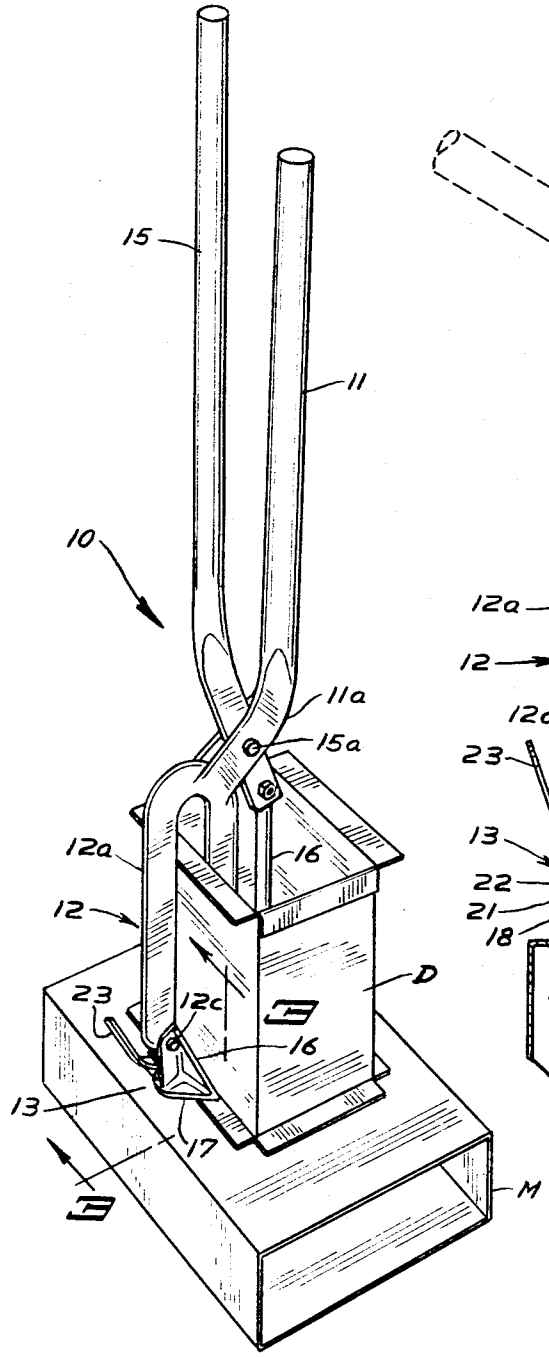
July 11, 1967 A. W. WIETERS 3,330,147

CENTER TAP DUCT CRIMPER

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FIG. 1



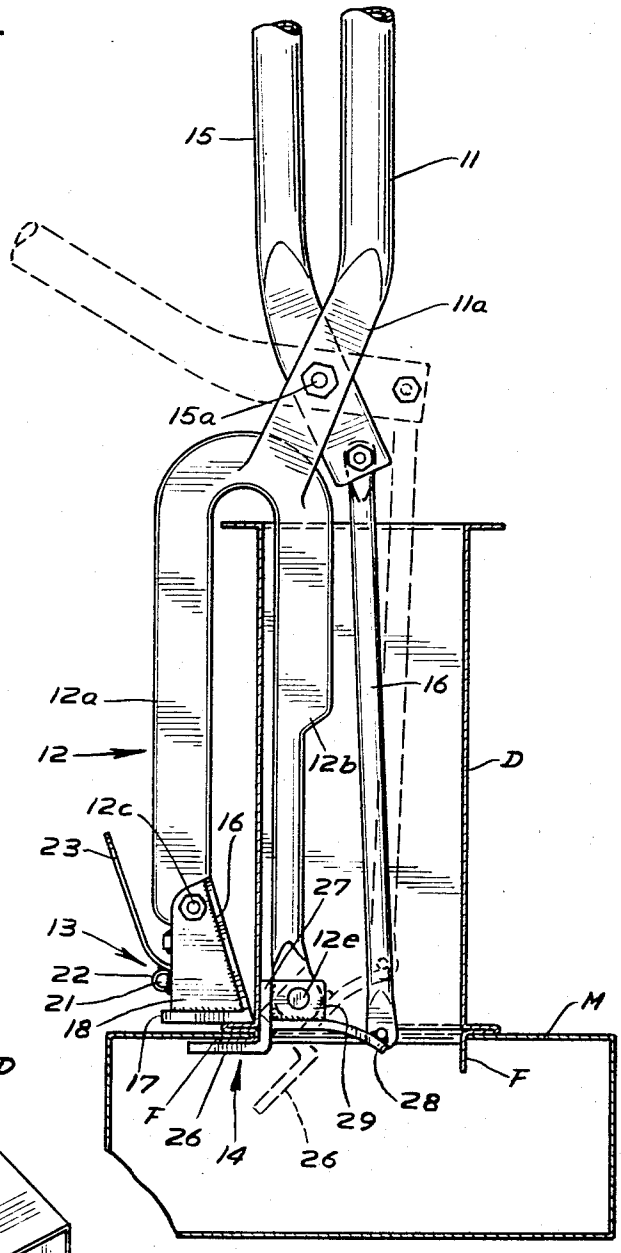


FIG. 2

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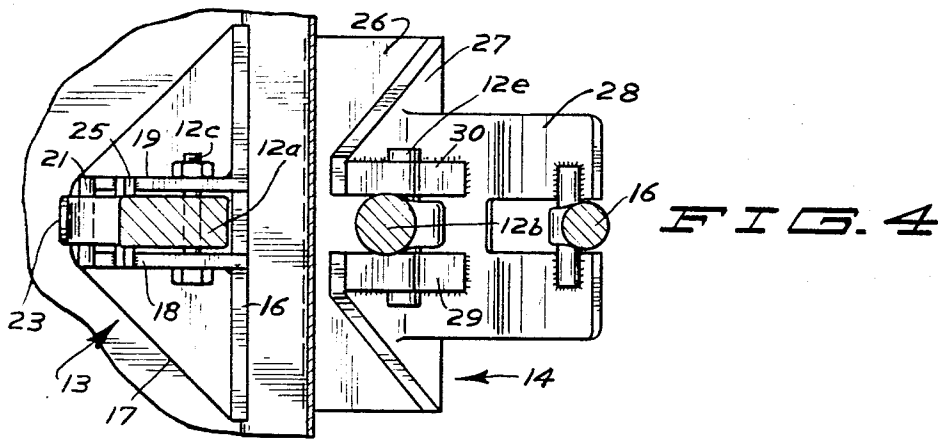


