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CLAMP AND FRAME COMBINATION FOR SINKS AND THE LIKE

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The invention relates to a clamp and frame combination particularly for securing sinks and the like in an opening in a drainboard. The clamp and frame combination is inexpensive to manufacture in that all parts used are pressed and punched into shape. The clamp and frame combination is also easily and quickly assembled with a drainboard and sink.

It is an object of the invention to construct a clamp and frame combination which is inexpensively manufactured, effectively clamps the sink to the drainboard, and the whole combination is easily assembled.

Another object of the invention is to construct a clamp and frame combination utilizing a standard nut and screw, the nut being held against rotation by the form of the clamp.

A still further object is to construct a clamp and frame combination in which the frame is pressed into form to serve as the nut for the screw.

Another object is to construct a drainboard, frame and clamp combination in which the combination is so constructed that the nut or screw is held against rotation when the other is tightened.

A further object is to construct a drainboard, frame and clamp combination such that the frame will be restrained against lateral shifting.

Again the construction has the objects of the two preceding objects in which the same structure performs both functions.

Another object is to construct a new and inexpensive sink clamp which holds a screw or nut part against turning when another part is being tightened and also preferably provides means against lateral shifting of a frame when the combination is assembled.

Other objects of the invention will be more apparent from the following description when taken in connection with the accompanying drawings illustrating several forms of the invention in which:

Figure 1 is a side view of the clamp and frame mounted with a drainboard and sink;

Figure 2 is a front view of the clamp and frame mounted on the drainboard and sink;

Figure 3 is a side view of another form of clamp and frame combination;

Figure 4 is a side view of a clamp and frame combination mounted with a drainboard and sink with the frame pressed into a form to provide a threaded nut for the screw;

Figure 5 is a front view of the clamp and frame combination of Figure 4 mounted with the drainboard and sink;

Figure 6 is an edge view of the frame of Figure 4;

Figure 7 is a partial section of a sink assembly showing a side view of another form of sink clamp;

Figure 8 is a partial section of a sink assembly showing a side view of an additional form of clamp; and

Figure 9 is a top view of the clamp of Figure 8.

The drainboard, clamp and frame combination of

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Figures 1 to 6 secures together a drainboard and a sink which is received in an opening in the drainboard and it may be termed a combination of clamp and frame. The combination of drainboard, frame and clamp shown in Figures 7 to 9 provides a construction particularly suitable for thin metallic drainboards so that the frame and hence the sink cannot shift laterally of the drainboard when the sink is being installed upon the drainboard.

The clamp and frame combination secures together a drainboard 10 and a flange 11 of a sink which is to be secured in an opening 12 in the drainboard. The combination includes a U-shaped clamp 15 having spaced legs 16 and 17 connected together by a connecting member 18. The leg 17 preferably carries a foot 19 at the end thereof for engaging a greater area of the underside of the drainboard when it is of wood. The end of the leg 16 engages the underside of the metal sink flange. The clamp has an opening for a clamping screw 21 which in the form of Figure 1 is a hole 20 through the connecting member.

The frame is of generally sickle-shaped construction in cross section and includes a downwardly extending frame leg 24. The frame conforms to the drainboard opening and extends around the edge thereof. At the upper end is a lateral extension 25 forming a shoulder or abutment which engages the upper face of the sink flange 11 and extending on the opposite side of the frame leg is a lateral extension 26 forming a shoulder or abutment which engages the top surface of the drainboard. The frame is bent from sheet material, and preferably the upper extension 26 is connected with the edge of the lower extension and is preferably spaced from each other in order that the sink flange may be at a lower level than the top surface of the drainboard. The frame leg carries a series of spaced slots along the length thereof, one being provided for each clamp and one such slot 27 being shown.

The frame leg 25 carries means for engaging the threads on the screw. In the construction of Figures 1 and 3 this means is an ordinary nut 29 preferably square which is received in the slot 27 in the frame leg. The legs 16 and 17 of the clamp preferably are spaced apart a distance approximating the width of the nut so that the nut engages the walls or sides of the legs and is prevented from turning thereby. In the construction of Figure 3, the legs are spaced farther apart and a leg, preferably the leg 17, has an inwardly directed foot 22 for engaging the bottom surface of the drainboard. A downwardly extending flange 23 is carried by the foot and is spaced from the leg 16 of the clamp a distance approximating the width of the nut so that the wall of the flange and the leg 16 hold the nut against turning when the screw is tightened. In the forms shown in Figures 1-3 the U-shaped clamp has a form providing means or at least one wall which is spaced apart a distance approximating the width of a screw element or particularly the nut to retain the nut against turning. The slot 27 in the frame provides a clamping shoulder for the nut.

In the construction of Figures 4-6, the frame leg carries oppositely directed half loops 30, 31 and 32, which have threads impressed therein which provide means or nuts for receiving and engaging the threads of the screw. Two or more such half loops may be provided, there being three illustrated. In the constructions shown in Figures 1 to 6, the nut is carried by the frame leg whether it is a nut carried in a slot or a nut pressed into the frame leg.

