

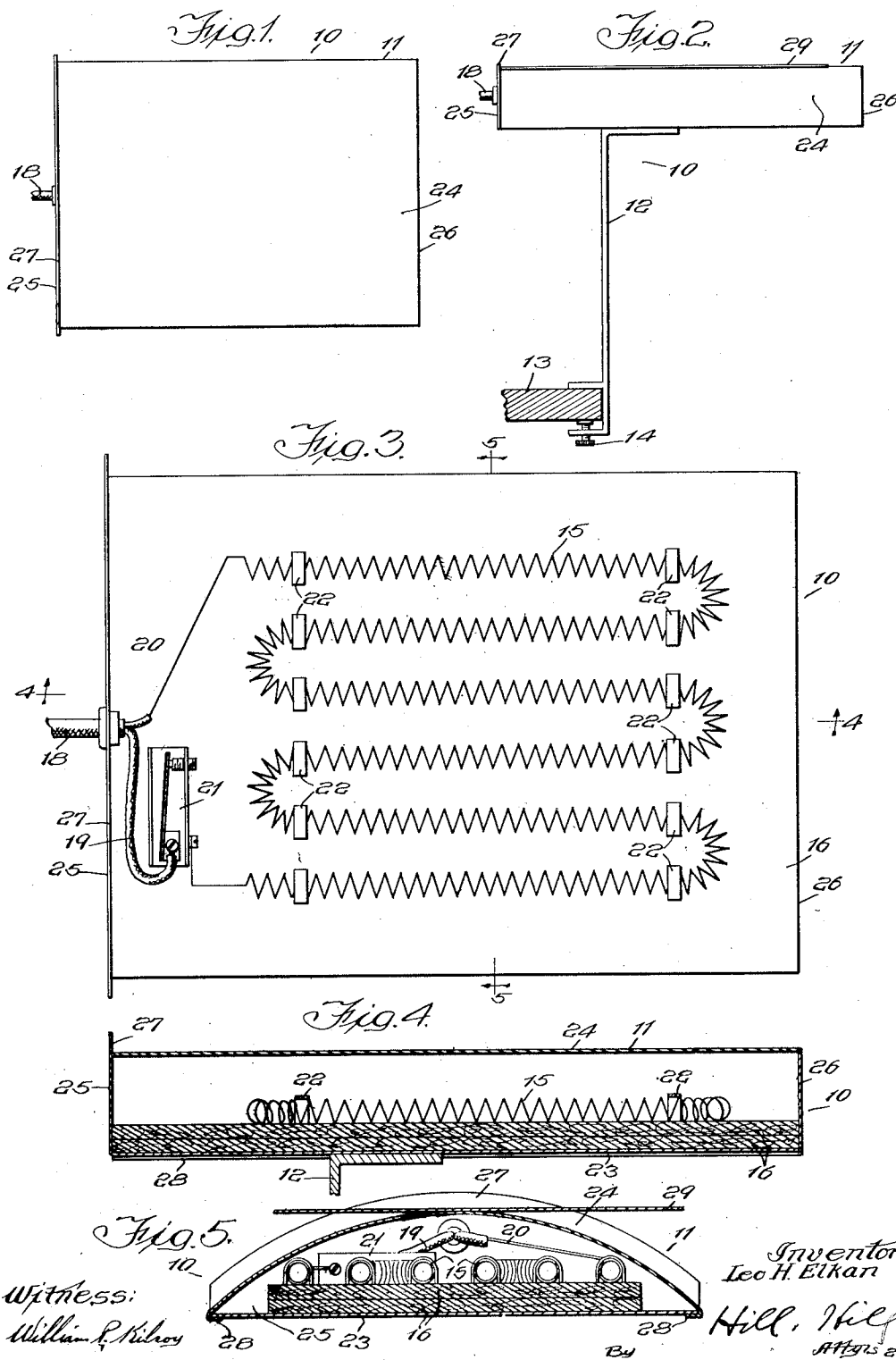
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MEANS FOR REHABILITATING USED CARBON PAPER

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MEANS FOR REHABILITATING USED CARBON PAPER

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The invention relates to carbon paper and more particularly it relates to a novel method of treating carbon paper to prolong its service life.

5 One of the objects of the invention is the provision of a novel method of treatment of used or pitted sheets of carbon paper to rehabilitate the same.