FIG. 4

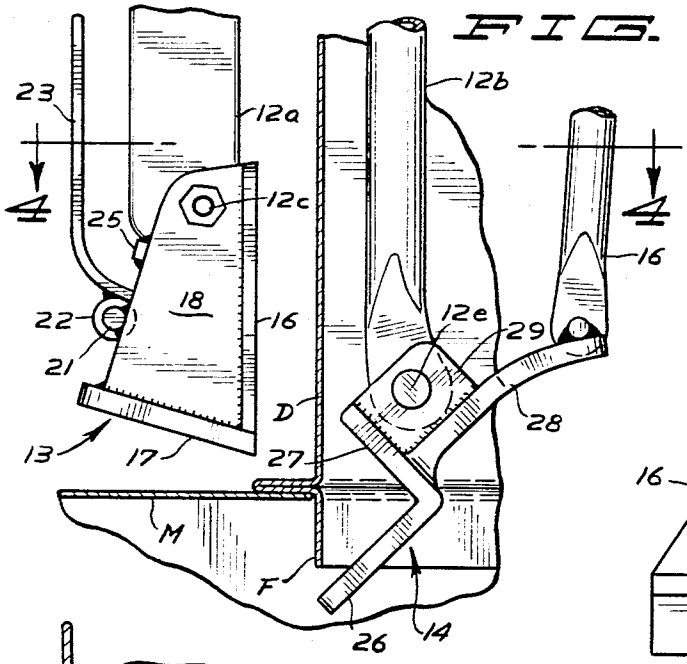


FIG. 3

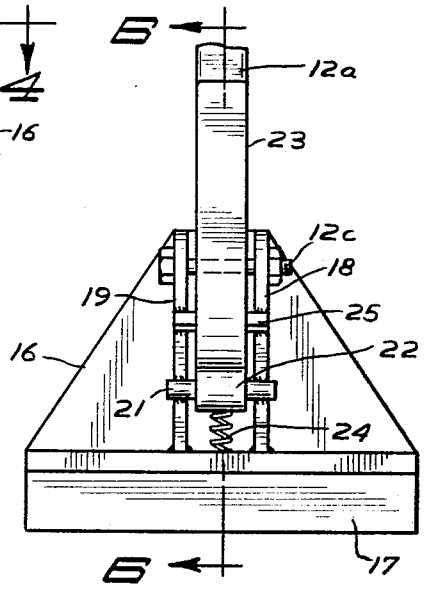


FIG. 5

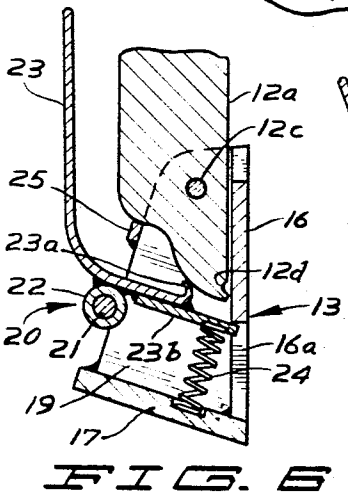


FIG. 6

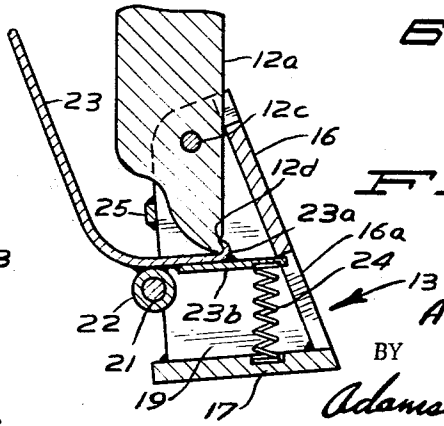


FIG. 7

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Patented July 11, 1967

3,330,147

CENTER TAP DUCT CRIMPER

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Filed July 2, 1964, Ser. No. 379,887
3 Claims. (Cl. 72—409)

This invention relates generally to tools for installing and assembling heating and ventilating systems and more particularly to a tool for crimping feeding duct members into the main duct.

In the installation of duct work a number of taps to feed individual rooms must be made in a main duct. These taps are substantially smaller in cross sectional areas than the main duct and the common method of installation is to cut an opening in the main duct wall, insert the tap duct therein and peen over the duct flange material which extends into the interior of the main duct. These taps are designed to be of a standard length such that a workman may insert a hammer therein to peen over the attaching flange material. This is not a particularly simple task and the time involved to peen over these individual units is quite substantial when a number of such installations must be made.

The device provided herein by the applicant will eliminate the difficult peening job and will allow a workman to clench the material of the tap duct tightly to the main duct without reaching inside the tap to perform the peening operation. This unit likewise will quickly and efficiently perform the clenching operation and thus will cut down on the entire time for the installation of the duct work.

The duct crimper itself comprises an anvil member and what may be termed a hammer unit arranged in slightly spaced relation and supported by an elongated U frame member. The frame system allows the positioning of the anvil exteriorly of the tap duct and the insertion of the hammer member inwardly of the duct where it will be in position to bend the flange material of the duct into proper clenching position. The hammer portion is rotatably mounted