Feb. 14, 1933. W. C. BOHMERT 1,897,038

BINDING MEANS FOR PAPER SHEETS

Filed Sept. 19, 1930 2 Sheets-Sheet 1

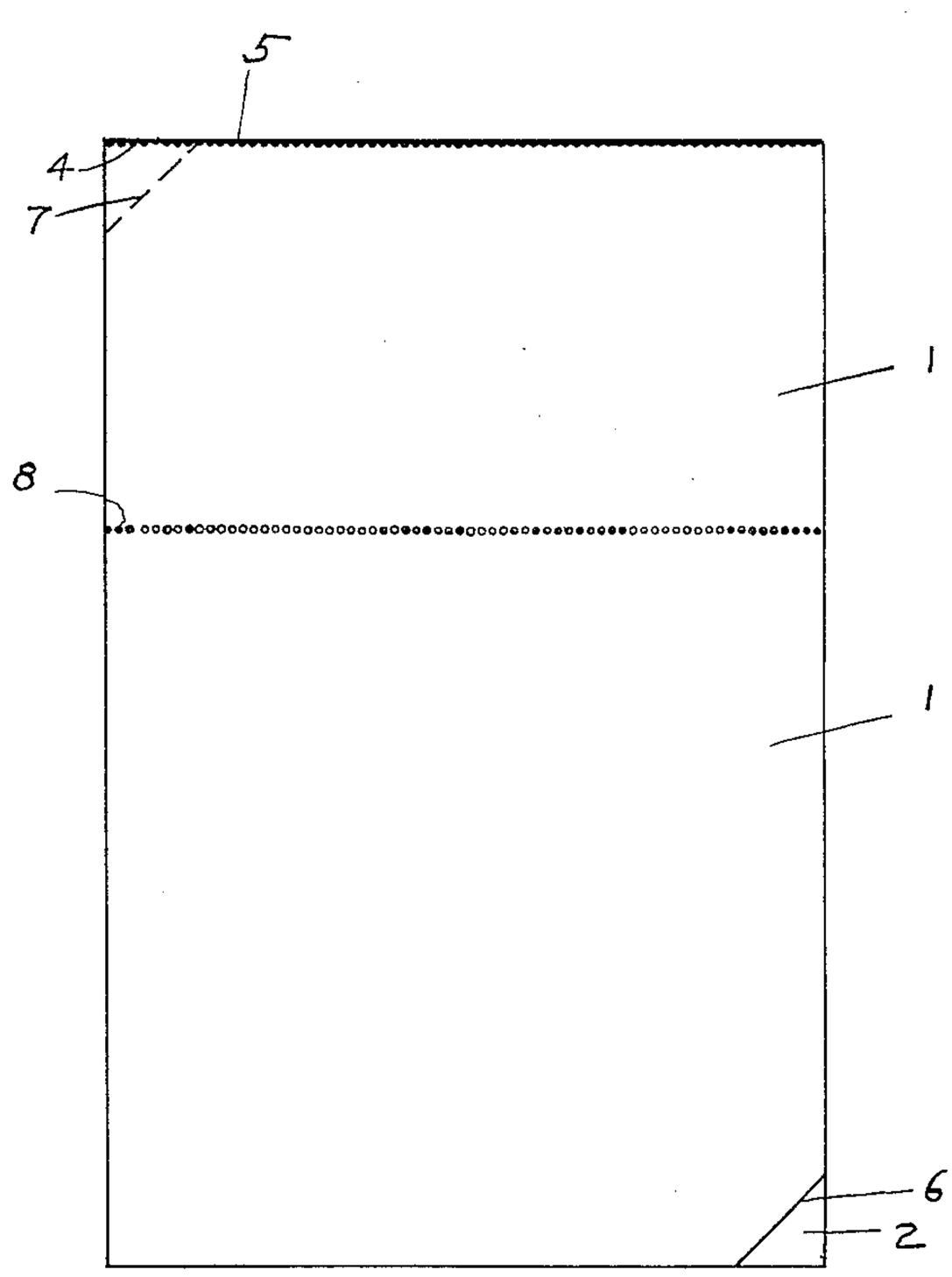

FIG. 1.

