

Oct. 16, 1928.

1,687,905

R. C. STEVENSON

METHOD OF MAKING CONTINUOUS MANIFOLD FORMS

Filed April 25, 1924

Fig. 1.

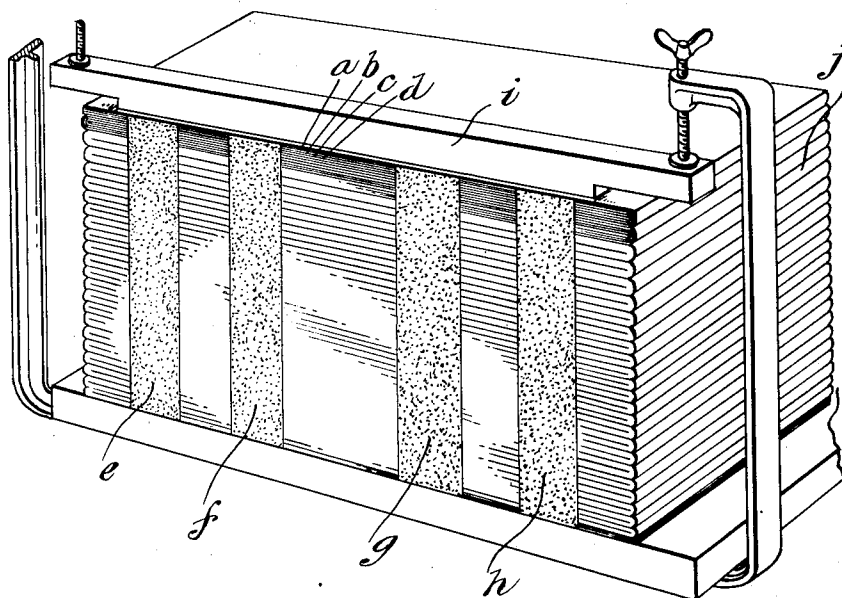
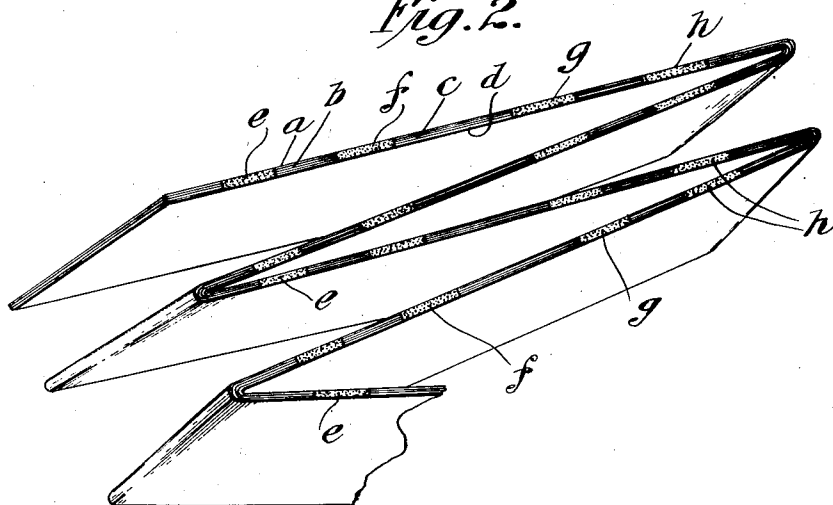


Fig. 2.



Ralph C. Stevenson INVENTOR

BY *Frank J. Wentworth*
ATTORNEY.

Patented Oct. 16, 1928.

1,687,905

UNITED STATES PATENT OFFICE.

RALPH C. STEVENSON, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GILMAN FANFOLD CORPORATION, LIMITED, OF NIAGARA FALLS, NEW YORK, A CORPORATION OF ONTARIO, CANADA.

METHOD OF MAKING CONTINUOUS MANIFOLD FORMS.

Application filed April 25, 1924. Serial No. 708,849.

My invention relates to continuous manifold forms of a type in which a plurality of paper strips or webs are superimposed, one upon the other, succeeding strips having a sequence of impressions thereon, containing blank spaces, the spaces in the impressions on one strip registering with those upon the other strips, and in the novel method of making such forms so that the several strips or webs will be maintained in superimposed relation with the matter thereon, properly registered, while permitting the forms as a whole to be conveniently handled in special typewriters, or the strips or webs to be separated while passing through said typewriter, or different parts of each form to be separated after being separated from the end of the continuous forms.

For many years, so-called fanfold manifold forms have been extensively used, the different longitudinal folds being perforated to facilitate the separation of the different superimposed strips from each other while passing through the typewriting machine.

It has also, of recent years, been the practice to trim the edges of such manifold forms by methods old and well known in the book making art, so as to dispense with the necessity for separating the different superimposed strips while passing through the typewriter.

