United States Patent [19]

Duff et al.

[11] **3,748,737**

[45] **July 31, 1973**

[54] **PAPER PERFORATING DEVICE**

[76] Inventors: **Joseph Howard Duff,** 2521 Branford Ave., Union, N.J. 07083; **Paul Joseph Smith,** 1138 Maple Ct., Mountainside, N.J. 07092

[22] Filed: **Mar. 30, 1971**

[21] Appl. No.: **129,480**

[52] **U.S. Cl.** **30/358,** 101/26

[51] **Int. Cl.** **B26f 1/00**

[58] **Field of Search** 30/358; 220/315; 101/26

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Primary Examiner—James L. Jones, Jr.
Attorney—Herbert M. Shapiro

[57] **ABSTRACT**

An inexpensive and portable plastic check perforating apparatus is formed by a single plastic layer with an integral hinge which permits the apparatus to fold flat forming opposing faces adapted to receive paper therebetween. Opposing faces are equipped with a pattern of rigid teeth and mating holes for perforating the check when the faces are pressed together.

1 Claim, 5 Drawing Figures

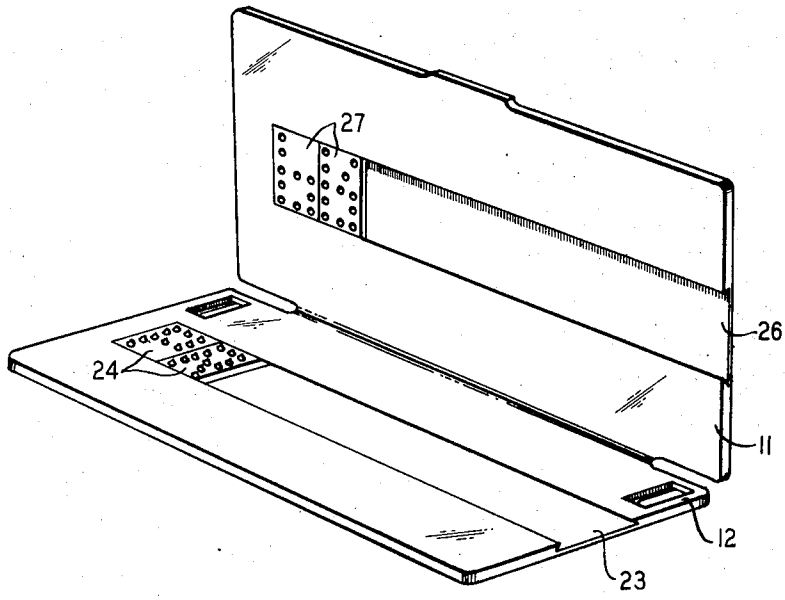


FIG. 1

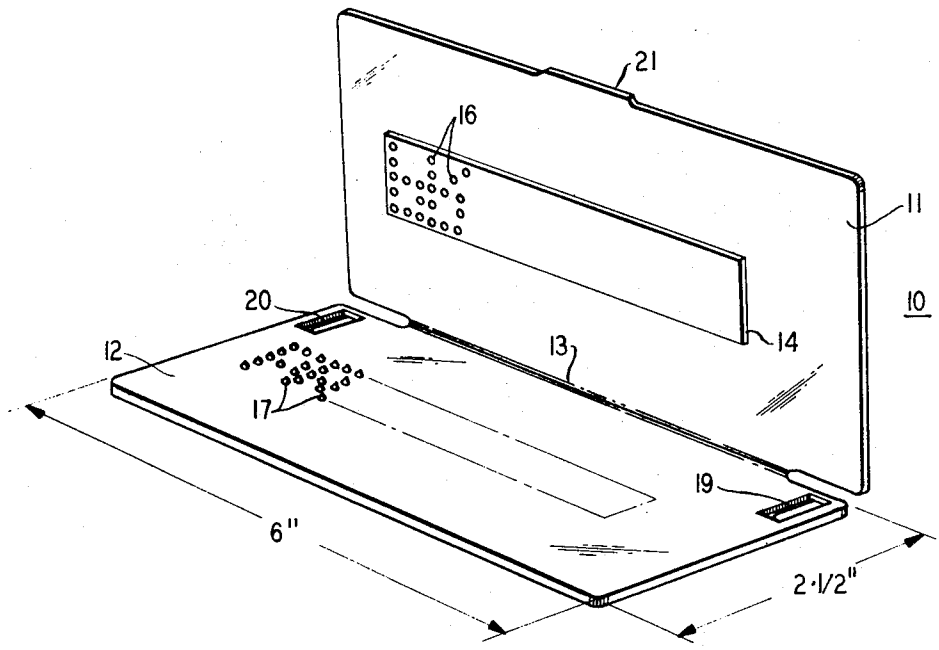


FIG. 2

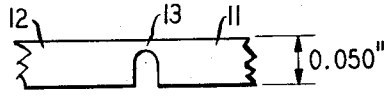


FIG. 3

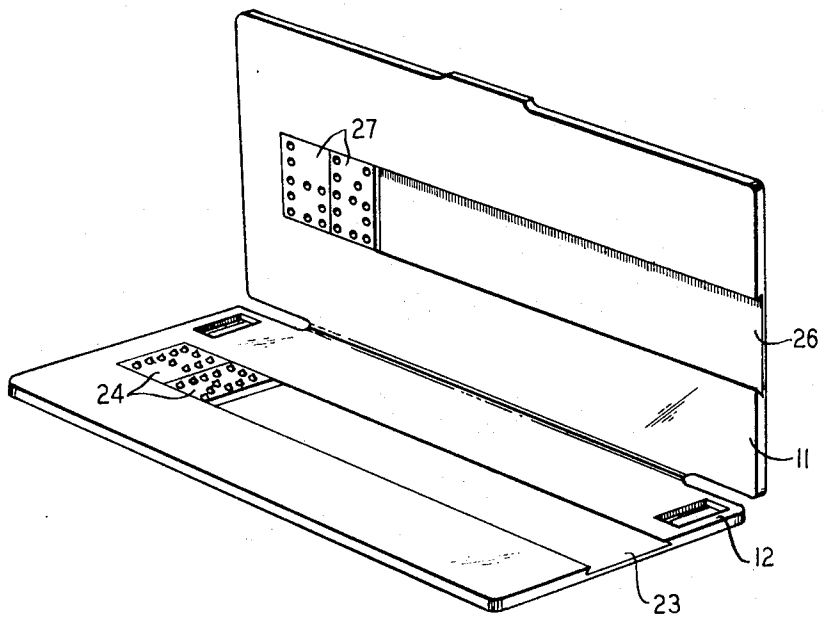


FIG. 4

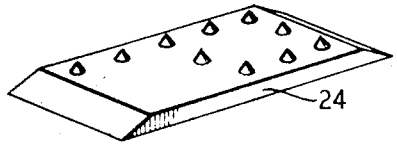
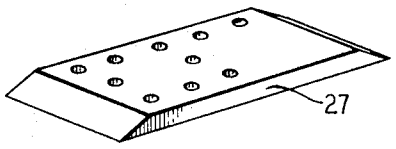


FIG. 5



PAPER PERFORATING DEVICE

FIELD OF THE INVENTION

This invention relates to paper perforating devices and more particularly to such devices adapted to perforate, for example a check in a pattern which prevents alteration of writing thereon.

BACKGROUND OF THE INVENTION

It is well known that a pattern of holes in a check is useful to prevent alteration of the writing thereon. Many devices are available for producing a desired pattern of holes to prevent such alteration. Unfortunately, the available devices are made of metal typically with hinged or spring loaded members which are costly, bulky, and heavy.

BRIEF DESCRIPTION OF THE INVENTION