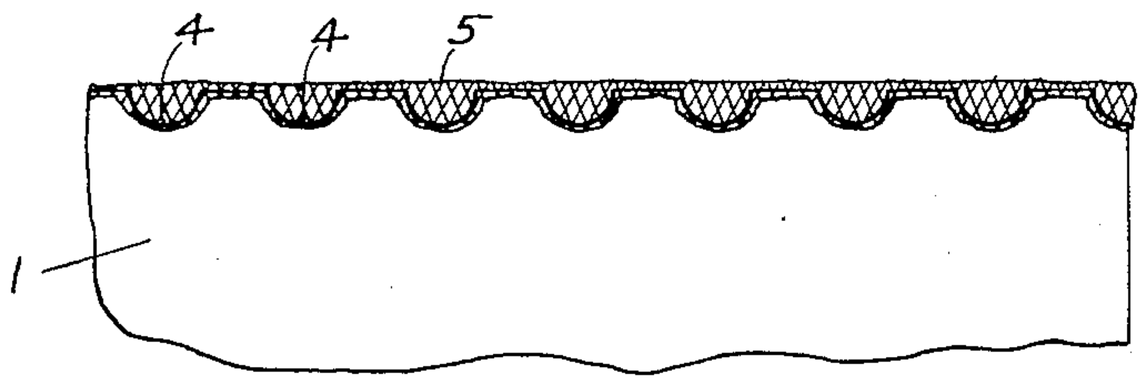

FIG. 2.

INVENTOR
BY William C. Bohmert
Benjamin Webster
ATTORNEY

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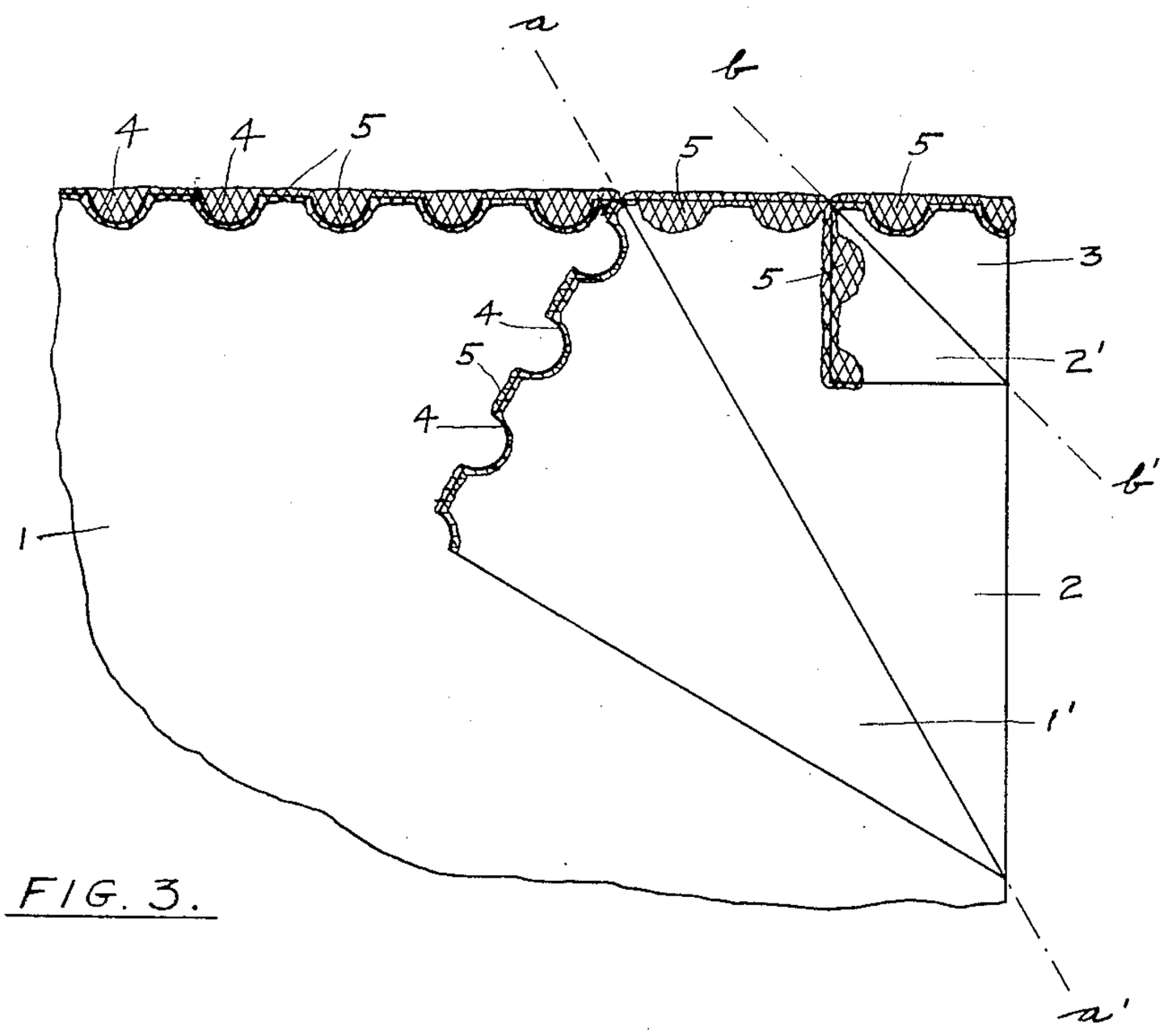

FIG. 3.

