No. 667,098.

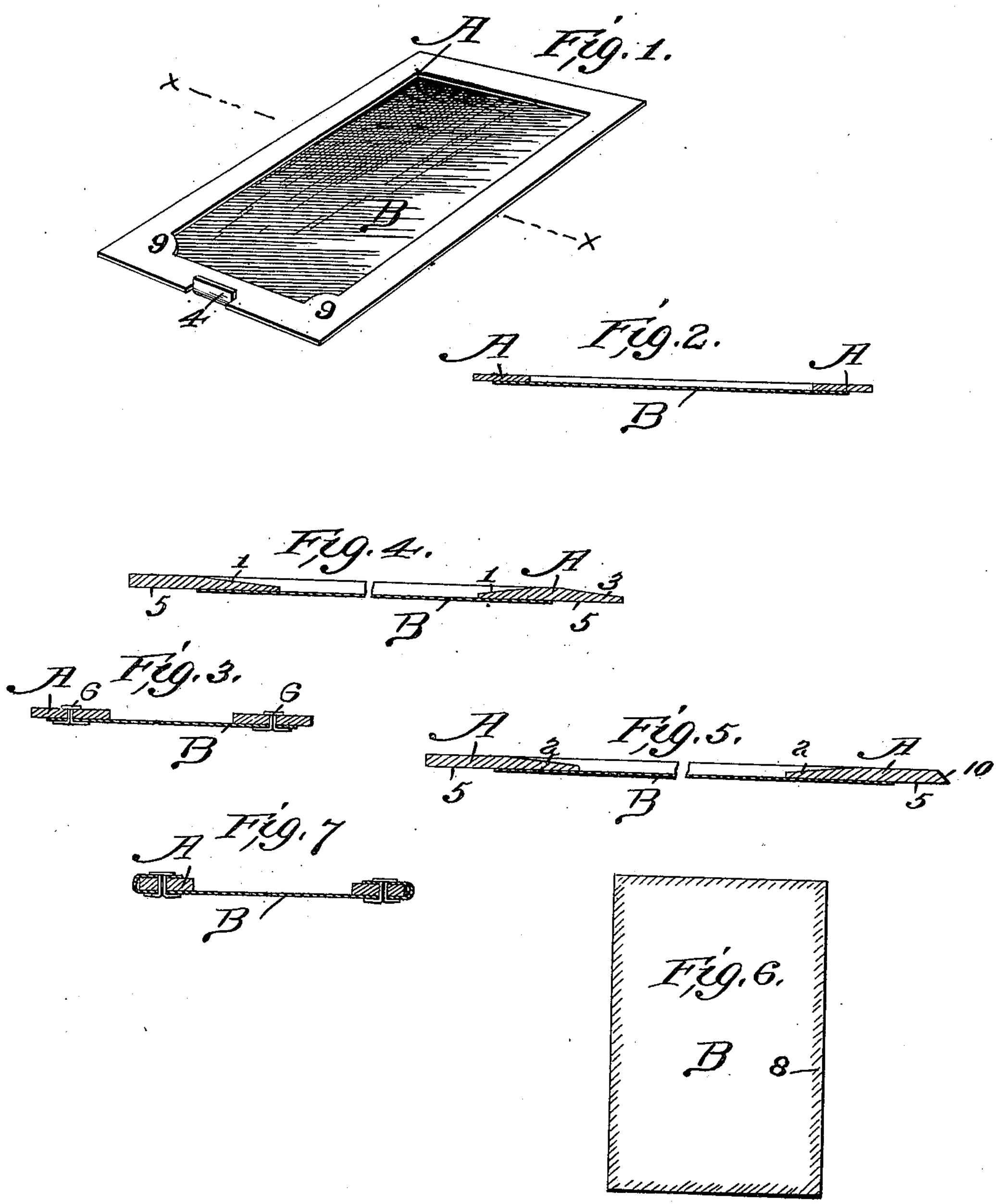
Patented Jan. 29, 1901.

L. F. MILLER.

CARBON SHEET HOLDER.

(Application filed Nov. 20, 1899.)

(No Model.)



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CARBON-SHEET HOLDER.

