C. F. SPERY.

CLAMPING FRAME FOR RADIATOR CORES.

APPLICATION FILED OCT. 1, 1918.

1,301,793. Patented Apr. 22, 1919.

FIG. 1.

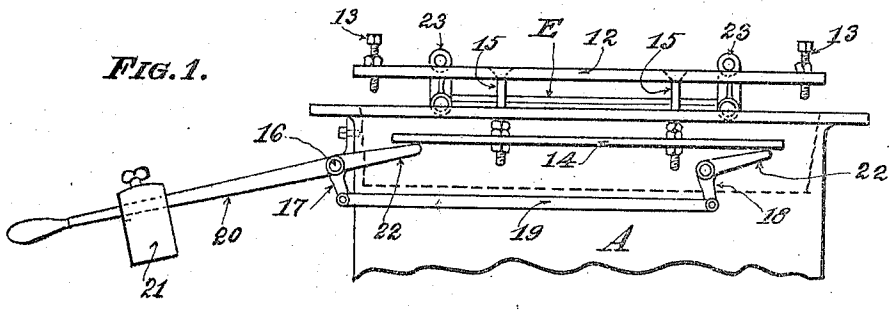


FIG. 2.

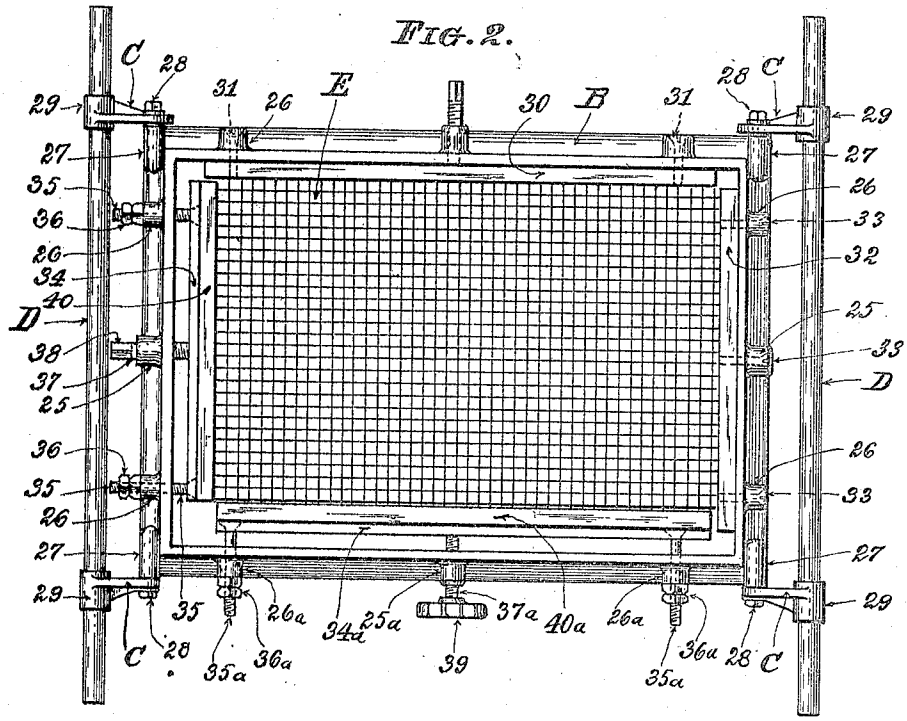
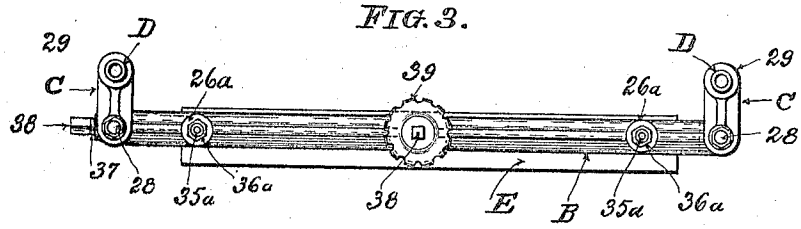


FIG. 3.



WITNESS:

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UNITED STATES PATENT OFFICE.

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CLAMPING-FRAME FOR RADIATOR-CORES.

1,301,793. Specification of Letters Patent. Patented Apr. 22, 1919.

Application filed October 1, 1918. Serial No. 256,484.

