Jan. 2, 1923. 1,441,174.

J. ROSENBERG.

DEVICE FOR PRINTING INTERSECTING LINES.

ORIGINAL FILED JUNE 6, 1918.

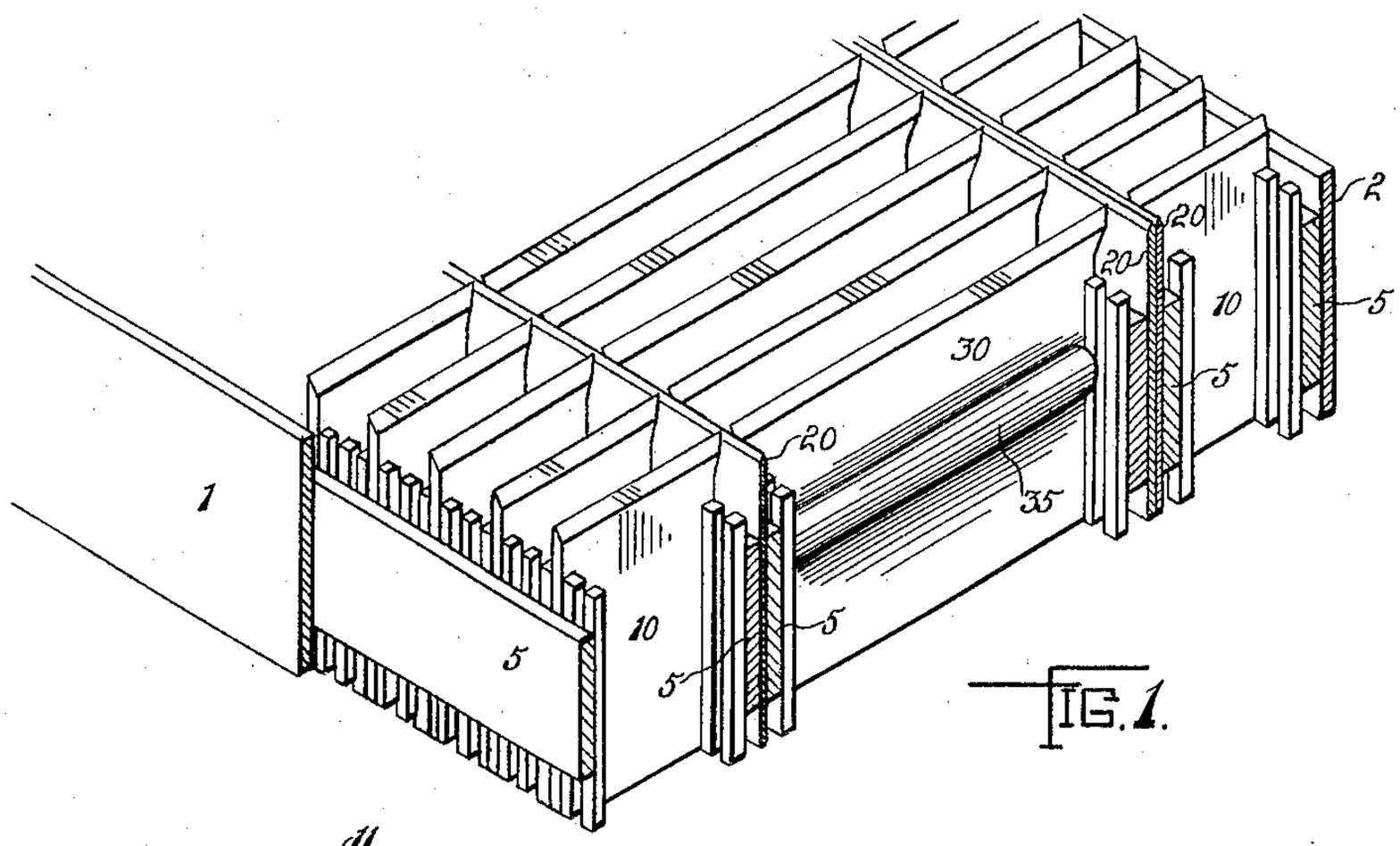

FIG. 1.