SPECIFICATION forming part of Letters Patent No. 667,098, dated January 29, 1901.

Application filed November 20, 1899. Serial No. 737,637. (No model.)

To all whom it may concern:

Be it known that I, LOUIS F. MILLER, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Carbon Sheets and Holders, of which the following is a specification.

My invention relates to the general subject of reproducing written matter by transfer of the original impression through the medium of a carbon-sheet to another sheet. For some purposes, such as typewriter-copying, loose sheets of carbon are necessarily used; but in many other kinds and lines of work such reproductions are neglected on account of the trouble, annoyance, and inconvenience experienced in the attempt to use such loose sheets, although the possession of a copy may be desirable as well as important. This is particularly the case where the original writing is done on sheets, pages, or forms bound in book fashion, as in check-books, receipt-books, and books of blank forms generally. In such cases it would often be considered more desirable to have a facsimile of the original, either in place of a memorandum on a stub or to be forwarded as an advice for subsequent comparison with the original. It is very difficult and inconvenient to place loose sheets of carbon between the leaves of such books, and, moreover, such a practice results in a great waste of carbons and is liable to produce imperfect copies. In the first place frequent handling of a carbon-sheet makes the carbon surface greasy and unfitted to give clear impressions. The hands are also soiled and unless frequently washed are liable to soil other papers. Further, it is difficult to slip the thin carbon-sheet between the leaves without wrinkling it and so producing the mark of the crease or wrinkle upon the copy. Again, time is wasted in getting an accurate fit of the loose carbon-sheet to the two surfaces between which it is placed. The carbons are often torn and thrown away, and, in fact, this method of use for large establishments, where the reproduction of originals is done frequently and on a large scale, is not only uneconomical, but actually wasteful both of time and material.

The object of my invention is to overcome all these disadvantages in the employment of carbon-sheets, to produce better copies, and to make the use of such carbon-sheets convenient, cleanly, and economical.

In carrying out my invention I support the carbon-sheet upon a frame of heavier material having narrow side and end pieces, so as to leave a large open space covered by the carbon. This open frame forms, first, means of supporting the carbon which enables the latter to be easily slipped between two pages and also to be handled without contact with the fingers. Such frame also forms a guide for the sheet or page or the portion of sheet or page upon which the original is to be written, and, further, the frame keeps the carbon smooth and under sufficient tension to prevent wrinkling and creasing.

In the accompanying drawings I have shown several different ways of applying my invention.

Figure 1 is a perspective view of one of my frames and carbons. Fig. 2 is a cross-section of the same on the line $x\,x$ of Fig. 1. Fig. 3 is a similar cross-section representing a modification. Fig. 4 is a longitudinal section representing a special construction of the frame. Fig. 5 is a cross-section of the same. Fig. 6 shows a sheet of carbon prepared with adhesive material for attachment to my frame. Fig. 7 shows a modification of Fig. 3.

A represents a frame, shown as of rectangular form and constructed of any material which may be suitable for the purpose, such as wood, metal, hard rubber, or celluloid. If such frame is made of thin material, so as to have edges which are naturally thin, I prefer the construction shown in Figs. 1 and 2, where the whole frame is of the natural thickness of the material. Where the material is somewhat heavier, as in Figs. 4 and 5, I may bevel the inner edges of the frame all around, as shown at 1, Fig. 4, and at 2, Fig. 5. In such case I also prefer to bevel the outer edge at one end, as at 3, Fig. 4, this end being the one which is pushed inwardly toward the back of the book and which on that account lies better in position. When such thicker material is used, the beveling 1 and 2 facilitates the use of the frame as a guide for a

