

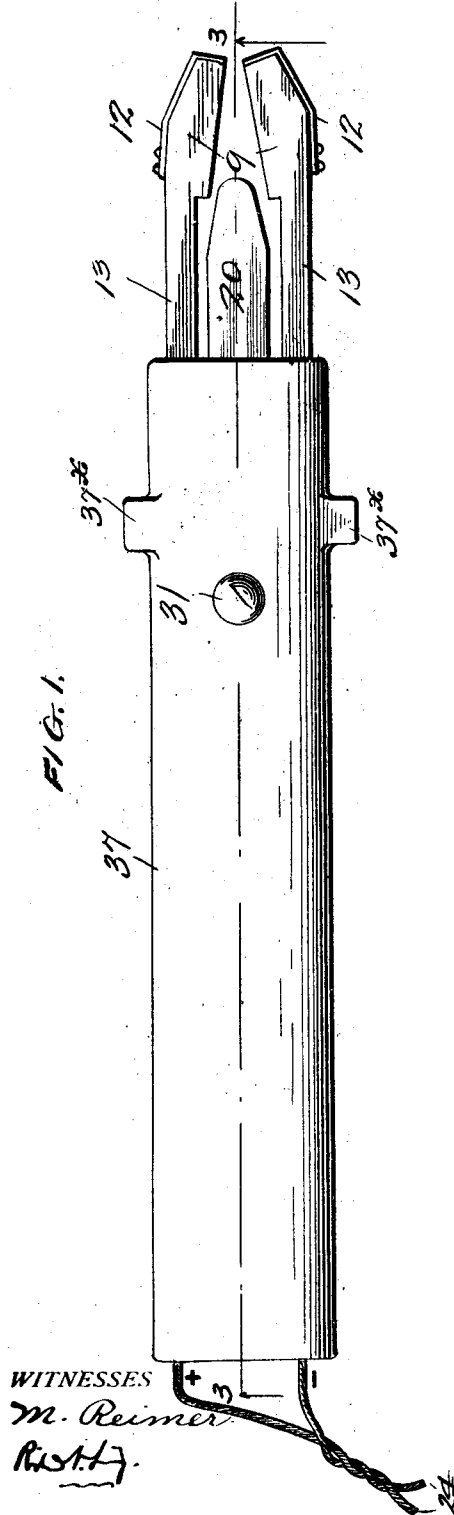
B. BRYAN.
WAX MELTING DEVICE.
APPLICATION FILED APR. 29, 1911.

Patented Mar. 18, 1913.

2 SHEETS-SHEET 1.

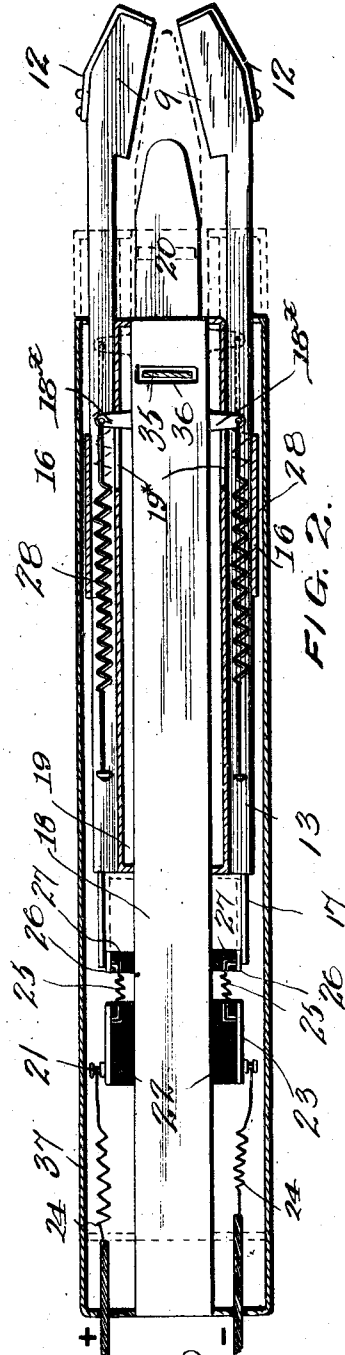
1,056,497.