A check protection device has been achieved from a single piece of plastic comprising two planar members hinged together at a fold which has a cross section reduced in a manner to permit the two members to lie flat against one another with only negligible tendency to open. An attractive portable device results conveniently carried as an attachment to a pocket checkbook. The plastic, although flexible, includes rigid conical teeth on one of the opposing faces of the members and mating cylindrical recesses in a mesa area on the other to perforate a check positioned therebetween.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a plan view of a portable check perforating device in accordance with this invention;

FIG. **2** is a side view of the hinge portion of the arrangement of FIG. **1**; and

FIGS. **3, 4,** and **5** are plan views of portions of an alternative arrangement in accordance with this invention.

DETAILED DESCRIPTION

FIG. **1** shows a check perforator **10** in accordance with this invention. The perforator comprises two essentially planar plastic members **11** and **12** hinged together at **13.**

Member **11** includes a mesa portion **14** on its inside face as shown in FIG. **1.** The mesa is positioned, for illustrative check perforating applications, to correspond to the location of the amount to be paid as written on a check the edge of which is placed along hinge **13.** The mesa includes recesses **16** which may be arranged in a coordinate array or in a design as shown to correspond to the letters P and R . . . etc., in the figure. In either case, the recesses are arranged to receive a pattern of teeth **17** formed on the inside face of member **12.** When a check is placed with its edge at hinge **13,** and the two planar members are urged together, the teeth enter the mating recesses thus perforating the check.

The perforator is intended as an attachment to a pocket checkbook. To this end, the perforator illustratively includes hook elements **19** and **20** formed from member **12** and extending into a plane lower than the lower surface of element **12** as viewed. Hook elements **19** and **20** are sufficiently resilient to permit a checkbook cover to be disposed between the elements on the one hand and bottom surface of member **12** on the other.