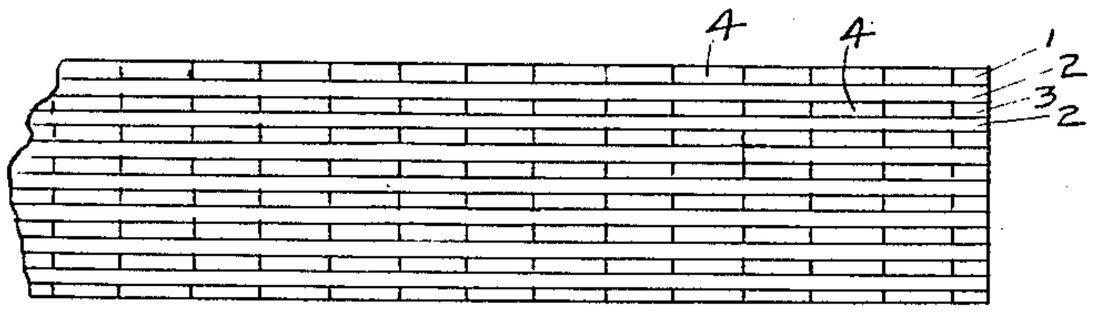

FIG. 4.

INVENTOR
BY William C. Bohmert
Bellamy & Webster
ATTORNEY

Patented Feb. 14, 1933 1,897,038

UNITED STATES PATENT OFFICE

WILLIAM C. BOHMERT, OF MAMARONECK, NEW YORK

BINDING MEANS FOR PAPER SHEETS

Application filed September 19, 1930. Serial No. 483,035.

This invention relates to means for binding sheets of paper in pad or assembled form, and more especially to binding means especially adapted for manifolding assembly.

The invention has for its objects, among others, first, to provide a means for binding together loose sheets of paper that both securely holds the sheets in the assembled form and also permits of the facile tearing of the sheets from the binding means; second, to provide a secure binding means for paper sheets with a simple and economical manufacturing operation; third, to provide a binding means that is both durable and flexible; fourth, to provide a binding means equally well adapted for securing together a few or a large number of sheets; fifth, to provide a binding means comprising an adhesive with far greater adhesion to the sheets of the assembly; sixth, to provide a manifolding assembly especially adapted to the operations of manifolding; and seventh, to provide a manifolding assembly of more economical cost but retaining the security of the binding means. Other objects may appear as the description proceeds.

Reference is made to the drawings which are hereby made a part of this specification, in which

Figure 1 is a plan view of a manifolding assembly,

Figure 2 is a greatly magnified plan view of the upper right corner and a part of the edge as shown in Figure 1,

Figure 3 is a view similar to that of Figure 2 but with the top sheets turned back on the line *a*—*a* and the second or duplicating sheet turned back on the line *b*—*b*, and

Figure 4 is an end view of the upper edge also greatly magnified showing the paper sheet assembly before the fluid adhesive is applied to the edge.

Like parts are designated by the same numerals throughout the drawings in which I illustrate my invention applied to a manifolding assembly comprising original sheets 1, which are shown blank but which may be ruled or printed for any form desired, having carbon sheets 2 interposed between the original sheets 1 and 3 and so forth in the usual manner. As seen in Figures 3 and 4 the second original sheet is designated by the numeral 3 for the sake of clarity and to avoid confusion. The sheets 1 and 3 have the upper edge in the form of a straight line interrupted by a series of indentations or scallops or concavities 4. These indentations may be in a plurality of forms or shapes. The interposed carbon or duplicating sheets of thin porous paper however have the corresponding edges straight. The prior practice in binding a pad or assembly of paper sheets, as is well known to those skilled in the art, has been to have all the edges assembled in the same plane. On the other hand in the application of my invention the upper edges as viewed from the end present the construction as shown in Figure 4, namely a series of indentations in the alternate sheets, so that when the liquid adhesive is applied to the end with a brush the adhesive not alone adheres to the straight edges terminating in the plane, but also penetrates the indentations and adheres also to the edges of the indentations, which obviously increase the total linear dimension of the edges of the sheets that have the indentations, and also to the parts of the surfaces of the carbon or duplicating sheets exposed by the indentations in the overlying and underlying sheets. The improved construction of my invention therefore while requiring only the usual manufacturing operation in binding sheets of paper of brushing the end with a liquid adhesive provides a binding means for the assembly of far greater binding effectiveness thereby eliminating the loosening of sheets now commonly occurring in assemblies where the binding adhesive alone is used, and obtaining all the advantages in practice of the far more expensive manufacturing operation of stitching. A study of the end construction as shown in Figure 4 clearly indicates the form of the liquid adhesive when dried into a binding wall of greatly increased strength and resistance to breaking or mutilation, particularly when the wall is passed under the rolls and over a curved typewriter platen. In preparing the carbon or duplicating sheets 2 for this

