June 1, 1937. A. M. HECK 2,082,494

BACKING SHEET FOR MANIFOLDING ASSEMBLIES

Filed July 5, 1935

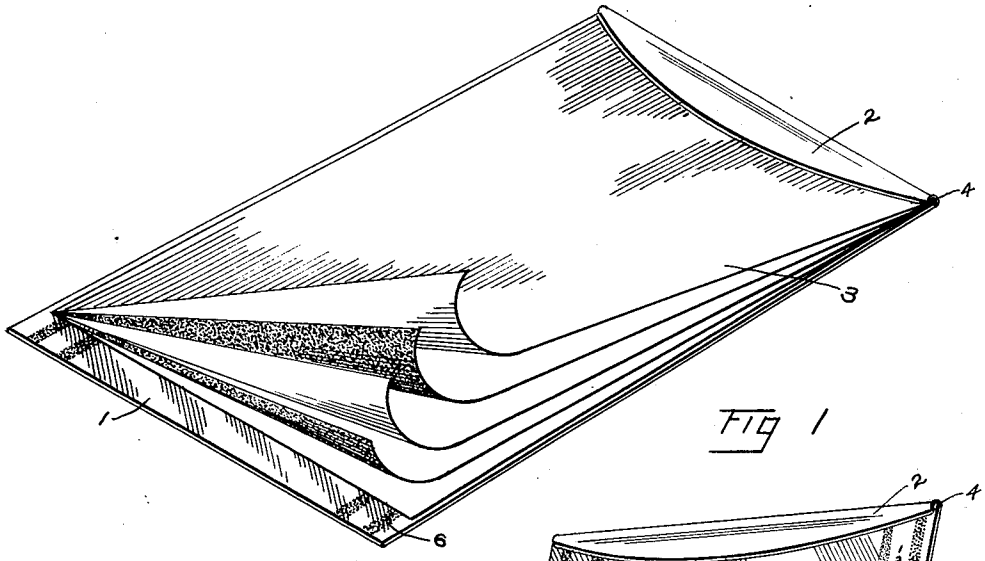


Fig 1

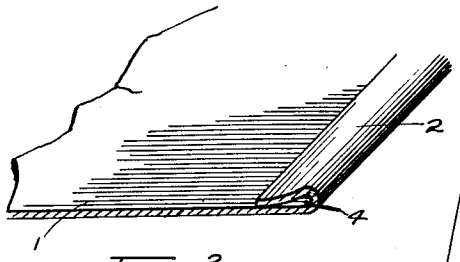


Fig 3

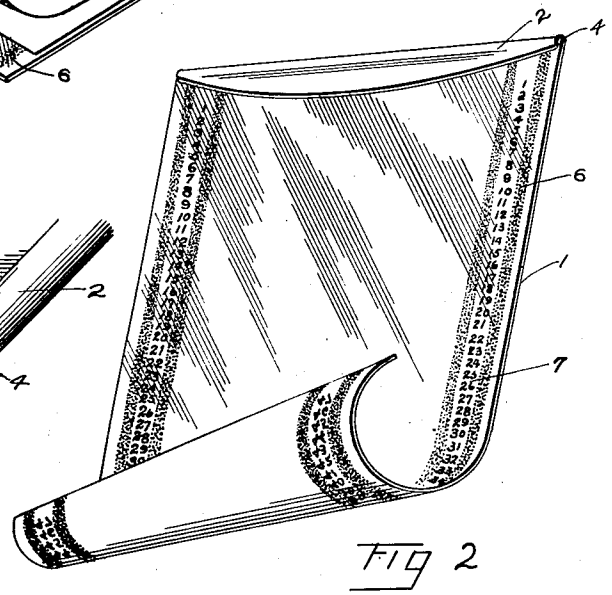


Fig 2

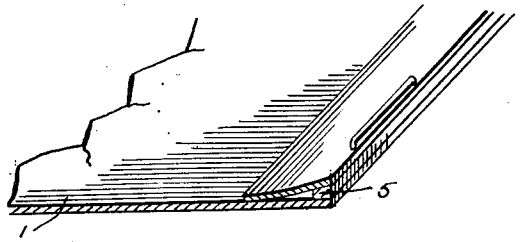


Fig 4

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Patented June 1, 1937 2,082,494

UNITED STATES PATENT OFFICE

2,082,494

BACKING SHEET FOR MANIFOLDING ASSEMBLIES

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Application July 5, 1935, Serial No. 29,888

6 Claims. (Cl. 282—29)

This invention relates to stationery and more particularly to a backing sheet for manifolding assemblies of writing material, which while well adapted for making either typewritten or hand inscribed records, will be found especially desirable for use in writing machines.

