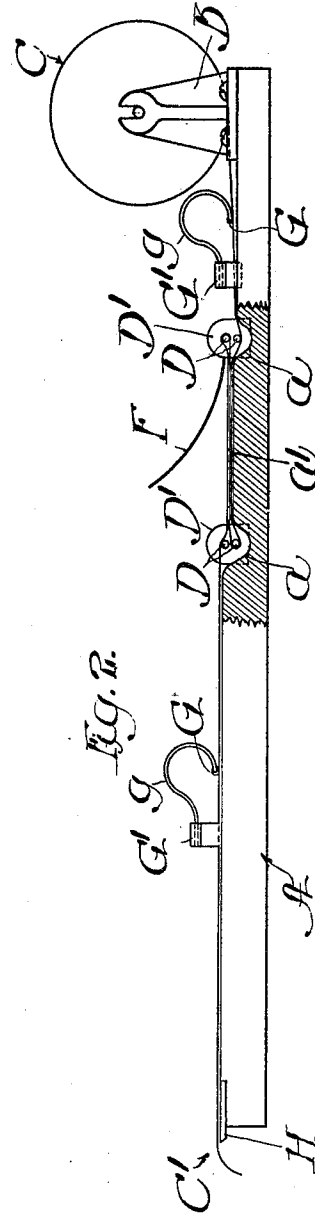
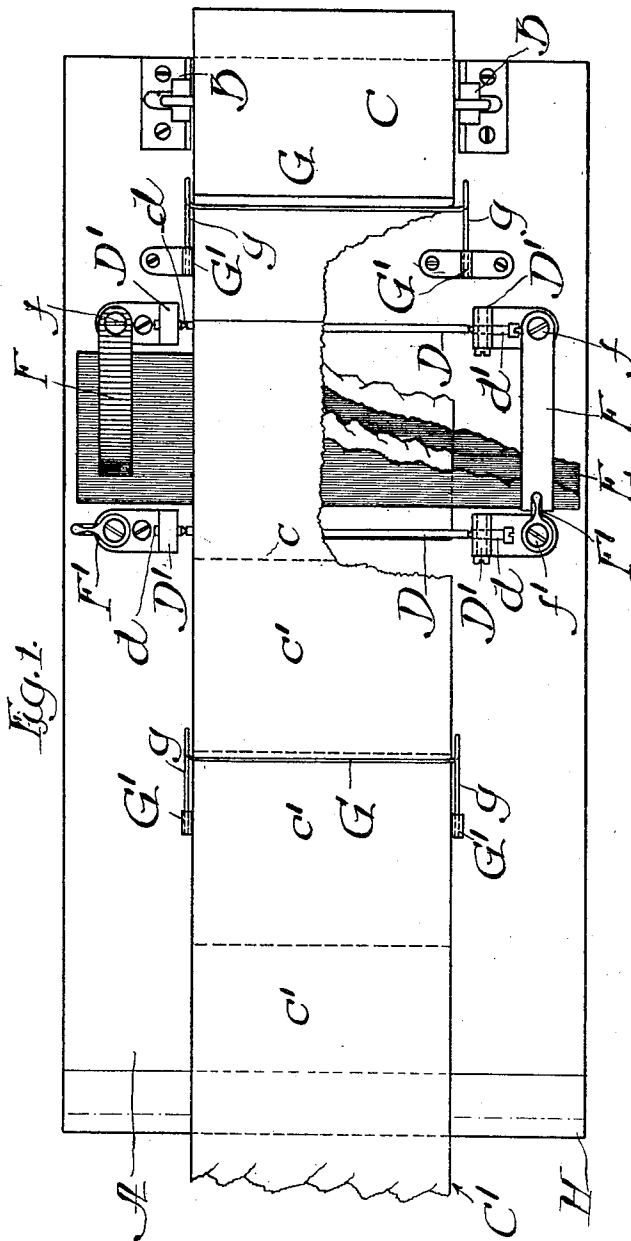


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MANIFOLD PRINTING DEVICE.  
APPLICATION FILED APR. 15, 1907.

932,148.

Patented Aug. 24, 1909.