In clamping the sink to the drainboard, the frame is inserted in the drainboard opening 12 with the drainboard engaging the shoulder formed by the extension 26 and

the drainboard is inverted with its top surface down on a table or the floor. A sink is then placed within the frame with the sink flange 11 resting upon or engaging the extension 25. A nut is inserted in the slot 27 in the constructions of Figures 1 and 3. A clamp is then positioned, as illustrated, over a threaded means which may be the nut 29 or a threaded means 30, 31 pressed into the frame leg after which the screw 21 is inserted through the opening or hole 20 and threaded into the threaded means. Tightening of the screw then pulls the nut and frame downwardly, or upwardly when assembling in inverted relation, which draws the frame and clamp together to clamp the frame to the drainboard and the sink flange against the extension 25 of the frame. As many clamps may be used as desired around the frame to firmly secure the drainboard, frame and sink together. With a thick or thick edged drainboard, such as of wood, the leg 24 of the frame engages the edge of the drainboard opening or lies close thereto in order to restrain or prevent lateral shifting of the frame with respect to the drainboard.

Figures 7 through 9 show two forms of a combination of drainboard, frame and clamp particularly suitable for thin or thin edged drainboards such as of metal which normally would permit lateral shifting of the frame and sink with respect to the drainboard when assembling unless care were used. Both forms prevent lateral shifting of the frame and hence of the sink with respect to the drainboard. In addition the leg of the frame need not be slotted to provide a clamping shoulder for the clamping screw or have threads impressed therein to form a nut as in the forms of Figures 1 through 6, but uses the shoulder formed by the lower extension of the frame as a clamping shoulder.

Figure 7 shows a drainboard, frame and clamp combination having a metal drainboard 35 such as of sheet steel or alloy, which may be plain or may have a composition surface 36 thereon. The metal drainboard has an angle member 37 secured thereto as by welding which is spaced from but adjacent to the edge of the opening 38 in the drainboard. One of the functions of the angle member is to give increased rigidity to the drainboard at the edge of the opening. Other functions will appear more fully hereinafter.

The frame is essentially the same as that shown in Figures 1 through 4 with the exception that the leg need not be as long and the slots or threaded loops are not provided. The extension 26 in being attached to the edge of the lower extension 25 and thereabove provides a clamping shoulder on the frame between the extensions for engagement of the head 40 of a clamping screw 41. The clamp includes a leg 42 and a connecting member 43 having an opening or particularly a hole 44 therethrough through which the clamping screw projects. A nut 45 is received upon the screw which engages the connecting member to clamp the drainboard, frame and sink together.

With a metal plate drainboard, the assembly usually is made by inserting the frame into the drainboard opening with the extension 26 engaging the top surface after which the drainboard is placed with its top surface downwardly. The flange 11 of the sink is then placed within the frame against the extension 25 of the frame and a screw positioned with the head 40 engaging the clamping shoulder formed by the extension 25. The clamp is inserted in position with the screw projecting through the hole 44 and so that the leg 42 engages the under surface of the sink and the connecting member 43 or its prolongation engages the edge of the flange 37. This flange therefore has a second function in serving as the fulcrum or a clamping edge for the clamp. The nut is threaded upon the screw and is tightened to clamp the parts together. It is noted that a flat of the head 40, which with the screw comprise screw elements, contact the face or wall

of the angle member 37 and are prevented from turning thereby when the nut is tightened. The angle also cooperates with the screw or the head thereof to prevent lateral shifting or movement of the frame and sink with respect to the drainboard while being assembled.

Figures 8 and 9 illustrate another form of drainboard, frame and clamp combination as well as another form of clamp also suitable for a relatively thin metal plate drainboard. The frame is the same as that shown in Figure 7. The clamp is of general U-shaped construction in that it includes a clamp leg 48 which engages the underside of the drainboard and a second clamp leg 49 which engages the underside of the sink flange 11. The leg 24 of the frame is received in a slot 50 between the legs.

The clamp of Figures 8 and 9 is a double U formation as shown in Figure 9 in that it is U-shaped in a horizontal plane or section formed by a pair of spaced flanges connected by a base 51 and each flange of the clamp is of U-shaped form with a slot 50 extending from the upper edge of each flange and parallel with the base. The base 51 carries a tab 52 struck inwardly between the flanges, the purpose of which will be explained hereinafter. The clamp preferably carries at least one ear 53 although it is desirable that one be provided on each of the flanges. This ear or projection extends above the level of the leg 48 so that it engages the edge of the opening in the drainboard 35 and prevents lateral shifting of the frame and sink relatively to the drainboard both when being assembled and after assembly.

