Oct. 25, 1927. 1,646,613

F. D. COURTENAY

PROCESS FOR MAKING EMBOSSED SHOW CARDS

Filed April 16, 1926

Fig. 1.

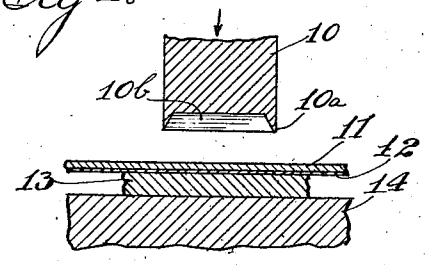


Fig. 2.

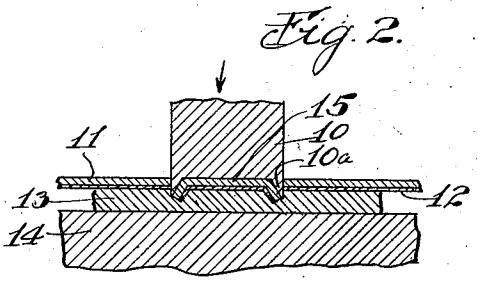


Fig. 3.

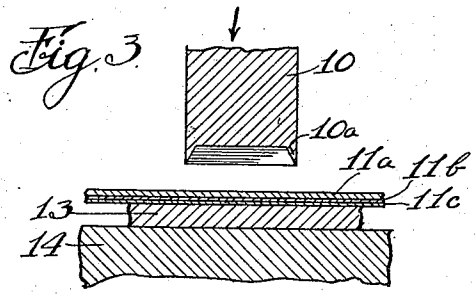


Fig. 4.

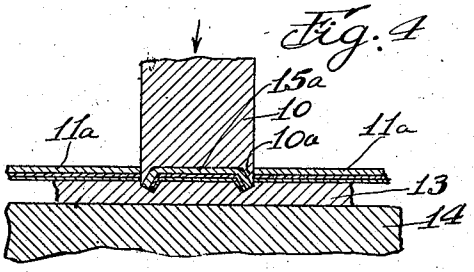


Fig. 5.

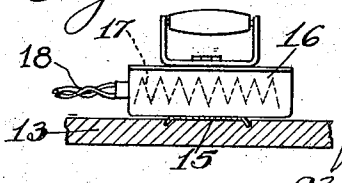


Fig. 9.

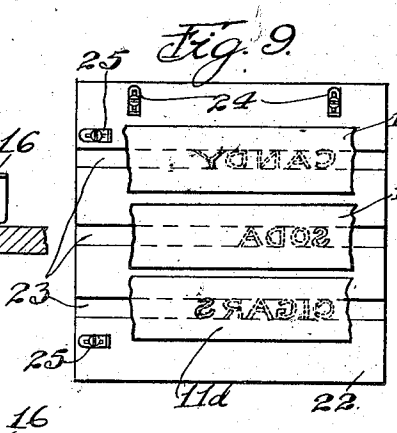


Fig. 7.

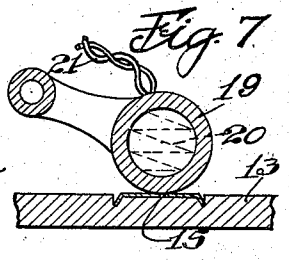
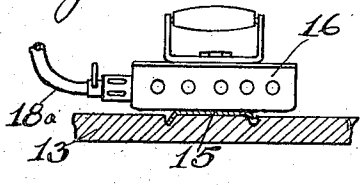


Fig. 6.



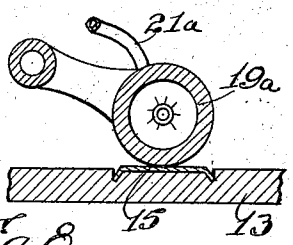


Fig. 8.

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UNITED STATES PATENT OFFICE.

FREDERICK DUDLEY COURTENAY, OF CHICAGO, ILLINOIS, ASSIGNOR TO EMBOSOGRAF CORPORATION OF AMERICA, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PROCESS FOR MAKING EMBOSSED SHOW CARDS.