For ordinary typewritten records a relatively soft platen roll is usually preferred. However, in order that a large number of legible manifolded copies may be produced, it is necessary that the impingement of the type upon the paper be resisted by a relatively hard platen or other abutment surface.

Clean uniform copies of typewritten matter can not be produced upon a writing machine having a rough or indented platen. To provide a smooth abutment surface against which the force of the type may be expended and which will insure even, strong impressions upon the overlying record material, a flexible sheet of a suitable cellulose derivative is provided preferably of acetate character and hence non-inflammable upon which alternating record and transfer sheets are superposed and held in their adjusted positions by an overlapping pressure or gripper flap.

It is recognized that it is not broadly new to provide a backing sheet for manifolding purposes of celluloid, pyroxylin or analogous material. However, much difficulty has been experienced due to slipping of the backing sheet and uneven feeding of the assembly through a writing machine. In the present instance, mat surface areas are provided upon the reverse face of the backing sheet for non-slipping traction engagement with the sheet feeding devices of the writing machine. Likewise while locating tongues beneath which the writing sheets of writing material may be inserted have heretofore been struck from the material of the backing sheet and in some instances the margin of a paper or other backing sheet has been sharply folded reversely for like purpose, in the present instance the reversely folded flap is so shaped, and the fold is affected in such manner as to facilitate the engagement of the writing sheets therebeneath and enable them to be more securely held by the inherent tension of the overlying flap.

The object of the invention is to provide a backing sheet which may not only be economically manufactured but which will be more efficient in use, of convenient form, of increased durability and unlikely to get out of repair.

A further object of the invention is to provide improved traction means for facilitating the feeding of a smooth hard surfaced sheet through a writing machine.

A further object of the invention is to provide a backing sheet for writing material having gripping means for engaging writing sheets under inherent tension.

A further object of the invention is to provide a writing material backing sheet having a reversedly disposed resilient flap of improved form and exerting pressure upon interposed writing sheets.

With the above primary and other incidental objects in view, as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the accompanying drawing wherein is shown the preferred but obviously not necessarily the only form of the embodiment of the invention Fig. 1 is a perspective view of a backing sheet embodying the present invention with which is associated a group of writing material sheets assembled in writing position.

Fig. 2 is a perspective view of the backing sheet from which the writing sheets have been removed.

Fig. 3 is an enlarged sectional view.

Fig. 4 is a similar sectional view of a modification.

Like parts are indicated by similar characters of reference throughout the several views.

As aforestated backing sheets of celluloid, pyroxylin, paper and analogous materials have heretofore more or less been generally used. When such backing sheets have been made of pyroxylin, celluloid or other smooth hard surfaced materials which are most desirable for backing purposes, considerable difficulty has been experienced due to the tendency of such materials to slip and not properly feed through a writing machine. The surface of such sheets do not ordinarily afford sufficient traction engagement with the frictional feeding roller of a typewriter or other writing machine to effect a uniform feeding movement. Therefore, in the present instance, the back of the sheet has been treated in a manner as to afford improved traction effect continuously throughout the length of the sheet.

If pyroxylin, celluloid or analogous sheets are reversely folded as has been the practice with paper backing sheets to form an overlapping flap for holding the writing sheets the pyroxylin or celluloid material is quite frequently likely to

break or tear along the fold line. Moreover, when sharply folded the resulting flap has a tendency to rise away from the main portion of the backing sheet and assume a position in divergent relation therewith where it exerts no holding pressure on the interposed writing material.

In the present instance, the marginal portion of the backing sheet is reversely folded upon itself about a rounded fold line or open bight whereby the sheet is not only protected from fracture on the fold line, but the resulting flap is disposed in converging relation with the main portion of the sheet in which, by its inherent tension, it exerts a gripping pressure upon interposed sheets of writing material.

