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54 **A sliding rule for conversion tables, address directories and similar references, made of cardboard or the like.**

57 The sliding rule comprises a flat, window-bearing sheath of a stiff material, in which a sliding tablet of the same material is received, the sheath and the sliding tablet bearing correlated inscriptions or pictures. According to the invention, the sliding rule is made from a single blank of said stiff material, comprising a first and a second board (10, 12), of which at least one has windows, integrally joined and folded one upon the other and laterally bonded to form said sheath, and a third board (14) which is end-joined to said second board through an intermediate area (23), and is folded between said first and second board around a folding line (18) at the midline of said intermediate area, the intermediate area being removed for using the sliding rule, said third board acting as sliding tablet.

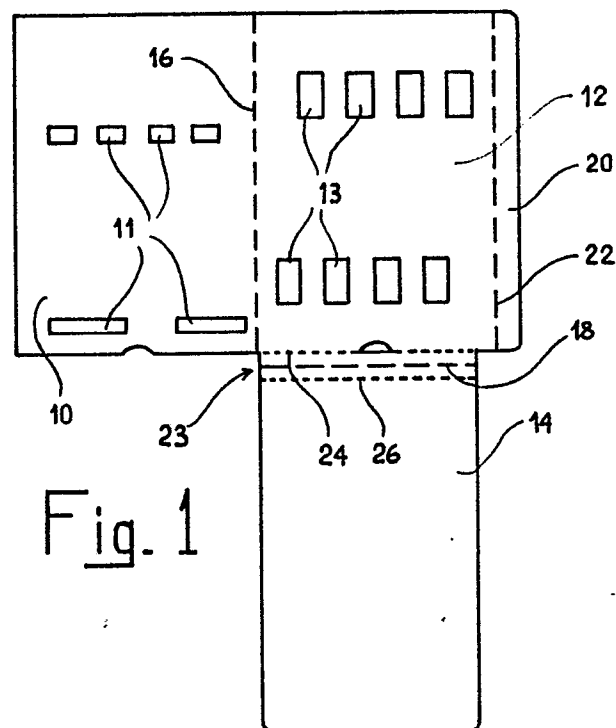


Fig. 1

EP 0 372 607 A2

A sliding rule for conversion tables, address directories and similar references, made of cardboard or the like

This invention is concerned with a sliding rule made of cardboard or other similar stiff material.

In such sliding rules, which are mainly used for conversion tables, address directories, and generally reference tables of various kinds, a cardboard tablet is slidable in a sheath similarly made of cardboard, and a set of windows cut in the sheath allow exposure of inscriptions printed on the tablet and correlated with other legends shown on the sheath itself. The cardboard is usually plastic-coated.

A sliding rule as described above is often used as a promotional article, or as an accessory for books, guides and the like, due both to the low cost of cardboard and of its processing methods (printing, punching) and to its flat, unobtrusive shape.

However, even if the majority of the items of manufacturing costs of such a sliding rule are small, the overall cost of the sliding rule is considerably increased by the fact that up to now the sliding tablet had to be manually inserted into the sheath. The cost of the manual insertion is alone higher than all the other items of the cost taken together, and a further disadvantage is that such manual insertion is a bottleneck in respect of the production times, considerably lengthening the delivery times in comparison with what would otherwise be caused by the other operations, such as printing and punching, which are mechanized and therefore very fast.

The essential aim of the invention is therefore to provide a sliding rule in the manufacture of which the step of manual insertion of the sliding tablet in the sheath can be dispensed with, with attendant drastic reduction of its manufacturing cost.

Another advantage is the concurrent reduction of the overall manufacturing times of the sliding rule.

This invention achieves the above and other objects and advantages, such as will appear from the following description, with a sliding rule for conversion tables, directories and the like, comprising a flat, window-bearing sheath of a stiff material, in which a sliding tablet of the same material is received, the sheath and the sliding tablet bearing correlated inscriptions or pictures, characterized in that it is made from a single blank of said stiff material, comprising a first and a second board, of which at least one has windows, integrally joined and folded one upon the other and laterally bonded to form said sheath, and a third board which is end-joined to said second board through an inter-

mediate area, and is folded between said first and second board around a folding line at the midline of said intermediate area, the intermediate area being removed for using the sliding rule, said third board acting as sliding tablet.