Application filed April 16, 1926. Serial No. 102,475.

My invention relates to an improved process for making embossed cards of the kind, for example, employed for advertising purposes in show windows and the like, where it is desirable to have permanently displayed, lettering in any desired manner to advertise one or more lines of goods. Show cards of this kind are usually made by applying to a mounting board of paper stock, the desired lettering or display, cut from a top paper sheet, the top paper being selected to have a distinctive appearance, usually as to color, from the display surface of the mounting board. To facilitate making such show cards, the type are provided with cutting edges entirely surrounding their impression outlines, so that a single operation of the type may cut the desired letters or display from the top paper and press the same against the mounting board in a manner to cause adherence between the letters or display and the mounting board.

The process generally described above, has heretofore been carried out in two ways: first by the so called "hot" process, and second by the so called "cold" process. In carrying out the hot process, the top paper is coated on its under surface with material that is non-adhesive when cold, but which when heated, becomes sufficiently plastic and fluid to become adherent as far as the material of the mounting board is concerned; the type employed are heated in any suitable manner, to a sufficient temperature to sufficiently soften the adhesive material on the top paper, to cause it to adhere firmly to the mounting board when the type are employed to cut the corresponding letters or characters from the top paper and press them against the mounting board. In carrying out the cold process, although the type may be formed in a similar manner to that used in connection with the hot process, they are not heated when in use, and the top paper must have a coating of adhesive that will adhere to the mounting board as a result of pressure alone.

By my invention I produce an improvement on the cold process by which all of its advantages are retained, by which its disadvantages are eliminated, and by which the advantage of strong adhesion between the characters and the mounting board incident to the hot process is secured. In carrying out my improved process, the characters are cut from the top paper and applied to the mounting board in substantially the same manner as with the cold process above described, the difference being in the nature of the adhesive employed on the top paper. After this operation, the card is subjected to an ironing operation by means of a heated iron of one kind or another, moved over the surface of the characters on the mounting board, and the action of the iron sufficiently heats the adhesive employed to cause firm adhesion between the paper characters and the mounting board. It will be understood that the type employed have a beveled construction at their cutting edges, which results in the edges of the paper characters cut from the top paper, being forcibly pressed against the corresponding portions of the mounting board by the operation of cutting the characters from the top paper. This produces sufficient adhesion between the characters and the mounting board, to retain the characters in place on the mounting board prior to and during the ironing operation, and the adhesive on the top paper may therefore be selected mainly from the standpoint of the requirements of the ironing operation. While the adhesive employed on the top paper may consist of a variety of different gums and resins, singly or in desired combination, I prefer to employ an adhesive consisting preferably of suitable gum or resin, for example shellac or rosin, and a small amount of suitable wax, for example beeswax. The wax employed, while insufficient in amount to produce satisfactory results if the embossing operation of the cold process were alone depending upon to produce the finished show card, is sufficient to produce the requisite temporary adhesion between the paper characters and the mounting board, to hold the characters in place prior to and during the ironing operation, and since the ironing operation is performed after the remaining top paper has been removed and there is no obstruction to passing the iron over the entire surface of the show card, the ironing operation is of simple nature and may be done by inexpensive and cheap labor. The composite adhesive referred to as preferable in carrying out my invention, may be applied to the top paper as a single coating, or separate coatings as preferred, that is to say the coating may consist of a mixture of the gum or resin and the

wax, or a coating of each may be applied to the top paper, as found most suitable for the requirements of the work.

