

Oct. 28, 1941.

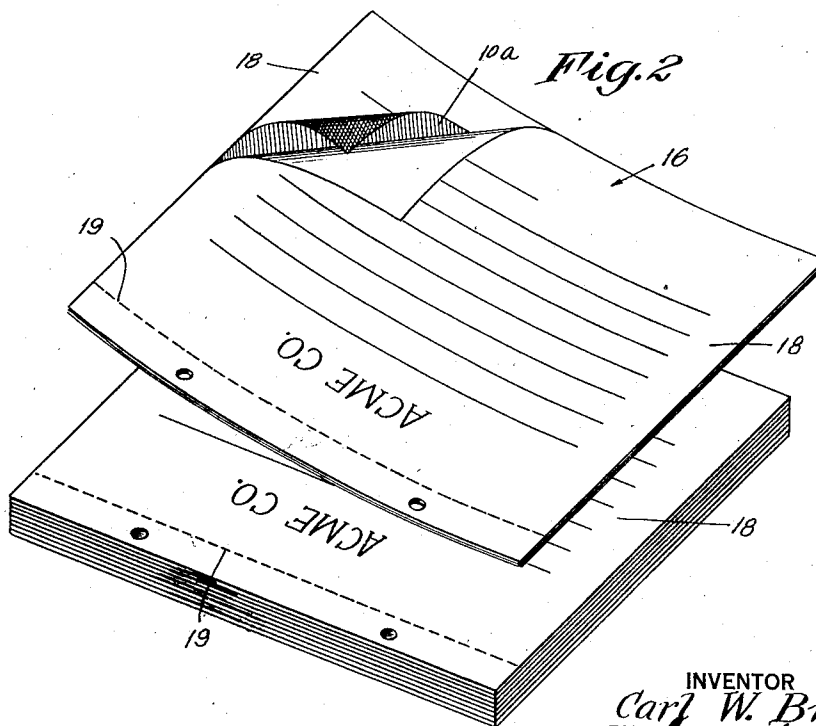
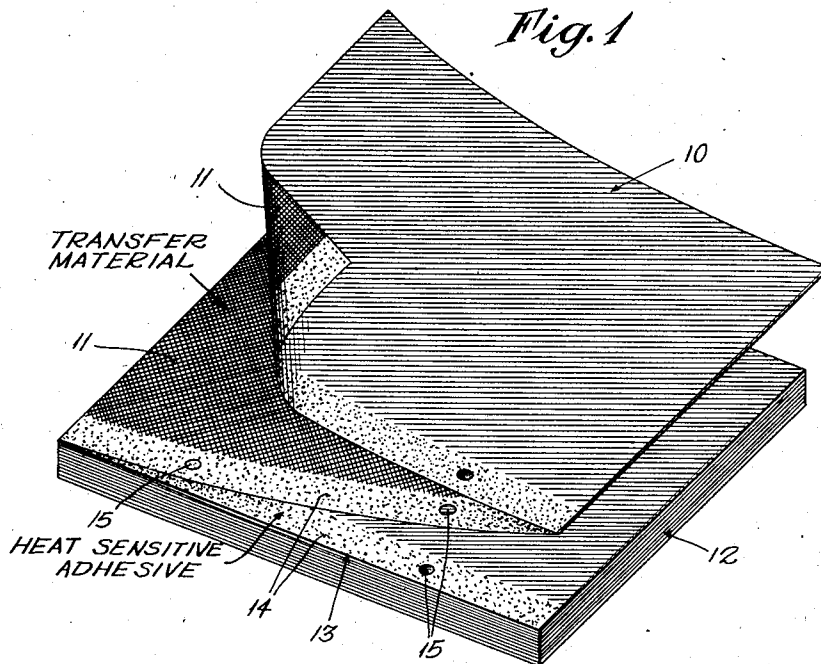
C. W. BRENN