Referring to the accompanying drawing, 1 is the backing sheet of pyroxylin, celluloid or analogous material but which is preferably of an acetate cellulose character and therefore non-inflammable. The top margin of the backing sheet 1 is reversely folded upon itself to form a writing sheet engaging flap 2. This flap 2 extends the entire width of the backing sheet 1 and its free edge is preferably though not necessarily of convex curvilinear shape. This arcuate form of the sheet holding flap greatly facilitates the interengagement of writing sheets 3 therebeneath. The flap 2 is not sharply folded but its juncture with the main portion of the sheet 1 is through a rounded or open fold or bight 4. In the manufacture of these backing sheets it has been found quite desirable and efficient to fold the flap 2 over an interposed wire which will prevent tight pressing of the fold. The flap 2 beyond the bight 4 is turned through somewhat more than an arc of 180° so that the flap 2 extends in a plane convergent with that of the main portion of the backing sheet 1 with its free edge approaching the backing sheet. The converging relation of the flap 2 enables it to exert an inherent tension upon interposed writing sheets 3. Thus the writing sheets are held in assembled relation by a limited pressure or gripping effect of the flap. In this respect the present device differs very materially from the usually reversely folded backing sheet wherein the flap portion which is sharply folded tends to assume a divergent or gapping relation and therefore exerts no tension or holding effect whatsoever upon the writing sheets.

In lieu of forming the overhanging gripper flap 2 from an integral portion of the backing sheet 1, such flap portion may be separately formed and fixedly attached to the backing sheet 1 with a filler or spacer strip 5 interposed therebetween as shown in the detail view Fig. 4. In this modified construction, while the holding flap 2 is not integral with the backing sheet 1, it is, nevertheless, fixedly secured thereto and disposed in inclined converging relation with the backing sheet and performed the same function as the integral holding flap shown in the preceding figures.

While pyroxylin, celluloid or other material having a similar hard, smooth surface is desirable for use as a backing sheet for manifolding purposes, such material presents a rather difficult problem of feeding through the ordinary friction feed writing machine. The frictional feeding rollers of the writing machine do not have sufficient traction upon such smooth, hard material to advance it uniformly and consequently there is some slipping between the backing sheet and feeding rollers and the manifolding assembly is not advanced uniformly, thereby causing uneven lines and spacing. To overcome this difficulty there are provided in the present instance mat surface stripes or areas upon the reverse side of the backing sheet 1 affording frictional surfaces for traction engagement of the feeding rollers.

As a convenient and economical method of providing such mat surface stripes 6 upon the reverse side of the sheet 1, heavy lines of printer's ink or other frictional material are printed upon the backing sheet and at the same time a succession of line space numbers 7 may be printed thereon. The printed surfaces of the line space numbers 7 and the parallel stripes 6 of printing ink or other frictional material afford non-slip areas for engagement of the feeding rollers and assure uniform advancement of the backing sheet 1 and the record sheet carried thereby through the writing machine.

While for commercial production such stripes of printing ink 6 have been found ample and sufficient for the purpose and enable economical production by passing the backing sheet 1 through an ordinary printing press, it will be understood that the non-slip mat surface areas may be otherwise produced. For example, the sheet may be treated by abrasion, whereby the polished surface of the sheet is removed from certain areas and such areas given a tooth or roughened effect by which their frictional engagement with the feeding rollers is materially increased. Likewise such mat surface areas may be produced by etching or by application of a treatment solution which will effectively remove the gloss of the sheet 1 and reduce its gloss surface to a friction surface. Furthermore while these frictional mat surface areas are preferably parallel spaced stripes extending longitudinally of the backing sheet 1 they may be of other shapes and variously distributed over the reverse side of the sheet 1 or the entire rear face of the sheet may be treated with abrasive material, etching solution, or by application thereto of frictional material analogous to printer's ink. The purpose of such treatment in any event is to afford the necessary frictional surface to insure uniform advancement of the backing sheet through a writing machine by the engagement of the conventional frictional feeding rolls therewith.

A backing sheet such as heretofore described may be conveniently inserted into an ordinary typewriter and immediately gripped between the feeding roll and the platen roll without the necessity of relieving the tension upon the platen roll which by their contact with the frictional mat surface areas of the back of the sheet serves to uniformly advance the sheet through the writing machine. By reversing the holding flap through a rounded bight instead of sharply folding the material breakage at this point is minimized and the life of the backing sheet is materially extended. Moreover the present method avoids the necessity of holes or perforations in the backing sheets which frequently form starting points for tears or breaks in the material.

