E. W. COOPER.

MEANS FOR PRODUCING MANIFOLDING WEBS.

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1,330,786. Patented Feb. 17, 1920.

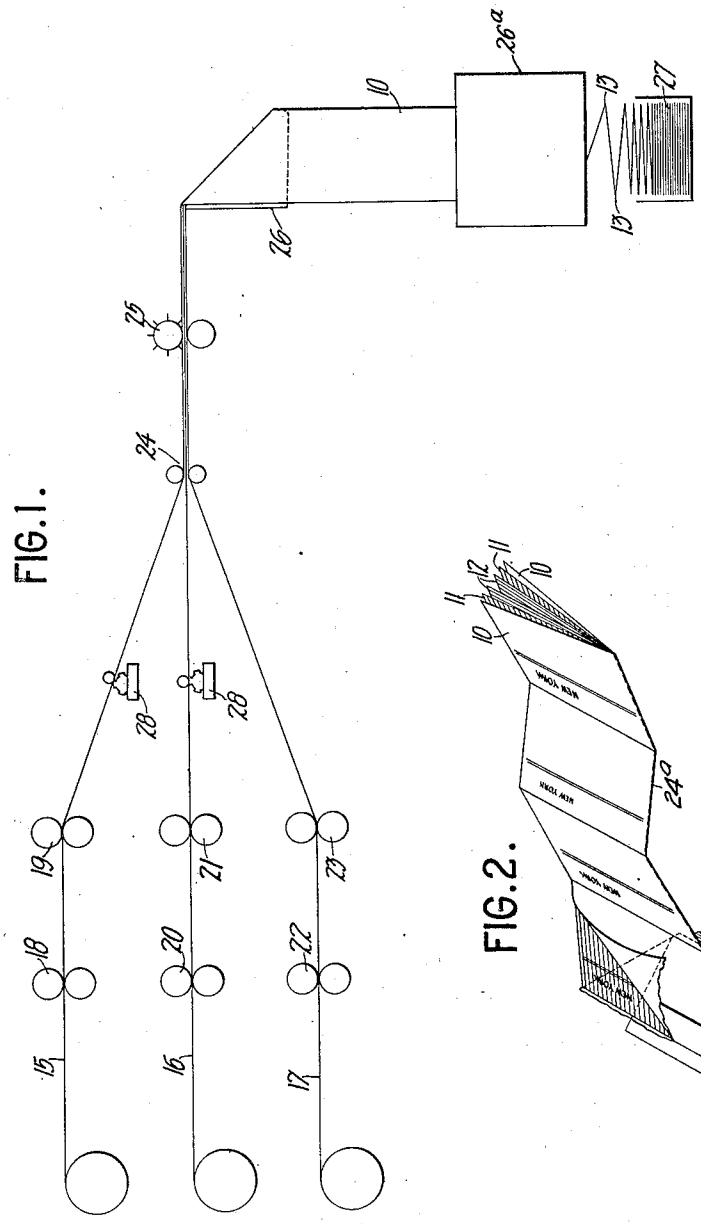


FIG. 1.

FIG. 2.

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MEANS FOR PRODUCING MANIFOLDING-WEBS.

1,330,786. Specification of Letters Patent. Patented Feb. 17, 1920.

Application filed October 18, 1917. Serial No. 197,373.

To all whom it may concern:

Be it known that I, ELLIS W. COOPER, a citizen of the United States, residing in Manhattan borough, New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Means for Producing Manifolding-Webs, of which the following is a specification.

This invention relates to typewriter manifolding by the use of webs.

It was formerly the practice to deliver webs in superposed relation to the platen of the typewriting machine, such webs being paid off separately from spools, and suitable carbons being placed between the webs in the typewriting machine, to make duplicate or manifold copies upon the webs; each page being severed from the web as soon as typewritten.

One of the main purposes of this kind of work was to typewrite upon printed forms, and accordingly the forms were repeatedly printed upon the webs. It was then found that owing to the independence of the webs, one web was liable to slip upon another, and hence the printed form on one web would become disalined from the form upon another web or webs, so that the typewriting would not fall in the desired place upon the disalined web.

This difficulty was especially noticeable in round platen machines, in which it was due largely to the fact that the outer ply of the superposed webs traveled faster than the innermost ply in running around the platen. This relative creeping of the outer web was found to be cumulative, so that by the time a large number of forms had been typewritten upon the webs, the disalinement would become excessive and troublesome.

It was therefore proposed to eliminate this trouble by using a fan-fold web; that is, a web which is folded back and forth longitudinally to produce many plies of work, each ply being appropriately printed with a form corresponding with the forms upon the other plies. This fan-fold web was interleaved with carbon, and typewritten in the manner shown in the Wernery and Smith Patent, No. 1,132,055. Creeping of one ply relatively to another was impossible, because the plies remained integral, and hence disalinement of any ply was avoided.

