July 28, 1936. N. M. BAKER 2,049,101

MACHINE FOR ASSEMBLYING OPHTHALMIC MOUNTINGS

Filed Sept. 1, 1933 2 Sheets-Sheet 1

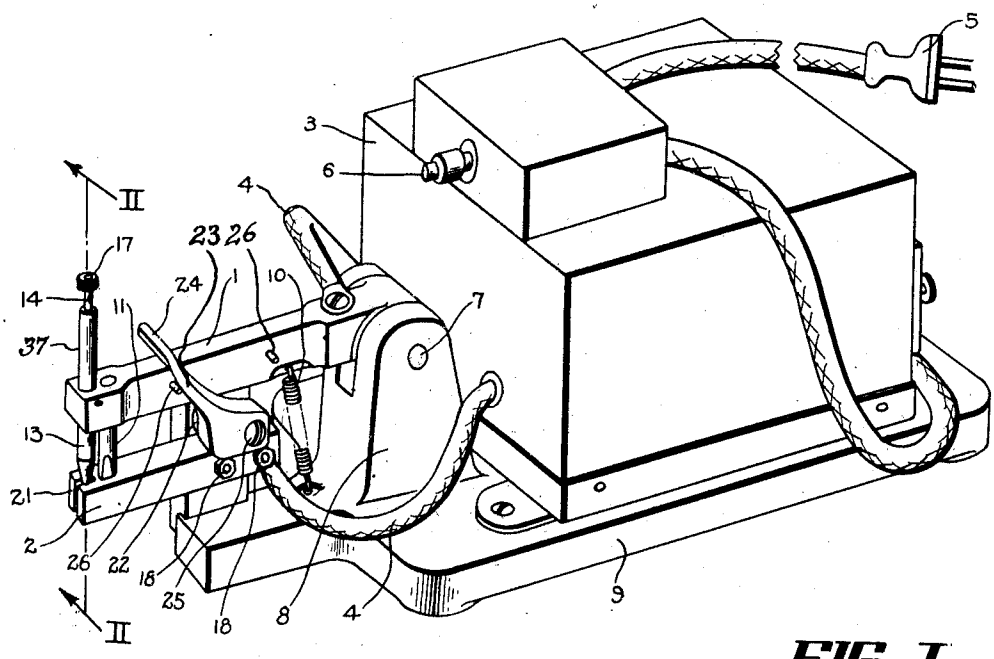


FIG. I.

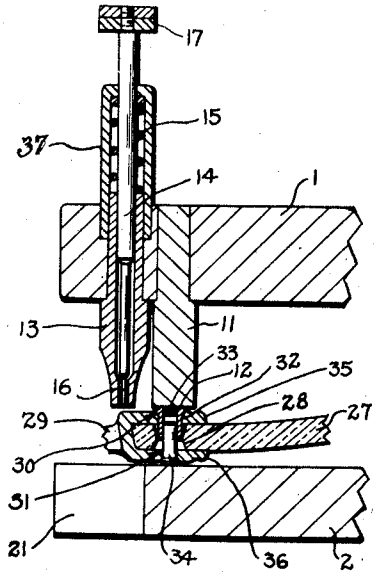


FIG. II.

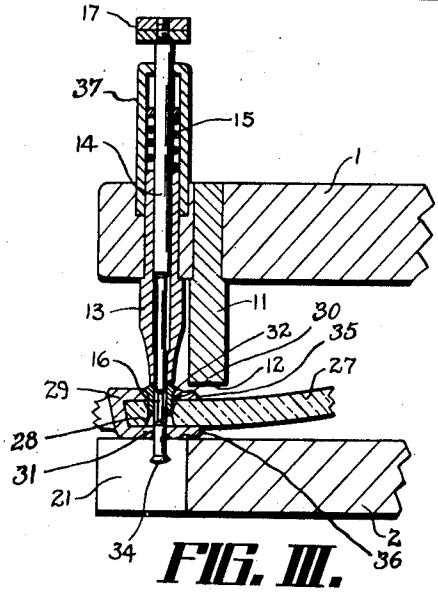


FIG. III.