FIG. 1.



WITNESSES
M. Reimer
R. H. L.

FIG. 2.



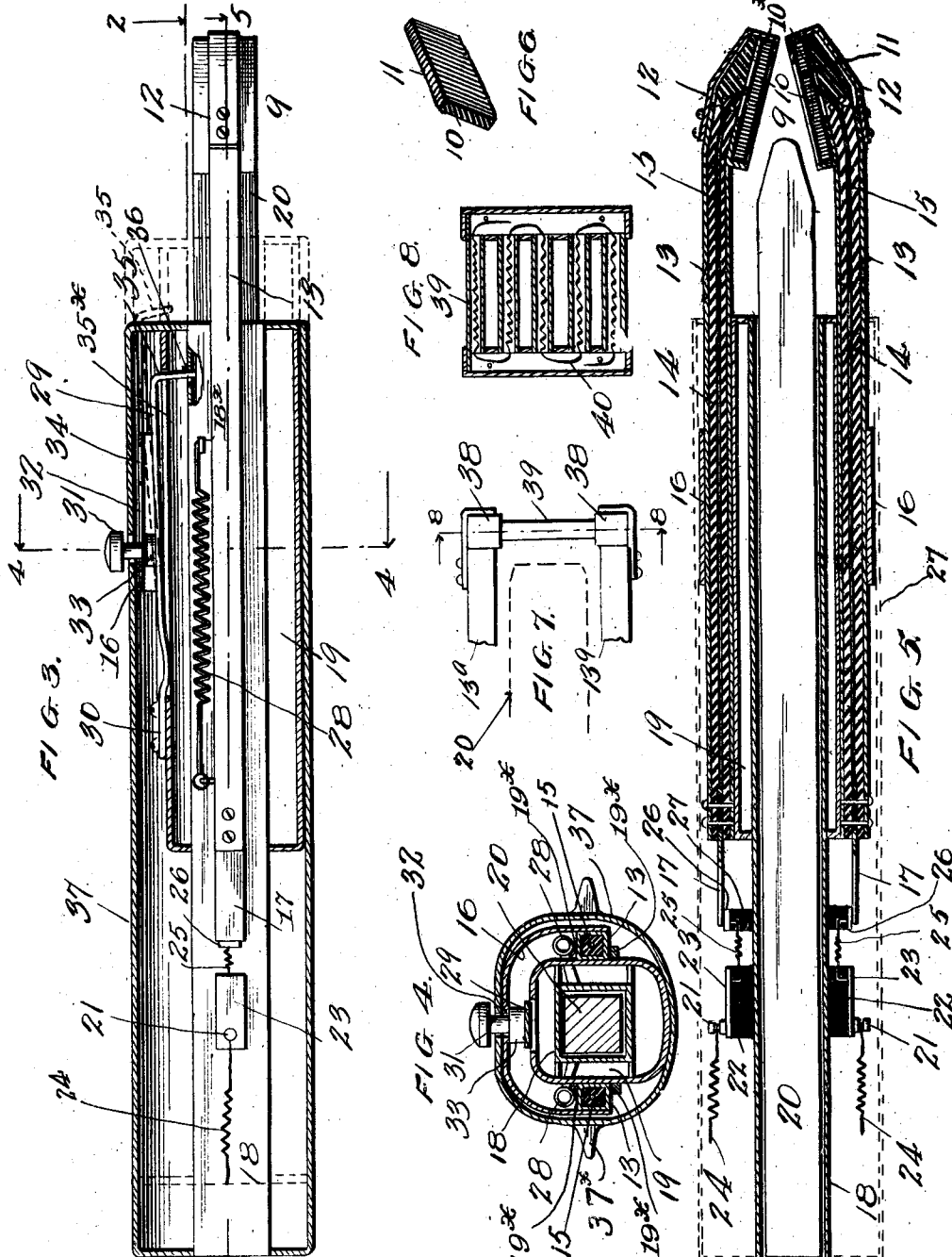
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2 SHEETS—SHEET 2.