The invention will now be described in more detail, with reference to a few preferred embodiments, shown in the attached drawings, given by way of illustrative and nonlimiting examples, and wherein:

Fig. 1 is a plan view of a punched cardboard blank for a first preferred embodiment of a sliding rule according to the invention;

Fig. 2 is a perspective view of an intermediate step in the assembly of the sliding rule from a blank according to Fig. 1, with omitted windows, for the sake of simplicity;

Fig. 3 is a perspective view of a subsequent step in the assembly of the sliding rule from a blank according to Fig. 1, with omitted windows, for the sake of simplicity;

Fig. 4 is a perspective view of an assembled sliding rule, partly broken, according to the first preferred embodiment, with omitted windows, for the sake of simplicity;

Fig. 5 is a plan view of a punched blank for a second preferred embodiment of a sliding rule according to the invention;

Fig. 6 is a perspective view of an intermediate step in the assembly of the second embodiment of sliding rule from a blank according to Fig. 5, with omitted windows, for simplicity; and

Fig. 7 is a perspective view of a subsequent step in the assembly of the second embodiment of sliding rule from a blank according to Fig. 5, with omission of the windows, for the sake of simplicity.

As shown on Fig. 1, a punched cardboard blank for the manufacture of a sliding rule according to the first preferred embodiment of the invention substantially comprises three boards integrally joined to form an inverted L. A first board 10 has preestablished windows such as 11, a second board 12, side-by-side with the first, also has windows such as 13, and a third, lower board, 14 is joined to the second board 12. A folding line 16 is shown dashed between boards 10 and 12, and another folding line 18 is shown dashed between boards 12 and 14. Board 12 is overhanging over board 14, and has an integral, auxiliary flap 20, with a further folding line 22 shown dashed between board 12 and flap 20.

An intermediate area 23 between board 12 and board 14, straddling folding line 18, is defined by two perforated (or otherwise weakened) lines 24,

26, parallel to folding line 18 and symmetrical with respect to it, and shown dotted.

One or both boards 10 and 12 bear desired inscriptions on their faces opposite the ones that are visible on Fig. 1, in a way known per se, and board 14 also carries similar desired inscriptions on one or both of its faces, which are correlated with the inscriptions on the other two boards.

The blank of Fig. 1 can be conveniently made by punching a preprinted cardboard, by means known in the art.

The blank described above is assembled to build a complete sliding rule by using the following assembly steps:

- a) apply glue on auxiliary flap 20;
- b) fold auxiliary flap 20 around folding line 22 so that it lies upon board 12 and is glued on it, as shown on Fig. 2;
- c) fold board 14 around folding line 18, so that it lies upon board 12 (Fig. 2);
- d) apply glue on the opposite side of auxiliary flap 20, which has become visible after folding;
- e) fold board 10 onto board 12, and glue it onto glue-coated flap 20 (Fig. 3).

By means of the above described steps, which are obvious to be carried out for the man skilled in the art by means of folding-gluing machines, so that a detailed description is not necessary, an assembled article as shown on Fig. 4 is obtained. The article thus obtained can be supplied as such to the user, who, before use, will have to tear off the intermediate area along perforated lines 24, 26, thus freeing board 14, which can now slide between the other two boards 10 and 12, forming the sheath of the sliding rule. The portion to be torn away has the further advantage that it can act a warranty seal, and assure the user that the sliding rule is actually new from factory. As an alternative, when such function of warranty seal is not desired, the article can be subjected to a further shearing step to remove such intermediate area.

Flap 20, which is sandwiched between boards 10 and 12, acts as a reinforcement and a spacer between opposite walls of the sheath, to make the sliding of sliding tablet 14 easier.

The step of folding board 14 onto board 12 does not generate appreciable cost increases with respect to the prior art, and is easy to implement within the usual performance of known folding-gluing machines, while the step of manual insertion of the sliding tablet into the sheath totally eliminated.