2 SHEETS—SHEET 1.



Witnesses  
Harry H. Quinby  
T. H. Alfreds

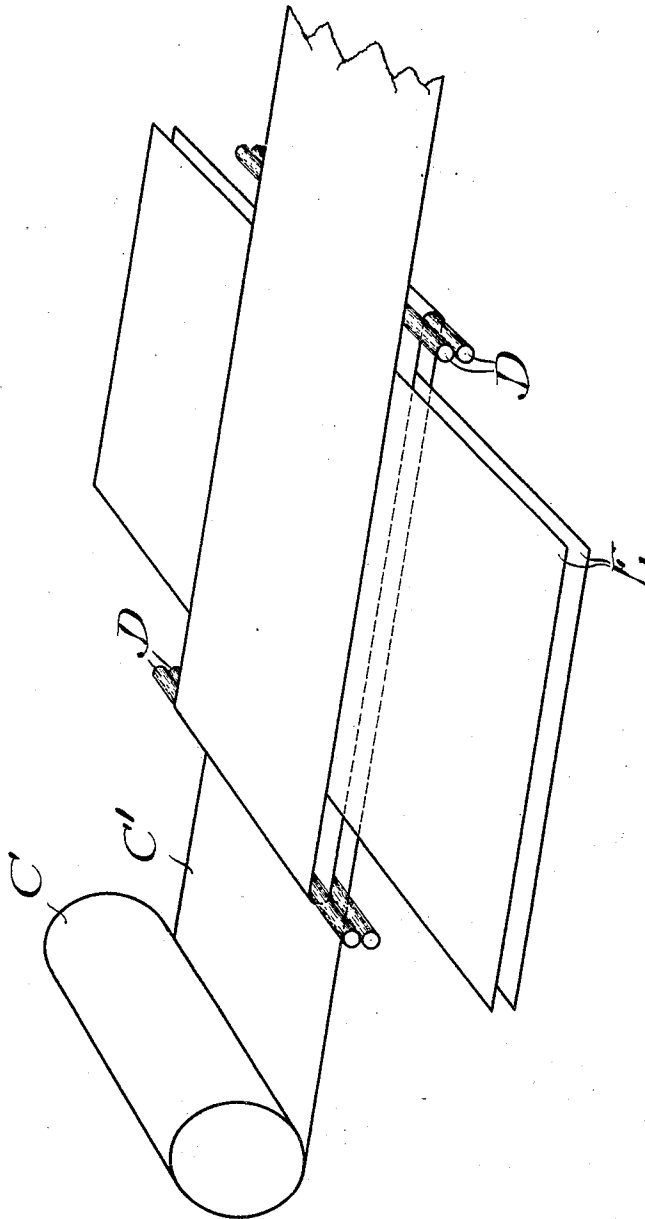
Inventor  
Edward Zuer Lewis  
By *Robert Brown*  
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Fig. 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWARD ZUVER LEWIS, OF FRANKLIN, PENNSYLVANIA.

## MANIFOLD-PRINTING DEVICE.

932,148.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed April 15, 1907. Serial No. 368,204.

*To all whom it may concern:*

Be it known that I, EDWARD ZUVER LEWIS, a citizen of the United States, and a resident of Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Manifold-Printing Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a manifold or duplicating machine for printing or impressing from the single impression of a stylus or printing device upon superposed sheets of paper an original copy and a plurality of carbon copies.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

Among the objects of my invention is to provide an exceedingly simple and efficient device for producing manifold copies in the manner described; to provide a device from which the manifold copies may be readily withdrawn for convenient subsequent handling; to provide a device in which the manifold copies may be produced on superposed registered form sections disposed longitudinally on a continuous strip and separated thereon by transverse division lines, and to provide an improved means for holding the carbon or duplicating sheets or ribbons interleaved with the superposed form sections thus arranged. Other objects of the invention will appear from the following description.

In the drawings:—Figure 1 is a top plan view of a manifolding machine made in accordance with my invention, showing a strip of paper laced therethrough to present a set of form sections to receive the manifold impressions, said paper being broken away to illustrate more clearly this arrangement. Fig. 2 is a side elevation, partially broken away, of the machine. Fig. 3 is a diagram illustrating the supporting rollers for the strip of paper and the manner in which the paper is folded upon itself, and illustrating also the manner of interleaving the carbons or duplicating sheets between the superposed form sections.