My invention will best be understood by reference to the accompanying drawings illustrating diagrammatically the steps of my process, said drawings being as follows:

Fig. 1 illustrates in vertical sectional view the relation between the cutting type, the top paper, the mounting board and the bed of the press, before the type is moved against the top paper,

Fig. 2 shows in a view similar to Fig. 1 the relation of the parts after the type has cut a character from the top paper and pressed it against the mounting board, before the type is withdrawn,

Figs. 3 and 4 are views similar to Figs. 1 and 2 respectively, of similar parts, the difference being that in Figs. 3 and 4 the top paper has two coatings of adhesive instead of one as indicated in Figs. 1 and 2,

Fig. 5 illustrates diagrammatically the use of an electrically heated iron having a flat lower surface for pressing the paper characters firmly into engagement with the mounting board,

Fig. 6 shows in a view similar to Fig. 5 the use of a gas heated iron for firmly pressing the paper characters against the mounting board,

Fig. 7 illustrates diagrammatically the use of an electrically heated roller for pressing the paper characters firmly into engagement with the mounting board,

Fig. 8 shows in a view similar to Fig. 7 the use of a gas heated roller for pressing the paper characters firmly into engagement with the mounting board, and

Fig. 9 is a plan view of a type set-up for use in connection with my invention, illustrating the facility with which different kinds of top paper can be used for different parts of the set-up in a single operation of cutting the characters from the top paper and attaching them to the mounting board.

Similar numerals refer to similar parts throughout the several views.

As shown in Fig. 1 a type is illustrated diagrammatically at 10, it being understood that this is representative of any desired character, the essential feature of the type being that it is provided with a cutting edge 10^a entirely surrounding the character outline, the cut out portion 10^b between the cutting edges, being of a depth somewhat greater than the thickness of the top paper. It is further important that the type should be made of metal hard enough to maintain the cutting edges in sharp condition when they are used, for example brass or harder and stronger metal as desired. A layer of top paper is indicated diagrammatically at 11, this top paper having a coating 12 of adhesive on its lower face, said adhesive being of a nature that is dry and non-adhesive at ordinary room temperatures, but sufficiently adherent under pressure to adhere temporarily to the mounting board 13 when the cut-out character is forcibly pressed against the mounting board by the type. A bed plate 14 is indicated supporting the mounting board 13. The adhesive 12 may be of any nature that is dry and non-adherent unless it is heated and subjected to pressure, but of a nature that will adhere slightly to the mounting board 13 under pressure, and be sufficiently melted by a subsequent ironing operation to produce firm and permanent adhesion between the paper character and the mounting board. In practice I find that the adhesive 12 may be made of any one of a variety of gums or resins, for example rosin or shellac, and to insure a fair degree of temporary adhesion due to the pressure of the type 10, I prefer to employ a small amount of pressure-adherent adhesive, for example some form of wax, as beeswax, and where this is employed with the structure illustrated diagrammatically in Figs. 1 and 2, the wax and gum or resin are mixed and applied to the top paper 11 as a single coating.

In Fig. 2 the type 10 is shown in its operated position, its cutting edges having cut through the top paper 11 and somewhat into the display surface of the mounting board 13, under pressure applied in the direction of the arrows indicated in Figs. 1 and 2. It will be noted that the inner oblique faces of the cutting edges 10^a, press the edge portions of the paper character 15, into the display surface of the mounting board 13, thus subjecting the adhesive under the pressed-in edges of the paper character to much greater pressure than the body portion of the paper character experiences from the face of the type. This greater pressure exerted upon the pressed-in edges of the paper character results in a temporary adhesion between the compressed adhesive 12 and the mounting board 13, to hold the paper character in place on the mounting board with sufficient firmness to retain the character in place on the mounting board until and during the remaining operations. The pressed-in edge portions of the paper character further give the finished character the appearance of being raised from the mounting board and at the same time remove the inturned edge portions of the character from the remaining part of the top paper, so that there is no engagement between the remaining part of the top paper and the character, and no tendency to remove the paper character when the remaining part of the top paper is removed from the mounting board.

The operation thus far described is conducted with all of the parts in cold condi-

tion, that is, of room temperature, as a result of which it will be observed that the part of the top paper 11 outside of the type 10 is not pressed against the mounting board 13 and therefore the part of the top paper remaining after the paper character has been cut therefrom, is readily removable from the mounting board 13 and does not adhere thereto. When the type 10 is withdrawn from its position indicated in Fig. 2, the remaining top paper is removed from the mounting board 13, leaving the character or characters cut from the top paper, in place on the mounting board.

