

Nov. 20, 1928.

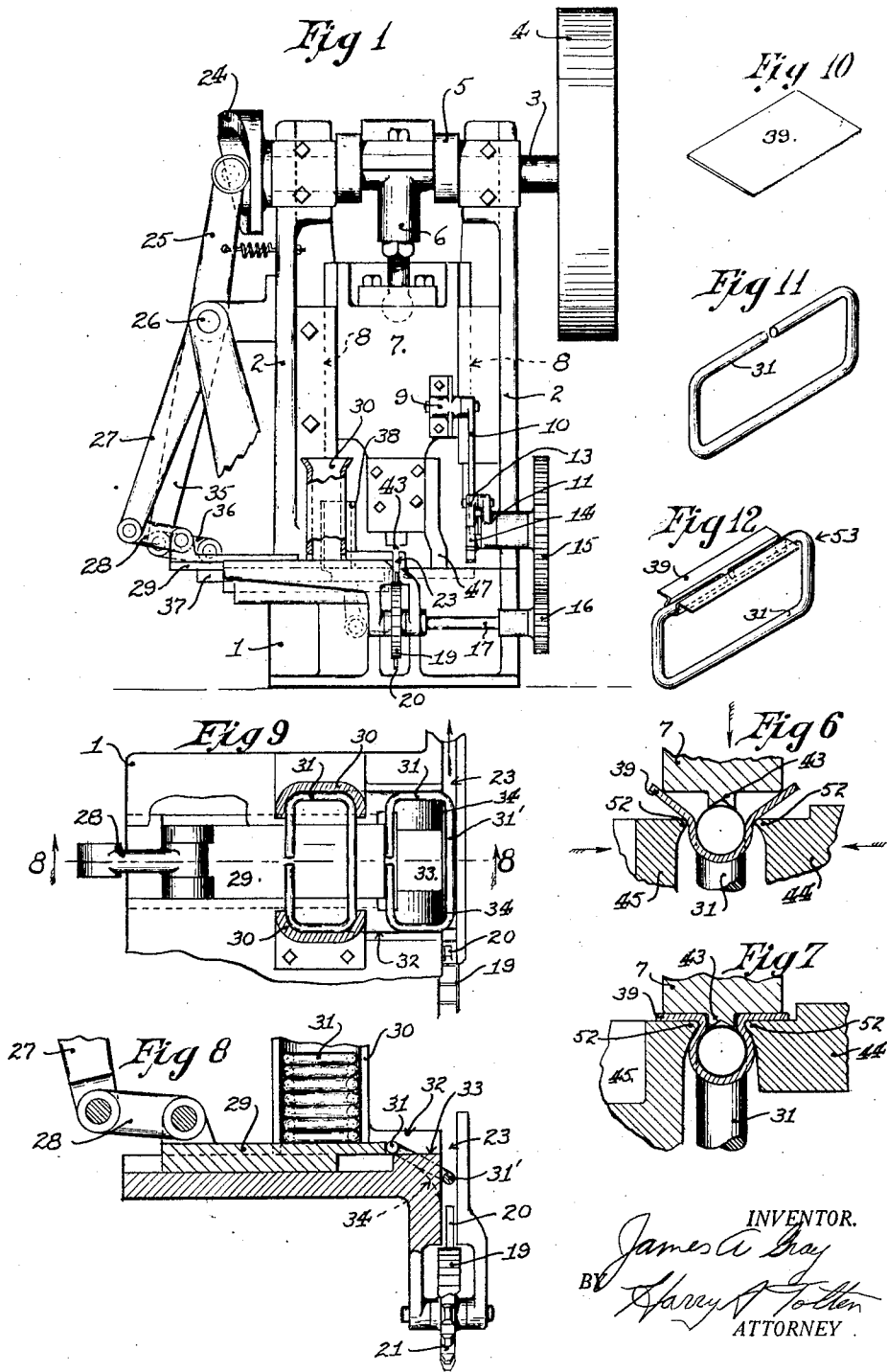
J. A. GRAY

1,692,033

CLEAT MAKING AND CLEAT AND HANDLE ASSEMBLING MACHINE

Filed May 2, 1925

2 Sheets-Sheet 1



Nov. 20, 1928.