and lever controlled which lever is in turn controlled by an upwardly extending handle member of such a length to allow sufficient bending pressure to be applied to the hammer. This unique combination not only eliminates the difficult peening task but performs the bending position more thoroughly and efficiently than is possible with a hammer due to the large cooperating surfaces of the anvil and hammer which press the flange section into closely fitting contact with the main duct wall.

It is, therefore, an object of applicant's invention to provide a duct crimping tool to aid in the installation of tap ducts.

It is a further object of applicant's invention to provide a duct crimping tool consisting primarily of an anvil member and a hammer portion in cooperating relation to the anvil such that when the hammer is pivoted it will swing into closing relation with the anvil such that material placed therebetween will be effectively and properly bent.

It is a specific object of applicant's invention to provide a duct crimping tool wherein an anvil and hammer are spaced such that the hammer portion may be inserted interiorly of a duct section to bend and thus seal a portion of the duct to a main duct without requiring that the user of the tool reach into the duct.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings wherein like reference characters refer to the same

or similar parts thruoghout the several views, and in which:

FIG. 1 is a perspective view showing a tool embodying the concepts of applicant's invention in crimping position on a portion of duct work;

FIG. 2 is a vertical section through the duct work again showing the tool in crimping position and showing the open position of the hammer in dotted lines;

FIG. 3 is a vertical section taken substantially along line 3—3 of FIG. 1 and drawn to an enlarged scale;

FIG. 4 is a horizontal section taken substantially along line 4—4 of FIG. 3;

FIG. 5 is a rear elevation of the anvil unit;

FIG. 6 is a vertical section taken substantially along line 6—6 of FIG. 5 showing one position of the anvil; and

FIG. 7 is a view similar to FIG. 6 showing the second position of the anvil.

