(No Model.)

W. JUNGE.

COPYING APPARATUS.

No. 581,163. Patented Apr. 20, 1897.

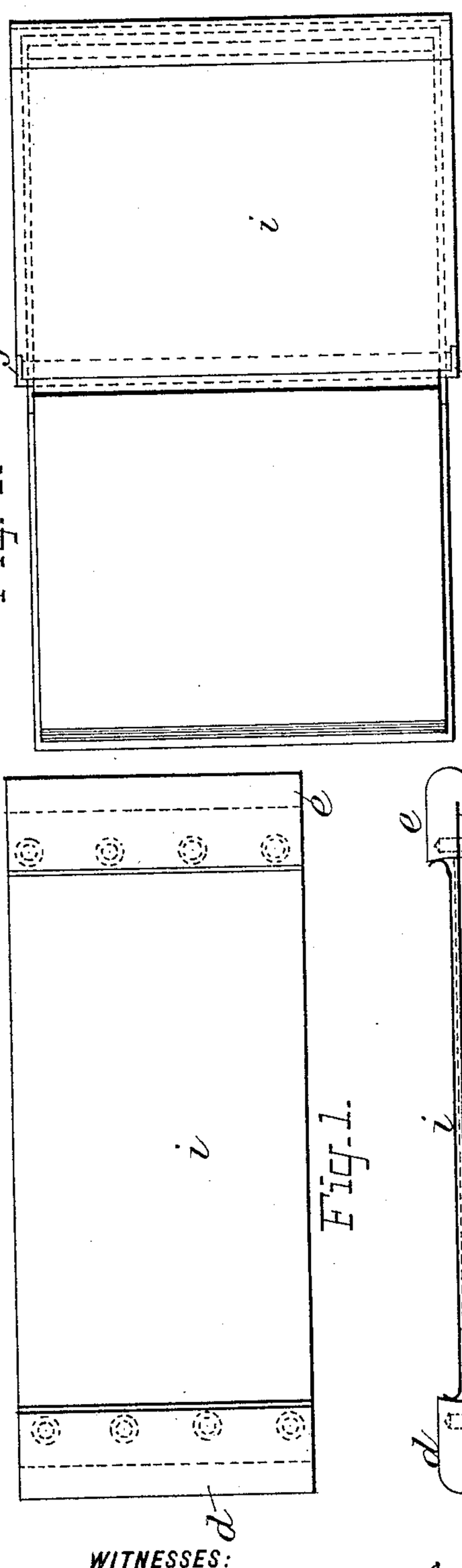

Fig. 1.

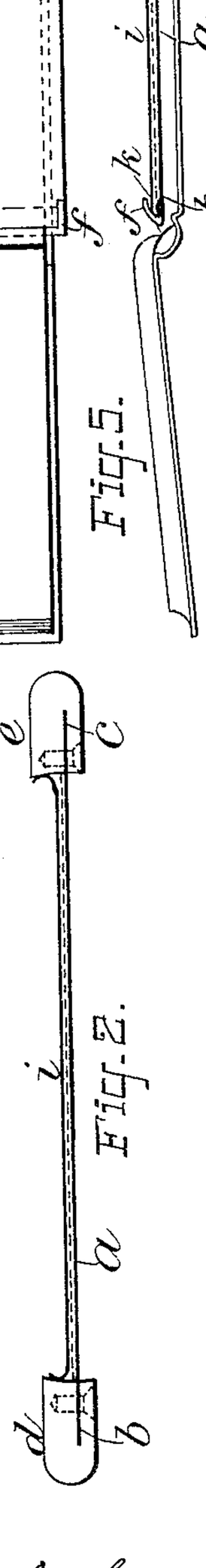

Fig. 2.

