June 23, 1925. 1,542,879

J. E. HIRES

SCORING AND CUTTING RULE

Filed Dec. 15, 1923

Fig. 1.

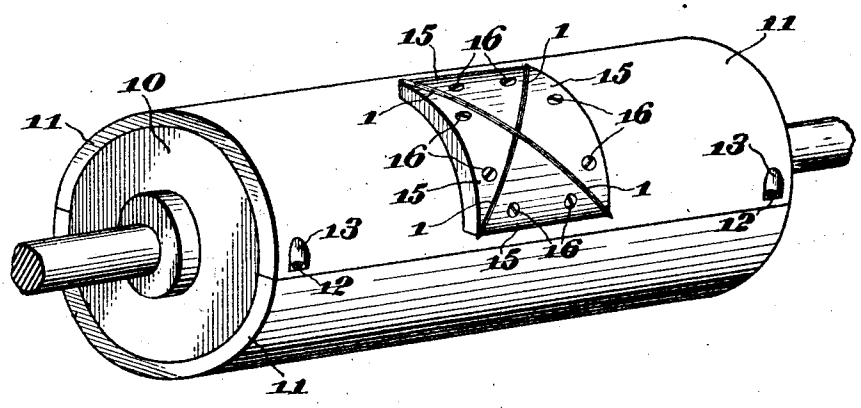


Fig. 2.

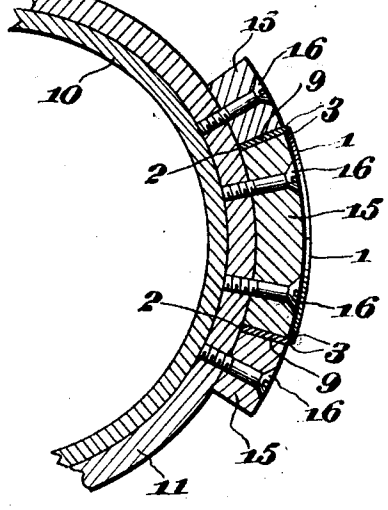


Fig. 3.

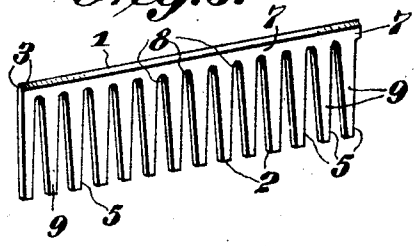
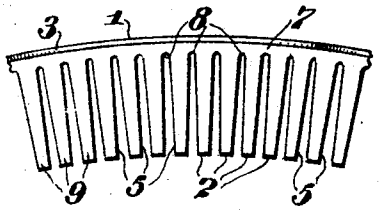


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN EDGAR HIRES, OF LANGHORNE, PENNSYLVANIA, ASSIGNOR TO AUTOMATIC MACHINERY AND EQUIPMENT COMPANY, A CORPORATION OF DELAWARE.

SCORING AND CUTTING RULE.

Application filed December 15, 1923. Serial No. 680,794.

To all whom it may concern:

Be it known that I, JOHN EDGAR HIRES, a citizen of the United States, and a resident of Langhorne, county of Bucks, and State of Pennsylvania, have invented certain new and useful Improvements in Scoring and Cutting Rules, of which the following is a specification, reference being had to the accompanying drawing.

My invention relates to scoring and cutting rules employed, in association with a suitable machine, for scoring or cutting sheets of cardboard or the like.

It is advantageous in the scoring or cutting of cardboard or like material to employ a machine comprising a bed or platen and a revoluble roll or cylinder adjacent thereto upon which are disposed metallic strips or rules the edges of which project slightly above the surface of the cylinder so that when the cylinder is revolved and the cardboard or other material fed between it and the platen, the rules impress on the cardboard scores or marks to facilitate the subsequent folding of the cardboard or, under certain conditions, and by suitable adjustment of the machine, cut entirely through the cardboard and thus sever the same into the desired shapes. Machines of this general character are ordinarily so arranged as to permit the board to be fed continuously from a roll instead of intermittently in the form of single sheets which is of advantage from the standpoint of economy and for other reasons.