Fig. 5 shows a cardboard blank for the manufacture of a sliding rule according to a second embodiment of the invention. It substantially comprises three boards 30, 32, 34, integrally joined together end to end. Board 30 has windows 31 and is similar to board 10 of Fig. 1. Board 32, also cut

with windows 33, has lateral auxiliary flaps 36, 38, integrally extending beyond the width of board 30. Dashed folding lines are shown with 40 between boards 30 and 32, and with 42, 44 between board 32 and lateral flaps 36, 38. Finally, from the opposite side of board 32 an intermediate area 46 extends integrally, and further extends integrally with board 34, with perforated lines 48, 50 which define it respectively on the side of board 32 and on the side of board 34. A folding line 52 is scored along the midline of intermediate area 46. Board 34 is as long as boards 30 and 32, but is appreciably narrower, and, more exactly, it is slightly narrower than the width of the central area of board 32, minus the total of the widths of flaps 36, 38. Boards 30, 32 and 34 bear desired inscriptions similarly to the first embodiment.

Similarly to the first embodiment, the blank described above is assembled to build a complete sliding rule by means of the following assembly steps:

- a) apply glue on auxiliary flaps 36, 38;
- b) fold auxiliary flaps 36, 38 around respective folding lines 42, 44, so that they lie upon board 32 and are glued on it, as shown on Fig. 6;
- c) fold board 34 around folding line 52, so that it lies upon board 32 (Fig. 7);
- d) apply glue on the opposite side of auxiliary flaps 36, 38, which have become visible after folding;
- e) fold board 30 onto board 32, and glue it onto glue-coated flaps 36, 38.

The second embodiment has the same features and advantages as the first, but it also has the added advantage that it has symmetrical spacers beside the tablet sliding within the two outside boards, and moreover it has a travel stop for the movement of the sliding tablet during use, the stop being the joint between boards 30 and 32. Use is identical with the first embodiment. The user will have, also in this case, to tear away the intermediate area 46 along perforated lines 48, 50.

Claims

1. A sliding rule for conversion tables, directories and the like, comprising a flat, window-bearing sheath of a stiff material, in which a sliding tablet of the same material is received, the sheath and the sliding tablet bearing correlated inscriptions or pictures, characterized in that it is made from a single blank of said stiff material, comprising a first and a second board (10, 12; 30, 32), of which at least one has windows, integrally joined and folded one upon the other and laterally bonded to form said sheath, and a third board (14; 34) which is end-joined to said second board through

an intermediate area (23; 48), and is folded between said first and second board around a folding line (18; 52) at the midline of said intermediate area, the intermediate area being removed for using the sliding rule, said third board acting as sliding tablet. 5

2. The sliding rule of claim 1, characterized in that said first and second boards (10, 12) are joined along a side, so that the blank of three boards is L-shaped, and are bonded on the opposite side. 10

3. The sliding rule of claim 1, characterized in that said first and second boards (30, 32) are joined at their ends, and are bonded on both sides, the third board being joined to the second board at the other end. 15

4. The sliding rule of any of claims 1 to 3, characterized in that said first and second boards (10, 12; 30, 32) are laterally bonded by means of glue. 20

5. The sliding rule of any of claims 1 to 4, characterized in that said second board (12) has a lateral flap (20) which is folded and sticking to the board to act as reinforcement and spacer.

6. The sliding rule of claim 5, characterized in that said second board (32) has lateral flaps (36, 38) which are folded and sticking to the board to act as reinforcements and spacers. 25

7. The sliding rule of one of claims 5 or 6, characterized in that each of said folded lateral flaps are glued to the second board (12; 32). 30

8. The sliding rule of one of claims 1 to 7, characterized in that said intermediate area is bounded by weakened lines (24, 26; 48; 50) for allowing the intermediate area to be torn away to free said third board. 35