WITNESSES
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UNITED STATES PATENT OFFICE

BARNABAS BRYAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

WAX-MELTING DEVICE.

1,056,497.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed April 29, 1911. Serial No. 624,235.

To all whom it may concern:

Be it known that I, BARNABAS BRYAN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Wax-Melting Devices, of which the following is a specification.

The present invention relates to means for melting and applying sealing wax to various articles, such as packages and the like that are to be sealed, and the primary object is to provide a practical structure, by means of which the wax will be expeditiously melted and can be properly applied to the surface or article to be sealed, the wax being out of the range of action of the heater when not in use, so that dripping and waste is avoided.

An embodiment of the invention that has proven entirely practicable is disclosed in the accompanying drawings, and is described in the following specification, but it will be evident from an inspection of the claims hereto appended that the said invention is not restricted to the particular structure set forth.

In the drawings: Figure 1 is a view in elevation of the instrument. Fig. 2 is a longitudinal sectional view therethrough, on line 2—2 Fig. 3. Fig. 3 is a longitudinal sectional view at right angles to Fig. 2, on line 3—3, Fig. 1. Fig. 4 is a cross sectional view on the line 4—4 of Fig. 3. Fig. 5 is a longitudinal sectional view through the heater, on the line 5—5 of Fig. 3. Fig. 6 is a detail perspective view, illustrating the structure of one of the heater elements or sections. Fig. 7 is a detail view of a modified form of construction. Fig. 8 is a sectional view on the line 8—8 of Fig. 7.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated, an electric heater is employed, composed of sections or elements 9 that are oppositely disposed, are spaced apart, and have their opposing faces convergently arranged. The heating members preferably consist of blocks of insulating material, 10, on which is wrapped resistance wire 11, the whole being suitably incased in insulating sheets 10^x, as will be evident. These heater sections or members are mounted in casings 12 that are carried by hollow arms 13 filled with insulating material 14 and carrying leads 15. The arms are

connected by a transversely disposed yoke or bridge piece 16. In the preferred form of construction, one of the leads 15 located in one of the arms is the negative, while that in the other arm is the positive, each of course being electrically connected to the heater section, and each of these coils 11 being in turn connected to the adjacent casing 12 so that the circuit is completed through the casing and the bridge piece or yoke 16. The rear ends of the leads 15 are connected to contact elements 17 that project longitudinally from the rear ends of said arms.

Slidably mounted on the arms 13 and between the same is a wax holding device, in the form of an angular open-ended tube 18 that extends beyond the rear ends of said arms, and has the portion between the arms preferably in the form of a hollow heat-insulating boxing 19. This tube or holder 18 is arranged to receive a stick of sealing wax, as 20, and it will be evident that the inner pointed end of said wax can be moved into and out of coaction with the heater elements when the holder is moved toward and away from the same. The side-walls of the boxing 19 are formed with lengthwise-extending ribs 19^x each pair of which embraces one of the arms 13. Hence, the tube 18 is guided on the arms 13 by these ribs 19^x. The tube is moved by placing the casings 12 on the envelop to be sealed, (the instrument being held vertically), and then pressing down upon the casing 37 to which the tube is attached at its ends and which surrounds the tube (Fig. 4). Mounted upon the rear portion of said holder are suitable binding posts 21 carried on insulating blocks 22, and connected to contact plates 23 that are movable into and out of engagement with the contact tongues 17. Leads 24 from any suitable source of current are connected to the binding posts 21. With this arrangement, it will be evident that when the wax holder is moved to present the wax to the heater, the circuit through said heater will be closed by the contact plates 23 coming into engagement with the tongues 17. In order that the heater may be maintained above the normal temperature of the room in which the instrument is placed, and yet below the melting point of the wax, if desired, shunts 25 of resistance material connect the plates 23 and the tongues 17, so as to always maintain a weak current through the heater. This structure is illustrated in Fig. 2, wherein it

will be noted that the resistance wires 25 are connected to plates 26 mounted on insulating blocks 27 that are in turn carried by the tube. These plates 26 are always in engagement with the tongues 17.