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MACHINE FOR ASSEMBLYING OPHTHALMIC MOUNTINGS

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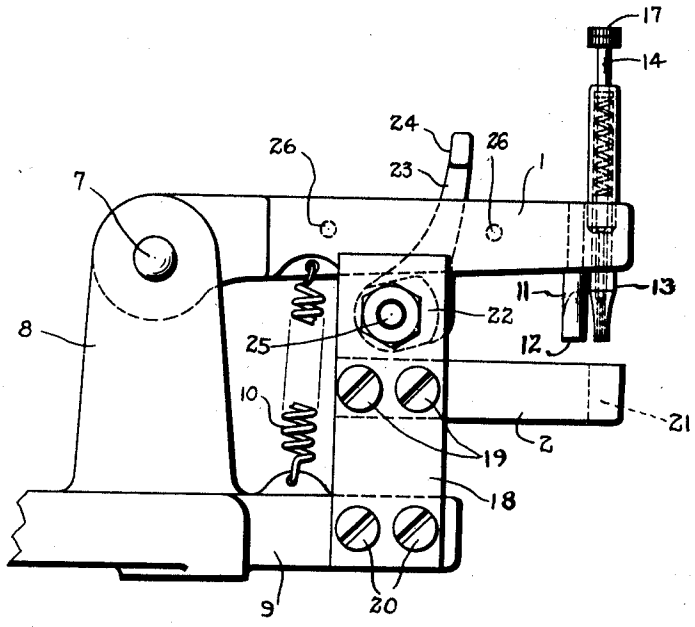


FIG. IV.

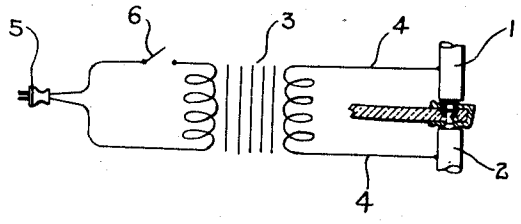


FIG. V.

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MACHINE FOR ASSEMBLING OPHTHALMIC MOUNTINGS

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16 Claims. (Cl. 219—12)

This invention relates to improvements in means for assembling ophthalmic mountings and has particular reference to improved means and method of integrally uniting and separating the operable and separable parts of such mountings.

One of the principal objects of the invention is to provide improved means and method of integrally assembling and separating the operable and separable parts of an ophthalmic mounting by the application of heat.

Another object of the invention is to provide means in a device of the above character for controlling the amount of heat applied to the parts being united or separated.

Another object is to provide improved means and method of supporting the parts in proper relation with each other during the uniting thereof.

Another object is to provide a device of the above character having its various operable parts positioned to be operated by either hand with equal ease.

Other objects and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings, and it will be apparent that many changes may be made in the details of construction, arrangement of parts and methods shown and described without departing from the spirit of the invention as expressed in the accompanying claims. I, therefore, do not wish to be limited to the exact details of construction and methods shown and described as the preferred form only has been shown by way of illustration.

Referring to the drawings:

Fig. I is a perspective view of the device embodying the invention.

Fig. II is an enlarged fragmentary sectional view taken on line II—II of Fig. I and illustrating the position of the parts during the assembling operation;

Fig. III is a view similar to Fig. II showing the position of the parts during the separating operation;

Fig. IV is a fragmentary side elevation of the jaws;

Fig. V is a schematic view of the heating element of the device embodying the invention.

Referring more particularly to the drawings wherein like characters of reference designate like parts throughout the several views, the device embodying the invention, as shown in Figures I and V, comprises broadly a pair of clamp arms 1 and 2 connected to a transformer 3 by the lead wires 4. The transformer 3 is provided with a socket connection 5 by means of which the said transformer may be connected to any suitable source of electrical energy and is also provided with a current control switch 6 for regulating the amount of electricity admitted to the clamp arms 1 and 2 during the use of the device.

The clamp arm 1, as shown in Figures I and IV, is pivotally connected at 7 to an upright 8 formed on the base 9 and is adapted to be constantly urged toward the clamp arm 2 by the spring 10. The arm 1, adjacent its end opposite the pivot 7, is provided with an interchangeable member 11 having a contact face 12 thereon adapted to engage one side of the parts which are to be united. The clamp arm 2 is likewise provided with a contact face adapted to engage the opposite side of the parts. The clamp arm 1, adjacent the member 11, is provided with a second contact member 13 having a hollow bore in which an ejector plunger 14 is slidably mounted. The plunger 14 is held against free movement in the bore of the member 13 by a compression spring member 15 mounted in the cap 31. The spring 15 tends to constantly urge the lower reduced end 16 of the plunger inwardly of the bore. The reduced projection 16, which as illustrated in Fig. III, is adapted for use in separating one of the parts of the united members by pressing the plunger 14 downwardly until the reduced end engages one of the parts and forces the said part outwardly of the connection. It is to be understood that heat is applied to the parts during this operation. At its opposite end the plunger 14 is provided with a fingerpiece 17 by means of which it may be compressed with ease. When the pressure on the fingerpiece 17 is released the spring member 15 causes the plunger 14 to return to its initial position within the bore of the contact 13.