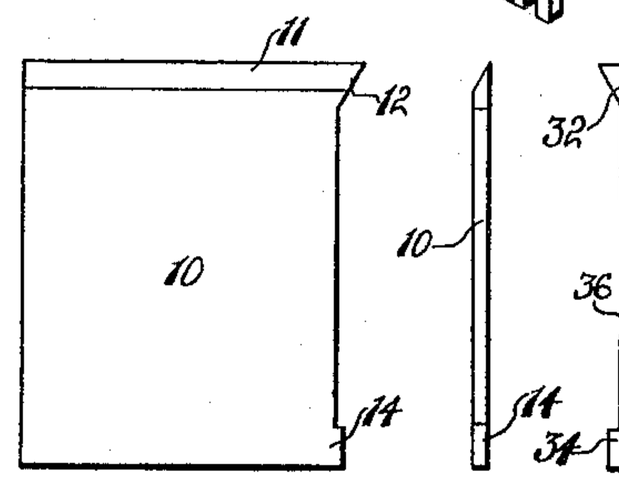

FIG. 2.

FIG. 3.

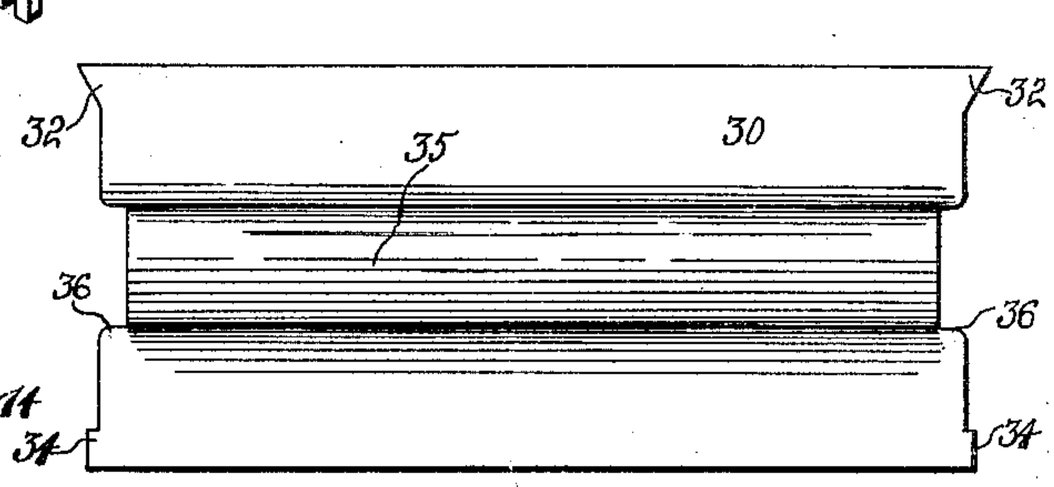

FIG. 4.

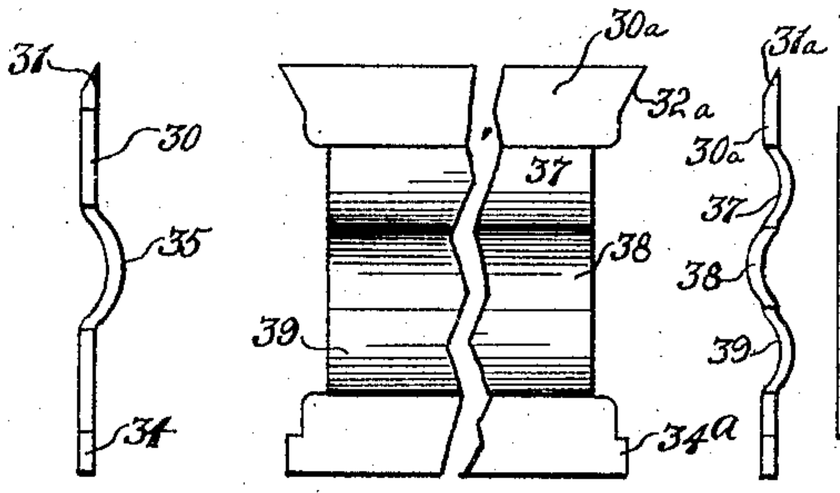

FIG. 5.