As shown in the drawings, A designates the base-board of the manifolding machine, B standards rising therefrom and formed to

receive the extended ends of the core or mandrel of a roll of paper C from which is unwound the strip on which are printed the form sections that receive the manifold impressions. The paper strip upon which are printed the forms that are to receive the manifold impressions and contained in the roll C consists of a continuous strip, designated as C<sup>1</sup>, and it is divided by transverse lines of division *c* into a plurality of longitudinally disposed formed sections *c*<sup>1</sup> *c*<sup>1</sup>, best shown in Fig. 1. A given or selected number of these formed sections constitute what will be hereinafter termed a form set which are arranged at the printing or impression point in superposed order with duplicating devices, as carbon sheets, interleaved between them. The number of form sections in a set depends upon the number of carbons or duplications desired; it being understood that at the location in the machine where the forms receive the impression of a printing device or a stylus, the sections of a given form will be disposed in superposed arrangement, the strip being folded upon itself a number of times required to bring the several sections of a given form set one under the other, and that between said form sections are inserted a plurality of carbon sheets or other duplicating devices whereby the imprint on the uppermost form section will be duplicated on the lower form sections through the medium of said carbon or duplicating devices. The form sections may of course be plain or may be specially ruled to receive the entries to be made thereon.

Referring now to the mechanism whereby the continuous strip bearing the separate form sections are brought together in superposed relation to receive the desired manifold impressions, the same is made as follows:

D D designate rollers which extend transversely across the base A and over which the strip of paper is trained in a back and forth manner to arrange the form sections printed on the strip one over the other. The said rollers are mounted in standards D<sup>1</sup> D<sup>1</sup> rising from the base-plate A. A convenient manner of rotatively mounting said rollers in the standards is to provide the ends of the rollers with suitable sockets which receive the pointed ends of bearing pins *d* *d*<sup>1</sup> which are suitably secured in said standards, as by means of screw-threads. One set of said screws, the screws *d*<sup>1</sup> as here shown, is made adjustable in the standards in order to admit

of ready removal and replacement of said rollers. In the construction herein shown, the base-board is provided with transverse recesses *a a* to receive the rollers *D D* and the upper face of the base-board between the rollers constitutes a support or platen *a*<sup>1</sup> which receives the thrust or pressure of the inscribing or printing device as the form sections are being filled in with the data which they are designed to receive. As herein shown, four rollers are provided arranged in two pairs, the rollers of each pair being disposed one over the other. The rollers thus arranged provide for the lacing of the strip of paper *C*<sup>1</sup> back and forth over the rollers in a manner to provide a superposition of three form sections, as clearly indicated in Fig. 2, the strip being passed under the lower rollers back over the lowermost roller remote from the roll *C*, thence back over the upper roller *D* adjacent to said roller *C* and finally forwardly from the latter roller over the upper roller remote from the roll *C*. If provisions are to be made for a greater number of superposed form sections and a greater number of rollers are, therefore, to be provided, it will be desirable to arrange said rollers, not with the axes of each set of rollers in the same vertical plane, as herein shown, but with said axes located in a plane inclined to the vertical in order that the form sections may be brought somewhat more closely together.

Interleaved between the form sections are a plurality of reproducing devices *E E* which may be carbon sheets, carbon ribbons, or the like. As herein shown, said reproducing devices consist of separate carbon sheets which are inserted transversely between the superposed form sections and extend at their ends beyond the side margins of said form sections. The carbon sheets are shown as being held in place by being pressed flat upon the base by means of clamping bars *F F* arranged one at each side of said base. Said clamping bars are shown as attached by screws *f* to the foot flanges of the standards *D*<sup>1</sup> of the rear rollers *D*, the screw-threaded connections permitting the clamping bars to be swung horizontally outwardly when arranging the carbon sheets in place. Preferably, said clamping bars are of spring or resilient nature, whereby the free ends, when not restrained, are thrown upwardly, as indicated in Fig. 2. Said free ends of the clamping bars are held flat upon the ends of the carbon sheets by means of latches *F*<sup>1</sup> which, as herein shown, are rotatively mounted, by means of screws *f*<sup>1</sup> on foot flanges of the forwardmost posts of the rollers *D*. Said latches are capable of swinging laterally toward and away from the clamping bars. In Fig. 1, one of said clamping bars is shown as thus confined or restrained in its clamping position by its latch while the other clamping

bar is free, the latch being turned laterally away therefrom.

The strip of paper made up into the form sections referred to is held flat upon the base-board in front and rear of the rollers *D* by means of presser bars *G G* which extend transversely across said strip and are fixed at their ends to lugs *G*<sup>1</sup> *G*<sup>1</sup> rising from the base. Said presser bars *G* are formed at their ends to provide curved springs *g* which serve to hold the presser bars yieldingly upon the strip to press the latter against the base. The said standards *G*<sup>1</sup> are herein shown as arranged to engage the side margins of the sheet and thereby afford lateral guides to hold the sheet in place so as to insure the accurate registering of the form sections, which are usually printed with columns and lines to receive thereon the various entries.

