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C. W. BRENN

2,213,157

MANIFOLDING

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Fig. 1

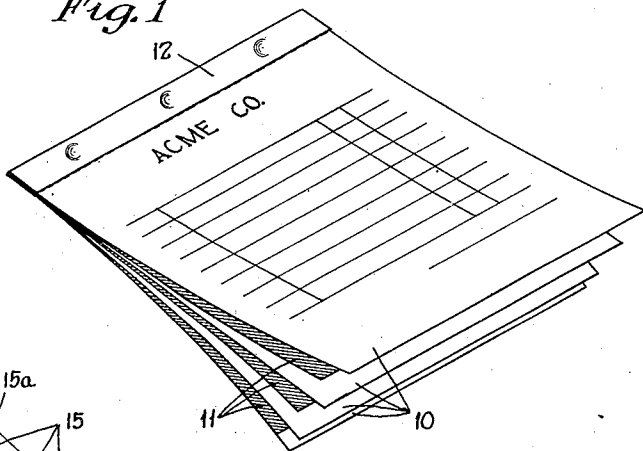


Fig. 2

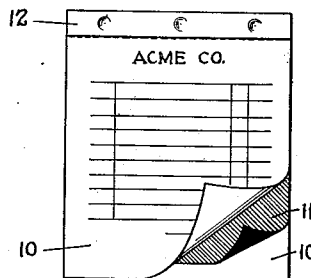


Fig. 3

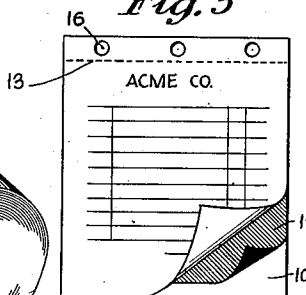


Fig. 4

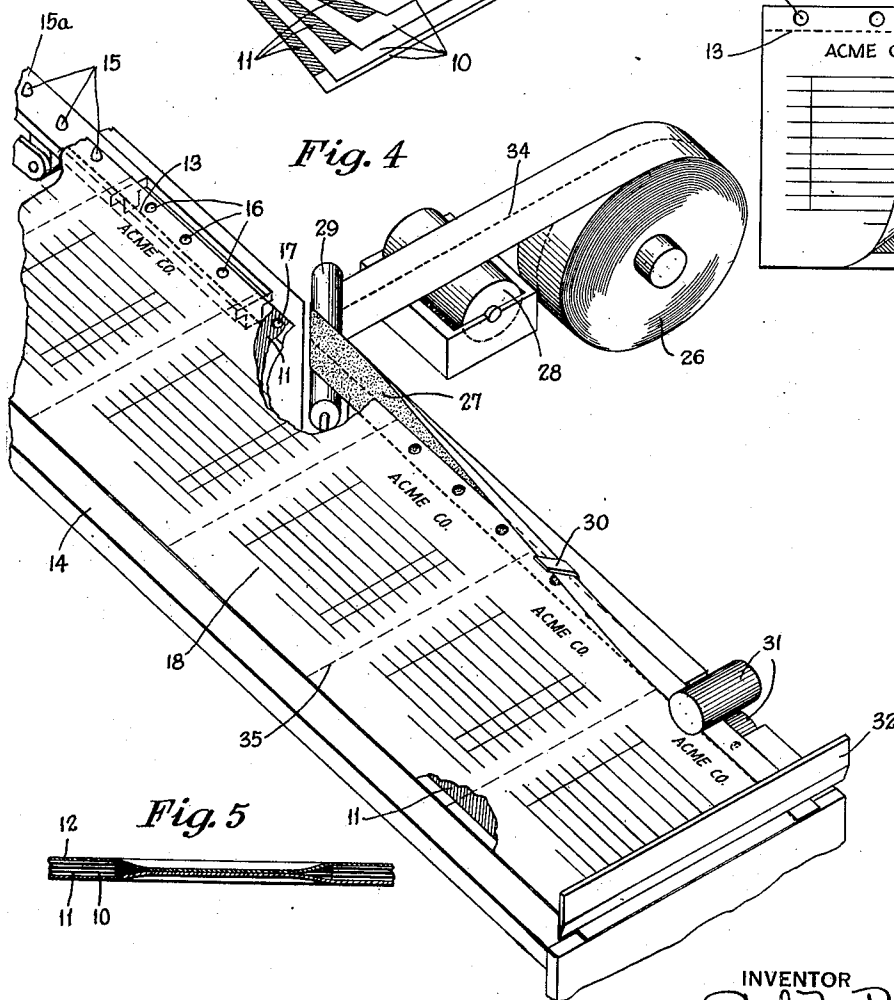
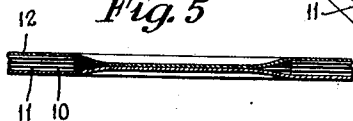