The cutting operation illustrated in Figs. 3 and 4 is the same as described for Figs. 1 and 2, with the exception that the top paper 11^a is first coated with adhesive 11^b which is responsive to temperature, that is to say, a gum or resin that will be melted sufficiently by the application of a heated iron so that it will adhere firmly and permanently to the material of the mounting board 13. After the adhesive coating 11^b is applied, a second coating 11^c of pressure-responsive adhesive is applied, for example wax, this coating being thin relatively to the coating 11^b. The effect of pressing the paper character against the mounting board as indicated in Fig. 4 is substantially the same as above described in connection with Fig. 2, excepting that in this case the pressure-responsive adhesive may be made more effective on account of being a separate layer, which is desirable to meet the requirements of certain cases, for example where the mounting board is relatively soft and porous in nature.

It will be observed that whether the top paper is single coated or double coated with adhesive, the operation thus far described, requires only that the top paper shall be prepared as described, that the desired display to appear on the mounting board shall be set up in cutting type or characters, and that a suitable press is available for pressing the set-up type form, whether of individual characters or a specially cut die from a single piece of metal, against the bed 14, and that relatively unskilled labor may be used in this operation. It will further be observed that on account of all of the parts being of room temperature and not heated, either the type or the bed may be uppermost, as desired, the only difference being that where the bed is uppermost, the top paper is placed face down on the type form under the raised bed, the mounting board is then placed on the top paper and the cutting operation is effected by bringing the type form and bed together under considerable pressure, either by moving the bed or type form as desired, by any suitable mechanism.

In Fig. 5 I show diagrammatically at 16 an iron having a flat lower face, said iron being made to be heated electrically by a heating coil 17 contained therein and supplied with current by the electric cord 18. The iron 16 is shown as resting upon the paper character 15 in place on the mounting board 13, as a result of the operation above described. The iron 16 is preferably heated to a temperature insufficient to scorch the paper of the character 15, and in this condition it is passed over the display surface of the mounting board 13 and the display surface of the paper character or characters 15. The heat of the iron serves to sufficiently heat the heat-responsive adhesive between the paper character and the mounting board, to cause firm and permanent adhesion between the paper characters, the adhesive and the mounting board, as a result of which the characters are firmly and permanently secured in place on the mounting board. A further result secured by the ironing operation just described, is to smooth out any slight irregularities in the surface of the paper character or characters 15, and to uniformly spread the adhesive under the character or characters, in a way that it would be difficult if not impossible to accomplish by means simply of pressure. It will be observed that this operation is performed after the remaining top paper has been removed, and there is therefore no danger of marring the display surface of the mounting board from any such cause, in the event the iron 16 is hotter than the exact temperature required to cause adhesion between the adhesive and the mounting board. For this reason considerable latitude of temperature is afforded and here again skilled and highly paid labor is not required, and the operation can be performed by relatively unskilled and cheap labor. In Fig. 6 I show a form of iron 16^a similar to the iron 16 shown in Fig. 5 and for the same purpose, the only difference being that the iron 16^a is adapted to be gas-heated by gas supplied through a feed pipe or hose 18^a.

In Fig. 7 I show a different form of ironing device for the same purpose described in connection with Fig. 5, the device in this case consisting of a metal roller 19 containing an electrical coil 20 for heating it by current supplied through the electric conductors 21. When heated to a temperature sufficient to cause firm and permanent adhesion between the adhesive of the paper character and the mounting board 13, the iron 19 is rolled over the display surface of the mounting board and the display surface of the paper character or characters, with substantially the same effect above described in connection with Fig. 5, the only difference being that the pressure action is more localized with this type of iron and should the adhesive be unequally distributed, its spreading is more easily effected than where

the surface of contact between the iron and the paper character is greater, as indicated in Figs. 5 and 6. The construction shown in Fig. 8 is similar to that shown in Fig. 7, the difference being that the roller iron 19ª is adapted to be gas-heated by gas supplied to it through a pipe or hose 21ª.