J. A. GRAY

1,692,033

CLEAT MAKING AND CLEAT AND HANDLE ASSEMBLING MACHINE

Filed May 2, 1925

2 Sheets-Sheet 2

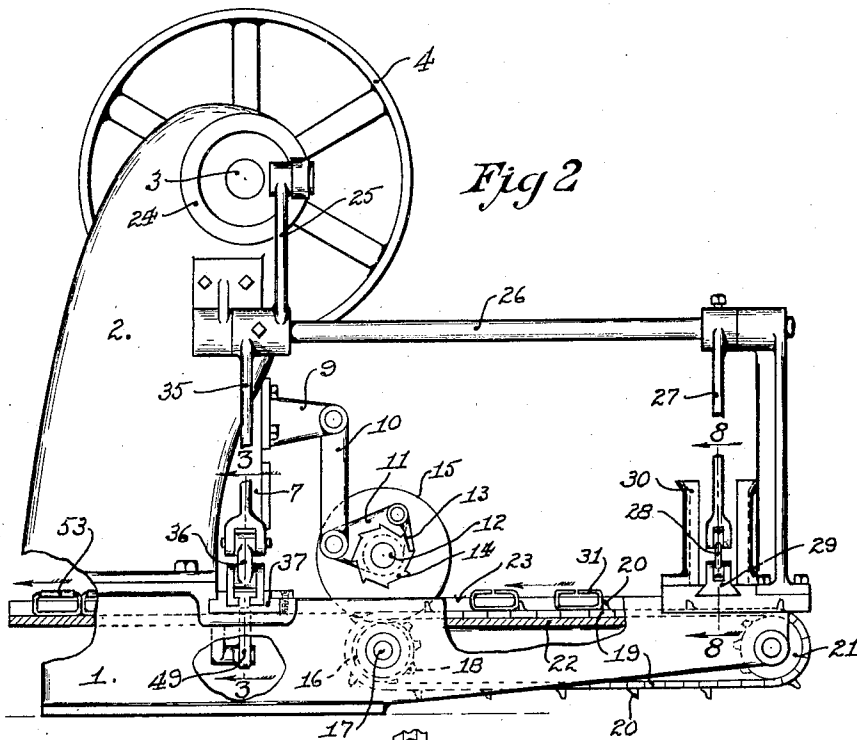


Fig 2

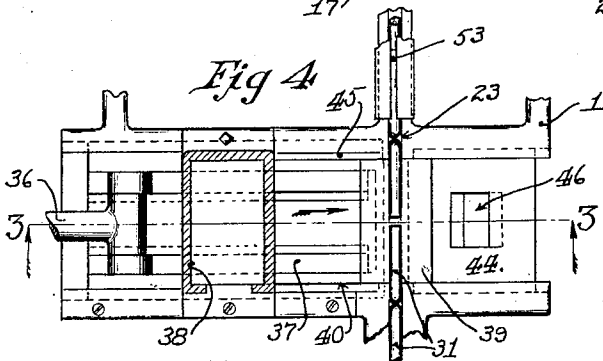


Fig 4

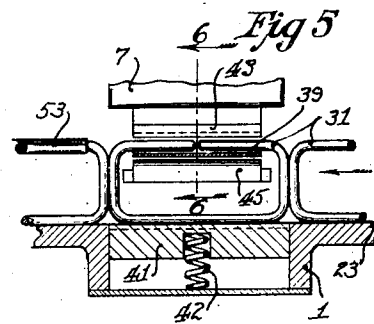


Fig 5

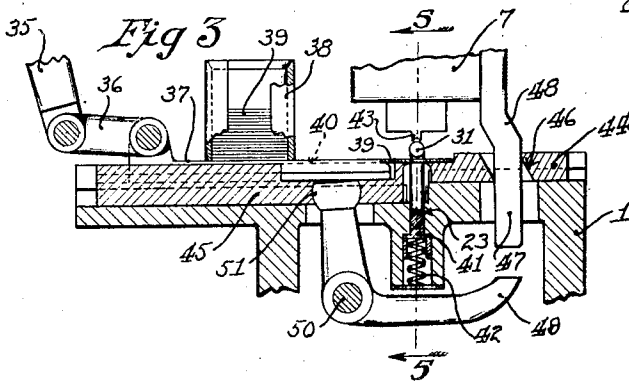


Fig 3

INVENTOR.
James A. Gray
BY Harry H. Totten
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES A. GRAY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO AMERICAN CAN COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF NEW JERSEY.

CLEAT-MAKING AND CLEAT AND HANDLE ASSEMBLING MACHINE.

Application filed May 2, 1925. Serial No. 27,590.

The present invention relates to an apparatus for preparing handles to be subsequently attached as by soldering to can ends, the handles so prepared being of the well known type comprising a rectangular or similarly formed loop of wire secured to the can end by means of a sheet metal clip or cleat, said cleat embracing one side of the wire loop to form a hinge joint to permit said loop either to lie flat upon the can end, or to be swung at right angles thereto when used as a handle.

The object of the invention is to provide a simple automatic machine for forming the sheet metal cleats, and assembling the same with the previously formed wire loop in such a manner that they cannot be accidentally separated therefrom during subsequent handling. As a result the assembled cleats and loops are discharged from the machine in a condition to be attached to can ends by soldering or any other well known method, and they may be handled or shipped without any further precautions to prevent a separation of the cleats from their respective loops.

Other objects and advantages of the present invention will be apparent from the following specification and the accompanying drawings in which is described and illustrated a preferred embodiment of the said invention. It is to be understood that the form, proportion, and arrangement of the several parts comprising the machine may be varied within the limits of the claims hereto appended without departing from the spirit of the invention.

In order to comprehend the invention, reference should be had to the accompanying drawings, in which

Fig. 1 is a part sectional end elevation of the machine.