9. A blank for the manufacture of a sliding rule according to any of claims 1 to 8.

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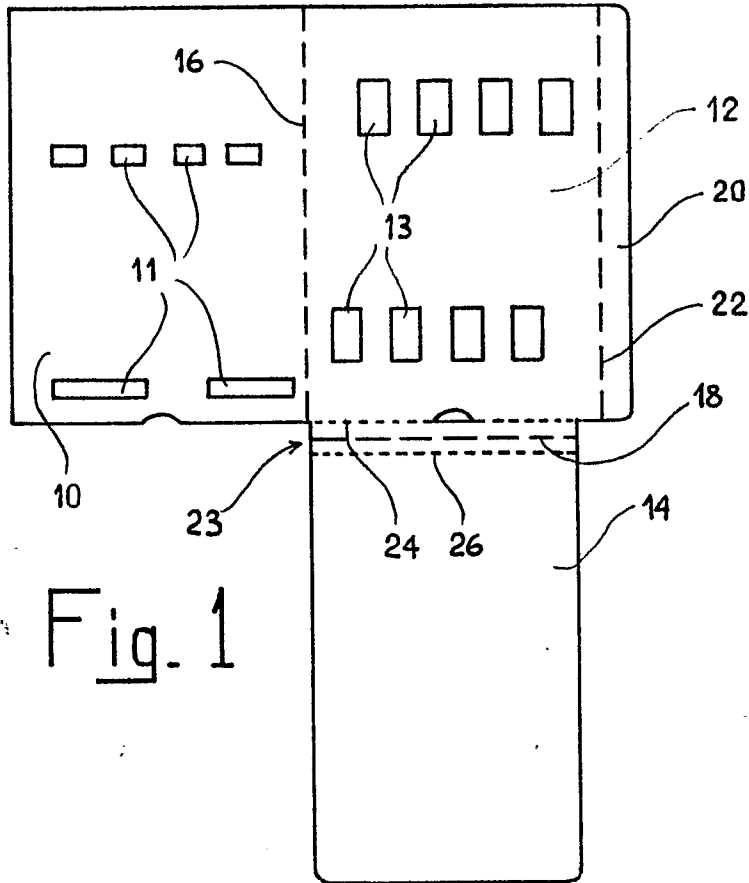


Fig. 1

Fig. 3

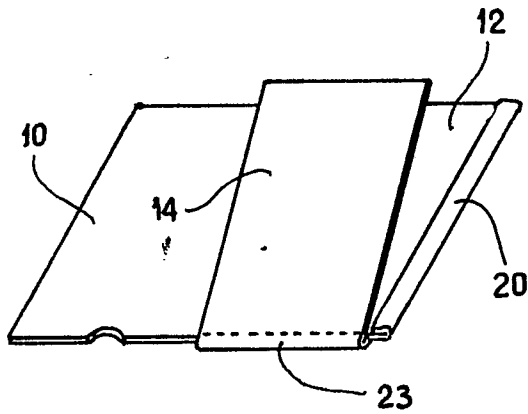
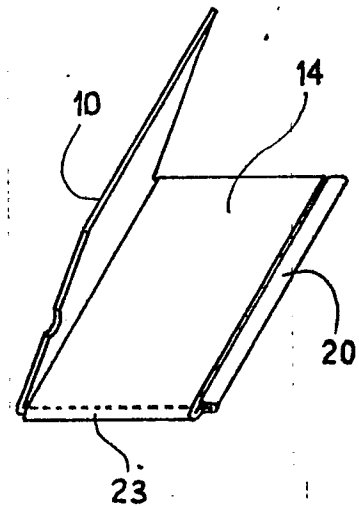


Fig. 2

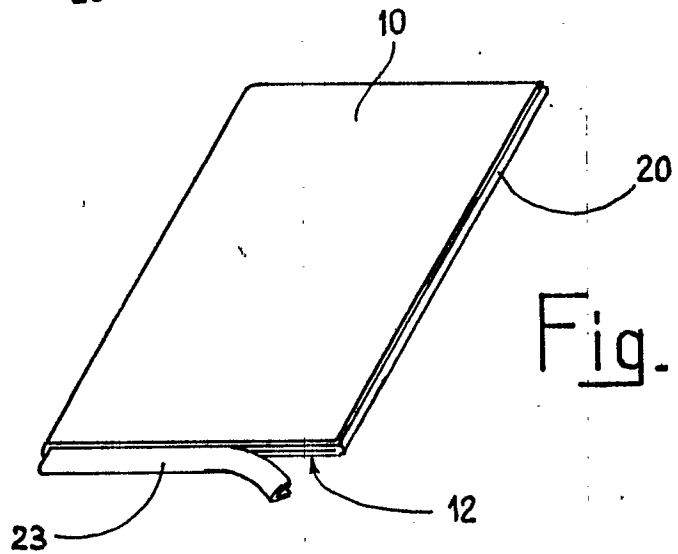


Fig. 4