manifolding construction I leave a narrow strip at the binding edges of the sheets unimpregnated with carbon or duplicating ink whereby the porous paper used for this purpose is left with all its absorption properties open to permeation by the liquid adhesive thereby increasing the binding effect on the manifolding assembly.

At the lower right hand corner the sheets 1 and 3 are cutaway and similarly at the upper left hand corner the carbon sheets 2 are cutaway. This cutaway construction permits the grasping of the lower right hand corners of all the carbon sheets 2 by the thumb and forefinger of the right hand and also permits simultaneously the grasping of all the original sheets 1 and 3 at the upper left hand corner by the thumb and forefinger of the left hand, after filling-in operation is completed on the machine, and thereupon the pulling of the hands apart simultaneously pulls out and separates all of the carbon or duplicating sheets 2. This operation leaves all of the sheets 1 and 3 securely bound at the upper edge. The perforated line 8 permits the tearing off of the lower portions of the sheets 1 and 3, leaving the upper portions of sheets 1 and 3 securely bound in pad or assembled form at the upper edge by means of the adhesive 5.

The securing of paper sheets together at the corresponding ends with the edges terminating in a plane surface by means of liquid adhesive applied with a brush is a common form of binding means for sheets of paper in assembled form, but when a pad or assembly of sheets of paper so treated is handled or tossed about the sheets frequently become separated, and this mutilation of the assembly form occurs especially when such an assembly of sheets so bound is passed under the rolls of a typewriter and over the curved surface of a typewriter platen. The alternative to having the assembly of sheets broken up and some of the sheets unwittingly loosened is to stitch the assembly together at the edge; but such stitching adds sharply to the manufacturing cost and therefore is a check and preventative of wide economic use of stitching in such assemblies. By the construction of my present invention, on the other hand, in which alternate sheets of paper in the assembly are not alone bound by adhesive at the edge but also on both faces of said sheets adjacent the edge and the linear dimension of the edges of the other sheets is materially increased by the same cutaway indentations that permit of surface adhesion of the binding adhesive, thereby increasing the edge adhesion of these sheets, the pad or assembly of sheets is held in assembly secure against accidental separation of any or part of the sheets and the adhesive wall is rendered so firm by the reinforcing projections within the edge of the assembly that the entire assembly is passed through the typewriter rolls binding means foremost without injury or mutilation. It is apparent that while I have illustrated an application of my invention to manifolding assemblies my invention is of general application wherever it is desired to bind together an assembly of sheets at the edge, therefore I do not choose to limit myself except as in the appended claims.

I claim:

1. A pad comprising a plurality of sheets of paper, alternate sheets having the ends to be bound straight in outline, the other sheets having parts of the corresponding ends set back from the plane of the ends of the other alternate sheets, binding adhesive applied to all the said ends, the construction being such that the binding adhesive adheres not alone to the ends of the straight-edge sheets but also to parts of the surfaces thereof.

2. A pad comprising a plurality of sheets of paper, alternate sheets having corresponding ends straight in outline and in the same plane, the other sheets having a series of indentations on the corresponding ends, the said ends being covered with binding adhesive, the construction being such that the binding adhesive adheres not alone to the edges of the straight-edge sheets but also to the parts of the surfaces thereof coextensive with the areas of the indentations of the edges of the adjacent sheets.

3. A pad or assembly of sheets of paper in which alternate sheets have the corresponding ends irregular in outline, and adjacent interposed sheets having the corresponding ends straight-edged, binding adhesive applied to all the said ends, the construction being such that the adhesive adheres not alone to the ends of the alternate sheets but also to the surfaces of the adjacent sheets.

Signed at New York city in the county of New York and State of New York this eighteenth day of September A. D 1930.

WILLIAM C. BOHMERT.