As shown in the accompanying drawings the crimping tool **10** generally consists of a stationary handle **11**, a bifurcated support frame **12** positioned on the end of the handle, an anvil member **13** on one of the legs **12***a* of the bifurcated support **12** and an actuating hammer **14** pivotally mounted on the other leg **12***b* of the bifurcated support **12**. A second actuating handle **15** is pivotally mounted on stationary handle **11** and an actuating rod member **16** is provided between the movable handle **15** and hammer **14**. Thus, as shown in FIGS. 1 and 2 the anvil **13** is located exteriorly of a tap duct D and the hammer portion **14** is located inwardly thereof such that when the handles **11** and **15** are closed hammer **14** will bend the flange F of duct D into clenched relation with the side wall of the main duct M.

The anvil and hammer co-action is best illustrated in FIGS. 2 and 3. The anvil **13** is pivotally mounted on the leg **12***a* of support frame **12** through a pin member **12***c*. It is necssary to position the anvil such that it will fit around and be received over the extending upper flanges of the duct D as illustrated in FIGS. 1 and 2. The two positions of the anvil **13** are illustrated in FIGS. 6 and 7, FIG. 6 being the open position and FIG. 7 in closed or what may be termed proper bending position. The anvil itself consists of a vertical support plate **16** and a base member **17** arranged angularly thereto. Between the vertical plate **16** and base **17** a pair of spaced gussets **18–19** are provided to maintain the anvil **13** in proper relation to the support arm **12***a*. The two position arrangment for the anvil **13** is obtained by providing a spring loaded locking mechanism rotatably mounted on gusset plates **18–19** through pin **21** and sleeve **22**. A positioning lever **23** is attached to the sleeve **22** and is provided with a hook member **23***a* on the end thereof to be received into a cooperating notch **12***d* on the front surface of support arm **12***a*. Lever member **23** is spring loaded by providing an extension **23***b* on the hook end thereof with a spring member **24** positioned between the extension **23***b* and base **17**. A passage **16***a* is formed on the vertical support wall **16** to allow one end of the extension **23***b* to fit therein. An additional limit stop **25** is provided on gussets **18–19** to abut with a portion of support arm **12***a* in the open position as seen in FIG. 6.

Hammer portion **14** is pivotally mounted on support member **12***b* through a pin **12***e* and in the form shown the hammer essentially consists of a right angled unit having a pair of sides **26–27** with an actuating lever arm **28** extending rearwardly from side **27**. To provide the pivotal mounting a pair of spaced support members **29–30** are arranged on the rear of side **27** such that pin **12***e* may pass therethrough.

Actuating rod **16** is pivotally mounted on the end portion of lever **28** such that, as shown in the dotted portion of FIG. 2, movement of the lever **16** will likewise move the hammer **14** into clenching relation to anvil **13**. The other end of lever **16** is pivotally mounted on the end of movable handle **15**.

In the form shown the bifurcated support **12** is of such a length to allow the tool **10** to be received over the duct D and into clenching position.

Handle **11** is securely connected to support **12** and the lower portion **11***a* of handle **11** is bifurcated such that the rotatable handle **15** may be pivotally mounted therein with pin member **15***a*. Length of the handles **11** and **15** provides a powerful lever action in order to effectively bend the flanges F of the ducts D.

In operation the anvil **13** will be put into the open position as shown in FIG. 6 to permit it to slide over the upper flanges of duct D and when in position at the bottom of the duct it will be snapped forward to the closed position of FIG. 7 such that the corner thereof will nest in the corner of the duct with the base plate **17** flat to the material. At this point it is only necessary to actuate the movable handle **15** to bring the hammer **14** into proper bending relation while forcing the flange F into clenching position about the duct material M.

It should be obvious that applicant has provided a unique crimping tool which obviously may be used in other applications simply by changing the sizes of parts but will definitely reduce the amount of labor involved in joining duct elements wherever it is used.

It will, of course, be understood that various changes may be made in the form, details, arrangements and proportion of parts without departing from the scope of my invention, which generally stated consists in the matter set forth in the appended claims.

What I claim is:

1. A tool for bending flanges of ducts including:

(a) an elongated bifurcated support member with spaced apart legs having:

(1) an anvil member pivotally mounted on one end of one of the legs for shifting into and out of the area defined between the legs;

(2) a forming element pivotally mounted on the end of the other leg to swing into and out of pressing registration with said anvil for forming materials therebetween;

(b) a pair of handle means arranged to extend from said bifurcated member, one of said handle means being shiftable; and,

(c) actuating means between said movable handle and said forming element for shifting the same into bending registration with said anvil.

2. The structure set forth in claim **1** and said anvil member having locking means thereon for releasably positioning the same within the area between the legs.

3. The structure set forth in claim **2** wherein said actuating means is adjustable to shift the spacing between the anvil and forming element when the tool is in forming position.

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