In order to move and normally maintain the wax out of coaction with the heater, springs 28 are employed that are connected at their front ends to arms 18* which project from the front end of the holder 18 through slots 19* formed in the boxing 19 and, at their rear ends to the rear portions of the arms 13, these springs being extended when the holder is moved toward the heater.

For the purpose of locking the holder with the wax in coaction with the heater and to prevent the springs 28 acting, a latch is employed that is in the form of a spring 29 secured at one end, as shown at 30 to the boxing 19 and having an actuating stem 31 fixed upon it, which projects through a key-hole slot 32 in the yoke 16. This actuating stem or knob has an enlarged lower portion 33 that springs up into the enlarged portion 34 of the key-hole slot 32 when the wax holder is advanced, thus locking said holder against retrograde movement under the action of the spring 28. The latch 29 has an inwardly turned end 35 that passes through a lengthwise-extending slot 35* formed in the boxing 19 and then through a transverse slot 36 in the holder so as to engage with the stick of wax 20, as will be clear by reference to Figs. 2 and 3. With this arrangement, it will be evident that when the wax holder is in its rearmost position, the latch 29 will of necessity be depressed, inasmuch as the enlargement 33 of the stem is confined beneath the yoke 16. The inwardly turned terminal 35 is therefore clamping the wax stick and holding it against movement in the tube. When, however, the wax holding tube is moved forwardly to present the wax to the heater, the springs 28 will be elongated, and as soon as the enlargement 33 comes to a position in front of the enlarged portion 34 of the key-hole slot 32, the latch will move outwardly, thereby releasing the wax and permitting it to feed by gravity freely to the heater as rapidly as it is melted. To carry said wax out of the range of said heater, it is only necessary to press the stem 31 inwardly. The first movement will therefore be to again clamp the wax to the wax holding device, and as soon as the enlargement 33 is out of the key-hole slot, the springs will react to move the holder with the wax rearwardly. In the preferred embodiment of the invention, the mechanism, with the exception of the outer end of the stem and the heating elements is inclosed in an outer casing 37. The latter is formed at each side with a lug 37* and these lugs prevent the instrument from rolling

trickle upon the heaters 12 and later harden there.

For the proper operation of an instrument of this character, it is most desirable that the wax within the wax-holding device be not melted. The arms 13 which act as heater-carriers are, as is clearly shown in the drawings, spaced apart and separated by an opening which permits the free circulation of the outer air around the piece of wax which extends from the outlet end of the wax-holder 18. In this way this portion of the wax is kept air-cooled. Again, when the wax-holding device 18 is in operative or active position, in which it presents the wax to the heaters 12, its outlet end is beyond the melting range of the heaters 12; that is, the outlet end is, as is shown in the drawings, so far removed from the heaters 12 that the wax at the outlet end of the wax holder 18 is not melted. Furthermore, by means of the air-gaps between the box-like casing 19 and the wax-holder 18 (Fig. 4), the latter is heat-insulated. To prevent a back-flow of the molten wax, the heating elements 12 are spaced apart and separated by an opening which permits not only a free endwise flow of molten wax but a flow laterally (it will be understood that the instrument will be held with the stick of wax extending vertically). Were the molten wax to flow back into the outlet end of the wax-holder 18 upon laying the latter down on a table, for example, the melted wax would upon cooling seal the stick of wax in the holder 18. Where the end to be melted is inclosed in a tube, it is obvious that the molten wax will upon cooling solidify and seal the outlet of the tube and the solidified mass of wax must be remelted before any flow can take place. When a gate or valve is provided for controlling the flow from such a tube, this gate will be sealed against movement by the cooling of the molten wax at the end of each operation. A waste of electric energy (or heat) must result in such an instrument from the necessity of again melting the wax in the outlet end of the tube no matter how little sealing wax is required for the next operation. Furthermore, experiment has demonstrated that such a tube will almost certainly overheat the wax, which then gives off smoke, the production of which it is, of course, very desirable to prevent.

