No. 813,261. PATENTED FEB. 20, 1906.

G. H. VINING.

MEANS FOR PRODUCING FOLDING MATRICES.

APPLICATION FILED DEC. 9, 1904.

2 SHEETS—SHEET 1.

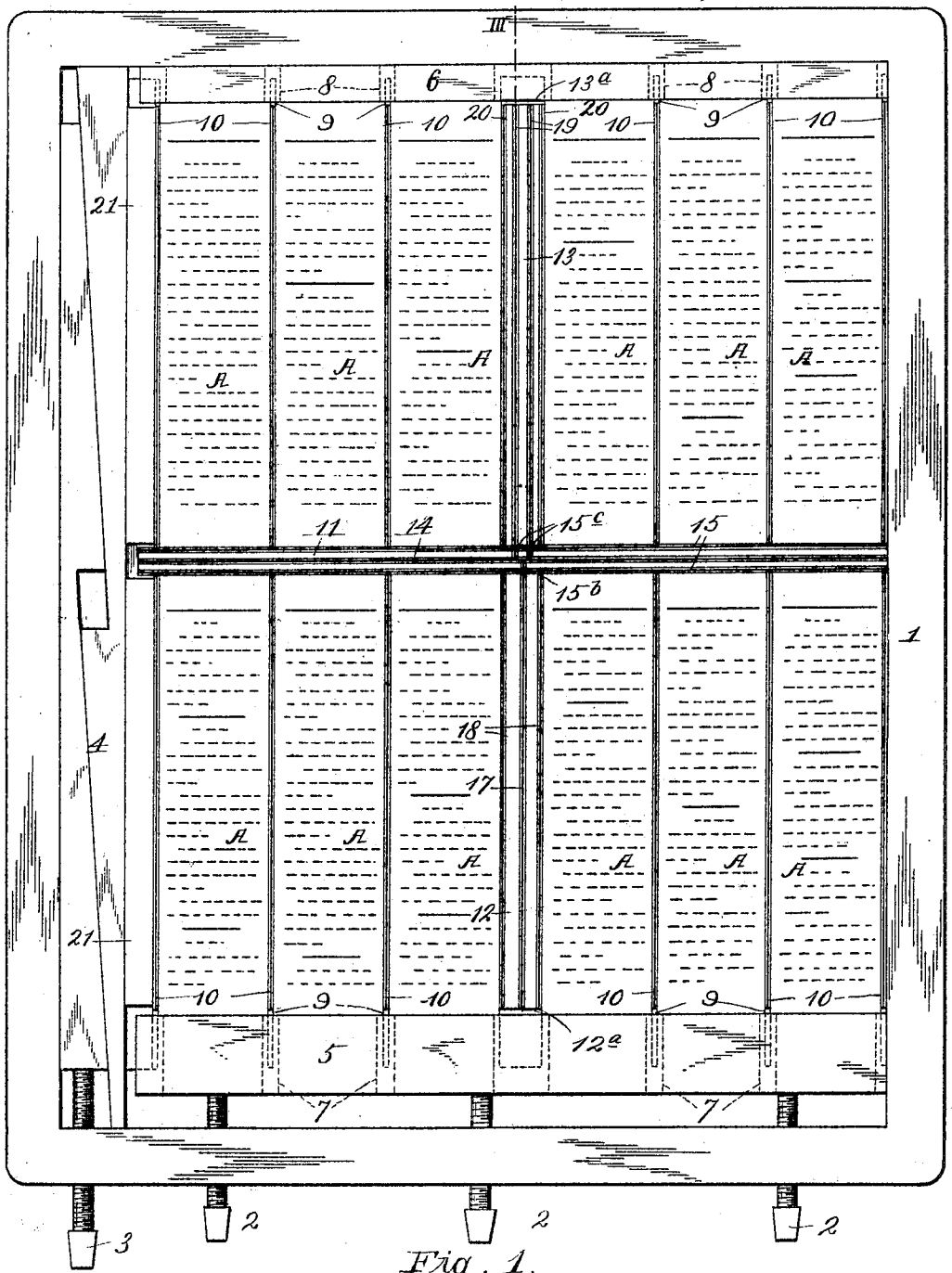


Fig. 1.