To all whom it may concern:

Be it known that I, CHARLES F. SPERY, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Clamping-Frames for Radiator-Cores; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawing, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to improvements in a clamping frame for radiator cores; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

The object of my present invention is the production of an efficient and serviceable device for accurately clamping the units of radiator cores in a metallic frame structure preparatory to dipping the core into molten solder to unite the several elements comprising the core. It is essential for rapid production, that these cores be exactly alike in length and width, which is rather difficult to accomplish, owing to the very thin metal used in the cores, and the ease with which these units can be disarranged and deformed in handling before they are homogeneously united by the soldering of the many joints and seams in the core.

To attain the above-described object, I construct the clamping device in the preferred embodiment of my invention, as illustrated in the drawings forming a part of this specification, and in which—

Figure 1 is side elevation of a dipping apparatus employed for dipping the radiator cores into molten solder, in connection with which my improved clamping device is adapted for use. Fig. 2 is a plan of this clamping device and showing a radiator core locked in position, ready for having one of its flanks dipped into the solder. Fig. 3 is a side elevation of the same.

In order that the operation of this device may be readily understood, a brief description of an apparatus in connection with which this clamping device is employed, will be of assistance. Thus A, in Fig. 1, designates a metallic tank, which contains solder, which is to be liquefied by any suitable means, such as gas-burners or the like. Upon this tank there are located bars 12, having adjusting screws 13, at their ends, by which the downward movement of these bars is limited, as will hereinafter appear. A suitable distance below these bars 12, there are other bars 14, and these latter bars are connected to the first-mentioned bars by screw-rods 15. At one end of this tank there is rotatably mounted a shaft 16, carrying at its terminals bell-crank levers 17; and at the two sides of the tank there are pivotally mounted other bell-crank levers 18, bell-crank levers 17, 18 at one side of the tank being connected by a rod 19, as are also the bell-crank levers at the opposite side of the tank. A hand lever 20 is fixed to shaft 16, whereby the bell-crank levers may be rotatably moved.

Upon the hand lever 20 there is slidably mounted a counterweight 21, by which it is possible to so adjust this device that radiator cores of different sizes and weight can be handled in this apparatus, the counterweight being so adjusted that it fully sustains a clamping frame with its radiator core, which is sustained by the arms 22 of the bell-crank levers that underlie the lower bars 14. By lifting the hand lever 20, the bars 12, 14 will be caused to descend by their own gravity augmented by the weight of the radiator core and the clamping device when placed upon the upper bars 12, as indicated at 23 in Fig. 1.

The clamping device comprises a rectangular metallic frame B, having, preferably, a T-shaped transverse section. Medially, the bars or members comprising this frame have screw-tapped bosses 25, 25ª, and near their ends there are additional bosses 26, 26ª, all of which latter bosses are cylindrically bored, as will farther on appear. At the four corners of this frame there are further bosses 27, in which there are located pivot bolts 28, upon which are rotatably mounted links C, which links have tubular sockets 29; and in each coacting pair of these sockets there is mounted a rod D, which rod is preferably an iron tube or pipe to reduce weight.

Inside of the frame B there is secured to one member thereof a preferably wooden bar 30, by means of screws 31; and to one end-member of this frame there is secured a

similar wooden bar 32, by means of screws 33, passing through the bosses 25, 26, as shown at the right of Fig. 2. To the opposite member of the frame there is connected a metallic bar 34, having near its ends stud-bolts 35, suitably fastened to said bar and passing through the cylindrical bore of the bosses 26, there being upon said bolts locking nuts 36, by which the inward movement of the bar 34 is limited. In the central boss 25 there is mounted a set-screw 37, the outer end of which is preferably squared as at 38, and upon this squared end there may be removably placed a handle or knob 39, by which the screw 37 may be conveniently rotated. This bar 34 is faced with a wooden bar 40 preferably fastened to bar 34 by any suitable means.

In the rectangular frame opposed to the fixed wooden bar 30, there is a metallic bar 34^a, faced with a wooden bar or slat 40^a, and provided with screw-rods 35^a, having locking nuts 36^a, and a central adjusting screw 37^a, upon the squared end of which the knob 39 is placed.

To receive a core for dipping, the bars 34, 34^a, are pulled toward the side and end member of the frame, by slacking the adjusting screws 37, 37^a, whereby sufficient space is attained to conveniently place the units of which a radiator core E is composed, into the frame. Then the adjusting screw 37 is rotated to move the bar 34 inwardly until the locking nuts 36 reach the bosses 26, when further compression of the core units is prevented. Now the side screw 37^a is manipulated in the same manner until the adjusting nuts 36^a reach the bosses 26^a, when further movement of bar 40^a is arrested. In this manner a core E is compressed to proper longitudinal and transverse dimensions, which can be changed, however, when necessary, by rotation of the locking nuts 36, 36^a. And it will be noted that, as long as these locking nuts are not disturbed, radiator cores must, of necessity, be alike in size.

