally and as an entirety by the numeral 7. This clamp includes a tie rod 8, threaded inwardly from both ends, as shown at 9 and 10, brackets or face plates 11, of which there are two, as shown at 12 and 13, each bracket or face plate carrying a rotatable nut 14. Each nut 14 is provided with an axially threaded bore, the threads of which are adapted for engagement with the threaded portion of the tie rod 8, whether it be the portion 9 or 10, or both. A nut 14 has two body portions of different external diameter, as illustrated at 15 and 16, and a plate or bracket 11 is formed with two axially aligned bores 17 and 18, the bore 18 being of greater internal diameter than the bore 17. The portion 16 of the nut is passed through the bore 17 of the plate or bracket, after which an end portion of the nut is flanged so as to lie within the bore 18. This flanged portion will engage the shoulder interposed between the two bores of the nut, while the base of the portion of largest diameter of the nut will engage the outer face of the bracket or plate. This method of fastening the nut to the bracket or plate is simple, expedient and inexpensive. The said bracket or plate may also be formed with other through openings, as shown in Figure 1, at 19, 20 and 21.

One or the other of the plates or both of the said plates may be provided with lock mechanism of the character depicted by way of illustration in Figure 5, wherein said bracket or plate is provided with an outstanding headed stud 22, the said stud having its shank passed through an elongated slot 23 of lock 24. This lock includes a head 25 formed with a nut surface-conforming slot 26 and an integrally associated shank 27 provided with the slot 23, previously mentioned. Thus, the shank may be moved relative to the stud to the end that the nut-engaging head may release said nut when the lock is moved in one direction.

It is to be observed in Figure 2 that each nut 14 is adapted to receive a means for limiting the screw-threaded engagement of said nut with a threaded end of the tie rod. This means is shown at 28. The said means may comprise a screw received within the nut and against which one end of the tie rod abuts, thus stopping inward reception of the tie rod within the nut. This screw may be provided with a kerf 29 whereby the screw may be adjusted in a simple manner within said nut. Obviously, having decided upon the spacing between the sheathing and the length of the tie rod, the proper positioning of the screws 28 within their respective nuts 14 is easy of ascertainment. The brackets or plates must be secured to the wales; otherwise, the wales would not move when a nut is turned. For securing the brackets or plates to the wales, a double headed nail, such as shown in Figure 4 at 30, may be resorted to, the nail being driven through one of the openings 19 or 20 for this purpose. I may, as illustrated in Figure 2, provide a lag screw 31 for securing the bracket to a wale, or the means

shown in Figure 3 may be resorted to, which means consists in providing a bolt 32, one end of which is headed at 33, and a portion of the opposite end of the shank of the bolt threaded at 34, to receive a wing nut 35. The shank of the bolt is adapted to be passed between two of the wales, as shown in Figure 3 at 36. In order to hold the headed end of the bolt, I have provided a bracket 37 which overlies said wales. The bracket 37 may comprise a metal piece having an up-struck portion 38, the shank of a bolt being passed between said up-struck portion and the face surface 39 of the bracket.

In Figure 4, I have shown a slight modification of my invention, wherein the tie rod 40 may be left within the concrete shown at 41. Certain ordinances require that the tie rods shall not be removed from the concrete, but that the ends of the tie rods shall project inwardly at least one inch from the surface of the formed concrete wall. Where such requirements must be complied with, I provide an elongated conical-surfaced nut 42 formed with a threaded central bore 43. This nut is provided at one end with angularly related peripheral faces 44, whereby a suitable tool may engage said faces for the purpose of turning the nut. The tie rod 40 would have both ends thereof threaded, as shown for one end at 44' for reception within said nut 42. A further screw-threaded rod 46, which may be termed either a tie rod or waler rod, has threaded engagement with the said nut 42 at one end, and likewise threaded engagement with a nut 14 of the character depicted in Figure 2. In place of utilizing a short stud screw, such as shown at 28 in Figure 2, I may utilize a cross piece 47 for limiting movement of the rod 46 in one direction.

The operation, uses and advantages of the invention just described are undoubtedly understood by those skilled in this particular art. However, it is apparent that the present invention provides a simple means for either moving the sheathing inwardly or for separating the sheathing. Having selected a tie rod of a given length, the exact separation between the sheathing is accurately maintained by providing the stops within the nuts. All that is required is a turning of one of the nuts upon a tie rod for this purpose.

The use of the invention depicted in Figure 4 renders removal of the rod 46, together with the nut 42, from the concrete, easy of accomplishment, the nut having a conical periphery.

I may provide other forms of lock for preventing turning of the nut than that shown by Figure 5. Any simple means may be provided for holding the nut.

I claim:

In combination with the sheathing and the wales of a form board, a form board clamp including a tie rod threaded at one end to be extended through said form board, a face plate for engaging the wales of said form board, through which plate said tie rod is extended, a nut engaging the threaded end of said tie rod, said face plate being provided with an enlarged bore through which said tie rod extends and formed with an internal annular flange, the inner end of said nut being reduced and extended through said flange and into said enlarged bore, and the inner end of said nut being externally flanged for engagement with the inner side of said internal flange in said plate.

HERMAN P. NEPTUNE.