Fig. 2 is a part sectional side elevation.

Fig. 3 is an enlarged sectional detail taken in the direction of the arrows on the lines 3—3 of Figs. 2 and 4, showing the cleat blank feed mechanism.

Fig. 4 is a sectional plan view of the same.

Fig. 5 is an enlarged sectional detail taken in the direction of the arrows on the line 5—5 of Fig. 3, showing the assembling mechanism.

Fig. 6 is a section taken in the direction of the arrows on the line 6—6 of Fig. 5, showing the relative positions of the assembling dies during the operation thereof.

Fig. 7 is a similar view showing the relative positions of the dies at the conclusion of the assembling operation.

Fig. 8 is an enlarged sectional detail taken in the direction of the arrows on the lines 8—8 of Figs. 2 and 9, showing the loop feed mechanism.

Fig. 9 is a sectional plan view of the same.

Fig. 10 is a perspective view of the cleat blank.

Fig. 11 is a perspective view of the wire loop member.

Fig. 12 is a perspective view of the assembled formed cleat and wire loop making up the completed handle ready for attachment to a can end.

In the drawings, the reference numeral 1 designates the bed of the machine, and 2 a superstructure rising therefrom and supporting a rotatable shaft 3 provided with a driving pulley 4 for receiving power from an outside source, not shown. The shaft 3 is provided with a crank 5, Fig. 1, connected by a pitman 6 with a vertical reciprocable head 7, the latter operating in suitable guides 8 secured to the superstructure 2. A bracket 9, Figs. 1 and 2, extends laterally from the head 7 and is connected by a link 10 with an oscillatory member 11 journaled about a shaft 12, Fig. 2. The member 11 carries a pawl 13 adapted to engage a ratchet wheel 14 secured upon the shaft 12. A gear 15, Figs. 1 and 2, is also secured upon said shaft 12 and meshes with a gear 16 upon a lower shaft 17. A sprocket 18 is mounted upon said lower shaft for the purpose of carrying and driving a conveyer chain 19, Fig. 2, provided with spaced flights 20. An idler sprocket 21 for said chain 19 is suitably mounted at one end of the bed 1. The upper run of the chain 19 travels in the direction of the arrow, Fig. 2, and is suitably supported upon a track member 22 formed in the bed 1, the flights 20 of said chain travelling in a groove 23 as shown in Figs. 1 and 8.

