Oct. 18, 1955 O. KILE 2,720,665

ADHESIVE APPLICATOR

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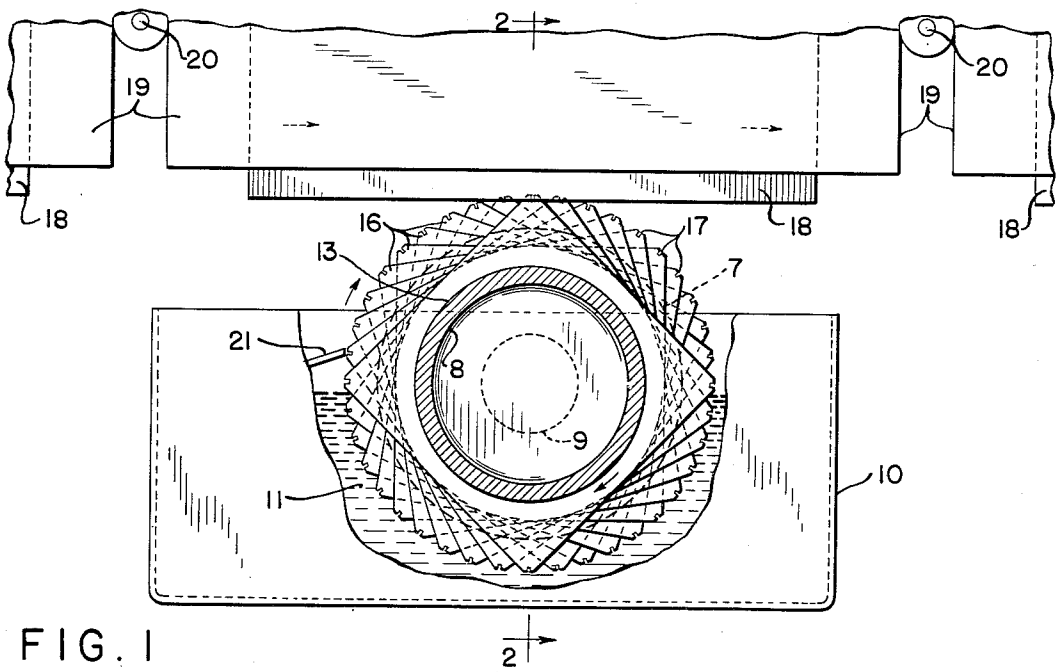