The fan-fold web, however, is relatively slow and expensive to manufacture. Moreover, the cost of the material is prohibitive in many instances, for the reason that where an extra fine quality of rather heavy paper is desired for the original copy, that is, for the outermost ply, it is necessary to use the same expensive grade of paper for all the remaining plies, of which there may be as many as six or more. Expensive paper is not needed for such remaining plies, which are merely carbon copies and merely intended for employees' assistance. Moreover the carbon copies are not clear where so many plies of expensive heavy paper are used. Owing, therefore, to the item of the paper cost and the lack of clearness of the carbon copies, the field for fan-fold machines has heretofore been limited to a cheap class of work, using inexpensive and thin paper. Moreover, all of the plies are of the same color, so that the expedient, which is favored in many offices, of having different copies made on different colors of paper, cannot be adopted.

The principal object of my invention, therefore, is to enable an economy to be effected in the cost of the paper, and to secure clean carbon copies, without resorting to the necessity of supplying different qualities of paper from different spools to the typewriting machine, with its attendant liability of creeping and disalinement of the forms on the different plies, and also to permit the use of different colors or qualities of paper in the assemblage. In other words, the object of my invention is to preserve all the advantages that accrue from supplying the webs from separate spools simultaneously to the typewriting machine, and at the same time preserve all of the advantages accruing from the use of a fan-fold web, while eliminating the principal disadvantages of both.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a diagram of means for printing the separate original webs each upon both sides so that the forms will all correspond, means for applying adhesive material (or otherwise providing for adhesion of superposed webs) to the webs along the fold line, which is usually about central of the web, means for assembling the printed and

adhering webs (the adhesion may be omitted in many cases), means for perforating the assembled webs longitudinally and centrally at the line of the subsequent fold, means for folding the assembled webs to make a single multiple-ply web, and means for zigzag cross-folding the web to make a pack.

Fig. 2 is a perspective diagram of a web pack, showing the registering forms printed upon the various plies thereof, and showing the use of interior plies of different material and preferably different color from the exterior; the inner plies being preferably much thinner than the container web.

The claims in this case will be confined to applicant's novel means for producing the above-described web pack, the product itself being claimed in applicant's divisional application, Serial No. 273,185, filed January 25, 1919.

In place of the web spools and the fan-fold web, I employ a multiplex web comprising two main elements, the first of which is a container 10, and the second of which is a web or webs 11, 12 within the container; the whole being cross-folded back and forth as at 13 to a form a convenient package 14 to be led directly into a typewriting machine.

In manufacturing this web, I lead the various elements thereof through a printing machine to print the forms in the necessary relationship on both sides of the various webs. These webs 15, 16, 17, after passing through the printing couples 18, 19, 20, 21, 22, 23, are brought to an assembled condition one upon another at 24, and preferably each web is then perforated centrally longitudinally at 24^a by perforating means 25. The web is then led to a V-shaped or other suitable folding device 26, which longitudinally folds the assembled webs into one multiple web. This then passes to a cross-folder at 26^a, which zigzags or makes back and forth folds in the web to reduce it to convenient package form at 27.

The outer folded element 10 of the multiple web performs the important function of a container for the other elements, holding the same against relative endwise displacement, and may be made, when desired, of much higher grade paper than the inner plies. Said inner plies 11, 12 are also folded and lie securely tucked within the fold of the container, and are held thereby and by one another against relative creeping among the webs; the friction of the rough web surfaces upon one another being sufficient to prevent such creeping as the unit passes through the typewriting machine. The inner webs may be of cheap paper, and each web may be colored differently from the others, 11 and 12 being shown as differently colored from each other and from the container 10.

When desired, a modicum of adhesive material may be applied by toothed devices 28 to certain of said webs, the container and intermediate web, as shown in Fig. 1, at intervals at or adjacent to the fold lines thereof, to hold together the inner webs and the container even more securely against the possibility of relative creeping; although the adhesive material (or other tacking device) may be dispensed with in many cases, as the possibility of creeping is practically eliminated by the described expedient of having the inner webs tucked one within the other and both within the fold of the container web. Moreover, the fact that the webs are folded back and forth in the final package precludes any possibility of creeping in those portions of the web that constitute the package itself. The portion of the web extending in unfolded condition from the package to the rolls of the typewriter is short, so that the opportunity for creeping is limited, and owing to the tucked-in condition of the folded plies and the pressure of said plies together by the devices of the typewriting machine, the possibility of creeping or disalinement becomes negligible, so that the forms are always in register or in their relative places when at the printing point of the typewriter.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. The combination with a means for printing forms upon a plurality of webs, of means for assembling the printed webs one upon another, means for centrally perforating the webs longitudinally, means for folding the assembled web longitudinally with a single central fold, and means for cross-folding the web in zigzag manner to form a package.