It is customary in machines of this general character to support the metallic rules or strips on the cylinder by means of wooden blocks or forms curved in conformity with the cylinder and operatively attached thereto by screws or the like, these blocks being cut to the desired shape and positioned on opposite sides of the rules so as to hold the latter in position with the scoring or cutting edges of the rules projecting slightly above the outer surface of the blocks and the opposite or inner edges of the rules resting on the surface of the cylinder. Furthermore, in order to produce scores or cuts of even depth in the cardboard it is requisite that all points on the scoring edge of the rules be at exactly the same distance from the axis of the revolution of the cylinder and it has thus been customary to cut the rules from thin sheet metal in such shapes as to effect this result. This method of forming the rules is open to numerous objections among which may be mentioned the time and labor involved in preparing and fitting special rules for each particular job and the waste of material due to the cutting of the curved rules from the ordinarily rectangular sheets of metal.

The principal object of my invention is to provide a scoring or cutting rule which may be made up initially in straight strips of any desired length which may thereafter be cut up into shorter sections if required and bent into suitable shapes to conform to the surface of the cylinder on which it is to be supported and thus readily arranged thereon in association with the wooden blocking on other support to produce the desired pattern on the cardboard and which, when so arranged and supported, will present a scoring or cutting edge all points of which are equidistant from the axis of the cylinder. My invention further includes such other objects and novel features to which reference is hereinafter more specifically made or which will be apparent from the accompanying drawing forming a part hereof.

In the said drawing in which I have illustrated one form of my invention, Fig. 1 is a perspective view of the cylinder of a scoring machine showing the ordinary method of supporting the rules thereon, the latter, in this instance, being arranged so as to form an X upon the cardboard; Fig. 2 is an enlarged fragmentary transverse section on the line 2—2 in Fig. 1; Fig. 3 is a view in perspective of a fragment of my improved rule prior to its being bent into conformity with the surface of the roll and Fig. 4 is a view in side elevation of a fragment of the rule after it has been bent to conform to the roll but before being positioned thereon. Like numerals are used to indicate the same parts in the several figures.

My improved rule in its preferred embodiment and as best shown in Fig. 3 consists of a strip of sheet metal of suitable thickness and of any desired length having parallel side edges respectively designated as 1 and 2, the former forming the scoring or cutting edge and the latter the inner edge which rests against the roll when the rule is positioned thereon, and to facilitate the scoring or cutting operation the sides of the strip adjacent the edge 1 may be beveled as at

3—3 by grinding or otherwise so as to suitably sharpen the edge.

In practice the rule is ordinarily about one inch in width between the edges 1 and 2, although of course this width may be varied as desired, and is provided with a series of preferably similar and equidistantly spaced notches or indentations 5 extending inwardly from the edge 2 toward the edge 1 and terminating more or less adjacent to the latter edge so as to leave a relatively narrow uninterrupted strip of metal 7 in the rear of the said edge. The notches or indentations may be of any desired form but in the preferred embodiment of the invention these notches are of narrow V-shape with their closed ends slightly rounded or, in other words, the sides of each notch are arranged to converge slightly toward the closed end of the notch but not sufficiently to intersect at that end and are there connected by a curved fillet or edge 8. The formation of the notches in the manner aforesaid results in the provision of a plurality of spaced fingers or tongues 9 extending from the strip of solid metal 7 in the rear of the outer or scoring edge 1 and terminating at the edge 2, each of these fingers having substantially the profile of a narrow truncated pyramid with its base disposed adjacent the solid metal in the rear of the scoring edge.

It will be understood that in the manufacture of my improved rules the same are ordinarily punched or stamped from sheets of metal of suitable thickness, conveniently by a single operation and in convenient lengths, after which the bevels at the scoring edge may be formed by grinding or in any other suitable way. As the rules are initially formed in straight lengths it will be apparent that the same can be manufactured very economically and with practically no waste of the material from which they are stamped as the said material is ordinarily in the form of rectangular sheets.