A tearing bar *H* is provided by which to facilitate the tearing of one set of forms from another set. Said tearing bar is herein shown as located at the forward end of the base *A* but may obviously be otherwise arranged and located to facilitate the detachment of the form sets one from the other after the same have been drawn from the point at which they receive the impression.

In the use of the device a strip in the form of the roll *C* is placed on the standards *B* and the free end of the strip is laced over and about the rollers *D D* to provide the required number of superposed form sections, and the free end of the strip is carried from the last roller over the base in advance of said roller and beneath the forward presser bar *G*. The said sheet is then drawn forwardly to bring the form sections properly into place between the rollers and into proper register with each other. Thereafter the carbon sheets *E* or other reproducing devices are inserted between the superposed form sections and are clamped in place by the clamping devices, or other suitable means provided therefor. The forms are now in position to receive written or printed impressions. The carbon or other reproducing sheets *E* will usually be arranged with their carbon faces downwardly. It will be observed, therefore, that in filling in the form sections two of the printed forms will appear on one face of the strip and the third form will be intermediate the latter forms and on the other face of the strip. After one set of forms has thus been filled in, the strip is shifted by grasping the free end of the strip and pulling it endwise until the original and carbon form sections of the set are drawn entirely away from the supporting rollers *D*, during which time another set of forms will have been automatically brought to place in superposed order between the rollers *D*. It will be observed, by reason of the space between adjacent form sections, that such shifting of the form strip to withdraw one set of printed forms and to

place another set of forms in position to receive another impression thereon, will not disturb the carbon sheets or other reproducing devices interleaved between the superposed form sections. Thus the carbon or other reproducing sheets will not need to be removed during the shifting of the form strip.

It will be observed that the form and size of the machine is such that printing impressions may be readily made upon the top-most form section of the superposed forms by the use of a book typewriting machine, as well as by a stylus. Attention is further called to the fact that all the form sections of a given set, after they have been filled in and detached from the strip, are in a form to be most advantageously handled or filed, all of the several sections of a set being in the form of a single strip, in which form they are retained until detached one from the other in accordance with the method by which the sections are afterward handled and distributed, thus avoiding liability of the sections becoming separated, misplaced or lost, as is liable to occur in manifold methods where the form sections are detached one from the other at the time they are removed from the machine.

I claim as my invention:—

1. In a manifolding machine, a base provided at one end with means for supporting a continuous strip arranged in a roll, two sets of rollers supported on said base and separated by an upwardly facing platen and about which rollers the strip is interlaced in a to-and-fro fashion for supporting sections of said strip in superposed relation over said platen, manifold sheets interleaved between the superposed sections of the strip, spring presser bars arranged to engage said strip in front and rear of said rollers and hold the same yieldingly against said base, and standards rising from the base to which said spring presser bars are attached, said standards being spaced apart to engage the margins of said strip.

2. In a manifolding device, a base provided at one end with means for supporting a continuous strip arranged in a roll, two

sets of rollers mounted on said base and separated by an upwardly facing platen, said rollers being arranged to support the strip interlaced in a to-and-fro fashion between the same to provide superposed layers or sections of said strip above the platen, manifolding sheets interleaved between the superposed layers or sections of said strip and extending at their ends over the flat base, said base being extended at each side beyond the limits of the platen, and resilient clamping bars arranged at each side of the platen to clamp the extended ends of the manifolding sheets upon the flat base, said clamping bars being hinged to the base to swing horizontally toward and away from the platen and arranged to swing upwardly at their free ends when unrestrained.

3. In a manifolding device, a base provided at one end with means for supporting a continuous strip arranged in a roll, two sets of rollers mounted on said base and separated by an upwardly facing platen, said rollers being arranged to support the strip interlaced in a to-and-fro fashion between the same to provide superposed layers or sections of said strip above the platen, manifolding sheets interleaved between the superposed layers or sections of said strip and extending at their ends over the flat base, said base being extended at each side beyond the limits of the platen, resilient clamping bars arranged at each side of the platen to clamp the extended ends of the manifolding sheets upon the flat base, said clamping bars being hinged to the base to swing horizontally toward and away from the platen and arranged to spring upwardly at their free ends when unrestrained, and latches engaging the free ends of the clamping bars for locking them flat on said extended ends of the manifolding sheets.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 12th day of April A. D. 1907.

EDWARD ZUVER LEWIS.

Witnesses:

TAYLOR E. BROWN,  
A. M. BUNN.