A screw 56 is received between the pair of clamping flanges and the tab 52 retains the screw against moving away from the frame. The head 57 of the screw may be formed such as by bending the same laterally so that it will engage the shoulder formed by the extension 25 of the frame. The walls formed by the pair of spaced flanges provide an opening in the clamp to receive the screw. The walls also provide, and particularly the ears or projections 53, means to hold a screw element against turning which in the form shown is the head of the screw, when the nut 58 is tightened on the screw. The construction of Figure 8 is assembled in essentially the same manner that the form of Figure 7 is assembled.

This invention is presented to fill a need for improvements in a clamp and frame combination for sinks and the like. It is understood that various modifications in structure, as well as changes in mode of operation, assembly, and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the teachings of an invention. Hence it will be understood that this disclosure is illustrative of preferred means of embodying the invention in useful form by explaining the construction, operation and advantages thereof.

What is claimed is:

1. A drainboard, clamp and frame combination for sinks and the like comprising a drainboard having a frame opening, a frame of sheet material bent to a generally sickle-shaped form in cross-section, said frame including a downwardly depending frame leg and lateral extensions at the upper end thereof extending on each side of the leg to form a downwardly facing abutting shoulder on each side thereof for engagement with said drainboard and sink respectively, said frame also providing an upwardly facing clamping shoulder; U-shaped clamping means forming parallel clamp legs perpendicularly disposed with respect to said abutting shoulders, the clamping means having an opening located between said legs for a clamping screw, a clamping screw passing through said opening between said legs and parallel to said legs, said screw having a head, a nut received on said screw, said screw head and nut comprising screw elements of which one element produces downward pressure on said upwardly facing clamping shoulder and

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the other element applies upward pressure to both of said downwardly facing abutting shoulders.

2. A drainboard, clamp and frame combination for sinks and the like comprising a drainboard having a frame opening, a frame of generally sickle-shaped form including a downwardly depending frame leg and lateral extensions at the upper end thereof extending on each side of the leg to form an abutting shoulder on each side thereof, one extension being connected with the edge of the other extension and spaced therefrom to form a clamping shoulder; U-shaped clamping means forming clamp legs, the clamping means having an opening for a clamping screw, a clamping screw passing through the opening and having a head engaging the clamping shoulder on the frame, a nut received on the screw, and means carried by the frame and engaging the frame opening in the drainboard to prevent lateral shifting of the frame.

3. A drainboard, clamp and frame combination for sinks and the like comprising a drainboard having a frame opening, a frame of generally sickle-shaped form in cross section including a downwardly depending frame leg and lateral extensions at the upper end thereof extending on each side of the leg to form an abutting shoulder on each side thereof, one extension being connected with the edge of the other extension and spaced therefrom to form a clamping shoulder; U-shaped clamping means forming clamp legs, the clamping means having an opening for a clamping screw, a clamping screw passing through the opening and having a head engaging the clamping shoulder on the frame, a nut received on the screw, and means carried by the frame and adjacent to the screw head to retain the latter against turning and to engage the frame opening in the drainboard to prevent lateral shifting of the frame.

4. A clamping device for sinks and the like comprising a clamp of U-shaped form providing a pair of flanges spaced apart to pass a clamping screw therebetween, the flanges being connected by a base, the flanges having a slot extending from an edge and parallel with the base to form a U-shaped clamp of each flange with spaced clamping edges, a clamping screw passing between the flanges and having a head, and a nut received on the screw and engaging the lower edge of each flange.

5. A clamping device for sinks and the like comprising a clamp of U-shaped form providing a pair of flanges spaced apart to pass a clamping screw therebetween, the flanges being connected by a base, the flanges having a

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slot extending from an upper edge and parallel with the base to form a U-shaped clamp of each flange with spaced clamping edges, a clamping screw passing between the flanges and having its end bent over to form a head, a nut received on the screw and engaging the lower edge of each flange, and ear means extending upwardly from the upper edge of at least one flange adjacent to the head to prevent turning of the head.

6. A clamping device for sinks and the like to be mounted in an opening in a drainboard comprising a clamp of U-shaped form providing a pair of flanges spaced apart to pass a clamping screw therebetween, the flanges being connected by a base, the flanges having a slot extending from an upper edge and parallel with the base to form a U-shaped clamp of each flange with spaced clamping edges, a clamping screw passing between the flanges and having its end bent over to form a head, a nut received on the screw and engaging the lower edge of each flange, and ear means extending upwardly from the upper edge of at least one flange and located approximately centrally of the edge and adapted to engage a drainboard opening.

7. A clamping device for sinks and the like to be mounted in an opening in a drainboard comprising a clamp of U-shaped form providing a pair of flanges spaced apart to pass a clamping screw therebetween, the flanges being connected by a base, the flanges having a slot extending from an upper edge and parallel with the base to form a U-shaped clamp of each flange with spaced clamping edges, a clamping screw passing between the flanges and having its end bent to form a head, a nut received on the screw and engaging the lower edge of each flange, and ear means projecting upwardly from the upper edge of at least one flange and located approximately centrally of the upper flange edge to retain the screw head against turning and adapted to engage a drainboard opening.

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