10 A more particular object is the provision of a novel method of treatment of sheets of carbon paper which, by reason of repeated use have become incapable of producing satisfactory copies of an original manuscript.

15 Another object of the invention is the provision of a novel device for practicing the above mentioned method whereby used sheets of carbon paper of the kind ordinarily used in typewriting are adapted for
20 forming satisfactory copies in substantially the same number as were the sheets when used for the first time.

A further and more general object is the provision of a novel method of treating
25 used sheets of paper which have a coating of fusible material, a portion of which is lost by each successive use, whereby the service life of such sheets may be prolonged several times and substantial savings effected
30 by reducing the number of sheets required and the original outlay for same.

Other further and more particular objects will become apparent as the specification proceeds.

35 It is well known to those familiar with the art that so-called carbon papers consist of specially treated sheets of tissue paper having a coating of ink on one face of a consistency that will neither smear
40 nor spread.

The ink used for such coatings generally comprises a mixture of wax, color and oil in proportions to produce the desired results as to consistency and other qualities
45 including a low fusing point. As is well known, pressure on the uncoated side of the sheet causes the ink to be transferred to a paper sheet laid against the coated side and the impact of the typewriter keys
50 against the original sheet causes the under-

lying sheet or sheets of carbon paper to become pitted by losing ink on corresponding underlying small areas or spots. The pits or spots on the sheet which is thus deprived of its ink increase in number and size with
55 each successive use of the sheet and upon continued use there will be an ever increasing number of instances in which the typewriter keys strike wholly or partially over the pits or spots which are barren of ink
60 and as a result faint or otherwise unsatisfactory impressions of the type are imposed on the copies. For this reason carbon sheets are frequently discarded after they have been used a relatively few times.
65 The sheets thus discarded still retain a large proportion of the coating of ink or so-called carbon material and entails a substantial waste, the avoidance of which is another object of the invention.
70

The invention contemplates multiplying the service life of the carbon sheets several times and saving a substantial portion of the coating material hitherto discarded. These results are accomplished by heating the sheet
75 until the coating material is fused and is caused to flow and spread uniformly to fill the pits. While the fusion may be accomplished by applying the heat to either side of the sheet I preferably apply it to the
80 back or uncoated side of the sheet by pressing the sheets against a heated surface and imparting a reciprocatory movement thereto. As a result of the fusing process that follows the coating will again be of a uniform thickness only slightly less than the thickness of the coating material at the time the sheet was initially used. The fusing process by means of which the rehabilitation of the sheet is accomplished may be
85 repeated several times, the thickness of the coating in each case being only slightly diminished and as a result the service life of the sheets is in many cases multiplied or increased several times over that of the same
90 sheets if untreated.

Satisfactory results are obtained in practice by using a limited amount of pressure in applying the back or uncoated side of the sheet to a surface heated to a temperature
100

above the fusing point of the coating material.

Referring now to the drawing which illustrates one embodiment of a device by means of which the method may be practiced,

Fig. 1 is a plan view of the device;

Fig. 2 is a side elevational view of the device shown in plan in Fig. 1 drawn to a smaller scale;

Fig. 3 is a plan view showing the device with the top cover removed and drawn to a larger scale;

Fig. 4 is a sectional view along the line 4-4 of Fig. 3; and

Fig. 5 is a sectional view of the device taken along the line 5-5 of Fig. 3 drawn to a smaller scale.

Referring now more particularly to the drawing, I have shown one embodiment of a heating device, suitable for practicing the method, which is generally designated by the numeral 10. The heating device 10 comprises a housing 11 detachably mounted upon a table or desk 13 by means of a supporting arm 12. The heating device may be shifted as desired from one table or desk to another and clamped into position by means of a screw 14.

The housing provides an enclosure for a plurality of resistance coils 15 arranged in any desired manner. A conduit 18 containing conductors 19 and 20 connects the coils 15 with a source of electrical energy not shown. The free end of the conduit 18 is preferably provided with a plug for insertion in a wall socket to enable the device to be set up for use at any convenient point in a room equipped with plugs. While I have shown the device as heated by resistance coils it is obvious that it may be used in the practice of the method by utilizing any other source of heat energy. Operation of the device may be started by plugging in any convenient socket and is stopped by simply removing the plug from the socket. The thermostatic switch 21 is shown diagrammatically and may be any type of switch to automatically break the circuit when the temperature reaches a predetermined point considered as a desirable maximum.