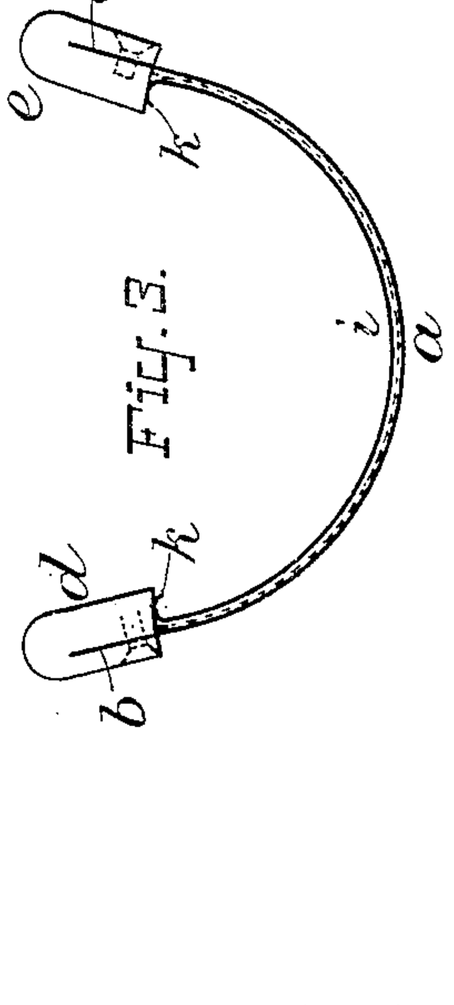

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

WITNESSES:

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WILLIAM JUNGE, OF LONDON, ENGLAND, ASSIGNOR TO THE COOKE & COBB COMPANY, OF NEW YORK, N. Y.

COPYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 581,163, dated April 20, 1897.

Application filed February 1, 1896. Serial No. 577,760. (No model.) Patented in England February 6, 1894, No. 2,579.

To all whom it may concern:

Be it known that I, WILLIAM JUNGE, a subject of the German Emperor, residing at London, in the county of Middlesex, England, have invented certain new and useful Improvements in Copying Apparatus, (for which I have obtained a patent in Great Britain, dated February 6, 1894, No. 2,579;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to copying writings, &c., by placing the original papers in contact with a dampened sheet of paper and subjecting them to pressure to transfer the writing to the dampened paper.

The object of my improvement is to do away with the clumsy and inconvenient screw and lever presses now commonly used and to provide a simple, cheap, and convenient contrivance for making such copies, which shall be portable, adapted to convenient and ready use, and to produce clean and clear copies easily and rapidly.

This invention consists of a resilient pressure-plate of suitable material and a resilient or flexible platen-plate, superposed with the papers between, so that by bending the apparatus the papers shall be compressed together and a copy of the writing produced.

In the accompanying drawings, Figure 1 represents a plan of a copying apparatus designed for loose leaves. Fig. 2 is a side view of the same. Fig. 3 represents the operation of copying by the apparatus. Fig. 4 is a plan showing the construction of the apparatus for copying on the leaves of a letter-book. Fig. 5 represents an end view of this apparatus as used in connection in copying on the leaves of a letter-book. Figs. 6 and 7 represent another form of the apparatus.

My invention may be carried into practice in several ways, as follows:

First, I provide a plate *a*, of spring-steel or similar resilient material, made of somewhat larger size than that of the leaves on which the copies are to be taken. Along two of its edges *b* and *c* I attach, either on one or both sides, ribs or flanges *d* and *e*, of any suitable section and shape, by means of screws, rivets, or other suitable means, as represented in Figs. 1 to 3. Such ribs or flanges may also be obtained by bending the edges *b* and *c*. The flanges *d* and *e* at the edges of the sheet *a*, Figs. 1 to 3, serve for the purpose of giving sufficient hold to the second sheet *i* and keeping it in proper position when the two sheets are bent to produce pressure upon the paper placed between them, as hereinafter described. A platen-plate *i*, which in this form of my invention may also be made of steel or similar resilient material, is of such length as to fit between the before-mentioned ribs or flanges *d e* at the edges of the sheet *a*.