FIG. 1

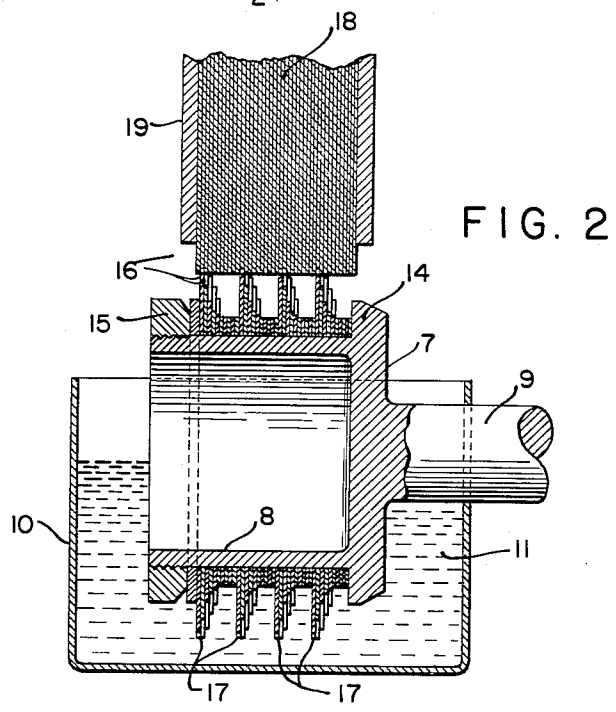


FIG. 2

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FIG. 3

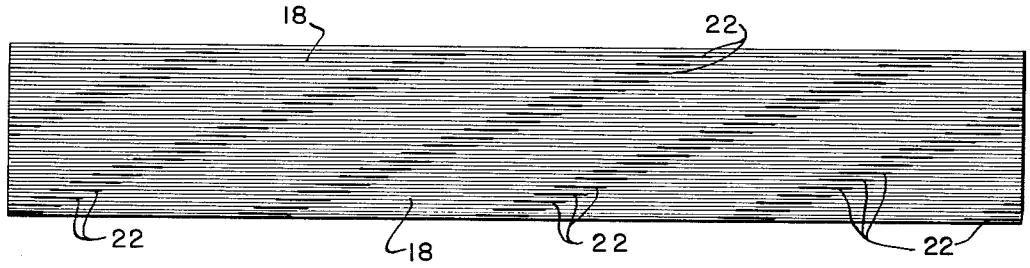
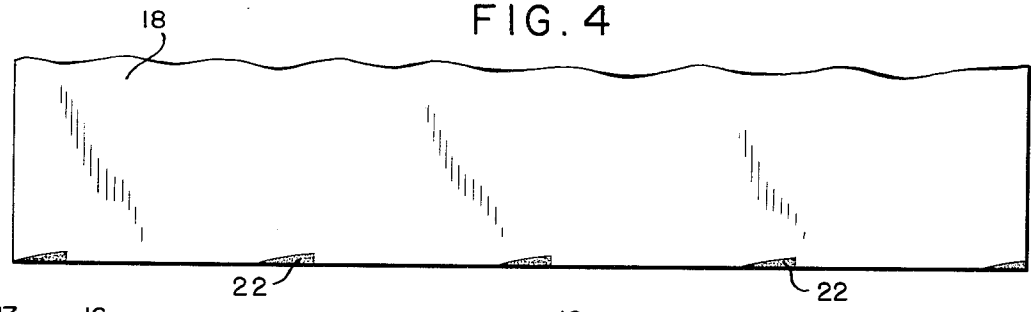


FIG. 4



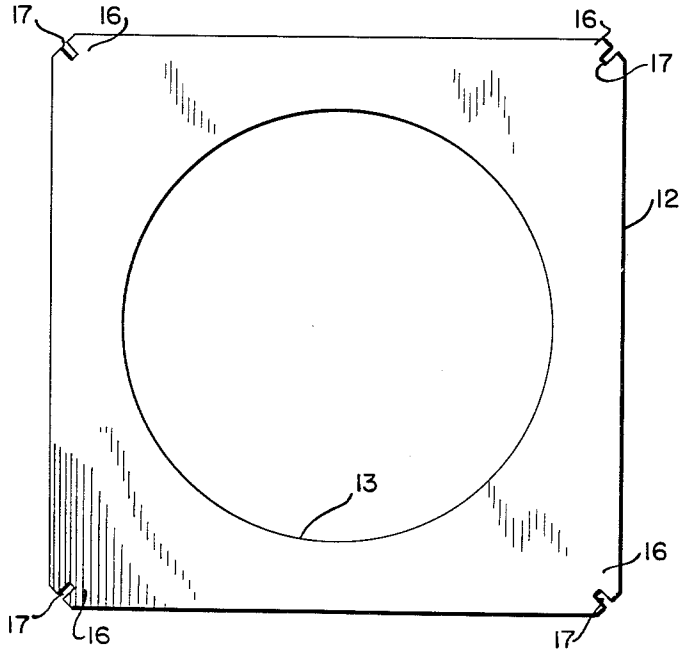
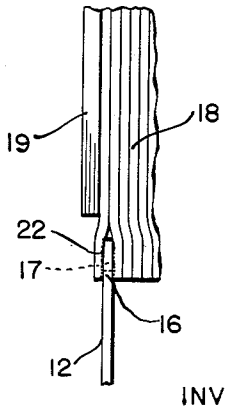


FIG. 5

FIG. 6



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United States Patent Office

2,720,665

Patented Oct. 18, 1955

2,720,665

ADHESIVE APPLICATOR

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Application November 20, 1952, Serial No. 321,595

7 Claims. (Cl. 11—1)

This invention relates to a method and device for applying adhesive materials to a block of sheets for binding, and more particularly to an improved gluing wheel for distributing glue on and between the binding margins of a block of sheets to be bound.

This invention concens books bound by the method known to the trade as "perfect binding" or "patent binding." Binding in this manner has normally involved passing the binding edges of the pages which are to be included in the book over a glue-applying roller. However, the area of the edge of the page exposed to the glue is so small that often the pages are not securely held in the book.

The primary object of the present invention is to provide a new and improved method of binding which will result in a book having greater over-all strength in its binding.

Another object of the invention is to provide a gluing wheel which will secure the penetration of glue between the pages a short distance at the binding margin.

A further object of the invention is to prevent excessive spots of glue between the pages so that all the pages of the book will open in a normal manner.

Another object of the invention is to provide a device which will distribute glue between the pages in a rather uniform pattern laterally and longitudinally of the book.