The present form of backing sheet having the sheet gripping function is quite advantageous in the making of large numbers of manifolded copies. One of the difficulties encountered in manifolding is the tendency of the sheets to creep one on another or to advance ununiformly, due to the outer sheets being greater distances from the center of rotation than the inner sheets and hence traveling through a greater circumferential path. Attempts to overcome this difficulty have been made by stapling, glue spotting or otherwise fixedly attaching the sheets together. Such fixed

attachment frequently results in wrinkling of the sheets and resultant "treeing" of underlying sheets by carbon transfer of the wrinkles as they are fed through the machine.

It is found that the gripper flap on the present backing sheet restrains the creeping action and tends to maintain accurate registry of superposed forms without however subjecting the sheets to wrinkling and "treeing" as occurs when the positive attachment is made.

Furthermore the convex curvilinear shape of the margin of the flap enables the sheets to be much more easily withdrawn from beneath the flap for erasing on underlying sheets without removing the assembly from the writing machine.

The corners of the sheets are but slightly overlapped by the flap 2. By collectively grasping the margins of the sheets and pulling away from the backing sheet they may be readily disengaged at the corner and continued outward pull on the sheets produces a camming action of the sheets upon the curved edge of the flap which is progressively elevated by the sheets which are being withdrawn. This enables one hand operation. The curvilinear form also facilitates the reinsertion of the sheets beneath the flap.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute, the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described my invention, I claim:

1. As an article of manufacture, a backing sheet for writing material including a sheet member, parallel stripes of printing ink on the reverse side of the sheet affording continuous feeding traction while in a writing machine, and a record sheet holding flap on the forward side of the sheet comprising the terminal portion of the sheet reversely folded upon a rounded fold line whereby the flap is directed downwardly toward the body of the sheet.

2. As an article of manufacture for use in typewriters and the like, a backing sheet for writing material, comprising a sheet member, longitudinal parallel mat surface stripes on the reverse side of the sheet to afford continuous traction engagement with sheet feeding means of a writing machine, and a tensioned flap upon the face of the sheet for overlapping gripping engagement with writing sheets, said tensioned flap being an extension of a rounded fold at the terminal portion of the sheet and directed toward the sheet surface.

3. As an article of manufacture for use in typewriters and the like, a backing sheet for writing material, and relatively spaced mat surface areas on the reverse side of the sheet affording continuous non-slip traction engagement with sheet feeding devices of a writing machine, the terminal portion of the sheet being reversely folded upon an arcuate fold line, and a flap extending from the arcuate fold and directed thereby into corresponding engagement with the sheet surface.

4. As an article of manufacture, a backing sheet for writing material, a longitudinally disposed mat surface area on the back thereof for non-slip traction engagement with the feeding devices of a writing machine and a sheet engaging flap integral therewith comprising a terminal portion of the sheet reversely folded upon itself through an arc of more than one hundred and eighty degrees whereby the flap will bear and exert pressure upon writing sheets interposed between the flap and the main portion of the backing sheet.

5. As an article of manufacture, a backing sheet for writing material, a longitudinally disposed mat surface area on the back thereof for non-slip traction engagement with the feeding devices of a writing machine and a sheet engaging flap for holding writing sheets in adjusted relation thereto, comprising an integral portion of the backing sheet reversely folded upon itself with an open bight, beyond which the flap assumes a normal position in a plane angularly directed relative to the plane of the main portion of the sheet with its free edge approaching such main portion of the sheet to hold interposed writing sheets under tension.

6. As an article of manufacture, a backing sheet for writing material, a longitudinally disposed mat surface area on the back thereof for non-slip traction engagement with the feeding devices of a writing machine and an integral writing sheet holding flap having a curvilinear marginal edge extending substantially all the way across the backing sheet from one margin to an opposite margin and comprising an integral portion of the backing sheet reversely folded upon itself about an open bight beyond which the flap converges toward the main portion of the backing sheet with resistance to separation therefrom whereby to exert gripping pressure on writing material disposed between the flap and the main portion of the backing sheet.

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