2. The combination with a means for printing forms upon a plurality of webs, of means for assembling the printed webs one upon another, means for centrally perforating the webs longitudinally, means for folding the assembled web longitudinally with a single central fold, means for cross-folding the web in zigzag manner to form a package, and means for applying adhesive material to certain of said webs at intervals along the fold lines thereof.

3. The combination with a means for printing forms upon each side of each of a plurality of webs, of means for assembling the printed webs one upon another, with said forms superposed one upon the other in registration, means for centrally perforating the webs longitudinally, means for folding the assembled web longitudinally with

a single central fold, and means for cross-folding the web in zigzag manner to form a package.

4. The combination with a means for printing forms upon each side of each of a plurality of webs, of means for assembling the printed webs one upon another, with said forms superposed one upon the other in registration, means for centrally perforating the webs longitudinally, means for folding the assembled web longitudinally with a single central fold, means for cross-folding the web in zigzag manner to form a package, and means for applying adhesive material to certain of said webs at intervals along the fold lines thereof.

5. The combination with means for printing forms upon each of a plurality of webs, of means for assembling the printed webs in superposed position with said forms in registration, means for weakening the webs along a longitudinal central line, means for folding the assembled web along said central line, and means for cross-folding the assembled web in zigzag manner to form a package.

6. The combination with means for printing forms upon each of a plurality of webs, of means for assembling the printed webs in superposed position with said forms in registration, means for weakening the webs along a longitudinal line, means for folding the assembled web along said line, means for cross-folding the assembled web in zigzag manner to form a package, and means for applying adhesive material to certain of said webs at intervals along the fold lines thereof.

7. The combination with means for printing forms upon each of a plurality of webs, of means for assembling the printed webs in superposed position with said forms in registration, means for weakening the webs along a longitudinal central line, means for folding the assembled web along said central line, means for cross-folding the assembled web in zigzag manner to form a package, and means to cause said webs to adhere together along their central fold lines.

8. The combination with means for printing forms upon each side of each of a plurality of webs, the forms on opposite sides of each web being symmetrically positioned with respect to a line longitudinal with respect to said web, said line constituting an axis of symmetry for the forms on each of said webs, means for assembling the printed webs in superposed relation with the forms in registration, means for perforating said webs along said axes of symmetry, means for folding the assembled web along said lines of perforation, and means for cross-folding the assembled web in zigzag manner to form a package.

9. The combination with means for printing forms upon each side of each of a plurality of webs, the forms on opposite sides of each web being symmetrically positioned with respect to a line longitudinal with respect to said web, said line constituting an axis of symmetry for the forms on said webs, means for assembling the printed webs in superposed relation with the forms in registration, means for weakening said webs along said axes of symmetry, means for folding the assembled web along the lines where said webs are weakened, and means for cross-folding the assembled web in zigzag manner to form a package.

10. The combination with means for printing forms upon each side of each of a plurality of webs, the forms on opposite sides of each web being symmetrically positioned with respect to a line longitudinal with respect to said web, said line constituting an axis of symmetry for the forms on each of said webs, means for assembling the printed webs in superposed relation with the forms in registration, means for perforating said webs along said axes of symmetry, means for folding the assembled web along said lines of perforation, means for cross-folding the assembled web in zigzag manner to form a package, and means for applying adhesive material to certain of said webs at intervals along the fold lines thereof.

11. The combination with means for printing forms upon each side of each of a plurality of webs, the forms on opposite sides of each web being symmetrically positioned with respect to a line longitudinal with respect to said web, said line constituting an axis of symmetry for the forms on each of said webs, means for assembling the printed webs in superposed relation with the forms in registration, means for weakening said webs along said axes of symmetry, means for folding the assembled web along the lines where the webs are weakened, means for cross-folding the assembled web in zigzag manner to form a package, and means for applying adhesive material to certain of said webs at intervals along the fold lines thereof.

12. The combination with means for printing forms upon each side of each of a plurality of webs, the forms on opposite sides of each web being symmetrically positioned with respect to a line longitudinal with respect to said web, said line constituting an axis of symmetry for the forms on each of said webs, means for assembling the printed webs in superposed relation with the forms in registration, means for perforating said webs along said axes of symmetry, means for folding the assembled web along said lines of perforation, means for cross-folding the assembled web in zigzag manner to

form a package, and means to attach said webs together at intervals along said lines of perforation.

13. The combination with means for printing forms upon each side of each of a plurality of webs, the forms on opposite sides of each web being symmetrically positioned with respect to a line longitudinal with respect to said web, said line constituting an axis of symmetry for the forms on said webs, means for assembling the printed webs in superposed relation with the forms in registration, means for weakening said webs along said axes of symmetry, means for folding the assembled web along the lines where said webs are weakened, means for cross-folding the assembled web in zigzag manner to form a package, and means to attach said webs together along the lines where said webs are weakened.

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Witnesses:
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