The drive shaft 3 carries a cam 24 at one end, as shown in Fig. 1, and said cam operates a lever 25 extending upwardly from and secured to a shaft 26, Figs. 1 and 2. A lever 27 secured to said shaft 26 extends downwardly therefrom and is connected by a link 28 with a slide 29. The slide 29 is adapted to be reciprocated horizontally beneath a holder 30, Figs. 1, 2 and 8, adapted to contain a stack of previously formed wire loops 31,

Figs. 8 and 11, and by said reciprocation the slide 29 successively feeds the lowermost wire loop out from beneath the stack, as shown in Figs. 8 and 9, and slides said lowermost loop through a guideway 32 into the groove 23. The guideway 32 is provided with a horizontal central portion 33 extending to the groove 23 and with downwardly inclined end portions 34, as shown. Thus the loop 31 when pushed out from beneath the holder 30 by the slide 29 remains in a horizontal position until its forward bar 31' drops off the end of the horizontal guideway portion 33. The inclined guideway portions 34 then permit the loop to assume a vertical position in the slot 23 as a result of the continued advancing movement of the slide 29. The loop 31 is thus fed into the groove 23 and falls upon the conveyer chain 19 in a position to be engaged by one of the flights 20 thereof as shown in Fig. 2.

The oscillating shaft 26, Figs. 1 and 2, is also provided with a second downwardly extending lever 35, which is connected by a link 36 with a feed slide 37. The latter is adapted to reciprocate horizontally beneath a holder 38, Figs. 3 and 4 adapted to contain a stack of cleat blanks 39, Figs. 3 and 10, and by said reciprocation to successively slide the lowermost of said blanks out from beneath the stack within said holder, and to position the removed blank across the slot 23, as shown in Fig. 3. The operations of the respective slides 37 and 29 and the conveyer chain 19 are so timed as to cause the cleat blank 39 to be pushed through a positioned wire loop 31, as shown in Figs. 3, 4 and 5. The wire loops, after being engaged by the flights 20 of the chain 19 and removed from the sphere of action of the feed slide 29, as shown in Fig. 2, are subsequently advanced through a continuation of the slot 23 by contact with each other, as shown in Fig. 5, and the various parts are so timed and related that when the conveyer chain 19 comes to rest one wire loop will be positioned in transverse alignment with the cleat blank feed slide 37, so that by the operation of the latter, as described above, a cleat blank 39 is slid horizontally through said positioned loop 31. A suitable guideway 40 is provided for insuring the proper travel of the cleat blank 39 from its holder 38 to its assembling position inside the wire loop 31.

At this assembling position, as shown in Figs. 3 and 5, the loop 31 rests upon a vertically movable plunger 41 suitably mounted in the bottom of the slot 23 and pressed upwardly to its normal position in alignment with the bottom of said slot by a spring 42. The reciprocating head 7 carries at its lower end a die 43 positioned in vertical alignment with the yieldable plunger 41. In this position also, the cleat blank 39 rests upon a pair of reciprocable slides 44 and 45

lying on each side of the groove 23. The slide 44 is provided with an inclined aperture 46 through which passes a bar 47 secured to the head 7 and provided with an inclined portion 48. It will be readily understood from Fig. 3 of the drawings that when the head 7 descends from the position shown, the slide 44 is moved to the left by the contact of the inclined portion 48 of the bar 47 with the inclined slot or aperture 46 formed in said slide. The same movement of the head 7 also causes the lower end of the bar 47 to contact with a bell crank lever 49 fulcrumed as at 50 and provided with a connection at 51 with the slide 45 so that said slide 45 is moved to the right simultaneously with the left hand movement of the opposite side 44.