The rules manufactured as aforesaid or in any other suitable way are sold to the consumer in straight lengths and may be utilized by him for the purpose of scoring or cutting cardboard in the manner now to be described. As hitherto stated, the scoring machines for use with which the rules are particularly suitable are ordinarily provided with a scoring roll 10 suitably driven to revolve adjacent a bed or platen (not shown). Conveniently this roll is surrounded by a removable two part metallic shell 11 the halves of which may be rigidly operatively secured together about the roll by screws or bolts 12 whose heads are disposed in countersinks 13 so as to lie below the outer surface of the shell. When it is desired to produce a particular scored pattern on the cardboard or other material, a suitable quantity of the initially straight rules is taken from stock, cut up into the requisite lengths to form the pattern and suitably arranged on the shell and secured in position thereon by wooden blocks or the like 15, the pieces of rule being disposed between the adjacent edges of the blocks which are then firmly fastened to the cylinder by screws 16 threaded thereinto or in any other suitable way, it being understood that the inner and outer faces of the blocks are curved to conform with the surface of the cylinder, that the height of the blocks is a little less than the width of the rule so that the scoring edge thereof will project above the outer surface of the blocks and that the side edges of the blocks are so formed as to snugly abut the side faces of the rule and retain the rule in proper position. In order to firmly seat the inner edges 2 of the rules on the surface of the shell or, in other words, to bring the free ends of all of the tongues 9 into contact therewith, the rules during the operation of adjusting them on the cylinder are suitably bent in a direction away from the scoring edge so as to bring them into exact conformity with the curvature of the surface on which they are intended to rest and by reason of the peculiar formation of my improved rule this bending operation may be very easily and rapidly accomplished, thereby enabling the rules to be readily brought to the desired form and greatly facilitating their arrangement on the roll in a manner to produce the required pattern on the cardboard. In Fig. 4 I have shown a short piece of my improved rule after the same has been bent to conform with the roll but before being placed thereon.

It will thus be apparent that by the present invention I have provided a scoring or cutting rule which may be readily utilized by the user to produce any desired pattern on the scoring roll of the scoring machine in a minimum amount of time and without waste of material and that by reason of the facility with which the rule may bend to conform with the surface of the roll all points on the scoring or cutting edge of the rule may be very readily disposed at an equal distance from the axis of rotation of the roll with resulting evenness of impression on the cardboard, while at all times the fingers or tongues 9 with their free ends resting on the roll afford a positive and adequate support to the scoring edge.

While I have herein described with considerable particularity and in the accompanying drawing illustrated a preferred embodiment of my invention, I do not thereby desire or intend to limit myself specifically thereto as modifications may be made in the details of the device and particularly the form or disposition of the notches or of the fingers may be varied as desired, without

departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

1. A scoring or cutting rule comprising a strip of metal having a continuous scoring edge and a plurality of indentations extending inwardly from the opposite edge.

2. A scoring or cutting rule comprising a straight strip of metal having a continuous scoring edge and a plurality of spaced indentations extending inwardly from the opposite edge.

3. A scoring or cutting edge comprising a straight strip of metal having a continuous scoring edge and a plurality of evenly spaced indentations extending inwardly from the opposite edge and terminating short of the scoring edge.

4. A scoring or cutting rule comprising a strip of metal having a continuous scoring edge, an uninterrupted body of metal adjacent the scoring edge and a plurality of evenly spaced V-shaped notches extending inwardly from the opposite edge and terminating short of the scoring edge.

5. A scoring or cutting rule formed of sheet metal and having parallel longitudinal edges, one of said edges forming a scoring edge and a plurality of evenly spaced notches having converging sides extending inwardly from the other edge and terminating short of the scoring edge.

6. A scoring or cutting rule comprising a continuous scoring edge and a plurality of spaced fingers disposed in the rear of the scoring edge and extending away from said edge.

7. A scoring or cutting rule comprising a sharpened scoring edge and a plurality of spaced and separated fingers each having converging side edges disposed in the rear of said edge and extending substantially normal thereto.

8. A scoring or cutting rule formed of sheet metal and comprising a continuous scoring edge and a plurality of separate fingers each of substantially V-shaped form disposed in the rear of said edge and extending substantially normal thereto in spaced relation with each other.

9. A scoring or cutting rule formed of sheet metal and having a continuous scoring edge and a plurality of substantially V-shaped separated and similar fingers disposed in the rear of said edge and extending substantially normal thereto, the free ends of all of said fingers respectively terminating at the same distance from the scoring edge.

In witness whereof, I have hereunto set my hand this 13th day of December, 1923.

JOHN EDGAR HIRES.