2,260,602

MANIFOLDING

Filed June 8, 1940

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3

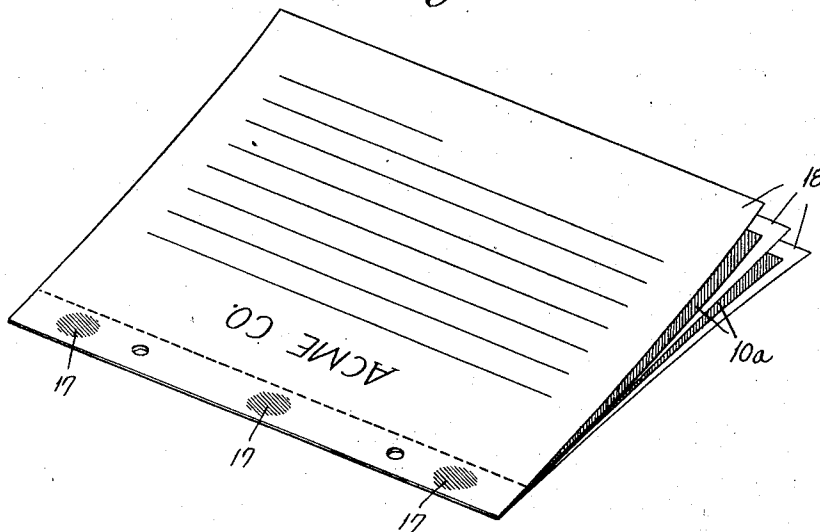
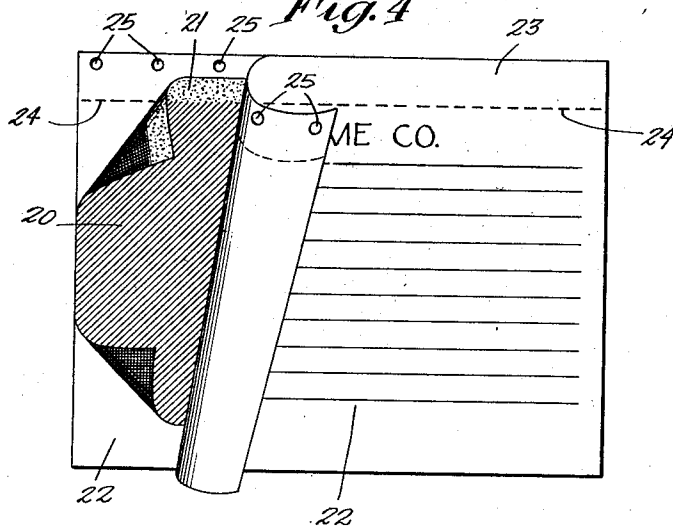


Fig. 4



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2,260,602

MANIFOLDING

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Application June 8, 1940, Serial No. 339,444

8 Claims. (Cl. 282-20)

This invention relates to manifolding, and, more particularly, to an improved transfer or carbon strip and manifolding sets formed of record sheets collated with the improved carbon sheets of the present invention.

This application is a continuation in part of my copending application, Serial No. 208,795, filed May 19, 1938.

Heretofore it has been proposed to collate continuous printed record strips with interleaved carbon strips, secure the strips together, and cut the strip into sheet lengths for use. The record strips usually have along one margin a weakening line constituting a stub or binding margin within which the strips may be secured together, and along which weakening line the record sheet may be torn when it is desired to remove the record sheets from the carbon sheets after the writing operation has been performed.

Various means for securing the collated carbon strips and record strips have been proposed, including wire staples going through the pile of strips in the binding margins, and adhesives applied to the binding margin as the strips are being collated and before they are cut into sheet lengths. It has been difficult, when applying adhesive to paper strips to secure them together, to have the adhesive applied in just the right quantity and at just the right degree of wetness, with the result that some of the sheets would adhere together satisfactorily while others would not. Yet, it is decidedly preferable, in many situations, to fasten the strips with an adhesive rather than with staples.

The present invention contemplates the securing of the strips together by a dry adhesive, which is caused to adhere to the strips as a result of being heated, rather than as a result of being wetted as is the common practice. This avoids the use of water or wet adhesives on or in the vicinity of the collating machine, and enables the collating, the registering, and finally the cutting of the strips into form-lengths to be performed without the messiness attendant upon the use of water and wet adhesive on or about a machine of this kind.

The adhesive material used preferably is such that it becomes tacky at temperatures above body temperature, and, in the particular form of the invention herein disclosed, the adhesive is applied to the carbon or transfer strips preferably while coating these strips with carbon. For this purpose, the carbon strip is usually left with one or more uncoated margins, and the heat-set adhesive is applied to the uncoated margin in a wet

state with such a vehicle or solvent as will dry rapidly.

The adhesive material employed may be of any suitable kind provided, however, that it becomes effective upon being heated at temperatures higher than body temperature. For instance, it may consist of a thermoplastic lacquer containing a solvent or vehicle which quickly evaporates and leaves the coating of thermoadhesive material dry and impervious to water or moisture. Since it can be applied to the carbon strip in the carbon-coating machine, its manufacture becomes a simple matter, because operators of carbon-coating machines are familiar with coating processes and can regulate, with considerable skill and certainty, the quantity of adhesive applied to the carbon strip, and practically the only additional cost in the manufacture of the carbon strip of the present invention is the cost of the adhesive material itself.