Figs. 3 and 5 show the relative positions of the parts immediately prior to the beginning of the assembling operation. The die 43 then moves downwardly, as shown in Fig. 6, pressing the loop 31 and the cleat blank 39 between the jaws 52 of the oppositely disposed slides 44 and 45, and thereby curling the cleat blank partially around the wire loop and forming a bearing for it in which the loop is rotatably retained. The oppositely disposed slides 44 and 45 are then moved toward each other until at the conclusion of the operation the parts are in the relative positions shown in Fig. 7, from which it will be seen that the jaws 52 have pressed the cleat blank 39 inwardly around the loop 31, thereby causing said blank to form the cleat shown in Fig. 12, and to embrace the loop 31 to such an extent as to prevent its accidental separation therefrom. The slide 7 then retreats upwardly, the oppositely disposed slides 44 and 45 are again separated and the assembled handle is pushed away from the sphere of action of the assembling mechanism by the advance of the next following wire loop. The assembled handles, as shown at 53 in Fig. 2, may be discharged from the machine in any convenient manner, not shown in the drawings.

It will be readily understood from the foregoing that the operation of the machine, which is entirely automatic, comprises the successive feeding of the wire loops 31 from their holder, the successive positioning of the cleat blanks 39 within said loops, and the successive forming of the cleat blanks into cleats by partially wrapping them around the wire loops. At each movement of the conveyer chain 19, a loop 31 is carried into assembling position, and during the succeeding period of rest of said chain 19, a cleat blank 39 is positioned within said loop and is formed into a cleat and assembled with said loop to make the completed handle shown in Fig. 12. On account of the extent of the bending of the cleat blank 39 around the loop 31, as shown in Figs. 7 and 12, the completed han-

dles may be subsequently operated on or shipped without any danger of their component parts becoming separated.

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

1. An apparatus for the described purpose comprising means for positioning a loop member and a cleat member in assembling relation, and means for uniting the said members by bending the cleat member and forming therein a bearing to embrace a portion of the loop member to an extent sufficient to prevent its removal therefrom, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

2. An apparatus for the described purpose comprising means for positioning a loop member and a cleat blank in assembling relation, and means for forming said blank into a cleat having a bearing and uniting the same with said loop member, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

3. An apparatus for the described purpose comprising means for positioning a loop member and a cleat blank in assembling relation, and means for bending said blank to embrace a portion of said loop member to form a bearing and cleat therefor, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

4. An apparatus for the described purpose comprising means for positioning a loop member and a cleat blank in assembling relation, means for bending said blank into a cleat and means for bending the same to embrace a portion of said loop member to an extent sufficient to prevent its removal therefrom, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

5. An apparatus for the described purpose comprising means for positioning a loop member and a cleat blank in assembling relation, and means for bending said blank around a portion of said loop member and means for further bending said blank to an extent sufficient to prevent removal of the loop member therefrom, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

6. An apparatus for the described purpose comprising means for positioning a loop member and a cleat member in assembling relation, and means for bending said cleat member into a U-shape around a portion of said loop member and means for further bending the cleat member to an extent sufficient to prevent removal of the loop member therefrom, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

7. An apparatus for the described purpose comprising means for receiving and holding a loop member, means for receiving and holding a cleat blank, means for feeding the blank within the loop member, and means for forming said blank into a cleat and uniting the same with said loop member comprising a die acting on the loop member and two sides of the blank and other dies acting on the two sides of the blank in opposition to the first die.

8. An apparatus for the described purpose comprising means for receiving and holding a loop member, means for receiving and holding a cleat member, and means for assembling said members to form a handle by bending said cleat member into more than a half circle around a portion of said loop member, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

9. An apparatus for the described purpose comprising means for receiving and holding a stack of loop members, means for receiving and holding a stack of cleat blanks, and means for successively forming said blanks into cleats and uniting the same with said loop members, and means for forming the two ends of the cleat member as extensions to fit on a can to be soldered thereto.