FIG. 6.

FIG 7

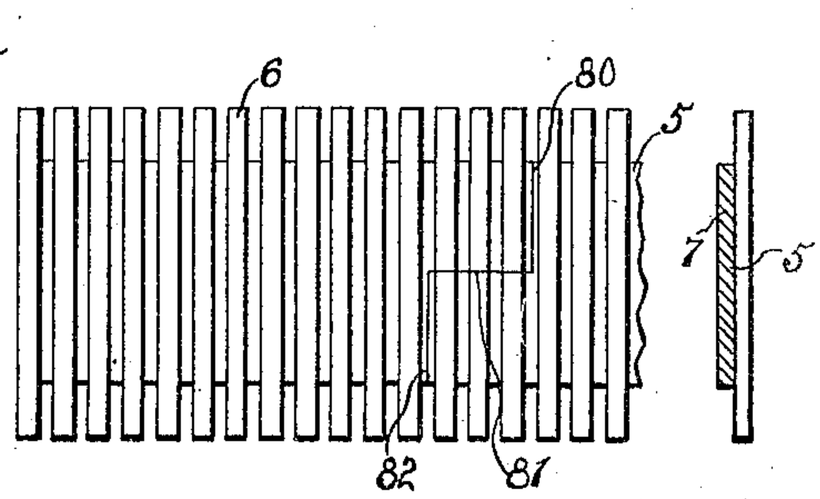

FIG. 8.

FIG. 9.

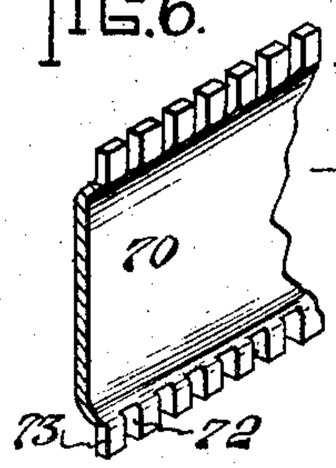

Fig. 10.

Inventor:
James Rosenberg,
By Baker Mackelvie. Attys.

Patented Jan. 2, 1923. 1,441,174

UNITED STATES PATENT OFFICE.

JAMES ROSENBERG, OF CLEVELAND, OHIO.

DEVICE FOR PRINTING INTERSECTING LINES.

Application filed June 6, 1918, Serial No. 238,445. Renewed April 17, 1922. Serial No. 553,916.

To all whom it may concern:

Be it known that I, JAMES ROSENBERG, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Devices for Printing Intersecting Lines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to rules and holding devices therefor, enabling the printing of intersecting or abutting lines, which may be arranged for a variety of rule forms having crossing or abutting lines closely adjoining each other.

This invention comprises improvements on the structures shown in my prior Patents Nos. 1,118,951 and 1,262,848, granted December 1, 1914, and April 16th, 1918, respectively. In those patents are shown printing rule holding members having a series of vertical grooves along the sides for positioning relatively transverse rules, the ends of which seat in such grooves. Among the objects of the present invention are the simplifying of the construction and assembling of such printing rules and holding members, the strengthening of the rules where the ordinary spring of metal causes bowing of the lines and the adaptation thereof to constructions capable of being cheaply manufactured.

Another object is to provide for the use of devices constructed along the principles of the inventions described and claimed in my prior patents and the association therewith of devices whereby I am enabled to print a still greater variety of ruled forms.

