July 12, 1932. R. C. SWINK 1,866,867

THERMOGRAPHIC PRINTING DEVICE

Filed Sept. 15, 1930 2 Sheets-Sheet 1

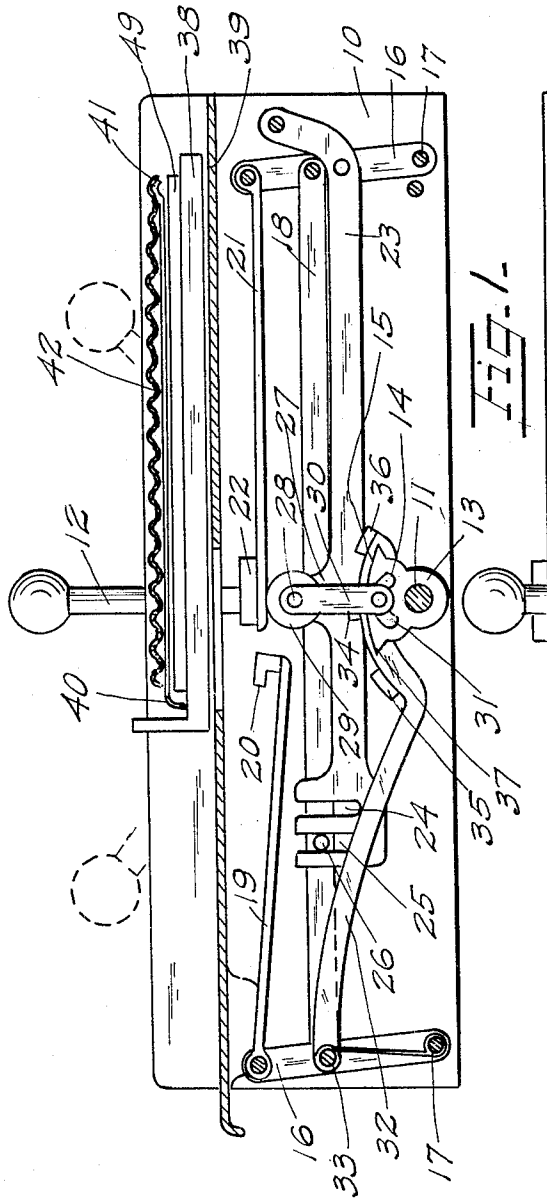


Fig. 1.

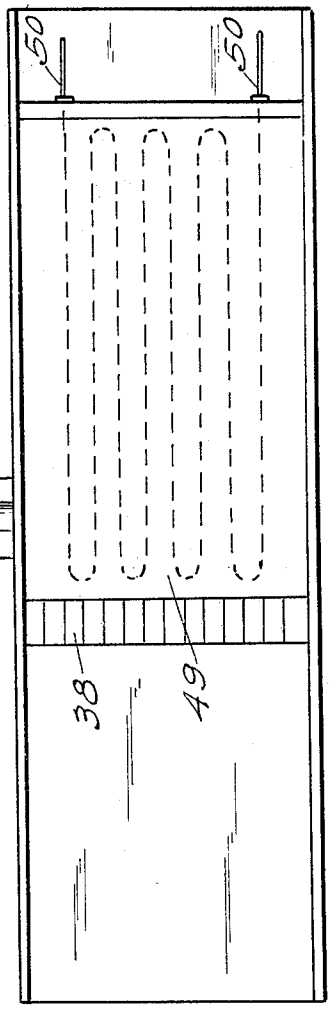


Fig. 2.

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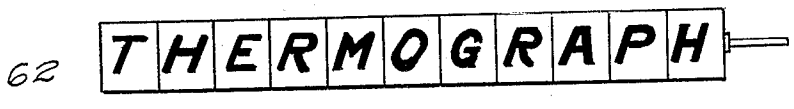


Fig. 3.