Fig. 5



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2,213,157

MANIFOLDING

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9 Claims. (Cl. 270-52)

This invention relates to manifolding, and, more particularly, to an improved set of manifold-
 5 ing sheets, including record sheets and carbon sheets, so secured together that, after the writing operations have been performed, the record sheets may be snapped from the assemblage, leaving the carbon sheets behind, and also to the method of making such manifolding sets.

In order to hold the record sheets, which are
 10 usually printed, in substantial registration with each other and to hold the carbon sheets between the record sheets, it has been proposed heretofore to provide, along one margin of the sheets, a binding or fastening separated from the main
 15 portion of the record sheets by a weakened tear line along which the record sheets may be severed when it is desired to remove them. Specifically, it has been proposed heretofore to make the bottom record sheet wider than the top one, so
 20 that the additional material may be folded over the sheet at the opposite face of the pile to provide a single edge, usually on the margin of the pile which is introduced between the type-writer platen and the feed rolls, and to form a
 25 securing means for holding the strips in registration.

For this purpose, it was proposed to increase the material of the lowermost strip and fold it over the uppermost strip after a quantity of adhesive material had been placed on the upper-
 30 most strip, which adhesive material would hold the flap to the uppermost strip, and also extend down through apertures in the strips to unite the latter to the backing strip.

With the previously proposed method of making manifolding sets, it was difficult to maintain the strips in registration at the time of
 35 folding the strips over in securing them, and it also required that either the bottom or the top strip be made from a wider web to provide the edge-binding flap. Besides, it had the limitation that the flap had to be made of the same material as one of the record strips, and a more desirable material for binding could not be
 40 used. In addition, it depended upon the adhesive material going through the apertures to lock the strips in registration.

According to the present invention, the strips are locked in registration not by the presence
 45 of adhesive material in the apertures but, rather, by pressing the material of the binding through the aperture and virtually filling the aperture with the meeting portions of the binding material. The portions of the binding material which enter
 50 the apertures and meet through the apertures

may be caused to adhere to each other in any satisfactory way, but, at the present time, it is preferred to do this by having the binding material provided with an adhesive so that the portions of the binding material which contact
 5 with each other will be adhesively secured together.

In the form of the invention at present preferred, the binding is composed of a separate pliable strip which may be heavier or lighter than
 10 the record strip material, or it may be paper or muslin, or a combination of paper and muslin, if so desired. The binding strip is preferably provided all over one face with an adhesive material so that when it is folded over the adjacent
 15 apertured edges of the record and carbon strips, the entire surface of the binding strip, except for the portions which extend through the apertures, will adhesively engage the top and bottom record
 20 strips, and the portions of the binding strip which extend into the apertures will engage with each other therein. The binding strip preferably is provided with a longitudinal medial weakened
 25 fold line along which it may be conveniently folded around the margins of the record and transfer strips which are to be secured together, and the strip is preferably of such width as to terminate adjacent the weakened tear lines in
 30 the record strips.

According to the present invention, the manifold-
 35 ing sets may be manufactured by a continuous method from long continuous record and transfer strips suitably prepared with printing and with apertures, and so controlled that, after the binding margin is secured in place, the sets of forms
 40 may be cut from the continuous strips, leaving the record sheets and carbon sheets in predetermined superposed relation.

According to the present invention, the apertured record and carbon strips are collated
 45 and brought into registration by pins engaging through the apertures in the record and carbon strips. These pins may also serve to feed the record and carbon strips over a worktable, and, while the strips are under the control of the
 50 feeding and registering pins, the binding strip is guided into juxtaposition with the aligned apertured margins of the record and transfer strips, and is folded over the adjacent edges of the strips, and finally pressed together, preferably by a soft roller, so as to cause the material
 55 of the binding strip to penetrate the aligning apertures from the opposite direction and lock the strips in registration.

