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PIGTAIL FORMING TOOL WITH SLIDE RAM

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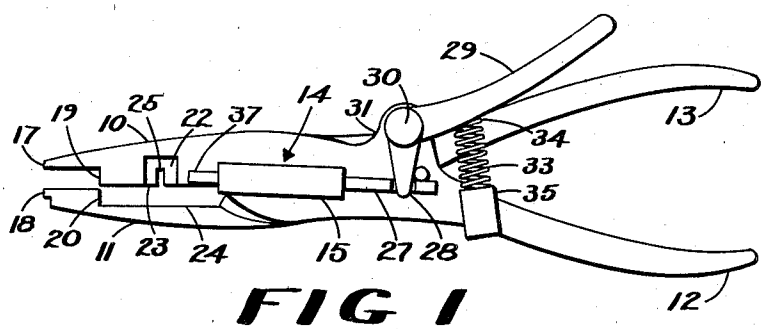


FIG 1

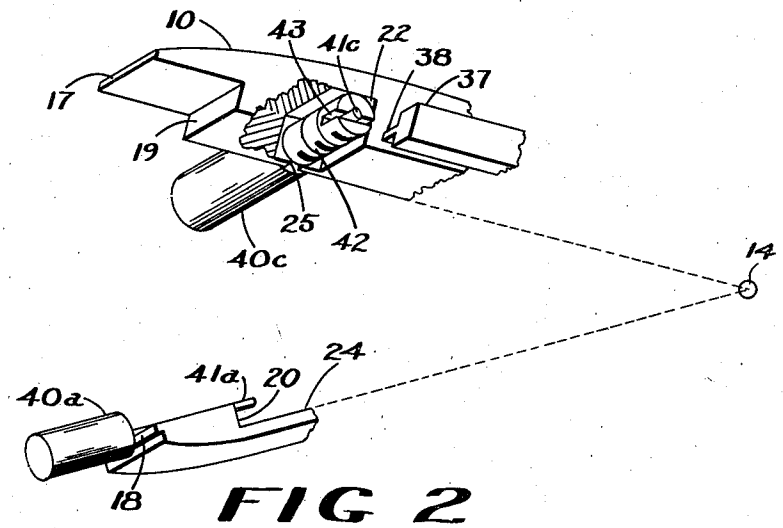


FIG 2

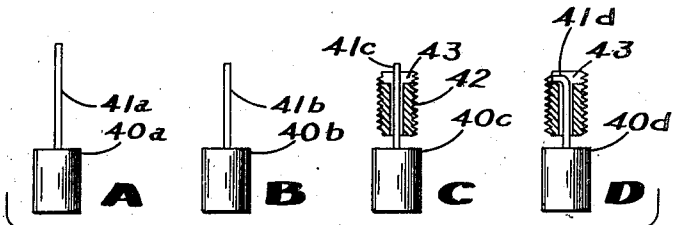


FIG 3

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PIGTAIL FORMING TOOL WITH SLIDE RAM

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1 Claim. (Cl. 81—15)

This invention relates to hand tools and more particularly to a tool usable in the manufacture of screw adjusted tuning slugs.

Previous to this invention only very slow procedures were available for the production of tuning slugs positioned by a threaded shank. The tuning slug consists of a cylindrical mass of powdered iron with a pigtail extending axially from one end of the cylinder. The problem is to cut the pigtail to the proper length, insert it in the end-slotted, threaded shank, and fasten the pigtail to the threaded shank to provide a mounting and adjusting means for the slug. A precise trimming of the pigtail lead and bending over of the tip of the pigtail is necessary to prevent the lead from projecting radially out of the slotted end. Soldering methods alone are not feasible since solder somehow always managed to get on the threads requiring further steps cleaning up the threaded portion.

Accordingly, it is an object of the invention to provide a tool which cuts the pigtail to the proper length, holds the assembled portion and bends over the tip of the pigtail just sufficiently assemblying the device ready for "tack" soldering.

It is a further object of this invention to provide a hand tool which permits streamlined operator procedure in the manufacture of a tuning slug.

It is yet another object of this invention to provide a hand tool with sufficient ease of operation to permit assembly line use by women operators.

It is a feature of this device that it enables the operator to manufacture a slug assembly with a minimum of motions yet provides precise results.

Further objects, features, and advantages of the invention will become apparent when read in conjunction with the drawing, in which;

Figure 1 shows a plan view of the tool,

Figure 2 shows a broken perspective view of the jaws in front of the hinge showing additionally two steps in the procedure in which the tool is used, and

Figure 3 shows the sequence in the manufacture of the slug assembly.

In Figure 1 the tool is shown with the jaws **10** and **11** slightly open. Jaw **10** is an extension of handle **12** and jaw **11** is an extension of handle **13**. The handles are pivoted at a point **14** which pivot point is obscured by a boss **15**.