The above and other objects will become apparent in the following description, which refers to the drawings, the essential characteristics being summarized in the claims.

In the drawings, Fig. 1 is a perspective of a portion of a form partly in section, illustrating the use of my improved printing rules and the holding devices therefor; Figs. 2 and 3 are side and edge elevations respectively of an improved form of a short rule; Fig. 4 is a side elevation of an improved form of longer rule and Fig. 5 is an end elevation of the same; Figs. 6 and 7 are side and end elevations respectively of still another form of strengthened rule; Fig. 8 is a side elevation of one of the vertically grooved holding devices; Fig. 9 is a sectional end elevation of the same; Fig. 10 is a detail in perspective of the modified form of holding devices.

Referring to Fig. 1, 1 and 2 indicate side members or slugs serving as retainers for the form shown as assembled in this figure. Inside these side members are vertically slotted holding members 5, in the slots of which are fitted short transverse rules 10, each extending inwardly to another positioning device 5 and seating into the vertical grooves thereof. The positioning devices are shown as arranged back to back and between those of the lower portion of this figure is a plain flat rule 20, while between those of the upper portion of this figure are two of such rules 20 arranged side by side to print double line. Between the two innermost retaining members 5 are comparatively long transverse rules 30, the printing edge of which extends in close proximity with their printing edge of the rules 20.

Referring next to the short rules shown in Figs. 2 and 3, these figures illustrate one of the rules 10 which has a substantially flat body portion and a beveled upper edge 11 forming a printing line or edge. At the upper portion and extending along this edge, the rule has an overhanging lip 12, at the lower portion of the body rule is a lip 14, having a substantially square upper shoulder adapted to engage beneath a shoulder formed in the holding device 5.

The rule shown in Figs. 4 and 5 illustrate the construction of longer rules 30 whereby they are stiffened so that they may retain their true alignment and still be capable of convenient formation from a flat strip by pressing, rolling or stamping operations, thus facilitating their cheap manufacture, while overcoming the flexing tendency of metal which ordinarily causes bowing of line. These rules 30 are provided with a beveled edge 31 forming the printing line, while at their ends the overhanging lips 32 allow the printing edge to extend closer to the printing edge of adjacent rules positioned as are the rules 20. In Fig. 1, lips 34 interlock with the securing devices 5 as is hereinafter described. The method of strengthening the rib to prevent its bending laterally from the surface of the body of the rule is to provide a bead or offset rib extending along the rule cut short at each end,

leaving cut-away recesses over notches appearing in Fig. 4 at 36, whereby the ends of the bead or off-set portion may stop short of and stand within the ribs formed on the vertical rules and engaging the ends of the rule above and below the recess.

Such rules may be further strengthened as indicated in the modified form of the rules in Figs. 6 and 7. Here the rule is designated 30ª, having a beveled edge 31ª, overhanging lips 32ª and locking lips 34ª, while the intermediate portion of the body is off-set to form three beads 37, 38 and 39, the beads 37 and 39 extending in one direction past the normal plane of the rule, while the bead 38 protrudes in the other direction. The holding device is illustrated in Figs. 8 and 9 in which appear vertical ribs 6, integral with a longitudinally extending body 7 of narrower width than the length of the ribs 6, whereby the end of the rule may be thrust into the groove at the end of the ribs and be held in its vertical position.

The lips 14 or 34 engage beneath the lower edge of the body 7 while the bottoms of the grooves closely abut the ends of the rule, thus the rules fitted in these holding devices are prevented from moving upwardly.

In the case of the strengthened rules reinforced by the rib or bead formation, the beads are shorter than the body portion of the rule whereby they may extend outside the face of the ribs allowing the portion of the rule at each side of the beaded zone to engage between the ribs.