It has been proposed to print separate strips or webs of paper, and while bringing them into registering relation, to apply a padding gum to the edges of the strips as they are being collated in order to correct those difficulties arising from the unconnected edges of the strips or webs when the edges of a fanfold form are trimmed in the manner described. The padding of five or six, or more, strips in the manner contemplated in the method immediately above described, has been found impracticable because of the lack of substance upon which the gum may act, and the high speed at which the strip or web travels while receiving an impression. Furthermore, this method, if practicable, will result in a strip having a continuous binding at its edge, and the strength and bulk of the binding material will be sufficiently great to not only interfere with the running of the strip through the typewriter, but will interfere with the separation of the superimposed strips, resulting in frequent tearing of the edge of the paper.

I have heretofore devised a continuous manifold form in which the superimposed strips or webs are secured together by light spot pasting within, and adjacent, an edge of the forms, which when employing special machinery, has given highly satisfactory results. This method, however, is not adapted for use in the production of forms except when they are assembled and secured together as the forms are being printed, or as the superimposed strips are being collated in a special machine for bringing the printed strips into the registering relation.

With the above conditions in mind, I have devised a continuous manifold form of the character above referred to, in which forms consisting of two or more superimposed paper strips or webs are padded or bonded together in a manner which will not increase the thickness of the forms at the point of connection, and will at the same time secure the different strips of the forms together with sufficient tenacity to prevent their accidental separation. Such forms may be readily separated if desired, while the continuous form is being fed in a typewriter, the character of the edge binding being such that there is little or no likelihood of the paper of the strips or webs being torn when the superimposed strips or webs are thus separated, or when the parts of any form are being separated one from the other. One sheet may be readily separated from the balance of a form without disturbing the connection between the remaining sheets, thus adapting the form to those uses where, after the forms have been filled in, it is desired to retain some of the parts in fixed relation to each other, and to remove others of the parts from the form.

Manifold forms embodying my invention cannot be produced simultaneously with the printing of the respective strips, nor while said strips are being collated, the essential characteristics of the method or art of my invention residing in the padding or bonding of a plurality of previously printed and collated paper strips or webs formed into a pile, the padding gum or other adhesive being applied at spaced intervals to a plurality of forms, the portion of the strips forming the different parts of each manifold form after being thus padded, being separated from portions of the strips forming the parts of other forms.

The invention consists primarily of a continuous manifold form embodying therein a plurality of superimposed strips, each having a sequence of imprints thereon, said imprints on different strips being in registered relation one to the other, and having edge padding at spaced intervals; and in such other novel characteristics and in the method or art of producing such forms, all as hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Fig. 1 is a perspective view illustrative of the method or art of producing continuous manifold forms embodying my invention; and

Fig. 2 is a perspective view of a short length of a completed form.

Like letters refer to like parts in both of said views.

A manifold form embodying my invention consists of a plurality of superimposed paper strips or webs indicated at *a*, *b*, *c* and *d* in the accompanying drawings. Each of these strips has impressed thereon a sequence of forms having spaces therein, the spaces upon the forms upon one strip registering with those upon the other strips, although the printed matter upon the different strips may be the same or may be different, according to the filing system with which the forms are to be used. This arrangement is old and well known in this art.

The making of the impressions upon the several strips or webs, and the collating of these strips to bring the printed forms thereon in registering relation, may be done in any desired manner either by printing the strips separately and collating and registering them by hand, or by machine; by printing and collating the strips in a single machine; by the ordinary fanfold printing methods and the subsequent trimming of the edges of the forms thus produced; or by a combination of these practices.

If it be desired that the separate strips or webs *a*, *b*, *c* and *d* be of different colors, weights, or qualities of paper, the trimmed fanfold forms cannot be used, although it is a common, though unsatisfactory, practice to use the fanfold printing methods either with inks of different colors as to the body of the forms, or as to a tint background.

While in the drawings, I have illustrated but a four-part form, it is the common practice to make continuous manifold forms containing from two to a dozen or more parts, the number of parts used being determined by the filing system of the user, since even if the number of parts exceed the capacity of a printing press, as to the width of the strip or web required to secure a given number of parts, or of the number of printing units when a plurality of webs are simultaneously

but separately printed, hand collating may be resorted to, in securing a form having the desired number of parts.

Printed and collated strips or webs *a*, *b*, *c* and *d*, or any variation in the number of such strips which may be required to produce parts of the desired number in the form, are required to have at least one edge of each part in register with the corresponding edge of all other parts. Said edges in forms of my invention are padded at spaced intervals as indicated at *e*, *f*, *g* and *h* by means of ordinary padding gum or adhesive which is applied only to the edge of the strip or web so as to secure a bonding action through the medium of the padding material, and at the edge of the strips or webs constituting the forms as distinguished from the anchoring of the adhesive or gum in the fibers at the contiguous surfaces of said strips or webs. In this manner, I am enabled to hold the strips or webs *a*, *b*, *c* and *d* in the desired relative position to maintain register of the printed forms thereon, the padding material having sufficient tenacity to prevent the accidental separation of adjoining strips or webs while, by reason of the spacing of the padded portions thereof, permitting the convenient separation of the different parts after the forms have been filled in and torn from the remainder of the strips or webs of the forms, it being possible to separate the outermost part of a form from the others, without interfering with the binding as to the remaining parts of a form.