In placing the radiator core into the clamping frame B, care is taken that the lower flank of the core projects below the lower surface of the frame sufficiently that this flank can be immersed into the solder without also dipping part of the frame therein, the depth to which the core can be dipped into the solder being governed by the adjusting screws 13 in the bars 12 on the top of the dipping tank A. The frame is now placed upon these bars 12 by its rods D resting thereupon as shown at 23 in Fig. 1, and thus the frame is suspended therefrom by its links D. Lifting the hand lever 20 permits the frame with its associated parts to descend until the adjusting screws 13 strike the upper surface of the tank, when deeper immersion into the solder will be impossible. Immersion of the core into the solder for but a very short space of time is sufficient to completely cover the joints and seams of the core with solder, which after cooling to solidification, will homogeneously unite the parts. The opposite flank of the core is treated in precisely the same manner, the frame being reversed without removing the core, by rotating the links C on their pivots in an obvious manner.

Radiator cores for the different automobiles, motor-trucks, tractors, aeroplanes, etc., vary considerably in length, width, and thickness, so much so that a number of frames B may be required to accommodate these various sizes, which frames, however, are comparatively cheap; and where the variations in length and width are not extensive, one frame can be made to answer for several sizes of cores by a proper adjustment of the locking nuts 36, 36^a, and by substituting wooden bars 40, 40^a, of different thicknesses for those shown. These wooden bars are desirable for the reason that they are slightly elastic and, therefore, not liable to injure the delicate members of the core, and for the further reason that they are poor conductors of heat, so that the cores will not be chilled by their contact with the bars when immersed in the fluid solder.

Attention is now directed to the fact that the frames B, by being suspended at their four corners by the links C, and rods D being placed upon the bars 12 of the dipping tank, the flank of the core to be dipped will be perfectly horizontal; it being understood that these bars 12 are so adjusted by the rods 15 and the nuts thereon, that they likewise are level, so that the depth of immersion of the core into the fluid solder is perfectly uniform, and cannot be otherwise, no matter how carelessly the frames may be handled by unskilled and careless attendants, of whom it requires two to properly handle a frame.

The solder in the tank A is constantly kept at very nearly the same level by additional solder being added as fast as required.

I have hereinbefore described the preferred embodiment of my invention, but I desire it to be understood that minor details of construction may be changed and parts omitted without departing from the scope of my invention as defined in the appended claims.

Having thus fully described my invention, I claim as new, and desire to secure to myself by Letters Patent of the United States—

1. A dipping frame for radiator cores, comprising a metallic substantially rectangular frame, means in said frame for compressing said core, including bars, set-screws for moving said bars, screw-rods having adjusting nuts for limiting the movement of said bars, links at the corners of said frame,

and rods in said links by which said frame may be handled and suspended.

2. A dipping frame for radiator cores, comprising a metallic substantially rectangular frame, said frame having medially in its sides and ends bosses, adjusting screws in said bosses, further bosses in said side and end members of said frame, metallic bars movably mounted in said frame, said bars having screw-threaded rods passing through said second-mentioned bosses, locking nuts on said screw-threaded rods, pivots at the four corners of said frame, links mounted on said pivots, said links having tubular hubs, and rods mounted in coacting pairs in said tubular hubs.

3. A dipping frame for radiator cores, comprising a metallic frame, said frame having medially of its side and end members internally screw-threaded bosses, adjusting screws in said bosses, further bosses in said side and end members, metallic bars movably mounted in said frame, said bars having screw-threaded rods passing through said second-mentioned bosses, locking nuts on said screw-threaded rods, pivots at the four corners of said frame, links mounted on said pivots, said links having tubular hubs, and rods mounted in coacting pairs in said hubs, there being on the faces of said metallic bars, and on one of the side and one of the adjacent end members of said frame, wooden slats to prevent contact of the units of a radiator core with metallic surfaces while mounted in said frame.

4. An apparatus for dipping radiator cores for soldering the seams and joints in said cores, including, in combination, a tank adapted to contain solder in fluid condition, said tank having bars at its upper surface, said bars being provided with adjusting screws for limiting their downward movement, mechanism which permits said bars to descend, mechanism for elevating said bars, and a frame for carrying said radiator cores upon said bars, said frame including movable bars, adjusting screws for moving said movable bars, means for limiting the movement of said movable bars, and means on said frame for suspending said frame from said first-mentioned bars on said tank.

In testimony that I claim the foregoing as my invention, I have hereunto set my hand.

CHARLES F. SPERY.