Whatever kind of iron is used to effect the ironing operation, it is desirable that it be smooth and have a true surface so that the ironing operation will leave the display surface of the paper characters in smooth condition. I find it desirable in connection with the ironing operation, and whatever form of iron is used to effect it, to lubricate the ironing surface slightly by means of a small amount of oil or wax rubbed on the ironing surface, to prevent the possibility of adhesion between the ironing surface and the paper characters. It will be understood that while I use the term "iron" as the means for effecting the ironing operation, that I use this term in its generic sense and mean thereby any smoothing or pressing device having the requisite surface to accomplish this operation, that may be sufficiently heated to melt the adhesive to the degree desired, and which may be moved over the printed characters to produce the results described.

In Fig. 9, I illustrate the readiness with which different kinds of top paper may be employed by my process for attachment to different parts of a mounting board by a single operation of the cutting characters. A type holder or frame is shown diagrammatically at 22, having grooves 23 for receiving the cutting type or characters in desired arrangement, suitable devices not shown being provided to secure the type in place in said grooves. In this case the frame 22 is assumed to be the lower member of the press, and the co-operating bed or platen to be the upper member. With this arrangement the top paper may be laid directly as desired on the cutting ends of the type or characters, with the display surface of the said top paper lowermost, after which the mounting board is put in place with its display surface lowermost, on top of the top paper. In the illustrative case shown in Fig. 9, three grooves 23 are indicated for containing three rows of cutting characters, and three strips of top paper are indicated at 11ᵈ 11ᵉ and 11ᶠ. In this manner one line may have a top paper of one display color, and each of the other lines may, if desired, have a top paper of different display color, or the parts of the display matter may be provided with different kinds of top paper in any desired arrangement, since the desired top paper in each case may be laid directly upon the cutting characters used to cut each desired kind of top paper. The frame 22 is provided with gauges 24 and 25 for locating the mounting board after the top papers have been arranged to suit any particular case, and then the cutting operation is effected as above described; then, after the remaining top paper is removed, the paper characters are ironed in the manner above described. The procedure just described cannot be used with the hot process above described, on account of the type being hot enough to melt the adhesive employed, which would result in causing adhesion between the top paper outside of the characters, and the mounting board, due to the top paper resting on the heated type.

In using the term "top paper", I do so generically, as I do not limit myself to the application of thin paper stock by my process, for any thin sheet material susceptible of responding to the operations above described, may be used to form the design or display applied to the mounting board by the type or dies in carrying out my process; again, the mounting board employed may be of any desired material adapted to receive the design or display as described.

While I have shown my invention in the particular embodiment above described, it will be understood that I do not limit myself to this exact construction as I may employ equivalents known to the art at the time of the filing of this application without departing from the scope of the appended claims.

What I claim is:

1. The method of making embossed show cards consisting in coating a top paper with pressure and heat responsive adhesive material, cutting desired characters from said top paper and applying them with temporary adhesion to a mounting board, and effecting permanent adhesion between said characters and said mounting board by passing a heated body over said characters.

2. The method of making embossed show cards consisting in applying dry adhesive-coated top paper to a mounting board, cutting desired characters from said top paper and pressing them against said mounting board by corresponding cutting characters, removing the remaining top paper, and pressing the paper characters against said mounting board by a heated pressing member.

3. The method of making embossed show cards consisting in first applying the desired display from thin sheet material by dies to a mounting board with interposed adhesive material, and then producing adhesion between the display and mounting board by an ironing operation.

4. The method of making embossed show cards consisting in coating thin sheet material with adhesive material that is heat responsive, then applying a desired design from said sheet material to a mounting board by pressure, and then securing said ap-

plied design to said mounting board by heat.

5. The method of making embossed show cards consisting in coating thin sheet material with adhesive material that is heat responsive, then applying a desired design from said sheet material to a mounting board by pressure, and then securing said applied design to said mounting board by heat and pressure.