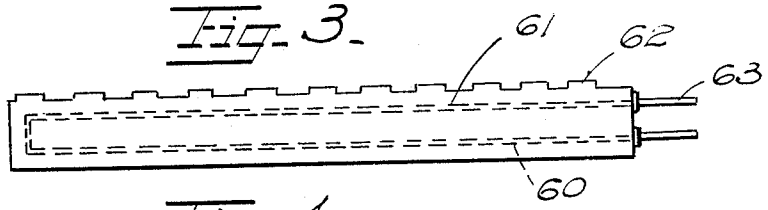


Fig. 4.

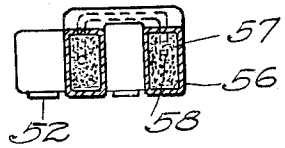


Fig. 5

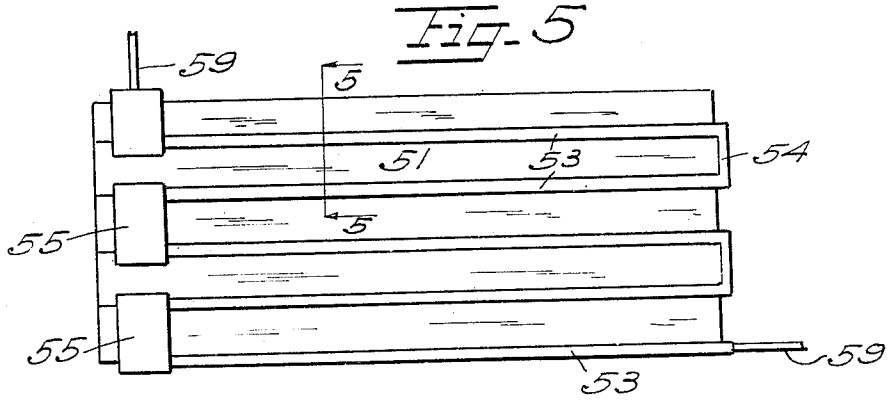


Fig. 6.

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UNITED STATES PATENT OFFICE

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THERMOGRAPHIC PRINTING DEVICE

Application filed September 15, 1930. Serial No. 481,923.

This invention is a thermographic printing device and has for its main object the provision of means by which printing may be done by the application of hot type, thus burning or scorching the impression, in lieu of the usual methods of printing by embossing, perforating or application of inks, the invention being directed particularly to that class of printing which it is desirable should particularly resist any attempts at erasures or alterations, such as check protectors and similar devices.

Another object of the invention is to provide means which may be applied to various types of equipment now in use, thus utilizing equipment which is now used with other printing means.

A further object of the invention is to provide a device as outlined which is economically constructed and maintained and as conveniently manipulated as the present ink printing methods.

Other objects and advantages of the invention will be readily discernable as the following description is read on the drawings which form a part of this specification.

The invention consists primarily of a device for thermal printing in which the type is heated to a temperature sufficient to char or scorch the material on which the printing is done, thus providing a charred or scorched impression which is unalterable and inerasable.

The invention is adequately illustrated in the accompanying drawings in which

Fig. 1 is a sectional elevation through a check protector indicating my invention applied thereto;

Fig. 2 is a top plan view of Fig. 1 with indicators and corrugated index plate removed;

Fig. 3 is a face view of a type bar with direct method of heating;

Fig. 4 is an elevation of Fig. 3;

Fig. 5 is a sectional elevation taken on line 5—5 of Fig. 6, and

Fig. 6 indicates a modification of the indirect method of heating the type bars.

The check protector indicated in Figs. 1 and 2 is illustrated for the purpose of specifically pointing out the application and particular advantages of the invention, and consists of a frame 10 having a shaft 11 pivotally mounted in the side frame members and having a handle 12 fixedly attached, for the purpose of operating the device. Cams 13 are fixed to the shaft 11 and are provided with an arcuate slot 14 and an exterior cam surface 15.