The arm 2, as shown in Fig. IV, is rigidly connected to a support 18 of insulation material by the screw members 19. The support 18 is in turn connected by the screw members 20 to the base 9. The arm 2, adjacent its end opposite the screw members 19, is provided with a slot 21 adapted to receive the part of the connection which is ejected by the reduced end 16 of the plunger, as shown in Fig. III.

The arm 1, as shown in Figures I and IV, is raised and lowered about the pivot 7 by a cam member 22 and lever 23. Attention is directed to the fact that the lever 23 is provided with a transverse projection 24 which enables it to be operated by the right or left hand, as desired, with equal ease. To limit the movement of the

lever 23 about its pivot 25, in either direction, the arm 1 is provided with stop members 26.

In using the device the parts to be united, which in this instance are shown only by way of illustration, comprise, as shown in Figures II and III, a lens 27 having an opening 28 therein and a lens strap 29 having spaced arm portions 35 and 36 having openings 30 and 31 therein in aligned relation with the opening 28. The connecting means in this instance comprises a tubular part 32 having a wad of soft solder or similar means frictionally held adjacent one end thereof and a pin member 34 adapted to be placed in telescoped relation with the tubular part 32. The tubular part 32 and pin 34 have enlarged head portions which when the tubular part and pin member are placed in the aligned openings 28, 30, and 31 are adapted to engage with the strap 29 and cause the portions 35 and 36 thereof to snugly fit the opposite faces of the lens 27. The parts when assembled are placed between the contacts on the arms 1 and 2 and heat is applied to said contacts by operating the switch member 6. The switch allows the electrical energy to flow through and heat said parts. The switch is placed centrally of the device so that it may be operated by either hand with equal ease. The switch is of the compression type which upon its release will automatically shut off the flow of electricity through the arms 1 and 2 and, therefore, must be held in compression until the desired amount of heat is applied to the parts to be united. Attention is directed to the fact that the arm members 1 and 2 urged toward each other by the spring member 10 will press the tube 32 and pin member 34 into proper relation with each other and will also press the arm portions 35 and 36 into proper relation with the lens and will hold said members in said relation during the heating and uniting of the pin and tubular member.

When heat is applied to the tubular member 32 and pin member 34 the wad or disc of solder means 33 will melt and flow between the tube 32 and pin 34 and when allowed to cool will harden and adhere thereto and integrally unite the same. It will be understood that the tubular member 32 and pin member 34 may be treated with a suitable flux previous to the heating operation to increase the adhering action of the solder.

When it is desired to separate the pin and tubular members as shown in Fig. III the contact member 13 is used. The mounting is clamped between the contact 13 and the slotted end 21 of the arm 2 under the action of the spring member 10 in a manner similar to that previously described above. Heat is applied by operating the switch 6 and allowing the electrical energy to flow through the parts. During the heating of the parts the plunger member 14 is compressed to cause the reduced end 16 to enter the bore of the tubular member 22 wherein it will engage the pin 34 and force the said pin outwardly of the connection. The heat is then shut off by releasing the switch 6. The tubular member may then be removed from the connection and the strap member 29 separated from the lens 27.

Attention is directed to the fact that although applicant has shown and described only one form of ophthalmic mounting and only one form of connection that any suitable type of connection and connecting means may be united and separated by the device embodying the invention.

To reunite the parts after they have been separated a new tubular member 32 having the solder disc or wad 33 internally thereof is employed. The parts are first properly fitted and assembled with each other, as shown in Fig. II, and are heated while held in said relation by the clamp arms 1 and 2 as previously described.

The hollow contact 13 plays an important part in the success of the device when used in separating the parts as it provides separate conducting means through which the electrical energy may flow to heat the parts during the separating operation. This avoids causing the plunger 14 to act as a heat conducting member with a danger that the reduced portion 16, thereof may become over heated and burn out or become bent and distorted. The contact 13 absorbs the heat from the reduced end 16 and thereby avoids injury thereto.

Attention is also directed to the fact that the arms 1 and 2 and contacts 11 and 13 thereon are formed of good electrical conducting metal which are dimensioned and arranged to cause the heat to be generated in the vicinity of the parts which are to be united or separated.