The continuous strip, after it has been coated with the transfer and adhesive material, may be folded into a suitable pack and stored in storage areas until it is desired to collate the strip with suitable record strips to form manifolding sets. The strips and the packs formed therefrom may be handled without danger of the adhesive becoming tacky and adhering to the handler's fingers or to adjacent portions of the strip or pack.

The strips may be sold as articles of manufacture and at some later date interleaved with the buyer's record strips to form manifolding material without the necessity of employing the elaborate and costly equipment now generally used by makers of manifolding material to apply wet adhesive to the strips as they are being collated with record strips.

In forming manifolding sets with the improved transfer strip of the present invention, it is merely necessary to collate the record and transfer strips, bring them into register, and then, while in registration, to apply heat to the pile of strips so that the adhesive on the carbon becomes activated and adheres to the adjacent record strip. By applying the adhesive to both the face and back of the carbon strip, the carbon strip itself becomes the binding unit for holding together the record strip above it and the one below it, and it is immaterial how many carbon strips and record strips are collected within the pile so long as sufficient heat can be transferred through the layers to activate the adhesive material carried by the innermost carbon strips.

As the adhesive used is not affected by temper-

atures below body temperature, the manifolding set formed with my novel transfer strip may be handled without danger of the sheets accidentally separating due to the adhesive being warmed or heated by the user's hands.

Other features and advantages will hereinafter appear.

In the accompanying drawings—

Figure 1 is a perspective view of the improved carbon strip of the present invention.

Fig. 2 shows a pile of manifolding sets made according to the present invention, with one manifolding set falling in place on the pile.

Fig. 3 is a perspective view of a manifolding set made according to the present invention, in which the records and carbons are caused to adhere to each other at limited zones of attachment.

Fig. 4 is a view of a modified form of the manifolding set, shown in Fig. 2, partially rolled back and showing the relation of the carbon sheet and record sheets.

The carbon strip of the present invention, which constitutes a new article of manufacture and which may be supplied to makers of manifolding material to be collated with record strips, comprises a long continuous strip 10 of paper, or other suitable fabric, coated, usually on one side only, with carbon or transfer material 11, and folded at predetermined intervals along transverse lines to make a zigzag folded pile 12. One longitudinal margin 13 of the carbon strip is left uncarbonized, and on this longitudinal margin there is provided, by any suitable method, a coating of adhesive material 14. This coating of adhesive material may be applied to the strip 10 at the same time the strip is provided with the coating of transfer material 11, and preferably the adhesive material 14 is provided on both the front and back of the carbon strip. The adhesive 14 is dried before the strip is zigzag folded, and the zigzag folded pile 12 may be stored in this condition until it is to be collated with the record strips or it may then be collated with record strips.

Of course, if desired, the carbon strip 10 may be supplied in roll form rather than in zigzag folded pack form, as shown in the accompanying drawings.

The adhesive 14 preferably is one which is impervious to moisture and water and only activated by an application of heat sufficient to raise the temperature of the adhesive above body temperature. The adhesive material may be in the form of a thermoplastic lacquer having a highly volatile vehicle, so that when the adhesive is applied to the carbon strip in the making of the latter, the vehicle will quickly evaporate, leaving the thermoplastic lacquer on the marginal portion of the carbon strip, and in dry and nontacky condition.

In any event, by striping the carbon strip with the adhesive 14 while coating the strip with transfer material 11, the quantity of adhesive applied to the carbon strip may be very accurately determined, so that neither too much nor too little adhesive material is carried by the carbon strip. By applying the coating of adhesive to the carbon strip simultaneously with the coating of the strip with carbon or transfer material 11, the same coating machine operator may attend to both the carbon coating and the adhesive coating.

A pack formed of my improved transfer strip may be stored until it is desired to collate the

transfer strip with suitable record strips and as long as the temperature of the storage space is not in excess of body temperature then the adhesive will not become activated or deteriorate in any manner. The pack and the strip from which the pack is formed may be handled prior to collating with the record strips without danger of the adhesive becoming tacky and adhering to either the handler's fingers or to other portions of the strip or pack.

In addition to having the adhesive 14 in the longitudinal margin 13 of the carbon strip, this margin also has apertures 15 predeterminedly spaced throughout its length. Depending upon the way in which the carbon strip is collated with record strips, these apertures may be used for feeding a superposed pile of record and transfer strips, or they may be used merely for registering the carbon strip with the record strips. Preferably, the apertures 15 are used both for registering and feeding the carbon strip with the record strips.

The preferred method and apparatus for collating the carbon strip of the present invention with suitable record strips is shown in my copending application, Serial No. 237,375, filed October 28, 1938. The carbon strips 10 may be collated with record strips and cut to form the manifolding set 16, as shown in Fig. 2, wherein the entire margin carrying the adhesive has been heated prior to cutting of the strips to cause the adhesive carried by the entire margin to become activated. However, if desired, the adhesive may be activated only in spots diagrammatically indicated by the shaded areas 17 in Fig. 3.