The invention is illustrated in a preferred embodiment in the accompanying drawings in which:

Fig. 1 is a fragmentary side elevational view of a gluing wheel in operation;

Fig. 2 is a sectional view, taken as indicated at line 2—2 of Fig. 1, the laminae and sheets being shown with exaggerated thickness;

Fig. 3 is a plan view of the binding margin of the book showing the pattern of glue deposits within the binding margin;

Fig. 4 is a longitudinal section of the pack shown in Fig. 3;

Fig. 5 is an elevational view of one of the laminae of the gluing wheel; and

Fig. 6 is an enlarged fragmentary sectional view similar to Fig. 2, and showing the penetration of one lamina between sheets of the pack.

In the embodiment illustrated, a gluing wheel **7** has a hub portion **8** mounted on a shaft **9** journaled in the wall of a reservoir **10** of adhesive material or glue **11**. A working portion of the wheel is shown with four aligned sets of laminae, each set having ten laminae, and each lamina **12** having a central aperture **13** to fit over the hub **8** and being clamped in fixed position against a flange **14** by means of a nut **15** threaded to the free end of the hub **8**.

As best shown in Fig. 5, each lamina is preferably generally square in form with blunt corners which serve as adhesive applying fins **16** in the wheel. Preferably each of the fins has a small notch **17** to form a pocket for carrying glue up between the sheets to be bound. In assembling the laminae they are preferably arranged, as

shown in Figs. 1 and 2, with the fins offset about 9 degrees from the fins in the next adjacent lamina and are permanently clamped in that position so that when they apply adhesive to the binding edge, there is a biased pattern, as indicated in Fig. 3. By this arrangement the spots of glue are distributed in a regular pattern and the bound book does not have stiff cross ribs of glue which might be more thick in some portions than in others.

As shown in Fig. 1, blocks of sheets **18** are secured together by clamping members **19** mounted on a conveyor **20** so as to move in a plane parallel to the plane of rotation of the gluing wheel **7**. Preferably, the gluing wheel is driven so that it has about twice the peripheral speed of the advancing sheets **18**. A doctor blade **21** is provided to scrape the excess adhesive from the wheel, and a suitable means, not shown, is provided for maintaining the adhesive in the reservoir at a constant level.

As shown in Fig. 6, the block of sheets is forced into contact with the wheel so that each fin penetrates a short distance upwardly into the binding margin between adjacent sheets. As the wheel is traveling at a higher speed than the blocks of sheets, a small spot of adhesive **22** is wiped into the binding margin, as shown in Fig. 4.

The laminae preferably are only about .005 inch in thickness so that they will fit in between a pair of adjacent sheets (which are shown of exaggerated width in Fig. 6) without difficulty. As the sheets are ordinarily quite thin and their edges do not follow an absolutely straight line, the succeeding fins on the same lamina do not generally enter between the same pair of sheets, and thus the spots of glue from the several fins of the same lamina are distributed between a number of pairs of sheets. It is not necessary that each sheet receive a special spot of glue, but it has been found that if the sheets are thin, four or five can be missed and still provide a very satisfactory binding.

The foregoing detailed description is given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, for some modifications will be obvious to those skilled in the art.

I claim:

1. A device for transporting adhesive material from a source of supply to between the the marginal portions of a pack of advancing sheets, comprising: a wheel adapted to rotate in a direction parallel to the direction of movement of the sheets, said wheel having a plurality of thin outwardly extending fins adapted to separate and project between some pairs of adjacent sheets and carry adhesive into the binding margin of the pack of sheets.

2. A device as specified in claim 1, in which the wheel is formed of a plurality of laminae in juxtaposition and the fins are integral with the bodies of the laminae.

3. A device as specified in claim 1, in which the wheel is formed of a plurality of similar laminae in juxtaposition, each having regularly spaced fins, said fins of each lamina being offset circumferentially from the fins in adjacent laminae.

4. A device as specified in claim 1, in which the tip of each of the fins is provided with at least one outwardly open adhesive-carrying notch.

5. A device as specified in claim 2, in which each of the laminae is a relatively thin sheet of metal of the order of .005 inch.

6. The method of binding a pack of sheets which comprises: advancing the assembled sheets in timed relation over a plurality of thin outwardly extending fins on the periphery of a wheel rotating in the plane of the assembled sheets, forcing the fins into the binding margin of the sheets at regularly spaced intervals, and wiping adhesive from the fins between the binding margins of said sheets.

7. The method of binding a pack of sheets which comprises: advancing the assembled sheets in timed relation over a plurality of thin outwardly extending fins on the periphery of a wheel rotating in the direction of the advancing sheets at approximately twice the speed of said sheets, forcing the fins into the binding margin of the sheets at regularly spaced intervals, and wiping the fins upon the sheets to deposit glue at spaced intervals between the binding margins.

References Cited in the file of this patent

UNITED STATES PATENTS

1,747,581	Frazier	Feb. 18, 1930
2,599,666	Surridge	June 10, 1952