6. The method of making embossed show cards consisting in coating thin sheet material with adhesive material that is heat responsive, then applying a desired design from said sheet material to a mounting board by pressure with said sheet material on said board, then removing the remaining sheet material, and then securing said applied design to said mounting board by heat.

7. The method of making embossed show cards consisting in coating thin sheet material with adhesive material that is heat responsive, then applying a desired design from said sheet material to a mounting board by pressure with said sheet material on said board, then removing the remaining sheet material, and then securing said applied design to said mounting board by heat and pressure.

8. The method of making embossed show cards consisting in coating thin sheet material with adhesive material in two layers, the first layer being heat responsive and the second layer being pressure responsive, then applying a desired design from said sheet material to a mounting board by pressure, and then securing said applied design to said mounting board by heat.

9. The method of making embossed show cards consisting in coating thin sheet material with adhesive material in two layers, the first layer being heat responsive and the second layer being pressure responsive, then applying a desired design from said sheet material to a mounting board by pressure, and then securing said applied design to said mounting board by heat and pressure.

10. The method of making embossed show cards consisting in coating thin sheet material with adhesive material in two layers, the first layer being heat responsive and the second layer being pressure responsive, then applying a desired design from said sheet material to a mounting board by pressure with said sheet material on said board, then removing the remaining sheet material, and then securing said applied design to said mounting board by heat.

11. The method of making embossed show cards consisting in coating thin sheet material with adhesive material in two layers, the first layer being heat responsive and the second layer being pressure responsive, then applying a desired design from said sheet material to a mounting board by pressure with said sheet material on said board, then removing the remaining sheet material, and then securing said applied design to said mounting board by heat and pressure.

12. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated with two layers of adhesive material, one of said layers being heat responsive and the other of said layers being pressure responsive, and then securing said design to the mounting board by heat.

13. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated with two layers of adhesive material, one of said layers being heat responsive and the other of said layers being pressure responsive, and then securing said design to the mounting board by heat and pressure.

14. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated with two layers of adhesive material, one of said layers being heat responsive and the other of said layers being pressure responsive, then removing the remaining sheet material, and then securing said design to the mounting board by heat.

15. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated with two layers of adhesive material, one of said layers being heat responsive and the other of said layers being pressure responsive, then removing the remaining sheet material, and then securing said design to the mounting board by heat and pressure.

16. The method of making embossed show cards consisting in coating thin sheet material with wax and vegetable gum, then applying a desired design from said sheet material to a mounting board by pressure, and then securing said applied design to said mounting board by heat.

17. The method of making embossed show cards consisting in coating thin sheet material with wax and vegetable gum, then applying a desired design from said sheet material to a mounting board by pressure, and then securing said applied design to said mounting board by heat and pressure.

18. The method of making embossed show cards consisting in coating thin sheet material with wax and vegetable gum, then applying a desired design from said sheet material to a mounting board by pressure, then removing the remaining sheet material, and then securing said applied design to said mounting board by heat.

19. The method of making embossed

show cards consisting in coating thin sheet material with wax and vegetable gum, then applying a desired design from said sheet material to a mounting board by pressure, then removing the remaining sheet material, and then securing said applied design to said mounting board by heat and pressure.

20. The method of making embossed show cards consisting in first applying the desired display from thin sheet material by dies to a mounting board with interposed adhesive material comprising wax and vegetable gum, and then producing adhesion between the display and mounting board by an ironing operation.

21. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated first with vegetable gum and then coated with wax, and then securing said design to the mounting board by heat.

22. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated first with vegetable gum and then coated with wax, and then securing said design to the mounting board by heat and pressure.

23. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated first with vegetable gum and then coated with wax, then removing the remaining sheet material, and then securing said design to the mounting board by heat.

24. The method of making embossed show cards consisting in applying to a mounting board by pressure a desired design from thin sheet material coated first with vegetable gum and then coated with wax, then removing the remaining sheet material, and then securing said design to the mounting board by heat and pressure.

In witness whereof, I hereunto subscribe my name this 8th day of April, A. D. 1926.

FREDERICK DUDLEY COURTENAY.