As is common practice, the carbon strip 10 is narrower than the record strips so that the record sheets 18 of the manifolding set project beyond the carbon sheets 10a. With this arrangement, after writing is performed on the manifolding sets, the record strips are grasped at their projecting margins with one hand while the binding margins are grasped by the other hand. By pulling the hands apart, the record sheets 18 will sever from the binding margin along the lines of weakness 19 leaving the carbon sheets 10a secured together by the binding margin and the record sheets 18 free of interleaved carbon material.

In the manifolding set shown in Fig. 4, the carbon sheet 20 has been formed from a carbon strip narrower than that previously described, and which did not have any registering apertures formed therein, but was provided only with a narrow band of adhesive material 21 on both sides of the strip along the longitudinal margin. With the registering apertures omitted from the carbon strip, one operation on the strip is eliminated in the preparation thereof and the coating of adhesive can be applied to the margin strip at the same time the coating of carbon is applied and the strips packaged in roll or zigzag folded pack form.

The record sheets 22 in this form of the invention have a binding margin 23 defined by a perforated tear line 24 with registering apertures 25 formed in the binding margin as in the form of the invention first described.

In the form of the invention shown in Fig. 4, the binding margin is unutilized for a major portion of the length of each form, as the registering apertures are relatively closely spaced and positioned in the corner of each form adjacent

the side margin of the sheets as shown in the figure referred to.

There has also been shown in my copending application, Serial No. 237,375, the preferred method and apparatus for registering, feeding and collating the strips to form the manifolding set shown in Fig. 4.

A manifolding set formed with my adhesive carrying transfer strips, as the adhesive used is unaffected by temperatures below body temperature, may be handled by a user without danger of the sheets separating by reason of the adhesive losing its adhesive qualities from the heat of the user's hands. A set, furthermore, as it may be formed from my transfer strips by a user subsequent to the formation of the transfer strips and at a time when actually needed by the user, permits a user to form sets as he needs them and obviates the necessity of the user purchasing and storing large quantities of sets pending their use.

The manifolding sets of this invention are claimed in my copending divisional application Serial No. 409,820, filed September 6, 1941.

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

I claim:

1. As a new article of manufacture, a transfer medium for manifolding use comprising a continuous strip of fabric having transfer material applied thereto over part of its area and having a normally ineffective adhesive applied to another part of its area by means of which the transfer medium may be fastened to a record strip when it is superposed thereon and the adhesive is made effective by an application of heat substantially higher than ordinarily encountered in the use of transfer strips so that after the transfer strip is fastened to the record strip the superposed strips may be handled without separating.

2. As a new article of manufacture, a continuous strip of carbon paper having an uncarbonized lateral margin carrying a dried coating of adhesive, said adhesive becoming tacky at a temperature substantially above body temperature thereby permitting the strip to be handled without rendering the adhesive effective.

3. As a new article of manufacture, a continuous strip of carbon paper having an uncarbon-

ized lateral margin carrying an adhesive adapted to become effective at a temperature substantially above body temperature so as to permit handling thereof.

4. As a new article of manufacture, a continuous strip of carbon paper having along one lateral margin a dried coating of water-impervious, thermo-responsive adhesive material normally nonadherent at body temperature so that the strip may be handled and stored without the material becoming tacky and adhering to other objects which it might come in contact with during handling and storage.

5. As a new article of manufacture, a continuous strip of carbon paper having on both sides thereof along one lateral margin dry water-impervious, thermo-responsive adhesive material normally nonadherent at body temperature so that the strip may be handled and stored without the material becoming tacky and adhering to other objects which it might come in contact with during handling and storage.

6. As a new article of manufacture, a continuous strip of carbon paper having on both sides thereof along one lateral margin dry, water-impervious, heat-set adhesive material normally nonadherent at body temperature so that the strip may be handled and stored without the material becoming tacky and adhering to other objects which it might come in contact with during handling and storage.

7. As a new article of manufacture, a transfer pack comprising a continuous zigzag folded carbon paper strip having along one lateral margin a dried coating of water-impervious, thermo-responsive adhesive material normally nonadherent at body temperature so that the pack may be handled without the zig and zag folds adhering to each other.

8. As a new article of manufacture, a transfer pack comprising a continuous carbon paper strip having along one lateral margin on opposite sides thereof a dried coating of water-impervious, thermo-responsive adhesive material adapted to be rendered adherent when heated to a temperature in excess of body temperature, said material being nonadherent at body temperature or less so that the pack may be handled without the adhesive material being rendered adherent.

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