10. In an apparatus for assembling cleat members and loop members to form handles, means for receiving and holding a stack of loop members, and means for successively removing said loop members from said stack and assembling cleat members therewith comprising a die acting on the loop member and two sides of the blank and other dies acting on the two sides of the blank in opposition to the first die.

11. In a machine for forming cleat members and uniting the same with loop members to form handles, means for receiving and holding a stack of cleat blanks, means for successively removing said blanks from said stack, and means for forming the removed blank into a cleat and uniting the same with a positioned loop member comprising a die acting on the loop member and two sides of the blank and other dies acting on the two sides of the blank in opposition to the first die.

12. An apparatus for the described purpose comprising a holder adapted to contain a stack of horizontally disposed loop members, means for successively removing a loop member from said stack and tilting the same into a vertical position, means for positioning a cleat member in assembled relation with the vertically disposed loop member, and means for uniting said members to form a handle.

13. An apparatus for the described purpose comprising means for receiving and holding a stack of horizontally disposed loop members to be attached to cleats, means for

successively removing a loop member from said stack and tilting the same into a vertical position, means for positioning the cleat blank in assembling relation with the vertically disposed loop member, and means for forming said blank into a cleat and assembling the same with said loop member.

14. An apparatus for the described purpose comprising a holder adapted to contain a stack of horizontally disposed loop members, means for successively removing the lowermost loop member from said stack and tilting the same to a vertical position, means for successively advancing the vertically disposed loop members to assembling position, means for positioning a cleat blank in assembling relation with the loop member at said assembling position, and means for forming said blank into a cleat and uniting the same with said loop member.

15. An apparatus for the described purpose comprising a holder adapted to contain a stack of loop members, a second holder adapted to contain a stack of cleat blanks, means for removing the loop members from their holder and conveying the same to assembling position, means for removing the cleat blanks from their holder and positioning the same in assembling relation with said loop members, and means for forming the positioned cleat blanks into cleats and uniting the same with said loop members.

16. In an apparatus for the described purpose, a pair of spaced movable jaws, means for positioning a loop member between said jaws, means for positioning a cleat blank upon said jaws, said blank extending through said loop member, means for forcing said loop member downwardly between said jaws to bend said blank around a portion of said loop member, and means for moving said jaws toward each other to cause said blank to embrace said loop portion sufficiently to prevent its removal therefrom.

17. In an apparatus for the described purpose, a pair of spaced movable jaws, means for positioning a loop member between said jaws, means for positioning a cleat blank upon said jaws, said blank extending through

said loop member, a plunger adapted to force said loop member downwardly between said jaws to bend said blank around its upper portion, and means actuated by said plunger for moving said jaws toward each other to cause said blank to embrace said loop portion.

18. In an apparatus for the described purpose, a pair of spaced movable jaws, means for positioning a loop member between said jaws, means for positioning a cleat blank upon said jaws, said blank extending through said loop member, a plunger adapted to force said loop member downwardly between said jaws to bend said blank around its upper portion, means for moving said jaws toward each other to complete the bending of said blank, and spring actuated means for returning said loop member to its original position upon the upward movement of said plunger.

19. In an apparatus for the described purpose, a bed having a slot formed therein, a pair of spaced oppositely disposed movable jaws positioned on either side of said slot, means for advancing a loop member through said slot and positioning the same between said jaws, means for positioning a cleat blank upon said jaws, said blank extending through said loop member, a plunger adapted to force said loop member downwardly between said jaws to bend said blank around its upper portion, and means for moving said jaws toward each other to complete the bending of said blank.

20. In an apparatus for the described purpose, a pair of spaced movable jaws, means for positioning a loop member between said jaws, means for positioning a cleat blank upon said jaws, said blank extending through said loop member, a plunger adapted to force said loop member downwardly between said jaws to bend said blank around its upper portion, means for moving said jaws toward each other to complete the bending of said blank, and a connection between said plunger and said loop positioning means for operating the latter.

In testimony whereof I have signed my name to this specification.

JAMES A. GRAY.