Of course, in order for perforator **10** to be carried as part of a checkbook conveniently it must satisfy a variety of criteria in addition to being inexpensive and disposable. For example, the perforator is to be lightweight and flexible and should remain in a closed position without tending to open. The thinner the plastic, the less the weight and the more flexible the perforator. But the perforation of a check is performed with greater and greater difficulty the thinner the plastic because of the difficulty of maintaining the teeth and recesses in geometrically stable configuration. Moreover, a minimum thickness for the plastic is imposed by the height of teeth **17** of FIG. **1.** Certainly, the teeth could not protrude beyond the recesses during the perforation operation without being uncomforatable for a thumb pressing member **11** against member **12** during the operation.

The apparently conflicting requirements are resolved by the inclusion of mesa **14.** The use of the mesa permits planar member **11** to be reduced in thickness almost to a film. The relatively thick recess bearing mesa on the inside face of the film receives the arrangement of teeth on the inside face of the other member. All that is required of the planar members is that they are capable of retaining the teeth and the recesses in a sufficiently stable configuration to enable them to mate when pressed together, a requirement met by the mesa portion. If both the planar members are film like, teeth **17** too may be formed on a mesa (not shown) such as **14** in FIG. **1.** If member **12,** on the other hand, is sufficiently thick to retain the arrangement of teeth in the configuration desired, member **12** does not require such a mesa.

Particularly, if both members **11** and **12** are sufficiently thick to be dimensionably stable (in the absence of mesas), the hinge **13** is formed such that when the perforator is open and lying flat, the inside and outside faces of the members are in first and second planes, respectively, and the hinge area is formed by a reduction in the thickness of the plastic from only the outside face. This is shown in FIG. **2** where the hinge is shown of reduced cross section. For closure, member **11** is moved counter-clockwise as viewed in FIG. **2** into juxtaposition with member **12,** remaining normally in this closed position unless opened. Member **11** includes a lip **21** which protudes beyond member **12** when the perforator is closed in order to facilitate opening of the perforator for operation. Even in the case where members **11** and **12** are sufficiently thick to be dimensionally stable, the thickness of member **11** may still be too thin to receive the teeth on member **12** and a mesa such as **14** of FIG. **1** is beneficial.

A typical perforator as shown in FIG. **1** has dimensions about the size of a normal check when closed. For example, each of members **11** and **12** are nominally 2 and ½ by 6 inches by 50/1000 of an inch thick. The overall dimensions are shown in FIG. **1** and **2.** The mesa is typically 9/16 of an inch by 4 and 3/16 inches having an elevation of 20/1000 of an inch and recesses 60/1000 deep. Teeth **17** are illustratively right angle cones 50/1000 long.

Teeth **17** and, if desired, recesses **16** may be arranged to produce a pattern of holes which corresponds to the name of a bank, a person's name, or a general logo such as PROTEXOCHECK. Moreover, the arrangement of FIG. **1** may be adapted in accordance with this invention for changing the pattern of holes produced by the

perforation operation. For example, for members **11** and **12** having thicknesses of about 55/1000, a slot **23** may be provided for receiving tooth holders **24** as shown in FIGS. **3** and **4**. Individual holders **24** may be fashioned to include a pattern of teeth for punching a single letter of the alphabet, a number of holders being assembled as shown in FIG. **3**. A similar slot **26** may be provided for holders **27** of FIG. **5** where recesses may be fashioned in the form of letters if desired for mating with the teeth of holders **24**. Holders **27** may be formed to define mesas when assembled. Alternatively, slot **23** may comprise separate areas in the planar member into which holders **24** or **27** may be secured by a snap fit.

The invention has been described in terms of a check protecting arrangement. It should be apparent, on the other hand, that other requirements may be fulfilled with a device of this type. If, for example, holders **27** are designed to include a single large hole each and holders **24** are designed to include a single large tooth in the form of a plateau, the proper placement of holders **24** in FIG. **3** provides a portable paper punch for forming ring holes for notebook paper.

A paper perforating device in accordance with this invention can be made by familiar injection mold processes, liquid plastic being forced between two plates of the mold formed to define therebetween, say, the structure of FIG. **1** The plates are water cooled, and the finished produce is ejected when the cooled plates are separated.

What has been described is considered only illustrative of the principles of this invention. Therefore, modifications can be devised by those skilled in the art in accordance with those priciples within the spirit and scope of this invention.

What is claimed is:

1. A check canceling device comprising first and second plastic members containing a pattern of plastic teeth and mating recesses respectively for perforating a check positioned therebetween when said members are urged into juxtaposition about an axis, said teeth and recesses being formed in relatively thick mesa portions of said first and second members respectively facing inwardly towards on another, said mesa portion of said second member being of sufficient thickness to avoid penetration of said teeth therethrough, the remaining portions of said members being substantially thinner than said mesa portions having a thickness less than that at which planar dimensional stability is maintained said mesa portion of said first member includes a slot arrangement housing a plurality of elements bearing different patterns of teeth.

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