The device is rigid and durable in construction and is simple and easy to operate.

From the foregoing description it will be seen that applicant has provided simple, efficient and economical means and methods of accomplishing all of the objects and advantages of the invention, particularly that of uniting and separating the operable and separable parts of an ophthalmic mounting by the application of heat.

Having described my invention, I claim:

1. In a device of the character described, a pair of clamp arms, one movable toward the other, one of said arms having a contacting face and an opening therein adjacent said face, and the other of said arms having a pair of contacting members, one of said members being in aligned relation with the contacting face on the first arm and the other in aligned relation with the opening, said last named contacting member having a hollow bore and a work contacting end for engaging and holding work in aligned relation with the opening in the first arm and a longitudinally slidable plunger in said bore, having an ejector end portion normally held in the bore and which may be pressed outwardly beyond the work contacting end of the last named contacting member toward the opening in the first arm independently of the movement of said arms.

2. A device of the character described comprising a pair of arms having contacting faces thereon, one movable toward the other, whereby the contacting faces may be brought into engagement with the means which is to be united, one of said arms having an opening therein removed from the contacting face and the other having a hollow bore and a longitudinally slidable plunger member mounted in said bore and in alignment with the opening and having a reduced ejector end movable toward and away from said opening whereby the said ejector end may be operated to displace a part of the united means into the opening independently of the movement of the arms.

3. A device of the character described comprising a pair of jaws having contacting faces thereon, one of said jaws being movable toward the other whereby the contacting faces may be brought into engagement with the means which is to be united, one of said jaws having an open-

ing therein and the other having a longitudinally slidable plunger mounted in aligned relation with the opening and having an ejector end movable toward and away from said opening independently of the movement of the jaws.

4. A device of the character described comprising a pair of jaws having contacting members thereon, one of said contacting members having an opening therein and the other having a hollow bore and a slidable spring pressed plunger mounted in the bore and in aligned relation with and to move toward and away from said opening independently of the movement of the jaws, means associated with the contacting members for heating said members, and means for regulating said heat.

5. A device of the character described comprising a pair of jaws having contacting members thereon, and spring means associated with said jaws for urging one of said jaws toward the other whereby the means which is to be worked on may be clamped between the contacting members, one of said contacting members having an opening therein and the other having a hollow bore and a movable plunger mounted in said bore to move toward and away from said opening independently of the movement of the jaws, means associated with the contacting members for heating the work held by said members, and means for regulating the heat applied to said work.

6. A device of the character described comprising a pair of jaws having contacting members thereon, one of said contacting members having an unobstructed opening therein and the other having a longitudinally slidable plunger mounted thereon in aligned relation with and to move toward and away from said opening independently of the movement of the jaws, said plunger being normally held in a retracted position in a direction opposite that of the opening when not in use, whereby the separable parts of an ophthalmic mounting and the connecting means for said parts may be held between the contacting members with the connecting means aligned with the plunger so that when it is desired to separate the parts, the said plunger may be pressed against the connecting means to force it out of engagement with the parts and into the aligned opening of the opposed contacting member.

7. A device of the character described comprising a pair of jaws having contacting members thereon, one of said contacting members having an unobstructed opening therein and the other having a hollow bore and a longitudinally slidable plunger mounted in said bore and in aligned relation with and to move toward and away from said opening independently of the movement of the jaws and means associated with the contacting members for heating said members, whereby the separable parts of an ophthalmic mounting having solder secured connecting means therein may be held between the contacting members with the connecting means aligned with the plunger so that when it is desired to separate the parts heat may be applied thereto to melt the solder and said plunger may be pressed against the connecting means to force it out of engagement with the parts and into the aligned opening of the opposed contacting member.

8. A device of the character described comprising a pair of jaws having contacting members thereon, and spring means associated with said jaws for urging one of said jaws toward the other whereby means having heat softenable means uniting separable parts thereof may be clamped between the contacting members, one of said contacting members having an unobstructed opening therein and the other having a hollow bore and a longitudinally slidable plunger mounted in said bore to move toward and away from said opening independently of the movement of the jaws and means associated with the contacting members for heating the parts held by said members to soften the heat softenable means whereby the plunger may be pressed against the means held between the contacting members to force a separable part thereof out of engagement with the other parts and into the aligned opening in the opposed contacting member so that said parts may be disunited.