With the instrument hereinbefore described, it will be clear that wax can be quickly heated to the melting point and yet cannot be overheated, because of the spaced heaters employed. Furthermore because of the open structure, the wax as soon as it is withdrawn from the heater cools to a temperature below the melting point, and there is no material drip or waste. Besides the

stuck to the heater. The rearward movement also automatically breaks the circuit so that there is no waste of current and yet if desired, the heater may be maintained in a heated condition but at a temperature below the melting point of the wax so that when the instrument is brought into operation, the wax is heated almost instantly.

Where large sticks of wax are employed, a heating device, such as shown in Figs. 7 and 8 may be utilized. In this case, the supporting arms are indicated at 13^a, and the heater is in the form of a grid comprising side bars 38 connected by tubular cross bars 39 in which the heating element or resistance 40 is placed. In this embodiment of the invention, the end of the wax stick is brought against the bars 39 and the melted wax passes between the same.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. An instrument of the character set forth, comprising a heater; means for carrying the wax to within heating range of the same, said means including a wax-engaging device; and automatic mechanism controlled by said device for limiting the exposure of the wax to the heat of said heater.

2. An instrument of the character set forth, comprising an electric heater; means for carrying the wax to within heating range of the same, said means including a wax-engaging device; and automatic mechanism controlled by said device for limiting the exposure of the wax to the heat of said heater.

3. An instrument of the character set forth, comprising a heater; means slidably mounted on the same for carrying the wax to within heating range of the heater, said means including a wax-engaging device; and automatic mechanism controlled by said device for limiting the exposure of the wax to the heat of said heater.

4. An instrument of the character set forth, comprising a heater having guide-arms; means mounted on said guide-arms for carrying the wax to within heating range of the heater, said means including a wax-engaging device; and automatic mechanism controlled by said device for limiting the exposure of the wax to the heat of said heater.

5. An instrument of the character set

forth having a heater; stick-guiding means which guide a stick of wax within heating range of the same; and mechanism, which automatically urges said means in one direction.

6. An instrument of the character described having a heater; stick-guiding means which guide a stick of wax within heating range of the same; and mechanism which automatically urges said means in a direction to carry the wax out of heating range of the heater.

7. An instrument of the character set forth having a heater; means which carry the wax to within heating range of the same, said means including a wax-engaging device; and mechanism which is controlled by the latter and which automatically urges said means in a direction to carry the wax out of range of the heat action of said heater.

8. In an instrument of the character set forth, the combination with a heater having arms, of a reciprocatory wax holding device slidably mounted on the arms for carrying the wax into and out of coaction with the heater, and a spring for moving the wax holding device in a direction to carry the wax away from the heater.

9. In an instrument of the character set forth, the combination with a heater, of means for carrying wax into and out of the range of heat of said heater, means for urging the carrying means in one direction, and means for holding the carrying means against movement by the said urging means.

10. In an instrument of the character set forth, the combination with a heater, of means for carrying wax into and out of the range of heat of said heater, a spring for urging the carrying means in one direction, and a lock for holding the carrying means against movement by the spring.

11. In an instrument of the character set forth, the combination with a heater, of a reciprocatory wax holding device slidably associated therewith, a spring connecting the wax holding device and heater to move the former in a direction to carry the wax away from the heater, and a lock for holding the wax holding device with the wax in coaction with the heater.

12. In an instrument of the character set forth, the combination with a heater, of a wax holder relatively movable thereto, and a clamp for securing the wax to the holder.