Jaws **10** and **11** terminate in thin tips **17** and **18** respectively. Adjacent said tips inwardly toward the pivot is a pair of mating surfaces **19** and **20** which comprise a cutting portion. These surfaces are set a desired dimension from the tips **17** and **18**. When the handles **12** and **13** are closed together, surfaces **19** and **20** pass and in so doing perform a cutting operation on wires extending radially from the pivot. The normal to the planes **19** and **20** is substantially perpendicular to the pivot **14**. The tips and the cutting surfaces are parallel to the pivot; the length of the wire pigtail cut is thus the same wherever cut in the tool. Further in toward

pivot **14** from the cutting surface, on jaw **10**, is a pocket **22**. This pocket has sufficient size to accommodate the threaded shanks which are involved with this tool. At the bottom of pocket **22** is a lip **23** which encloses the bottom of the pocket. Opposite pocket **22** is a relief portion **24** which closes the pocket on the open side when the jaws are closed. At the bottom of the pocket is a slot **25** which permits insertion and removal of the pigtail before and after assembly of the slug.

Boss **15** is mounted on jaw **10** and handle **12** so as not to interfere with the pivot **14**. Inside boss **15** is a passageway shaped to accommodate ram **27**. This ram has a slot **28** at one end which receives the end of finger lever **29**. Finger lever **29** is pivoted at point **30**. This pivot is also mounted on handle **12** in a second boss **31**. Between finger lever **29** and handle **12** a spring **33** is mounted engaging a small pin **34** on the finger lever and retained by a relatively short hollow cylinder **35** fixed to handle **12**. The opposite end **37** of ram **27** stands at rest closely adjacent pocket **22**.

In Figure 2 the jaws are shown in perspective to illustrate their arrangement and to show the use of the tool. The effective cutting position of surfaces **19** and **20** is determined by the distance between these surfaces and tips **17** and **18**. A slug **40***a* with pigtail **41***a* is shown in position for cutting the pigtail to length. Closure of the jaws by squeezing together handles **12** and **13** performs this cutting operation. Since tips **17** and **18**, planes **19** and **20** and pivot **14** are mutually parallel, positioning of the slug **40***a* anywhere within the jaws with the pigtail parallel to the normal to planes **19** and **20** assures a precise cutting to length. The relieved portion **24** has sufficient clearance adjacent the cutting portion of the opposing jaw near **19** to permit the tool to close down completely despite the tret from the clipped pigtail.

While the jaws are substantially closed, from cutting the pigtail to length, the operator takes tuning slug **40***b* from the cutting area of the jaws and positions it below the pocket **22** of the upper jaw **10**, with the trimmed pigtail **41***b* projecting upwardly through slot **25** into the pocket **22**. The threaded shank **42** is then inserted into the pocket **22** concentrically to the pigtail, now **41***c*, corresponding to Figure 3*c*, and the jaws are closed completely. The slot **43** of the threaded portion is turned to be parallel to and in line with the path of ram end **37**. Actuation of handle **29** moves ram **27** over the end of the threaded shank **42** bending over the pigtail. Figure 2 shows the downwardly-extending tong portion **38** which is shaped to enter slot **43** of shank **42** and bend over the tip of **41***c*.

These sequences of steps are shown in Figure 3. "A" shows slug **40***a* with pigtail **41***a* in its original length. "B" shows slug **40***b* with pigtail **41***b* trimmed to length according to the distance between tip **17** and surface **19**. "C" shows "B" with the threaded shank **42** assembled thereon and slot **43** oriented to the path of the ram end **37**. "D" shows the completed slug assembly with the tip of the pigtail **41***d* bent over within the slot **43** but not projecting out beyond the root diameter of the threads of shank **42**.

The jaws of the tool are then opened and the assembly removed therefrom through the slot **25**. Subsequent operations include touching solder and heat to the slot **43** to fix pigtail **41***a* in the threaded shank with a "tack" of solder.

Thus, a slug assembly is manufactured which will run within a threaded mount for adjustment of the tuning slug position, with a minimum of extra steps cleaning up after the assembly operation. The position of the threaded shank relative to the cylindrical ferromagnetic material is fixed to a high degree of precision due to

the use of the cutting surface **19** coupled with the fixed positioning of the assembly in pocket **22**.

Although this invention has been described with respect to particular embodiments thereof, it is not to be so limited because changes and modifications may be made therein which are within the full intended scope of the invention as defined in the appended claim.

I claim:

A tool comprising a pair of crossed levers, a pivot joining the two levers with portions extending in one direction from the pivot formed as handles and portions extending in the opposite direction formed as jaws, one jaw having an open-sided pocket with the open side facing the other jaw, a surface of said one jaw forming a bottom wall of said pocket, said bottom wall having a slot opening toward said other jaw, ram means slidably mounted on said one jaw between the pivot and the pocket, a finger lever mounted on that lever that is extended to form said one jaw, said finger lever engaging said ram means whereby movement of the handles toward each other will cause the jaws to grip a work-piece therebetween and subsequent movement of said finger lever will effect a sliding motion of said ram means past said pocket.

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