It will be noted that to construct the holding members 5 as above described, requires that these members be cut or milled from a single strip of metal by several milling operations. While this is a comparatively cheap and standardized process, I may still further cheapen the construction of these holding devices by forming them from flat strips such as those from which the rules 10 and 30 are formed, and form the holding slots and ribs by a stamping operation. Such construction is shown in Fig. 10, here the body portion 70 is pressed so that the edges thereof are bent laterally and then into a parallel relation with the body 70 and at the same time notches 72 are punched therein leaving parallel fingers 73 corresponding to the ribs 7. Such a rule by reason of the body portion being bent at each edge is comparatively stiff and resists bending while presenting surfaces for engaging the ends of the rules near the top and bottom thereof, holding them vertically with the same effectiveness as the ribs 7 of the holding device previously described. The lips such as 14 and 34 may extend beneath the body portion through the slots 72, thus preventing relative or downward movement of the rules.

In the printing of the comparatively extended forms, it is sometimes necessary to use a plurality of the holding members 5 placed end to end. To accomplish this without difficulty of displacement and also to secure lengthwise extension while retaining even spacing of the ribs 7, I may cut some of these rules as indicated by line 80, 81 and 82, Fig. 8, thus providing both horizontal and vertical coacting shoulders to cause the true alignment of the body of the holding members, as well as the equal spacing of the ribs on such adjoining members.

From the foregoing description, it will be seen that I have provided means for printing a wide variety of ruled forms by rule constructions which may be conveniently and cheaply manufactured and readily standardized and capable of indefinite wear. An important characteristic of all the constructions described, is that the rules running in transverse directions are all interlocked with the holding members against lateral and relatively vertical displacement. By this feature I am enabled to effect a material saving of metal ordinarily used in printing ruled forms and this is particularly true by reason of the fact that I eliminate the use of filling in or spacer slugs usually required to hold the rules in position. The strengthening of long rules by the use of longitudinal beads eliminates even the necessity of bracing one of these rules by the other intermediate of their ends or by the use of blocks, as is ordinarily done whenever flat printing rules are too long to be rigid of themselves. I also effect a pronounced saving of labor by shortening the time required for the composition of the forms.

Having thus described my invention what I claim is:—

1. As a new article of manufacture, a printing rule having a body, the upper and lower portions of which lie in substantially the same plane, a strengthening bead pressed laterally from the plane of the body and stopping short of the ends of the body portion whereby such ends may be engaged by positioning shoulders which may not engage the bead.

2. A printing rule, having a body, the upper and lower portions of which lie in substantially the same plane, a strengthening bead pressed laterally from the body and extending longitudinally of the rule, the ends of the rule being cutaway across the beaded portions whereby the bead stops short of the ends of the rule, which ends are thereby adapted to engage parallel shoulders of retaining and positioning devices.

3. The combination of a printing rule, having a body, the upper and lower portions of the body lying substantially in the same plane, and having an intermediate longitudinally extending rib stopping short of

the ends of rule and members extending transversely of the rule and having vertical ribs and grooves adapted to engage the ends of the rule and position the same.

4. The combination with a printing rule, of transversely extending retaining devices comprising body members and transverse ribs and grooves formed thereon, said ribs extending past the edge of the body members and adapted to engage opposite sides of the ends of the rule.

5. The combination with a printing rule, of a retaining device therefor, comprising a longitudinally extending body member, ribs projecting above and below the body member, and toward the rule from one side thereof, said rule being formed of flat material of a thickness adapted to fit between said ribs, the end of the rule being adapted to abut the longitudinally extending members between the ribs.

6. The combination with printing rules, retaining devices therefor having longitudinally extending members, and ribs projecting from one side thereof, forming a series of parallel grooves, said longitudinally extending members being adapted to be placed back to back, forming in effect a channel along the top of the longitudinally extending member and between the ribs which project above said members, and printing rule extending parallel with said members and adapted to fit between the ribs and rest on the longitudinally extending members.

In testimony whereof, I hereunto affix my signature.

JAMES ROSENBERG.