sheet or page which is intended to fit within it. At the outer end of the frame I may provide a lug 4, which may be made in any suitable way, as by slitting and bending a metal frame, which makes it more convenient to withdraw the frame from between the pages of a book. To this frame, however constructed, is secured a sheet of carbon-paper B. I do not limit myself to any particular way or means of securing the carbon to the frame; but I prefer to use any suitable adhesive substance, such as paste or mucilage. The carbon-sheet is secured to the lower side of the frame, so that it will lie flat and smooth and so that its contact with the paper which receives the copy will be assured. When the carbon is attached firmly and smoothly, it will be held under such tension that any wrinkling or creasing of its surface will be prevented, and this firmness of attachment is increased by cutting the carbon somewhat smaller than the frame, so as to leave a margin of the frame around the carbon, as shown at 5 in Figs. 2, 4, and 5, which makes it unnecessary to touch the carbon in handling the frame. The frame may be rigid; but I prefer to make it of material which has some degree of flexibility in order that it may be capable of bending slightly where the conditions of use require it. It is evident that such a frame and carbon as shown in Fig. 1 can be readily inserted between the leaves of a book, that the page on which the original impression is made can be fitted without trouble to the carbon-sheet, and that in this attachment of the frame and carbon no handling of the carbon is required, nor is any particular care necessary in placing the carbon in position, as is the case where loose sheets are used under similar conditions. In order to form a better support for the carbon at the free end of the frame and to prevent the liability of tearing in case the frame and carbon extend beyond the edge of the book, I prefer to provide stops 9 at the inner corners, as shown in Fig. 1, which form a supporting-surface above the carbon at these points. Such stops can be used at the other inner corners, if desired. I have also found that it is convenient to bevel one side of the frame to a sharp edge, as shown at 10 in Fig. 5, in order that such edge can be used as a guide for tearing off slips from the book. Where thin material is used for the frame, such as sheet metal, the natural edge will be sufficiently sharp for this purpose without beveling. I have found in actual practice that a carbon carried by such frame can be used and do good work for more than twice as long as a loose carbon-sheet.

I have shown in Fig. 3 a modification of the manner of attaching the carbon to the frame, which can be used instead of adhesive material. By this construction the side and end pieces of the frame are provided with perforations 6 to receive clips or fasteners 7, having, preferably, flat heads, which are passed through such perforations and the carbons and are then turned down flat below the latter. Other fastening devices might also be employed; but I have found in practice that the proper adhesive material can be used for securing the carbon-paper to the frame, which will also allow the carbon to be stripped from the frame without difficulty, so that a single frame, being practically indestructible, is capable of use for an indefinite period. The adhesive material may be applied to the frame and the carbon laid thereon and so attached; but I design, further, to provide carbon-sheets cut to the right sizes for different sizes of frames and to supply adhesive material to the edges of such carbons on one side, as shown at 8 in Fig. 6. In such a case it is only necessary to moisten the carbon around the edge and attach it directly to one of my frames.

In Fig. 7 I have shown a modification of the construction of Fig. 3, in which the carbon-sheet is carried over and around the side edges of the frame and held by fasteners. The same purpose can also be accomplished by the application of an adhesive material.

I have in the introductory part of this specification pointed out the many advantages resulting from this invention, and it is hence unnecessary to repeat their recital here. I may add, however, that since one frame is sufficient for a long sequence of carbon-sheets its cost is a mere trifle, if only when compared with the saving in carbons which results from its use.

I do not limit myself to any details of construction herein described, and shown in the drawings; but I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

The stops 9, hereinbefore referred to, are for the purpose of preventing rupture of the carbon-sheet in case the device is used with a book the leaves of which are smaller than the carbon-sheet. In this case the stops projecting inwardly from the corners of the frame engage the corners of the leaves; and thus support the device and prevent undue pressure on the carbon-sheet.

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

1. A reproducing device consisting of a single open frame having a sheet of carbon on its lowermost face, said carbon having only its lower surface an impression-surface while its upper surface inclosed by the frame is not covered by the carbon material.

2. In combination with a carbon-sheet, an open frame to which said carbon is secured, said frame being of rectangular form and having two or more of its corners provided with stops said stops extending over the upper face of the carbon-sheet and forming flush continuations of the frame substantially as and for the purposes set forth.

3. A reproducing device consisting of a single open frame having a sheet of carbon on

its lowermost face, said carbon having only its lower surface an impression-surface, while its upper surface inclosed by the frame is not covered by the carbon material, said frame having a stop extending from its inner edge over the upper surface of the carbon, substantially as described.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 11th day of November, 1899.

LOUIS F. MILLER.

Witnesses:
F. M. BURT,
L. W. SEELY.