The coils 15 rest upon sheets 16 of asbestos or other non-conducting material and are held in parallel longitudinal rows by clips 22. The sheets 16 rest upon a plate member 23 forming the bottom of the housing. The bottom plate 23 rests upon the supporting arm 12 and is fastened thereto by any suitable means such as welding or by screw bolts, not shown.

The top of the housing 11 comprises an outwardly convex or cylindrical shaped cover 24 having its longitudinal edges turned inwardly to form flanges 28. The inturned flanges 28 slidably engage the edges of the

bottom plate 23 to form a guide which permits the cover 24 to be removed from the housing for inspection or the renewal of parts. The cover 24 is preferably given a slight curvature. The slightly convex curvature of the cover 24 enables a substantial portion of the sheet 16 to be applied thereto under pressure by holding the ends of the sheet with the hands. The curvature of the cover being flat the movement of the sheet is accomplished with a sweep or a stroke which is easy to accomplish and control. A further advantage of the flat curvature of the cover 24 is that all parts of the same are in close proximity to the heating coils 15. The close spacing of the cover 24 to the coils 15 permits the cover to be quickly heated to the necessary temperature to fuse coating material on the carbon sheets and minimizes the waste of energy which would otherwise result.

The method of the invention is practiced by first connecting the device with any suitable source of energy and raising the temperature of the cover 24 to a point where the coating of material on a sheet 28 will be fused if brought into close contact therewith as shown in Fig. 5. The elements of the cylindrical cover 24 are preferably but not necessarily horizontal and the operator manipulates the sheet of carbon paper 29 by bringing the uncoated side of the sheet into pressure contact with the cover 24. That portion of the sheet being heated will be held substantially horizontal and the sheet is manipulated by moving it either longitudinally or transversely or in both directions over the cover 24. The sheet will be so manipulated as to uniformly fuse the coating over a considerable portion of its area. As a result the liquid or semi-liquid coating will be caused to flow and fill the pits or bare spots. The fused coating material hardens as soon as the sheet is removed from proximity to the device and upon cooling a coating of uniform thickness results.

The dimensions of the device are preferably such that a sheet of carbon paper of the usual size and width may be moved reciprocally in either direction to get the desired uniformity of fusing and thickness of coating. A flange 27 on one end of the cover 24 serves as a guide to assist in keeping the sheet 29 in proper position over or on the heated cover.

The manipulation of the sheet 29 to produce proper fusion over areas sufficiently large to get the best results makes it desirable that the cover be convex outwardly as shown. The particular degree of convexity or curvature may be varied to suit the individual requirements of the installation.

The device is simple and economical in construction and may be operated by un-

skilled persons. The ability to manipulate the sheet to practice the method and to rehabilitate the sheet to fill pits contained therein is soon acquired by any of the members of an office force and enables substantial savings to be effected in the outlay for carbon paper by utilizing slack periods for the rehabilitation of used paper.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence, I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described or mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described, a closed housing comprising a flat bottom plate, a slightly curved plate forming the top and side walls of the housing and end plates fastened to the bottom plate, said end plates having their top portions conforming to the inner periphery of the curved plate and terminating in closely spaced relation thereto, a vertically projecting flange member bounding one edge of the curved plate, the ends of said curved plate having inturned edge portions in slidable engagement with the lower face of the bottom plate, said inturned edge portions adapting the curved plate for easy mounting upon and removal from the housing.

2. In a device of the kind described, a closed housing comprising a flat bottom plate, a slightly curved plate forming the top and side walls of the housing and end plates fastened to the bottom plate, said end plates having their top portions conforming to the inner periphery of the curved plate and terminating in closely spaced relation thereto, a vertically projecting flange member bounding one edge of the curved plate, the ends of said curved plate having inturned edge portions in slidable engagement with the lower face of the bottom plate, said inturned edge portions adapting the curved plate for easy mounting upon and removal from the housing, a resistance coil mounted in the housing in close proximity to said curved plate, a support for said housing, clamping means operable to fasten said support to a table or desk, and conductors adapted to connect the coil with a source of electrical energy.

In witness whereof, I hereunto subscribe my name this 25th day of May, A. D., 1931.

LEO H. ELKAN.