A pair of arms 16 are pivotally mounted as at 17 at each end and are pivotally connected together by means of spacer bars 18. Attached to the upper ends of the arms 16 are respectively impression bars 19 with impression pad 20 and inking bars 21 with inking pad 22. Position bars 23 are provided with a pair of slots 24 and 25 which cooperate with a pin 26 in the spacer bars 18. The position bars 23 are provided with ears 27 in which a transverse shaft 28 is fixed and on which the rollers 29 are pivotally mounted and levers 30 are fixedly mounted, the lower ends of levers 30 having pins cooperating with slots 14 as indicated at 31. The shift levers 32 are pivotally mounted at 33 on levers 16 and have three inwardly extending lugs 34, 35 and 36 and which are adapted to cooperate with the shoulders 37 and cam surface 15.

Type bars 38 are adjustably mounted in spaced relation to cover plate 39, and are provided with a spring locator 40 which has an arcuately formed end 41 adapted to engage the corrugations in plate 42 for retaining the desired type in adjusted position relative to the printing location.

The parts so far described do not form a part of the invention.

The invention consists of a heating element or unit 49 which is placed in contact with the upper surface of type bars 38, and clearing the locator spring 40 and corrugated plate 42, the heating unit preferably consisting of electric resistance wire in an insulating medium and having proper terminal connections for a source of electric power. Fig. 2 indicates the heating unit 49 mounted above the type bars 38 and having terminal connections 50, this providing an indirect system of heating the type.

A modification in the method of heating is indicated in Fig. 6 in which the type bars are slidably mounted between heating units obviating the necessity for flexible cords and providing an efficient means for indirect heating, and consists of a plurality of type bars 51 having characters 52 formed on one face thereof and slidably mounted between parallel portions of a heating unit 53 which is continuous about the rear ends of the type bars as at 54 and passes over the bars adjacent the forward end as at 55. The heating unit consists of a metal shell 56 filled with an insulating compound 57 and having an interposed element wire 58 passing therethrough and provided with terminals 59 for connection to a source of electric power.

In Figs. 3 and 4 is indicated a direct method of heating in which a heating element 60 is insulated and cast or inserted and packed in a type bar 61 having characters 62 formed on the face thereof and provided with terminals 63.

The operation of the check protector is as follows: With lever 12 in the position indicated dotted to the right in Fig. 1, the lever is drawn to the forward dotted position, thereby swinging cam 13 counter-clockwise. Shoulder 37 engages the right hand side of lug 34 moving lever 32, and coincidentally all the mechanism connected to lever 16 to the left, the latter movement of the lever 12, through the slot 14 and pin 31, raising the ink pad 22 to ink the type on type bars 38 and coincidentally raising lever 23 so as to cause slot 25 to engage pin 26. The reverse movement of lever 12 brings the compression pad 20 in the position previously held by the ink pad 22 which is then raised and pressed against the type bars 38 with interposed check or paper. The present invention obviates the necessity for the ink pad 22, and instead the type being heated by the heating unit 49 are sufficiently hot to scorch an imprint on the check when the compression pad 20 is pressed againt the type with interposed check or paper.

The method is applicable to all types of printing where high melting point metals or alloys can be used for type, as it is but necessary to provide means for heating the type to a temperature to cause scorching of the material being imprinted.

I claim:—

1. A thermographic printing device in combination with impression actuating mechanism and a series of type bars, electric heating means interposed between said type bars.

2. A thermographic printing device, in combination with impression means and a plurality of type bars, an electric heating unit interposed between said type bars, said type bars being movable relative to the heating unit.

3. A thermographic printing device, in combination with impression means and a plurality of type bars having characters formed thereon, an electric heating unit interposed between said type bars and formed about the rearward ends thereof, the heating unit being connected over the type bars adjacent the forward end.

4. A heating element for type bars consisting of a plurality of U shaped heating units, the ends of the legs of adjacent units being connected by integral U shaped transverse units, said U shaped heating units being adapted to slidably receive type bars between the legs thereof, and between adjacent units.

In testimony whereof I have affixed my signature.

RUFUS C. SWINK.