In beginning the process, the binding strip is

folded over by hand and passed under the pressure rollers so as to be set in place, but, after this operation has been done, the advancement of the pile of strips by the feeding means draws the binding strip from its supply roll and causes it to automatically fold over the edge of the pile of strips. The feeding operation is preferably intermittent, and is so controlled that, when the strips stop, a line of division between adjacent sheets will be located beneath a cutoff knife, which then operates to cut the strips into sheet lengths.

It is important to note that the strips are adhesively secured together while they are yet under control of the registering pins, and therefore the registration established by these pins is maintained. As usual in such manifolding sets, at the edge of the pile of sheets opposite the binding margin, the carbon sheets fall short of the record sheets, so that the record sheets may be independently grasped with the fingers of one hand while the binding margin is grasped with the fingers of the other hand. By pulling or snapping the two hands apart, the records are torn along the weakening lines provided for that purpose and separated from the binding margin. The carbons are not weakened and remain with the binding margin.

In collating the record and carbon strips, this difference in width between the record and carbon would add difficulties to the maintenance of the desired relative position of the record and carbon strips. With the registering and feeding pins of the present invention, however, once the records and carbons are brought into desired position by hand, this relation will be maintained, for the lateral edges of the respective strips are not depended upon for this purpose.

Other features and advantages will hereinafter appear.

In the accompanying drawing:

Figure 1 shows a perspective view of the snapout pack.

Fig. 2 shows a plan view of the snapout pack with the corner turned back to expose the transfer sheet.

Fig. 3 is a view similar to Fig. 2 with the binding strip removed.

Fig. 4 is a diagrammatic showing of the collating and binding mechanism.

Fig. 5 is a detail section taken through one of the apertures in the completed snapout pack.

The present invention relates to manifolding snapout sets or packs, such as shown in perspective in Fig. 1, which comprise a plurality of record sheets 10 and interleaved carbon sheets 11, all secured in superposed manifolding relation.

The set is provided with a binding 12 extending transversely in the upper margin thereof which serves to lock the sheets together in a manner to be described. As shown in Fig. 3, the record sheets are provided with printed forms and a transverse line of weakening 13 extending thereacross in spaced relation to the top edge. The interleaved transfer sheets do not extend to the bottom of the pack but leave a margin which can be readily gripped so that the record sheets can be easily separated from the pile as desired. The transfer strips are not provided with a weakened line and remain with the binding on the pack after the record sheets have been removed.

These individual sets or packs can be used in typewriters or the like, or inscriptions can be made thereon manually by writing on the upper

record sheet. Notations made on the upper record sheet will be transferred to the lower record sheets by means of the interleaved transfer sheets, and the record sheets are then removed from the set.

The sheets of the packs are locked in superposed relation by having portions of the binding strip, which is an element separate from the material of the sheets of the pack, pressed into the aligned and registered apertures in the sheets from both sides of the pack and caused to adhere together therein. In the present preferred form of the invention, the adhesion is achieved by providing the face of the tape, which is pressed into contact, with a coating of adhesive material.

The binding strip, being a separate element, can be made of any desired pliable material. It may be made of heavier or lighter material than the record sheets, or it may be paper, muslin, or other pliable binding material, or a combination of both paper and muslin, if desired. Preferably, the binding strip is coated all over one face with an adhesive material and is provided with a medial weakened line so that this face can be readily folded over the apertured edges of the record and carbon sheets. When it is so folded over the edges, it is pressed into engagement therewith so that the entire surface of the binding strip, except for the portions which extend through the apertures, will adhere to the top and bottom record sheets, and the portions of the binding strip which extend through the apertures being secured together therein.

It is to be understood, however, that the present invention contemplates the use of any means which will cause the binding strip to adhere to the record strips and be present in and secured together in the apertures.

As shown in Figs. 1 and 2, the binding strip 12 is preferably of a width, that, when folded around the apertured margin of the strip, it will cover the apertures but will not extend beyond the lines of weakness.

With this form of locking means, it is not necessary to secure the superposed sheets together by adhesive material extending along the faces thereof adjacent one margin or to provide one of the record strips with an extending flap to be folded over the end to form a binder to cover the edge of sheets previously adhered together.

The novel method of manufacturing the manifolding sets contemplates a continuous process in which a plurality of continuous record strips and interleaved carbon strips are passed through a collating device and are assembled and registered, bound in interlocked relation, and severed into individual sets.