13. In an instrument of the character set forth, the combination with a heater, of a wax holder relatively movable thereto, and a clamp for securing the wax to the holder and releasing it when the holder is moved to carry the wax to the heater.

14. In an instrument of the character set forth, the combination with a heater, of a wax holder movable with relation thereto,

and means for normally securing the wax against movement in the holder and automatically releasing said wax when the holder is moved toward the heater.

5 15. In an instrument of the character set forth, the combination with a heater, of a wax holder movable with relation thereto, and common means for locking the wax to the holder and securing the holder against
10 movement.

16. In an instrument of the character set forth, the combination with a heater, of a wax holder movable with relation thereto, and means for alternately securing the wax
15 to the holder and locking the holder against movement.

17. In an instrument of the character set forth, the combination with a heater, of a wax holder movable with relation thereto, and a latch movable to one position to secure the wax to the holder and to another position to secure the holder against movement
20 with respect to the heater.

18. In an instrument of the character set forth, the combination with a heater, of a wax holding device slidably associated therewith, a yoke carried by the heater and having a key-hole slot, a spring latch mounted on the wax holder, and normally
25 engaging the wax to secure the same in said holder, and a handle for the latch operating in the key-hole slot and permitting the release of the wax when the latter is moved into co-action with the heater, said handle
30 engaging in the enlarged portion of the key-hole slot to secure the holder against movement when the wax is released.

19. An instrument of the character set forth having a heater; wax-holding means
40 spaced from the same and arranged to present wax thereto, said means including a wax-engaging device; and mechanism which is controlled by said device and which automatically controls the exposure of the wax
45 to the action of said heater.

20. An instrument of the character set forth having a heater; wax-holding means separated from the same by an open space and arranged to present wax thereto, said
50 means including a wax-engaging device; and mechanism which is controlled by said device and which automatically controls the exposure of the wax to the action of said heater.

21. An instrument of the character set forth comprising a heater having spaced heating elements; wax-holding means for presenting the wax to the latter, said means
55 including a wax-engaging device; and mechanism which is controlled by said device and which automatically controls the exposure of the wax to the action of said heater.

22. An instrument of the character set

forth comprising an electric heater having spaced convergently disposed heating elements; means connected with the heater for
65 presenting the wax to said elements, said means including a wax-engaging device; and mechanism which is controlled by said device and which automatically controls the
70 exposure of the wax to the action of said elements.

23. An instrument of the character described having a stick-guiding wax-holder; a heater-carrier which is connected therewith
75 and the heater-carrying end of which extends beyond the outlet end of the wax-holder; and a flameless heating element which is mounted upon said heater-carrier and the distance of which from said outlet end is
80 greater than the melting range of said element; the wax which extends between said outlet end and heater being exposed to air-cooling.

24. An instrument of the character described having spaced heater-carriers separated by an opening which permits circulation of air therethrough; flameless heating
85 elements mounted upon said heater-carriers and separated by an opening which allows the molten wax to flow away freely; and a wax-holder which is connected with said heater-carriers beyond the melting range of
90 said elements.

25. An instrument of the character set forth comprising spaced heater-carriers separated by an opening which permits the circulation of air therethrough; spaced flameless heating elements mounted on said
100 heater-carriers and separated by an opening which allows the molten wax to flow away freely; and a wax-holder which is connected with said heater-carriers and is heat-insulated therefrom and which in its operative position lies with its outlet end beyond the
105 melting range of said heating elements.

26. An instrument of the character set forth comprising a wax-holder; spaced flameless heating elements; and a pair of spaced arms which hold the latter away
110 from said wax-holder beyond their melting range; said arms being separated by an opening which permits air to circulate therethrough and cool the portion of the wax which extends from the outlet end of said
115 wax-holder; said elements being separated by an opening which allows the free flow of the molten wax.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

BARNABAS BRYAN.

Witnesses:

B. G. FOSTER,

A. M. PARKINS.