By reason of the bound-on edge effect characterized by the absence of any surface bonding of the superimposed strips or webs, as well as by the spacing of the padded portions thereof, there is no liability of the tearing of the paper when separating different parts of a form, since the padding material will break down before the paper will tear, and the spacing of the padding permits the separation of the parts of the form by a sort of shearing action, since the paper may be rolled freely before any stress is applied to the padding material.

The ordinary practice with continuous manifold forms is to fold the collated paper strips or webs alternately in opposite directions in lengths of approximately twenty-two inches, irrespective of the depth of the forms upon said strips or webs. When the usual practice is followed, the method or art of my invention will comprise the steps of compressing a stack of longitudinally folded, superimposed, unconnected, previously printed, strips or webs to bring one edge of the stack or pile closely together as by means of a clamp bar *i* shown in Fig. 1, the pile or stack of the folded superimposed paper strips or webs being indicated at *j*. When the pile or stack is thus closely compacted adjacent an edge thereof, the padding-gum or adhesive

is applied to the edges of the strips or webs from top to bottom of the pile or stack by means of a brush, or in any other desired manner, the width of the strip of gum or adhesive thus applied varying according to the size of the printed forms. Ordinarily with eleven inch forms, satisfactory results can be secured by making the strip of gum or adhesive from one-half to an inch wide, and spacing the strips apart from four to five inches.

The gum or adhesive is then allowed to set without being permitted to enter between the paper strips or webs forming the stack or pile. The pressure upon the stack or pile is then relieved, and the strips or webs forming the parts of each manifold form are separated from the adjacent portion of the corresponding strips or webs, thus breaking the bond between different portions of the same strips or webs, but preserving the bond between the strips or webs forming the different parts of the forms.

When thus separated, the forms may be packed in a box in the usual manner, and are ready for use.

Actual practice has demonstrated that this method of padding secures the different strips or webs *a, b, c* and *d* together with sufficient permanency to avoid their separation while they are being fed through a typewriter or billing machine, while permitting the different parts of the forms to be readily separated by the mechanism in such machines provided for that purpose, without interfering with the proper feeding of the forms, and without any tearing of the edges of the paper.

Since the different parts of each form are ordinarily separated from the continuous form, the arrangement of the strips of gum or adhesive *e, f, g* and *h* are such that at least one of such strips will be at some part of the edge of each such form. If it be desired to preserve all, or any number of parts of each form after it has been removed from the continuous form, without disturbing the register of the printed matter upon such different parts, the separator blade of the machine is not used. The manner of applying the padding gum or adhesive is such that one or more parts may be removed from any separated form without disturbing the padding as to the remaining parts, and consequently without interfering with the register of the printed matter upon said remaining parts.

A continuous manifold form bonded as described may be folded, rolled, or otherwise handled under the ordinary conditions of production and use, without breaking the padding *e, f, g* or *h*.

By applying the padding gum or adhesive to an edge of a compacted stack formed from continuous strips or webs and separating the different parts of the strips or webs in the manner described, it is apparent that the thickness of the padded material will of ne-

cessity be substantially that of the aggregate thickness of the superimposed paper strips or webs, and practically none of the material will enter between adjoining paper strips or webs and become anchored to the surface fibers of the paper. Hence the bonding action will be merely through the tenacity of the padding gum or the adhesive itself, or possible along a very thin line of anchorage at the edges of the superimposed paper strips or webs.

A stack representing many hundreds of separate forms may be simultaneously padded in the manner described, and the separation of different parts of the continuous paper strips or webs constituting each of the different forms may be rapidly done by hand, thus permitting the production of continuous manifold forms embodying my invention, without any material added cost of production as compared with other methods of making such forms.

It is not my intention to limit the invention to the number of parts to each form, or to the particular manner of printing and collating the paper strips or webs forming the corresponding parts of different forms, although my invention is particularly adapted for the production of forms in which the different parts are composed of paper of different colors, grades and weights.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. The herein described method of making continuous manifold forms consisting in longitudinally folding a plurality of superimposed, unconnected, previously printed strips having printed matter thereon with the blank spaces on different strips in registering relation one with the other, in a stack, with an edge of different portions thereof in alignment, compacting the stack thus formed, applying padding adhesive to said edge, and thereafter separating each fold of the strips or webs forming the parts of a manifold form from the adjacent folds of the strips.

2. The herein described method of making continuous manifold forms consisting in longitudinally folding a plurality of superimposed, unconnected, previously printed strips having printed matter thereon with the blank spaces on different strips in registering relation one with the other, in a stack, with an edge of different portions thereof in alignment, compacting the stack thus formed, applying strips of padding adhesive at spaced distances, and thereafter separating each fold of the strips or webs forming the parts of a manifold form from the adjacent folds of the strips.

In witness whereof I have hereunto affixed my signature this 24th day of April, 1924.

RALPH C. STEVENSON.