The continuous record strips used in the present method are of uniform width and are provided, along one margin thereof, with a plurality of spaced apertures 16. The carbon strips to be interleaved with the record strips are narrower than the record strips and are provided with a plurality of apertures 17 along one edge thereof, the apertures being spaced to cooperate with apertures 16. These strips are fed over a worktable 14 and are assembled in interleaved relation by means of a plurality of pins 15 which engage the apertures 16 and 17 and cause the strips to become registered; the spacing of the apertures in the record and transfer strips correspond to the spacing of the pins 15 on a movable slide 15a mounted to reciprocate in the top

of the worktable. These pins also serve as means for feeding the collated strips, preferably in a step-by-step manner. Since the strips are registered and fed by the apertures 16 and 17 co-operating with the pins 15, the difficulty encountered in maintaining the desired relative position of the record and carbon strips is avoided.

The line of weakening 13, referred to above, extends longitudinally of the record strips and in spaced relation to the longitudinal edge thereof. As shown in Fig. 4, the registering apertures 16, 17 are positioned in that zone extending between the line of weakening and the edge of the continuous strip.

The continuous record strips used in making the packs are printed with blank forms thereon (indicated at 18), to be used for manifolding purposes. These forms may be printed on the continuous strips in any desired relation with respect to the strip. In the preferred form of the invention, however, the forms extend transversely of the continuous strip with the head of the form adjacent the line of perforations. When printed in this manner, the registering apertures will not mutilate the form.

In the preferred form of the invention, the registering apertures in the continuous record sheets and transfer sheets extend in alignment with the edge of the set. This arrangement, however, can be altered in any desired manner so long as a plurality of such apertures extend across the top of each printed form, which will constitute a pack or set.

As the strips are fed by the registering mechanism, the apertures extending along the marginal edge will be in vertical register. While the strips are in this condition, the binding tape is applied to secure the strips together. The binding tape may be of any desired form so long as it contacts both sides of the collated set along one margin thereof. In the preferred form of the invention, the binding takes the form of a strip of pliable material folded over the edge of the continuous interleaved record and transfer strips having the registering apertures therein.

To start the process, the binding material, which is positioned adjacent the longitudinal edge of the collated strips having the apertures therein, is withdrawn from the roll 26. The face 27 of the strip having adhesive thereon is passed over a moistening roller 28, if the adhesive used is water-soluble adhesive, then around a guide roll 29 which guides the binding material into juxtaposition with the edge of the collated strips having the apertures therein. The strip is then fed through a folder 30 and folded over the edge of the strip and passed under the pressing rollers 31 to be pressed into intimate engagement with the strips so as to adhere to the upper and lower record sheets and be pressed through the openings into face-to-face engagement as shown in Fig. 5.

Once the binding strip has been secured to the advancing collated strips, the feed of the strips will be sufficient to withdraw the binding material from the roll. The strip will then automatically feed from the roll, turn into juxtaposition with the edge of the collated strips, be folded over the edge, and pressed into engagement with the advancing strip. This procedure will be continued as long as the strips are fed.

In order to insure that the fold will be proper and that the binding will extend over both sides of the edge of the strips to the proper extent,

the binding strip is provided with a weakened or perforated line 34 extending longitudinally along the strip. As the strip passes through the folder, it will assume a proper relation to the margin with the line of weakness positioned along the edge of the pile of strips.

The pressing rollers 31 can be of any suitable construction, preferably having a soft surface, which will enable them to follow the contour of the surface and thereby press the tape into intimate contact with the strips.

As will be seen in Fig. 5, which shows a detailed section of one of the registering apertures, the upper and lower portions of the strip will be pressed through the registering apertures by the action of the rollers and into face-to-face contact with the adhesive surfaces engaging one another. This provides an adequate and secure interlock between the record and transfer sheets. While one opening will serve to hold each set together, the preferred form of the invention provides each pack with a plurality of these openings in spaced relation across the top thereof to thereby more adequately hold the sheets in assembled manifolding relation.

After the pile of strips have been bound and locked together, they are fed through a suitable severing means. The severing means 32 is positioned on the worktable. The intermittent feeding means will feed the strips along the worktable, one form at a time, and will position an edge of the form to be severed under the knife. The knife is operated in timed relation with the feeding mechanism and during the period of rest in the feed of the collated strips. If desired, the record and transfer strips can be provided with a line of perforations 35 extending transversely thereof at form width intervals to assist in the severing operation.

This method, as outlined above, produces snapout packs with a minimum of operations and lends itself admirably to large scale production, inasmuch as it can be operated as a continuous process. As the strips are fed through the collating mechanism, they are immediately bound and secured together in a single operation and then severed into the desired size. In previous practices, it was necessary first to collate the sets, then secure them together, and then bind them in separate steps. This greatly increases the cost of production, inasmuch as it requires additional operations on the strip.