9. The process of separating operable and separable solder united parts of an ophthalmic mounting comprising placing the parts to be separated between the contacting faces of a heating device and in aligned relation with ejecting means, applying heat to said united parts to melt the solder and operating the ejecting means to cause one part to be moved out of engagement with the other during the heating thereof.

10. The process of separating operable and separable solder united parts of an ophthalmic mounting comprising placing the parts to be separated between the contacting faces of a heating device and in aligned relation with an opening and a plunger on said device, applying heat to said united parts to melt the solder and operating the plunger to cause the said plunger to engage one of the parts and force it into the opening and out of engagement with its adjoining part.

11. The process of separating solder united cap and pin type connecting means for operable and separable parts of an ophthalmic mounting comprising placing the cap and pin type connecting means between the contacting faces of a heating device with the pin in aligned relation with an opening in said heating device, applying heat to said cap and pin to melt the solder and pressing an ejecting tool against the pin to force it out of engagement with the cap and into the aligned opening.

12. The process of separating operable and separable parts of an ophthalmic mounting that have been solder connected comprising placing the said parts between the contacting faces of a heating device, applying heat to the parts to melt the solder and pressing an ejecting tool against one of the parts, during the heating operation to force it out of connected relation with the other parts and discontinuing the heat to allow the parts to cool so that they may be separated.

13. The process of uniting operable and separable perforated parts of an ophthalmic mounting, comprising placing the perforations of the operable and separable parts in aligned relation with each other, sliding attaching means having an enlarged head portion adjacent one of its ends and having solder means associated therewith axially into the aligned perforations from one side of the parts to engage its head with one of said parts, sliding attaching means having an enlarged head portion adjacent one of its ends axially into the aligned perforations from the opposite side of the parts to locate the said attaching means in cooperative relation with each other in the aligned perforations and to engage its head with another of the said parts, placing the assembled parts and attaching means be-

tween the opposed contacting faces of a heating device and applying heat to said assembled parts to cause the solder to melt and flow and discontinuing the heat and allowing said assembled attaching means and parts to cool to permit the solder to harden and integrally secure the attaching means in desired assembled relation with each other whereby the enlarged heads of said attaching means will hold the parts in non-integral assembled relation with each other.

14. The process of uniting operable and separable perforated parts of an ophthalmic mounting, comprising placing the perforations of the operable and separable parts in aligned relation with each other, placing a cap-like retaining member and a pin-like retaining member having solder means associated therewith in telescoped relation with each other in the aligned perforations from opposite sides of the parts, placing the assembled parts and pin and cap-like retaining members between the opposed contacting faces of a heating device and applying heat to said assembled parts to cause the solder to melt and flow between the pin and cap-like member and discontinuing the heat and allowing said pin and cap-like member to cool to permit the solder to harden and integrally unite the same whereby the said pin and cap-like member will hold the parts in assembled non-integral relation with each other.

15. The process of uniting operable and separable perforated parts of an ophthalmic mounting comprising placing the perforations of said operable and separable parts to be united in aligned relation with each other, sliding a tubular member having an enlarged head portion adjacent one of its ends and having solder means internally thereof axially into cooperative relation with the parts from one side of the aligned perforations, sliding a pin-like member into the aligned openings from the opposite side and into telescoped relation with the tubular member internally of said openings, said pin-like member having an enlarged head portion engaging the parts on the side thereof opposite the enlarged head of the tubular member, placing the assembled parts and attaching members between the opposed contacting faces of a heating device, applying heat to said assembled parts to cause the solder to melt and flow between the inner walls of the tubular member and the portion of the pin-like member in said tubular member and discontinuing the heat and allowing the said assembled parts to cool to permit the solder to harden and integrally secure the tubular member and pin-like member in desired relation with each other and in non-integral relation with the parts.

16. The process of uniting operable and separable perforated parts of an ophthalmic mounting comprising placing the perforations of the operable and separable parts in aligned relation with each other, placing a headed retaining member in the aligned perforations from one side of the parts to hold the said parts in aligned assembled relation with each other and with its head engaging one of said parts, placing a cap-like member having solder means internally thereof over the end of the retaining member opposite its head and into engagement with another of said parts, placing the assembled parts, headed retaining member and cap-like member between the opposed contacting faces of a heating device and applying heat to said assembled parts to cause the solder to melt and flow between the cap-like member and retaining member to provide an integral connection between the said members to prevent loosening and the displacement of the retaining member during the use of the parts whereby the said parts will be held in desired assembled relation with each other.

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