The second form of my invention is specially applicable to taking copies on the leaves of letter-copying books, and this form is represented in Figs. 4 and 5. Pressure and platen plates *a* and *i*, of spring-steel, are employed, but in lieu of the ribs, as flanges *d* and *e*, I furnish one or both of the edges *b* and *c* of the platen with hook-shaped projections or abutments *f* and *f*, applied to the edge *b*, say, in any suitable manner. For the purpose of strengthening the edges *k* of the plate *i* which come in contact with the ribs or flanges *d e* or abutments *f* at the edge or edges of the plate *a* such edges *k* may likewise be furnished with ribs, flanges, or the like. In place of ribs, flanges, or abutments pins may be attached to the plate *a* at or near the edges, and in that case the plate *i* extends beyond such pins and is pierced with holes, through which the pins project when the two sheets are superposed, and which holes may be strengthened by eyelets, bushes, hollow rivets, or the like.

In the third form of my invention the platen *a* is made of canvas or similar flexible and non-elastic material, the plate *i* being simply a flat plate of spring-steel with notches *n n* at the corners of one edge. In one edge of the canvas platen is sewed a bar *o*, at the ends of which are the hooked-shaped abutments *f f*, and at the opposite edge there is also a flat bar *p* sewed in to give stiffness to the edge. The notching of the pressure-plate *i* prevents the plate from slipping when placed in position. It is obvious that the plates *a* and *i* may be fastened together along one of their edges by hinges or other similar means.

To produce copies in loose leaves with this improved apparatus, the original writing and a dampened sheet of copying-paper are placed between the plates *a i*, as indicated by the dotted lines, the two plates being held in their relative positions by the ribs, flanges, pins, or hinges or abutments at their edges. The operator then takes hold of the apparatus and bends the two edges toward each other, as shown in Fig. 3, whereby sufficient pressure is applied to the paper between the plates to produce a copy on the dampened sheet.

To use the apparatus for the leaves of a book, some dry leaves and the dampened book-leaf and writing are placed between the plates, with the abutment edge of the apparatus next to the bound edge of the leaf, and the outer edge of the apparatus is then bent over toward the inner edge, as indicated by the dotted line in Fig. 5, and the plates bent, as shown in Fig. 6, to produce the copy.

When the plate *a* is made of canvas, after the paper is arranged between the plates the outer edge of the latter, which has the bar *p* sewed in it, is bent over on top of the steel plate *i*, as indicated by the dotted line, so that the plates *i a* are clamped together at both edges, and thus the apparatus is bent, as before described, to produce the required pressure.

It will be observed that the copying-press thus constructed is very simple, cheap, light, portable, compact, durable, requires little power for its operation, can be easily manipulated, and produces clear copies in the shortest time.

I claim—

1. A portable copying-press comprising resilient plates, one plate having abutments on opposite edges between which the other plate is held and prevented from displacement when bent in the operation of copying, substantially as specified.

2. In a copying apparatus the combination of a plate *a* made of canvas or other flexible material and having bars at its edges, one of said bars being provided at the ends with hook-shaped abutments, and a plate *i* made of spring-steel and having notches on one edge, the two plates being superposed and held together by the notches of plate *i* engaging the abutments of plate *a*, the plates thus disposed being adapted to be bent to produce pressure for the purpose of making copies of writings, &c., placed between them, substantially as specified.

3. In a copying apparatus the combination of a plate *i* made of spring-steel or other resilient material, and a plate or sheet *i* made of canvas or other flexible material, of greater width or length than the resilient plate *i* and having bars on opposite edges one of which is provided with abutments, the two plates adapted to be placed together with the abutments holding one edge of the resilient plate, and the bar on the opposite edge of the plate *i* laid on top of the opposite edge of the resilient plate, whereby the two plates are clamped together and are adapted to be bent to produce pressure upon the papers between them, substantially as specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

WILLIAM JUNGE.

Witnesses:

F. WALLACE WHITLOCK,

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