While the binding strip has been described as being provided with an adhesive surface which is moistened to cause it to adhere to the strips, any other material can be used so long as the binding tape will be locked in place when it is pressed against the pack and will pass into the registering apertures in the set.

The pack formed in accordance with the present invention is neat in appearance and is effective and efficient in operation, inasmuch as the binding tape securely locks the sheets together by being interlocked therewith, and provides a smooth and desirable finger grip for the separation and snapping out of the forms.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. In the method of preparing snapout manifold sets, the steps of collating a plurality of continuous record strips and interleaved transfer strips; registering and feeding said strips by means of apertures extending along one margin

of the strips; guiding a separate continuous pliable element into juxtaposition to the apertured margin as the registered strips are advanced; folding said pliable element around the adjacent edge of said apertured margin of the strips; and pressing the folded pliable element in such a manner that portions thereof enter the apertures and lock the record strips and interleaved transfer strips together in registration.

2. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips and interleaved transfer strips by means of apertures extending along one margin of the strips; folding a continuous pliable element over the last-mentioned margin as the strips emerge from the collating and registering operation; and pressing the folded pliable element in such a manner that portions thereof enter the apertures and lock the record strips and interleaved strips together in registration.

3. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips and interleaved transfer strips by means of apertures extending along one margin of the strips; folding a separate continuous pliable element having an adhesive surface over and around the said apertured margin of the collated and registered strips; and pressing the folded pliable element in such a manner that the adhesive surfaces adhere to the surface of the apertured margin of the top and bottom strips with portions of the adhesive surface entering the apertures and locking the record strips and interleaved transfer strips together in registration.

4. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips and interleaved transfer strips by means of apertures extending along one margin of the strips; folding a continuous pliable element having an adhesive surface over and around the apertured margin of the collated and registered strips; and pressing the folded pliable element in such a manner that portions thereof which enter the apertures have their adhesive surfaces in face-to-face engagement to lock the record strips and interleaved transfer strips together in registration.

5. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips and interleaved transfer strips by means of apertures extending along one margin of the strips; feeding a locking strip having adhesive on one face thereof over a moistening means and into juxtaposition with the last-named margin; folding the locking strip over the apertured margin of the collated and registered strips; and pressing the locking strip in such a manner that portions thereof enter the apertures and adhere together to lock the record strips and interleaved transfer strips together in registration.

6. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips having a line of weakness along one margin thereof and interleaved transfer strips by means of apertures disposed along the margin of the strips between the line of weakness and the edge of the strip; covering the marginal edge of the strip on both sides of the set between the line of weakness and the edge thereof with a continuous pliable element while the strips are registered; and pressing the continuous pliable element in such a manner that portions thereof enter the apertures to lock the record strips and interleaved transfer strips together in registration.

7. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips and interleaved transfer strips by means of apertures extending along one margin of the strips; adhering a continuous pliable element to both sides of the collated set along the last-mentioned margin after the strips are collated and registered; and pressing the pliable element in such a manner that portions thereof enter the apertures and lock the record strips and interleaved transfer strips together in registration.

8. In the method of preparing snapout manifold sets, the steps of collating and registering a plurality of record strips and interleaved transfer strips by means of apertures disposed along the adjacent margins of the strips; guiding a separate continuous pliable element into juxtaposition to the apertured margins of the strips as the registered strips are advanced; folding said element along a longitudinal line of weakness to cover the marginal edge of the strips; and pressing the adhesive pliable element in such a manner that portions thereof enter the apertures and are adhesively secured together to lock the record strips and interleaved transfer strips together in registration with the longitudinal line of weakness in close proximity to the edges of said apertured margins.

9. In the method of preparing snapout manifold sets, the steps of collating a plurality of continuous record strips and interleaved transfer strips; registering and feeding said strips by means of apertures extending along one margin of the strips; guiding a separate continuous pliable element into juxtaposition to the apertured margin as the registered strips are advanced; folding said pliable element around the adjacent edge of said apertured margin of the strips; pressing the folded pliable element in such a manner that portions thereof enter the apertures and lock the record strips and interleaved transfer strips together in registration; and continuing the feeding of the locking element to juxtaposed position solely as the result of its attachment to the advancing strips.

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