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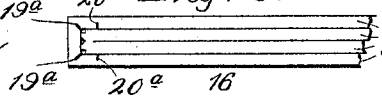
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Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 2.

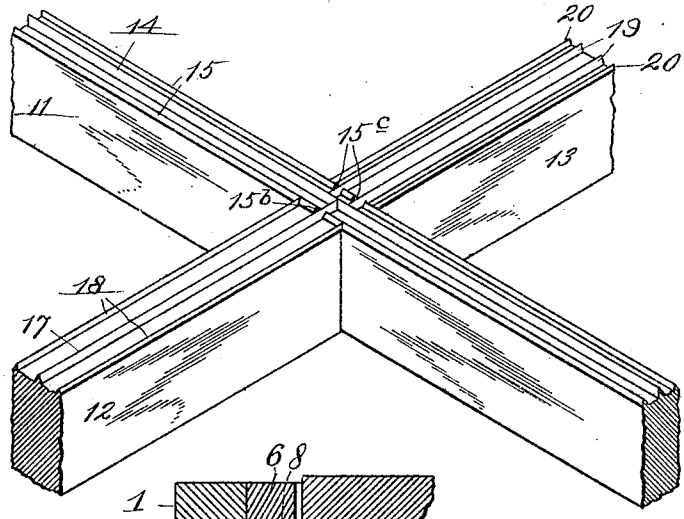


Fig. 3.

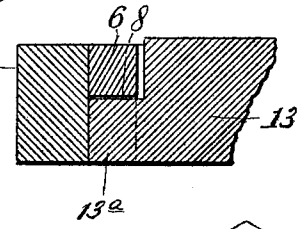
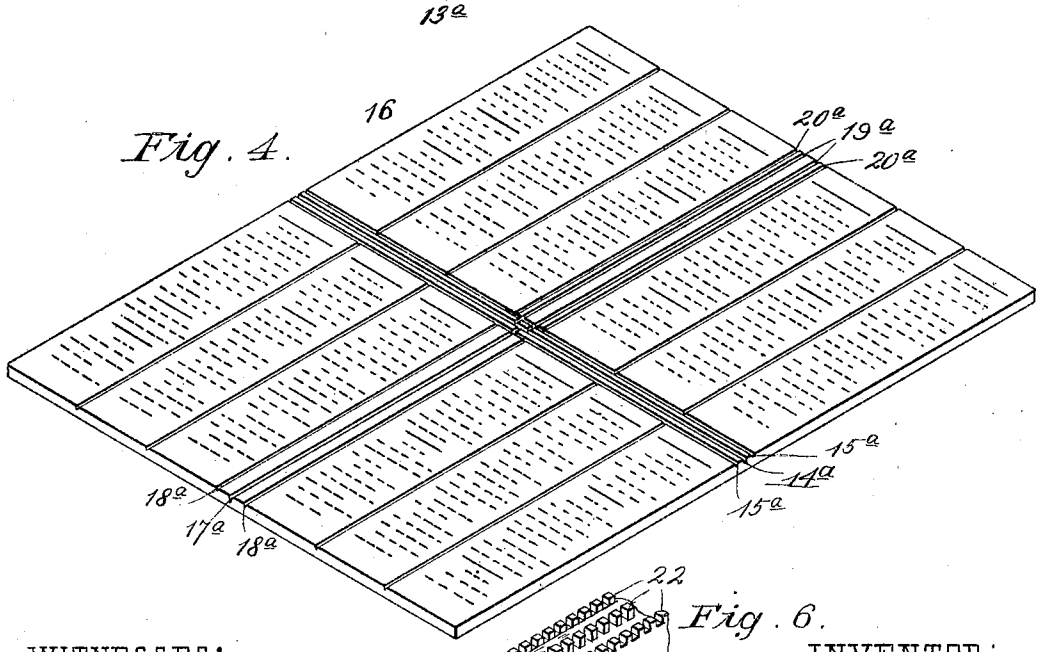


Fig. 4.



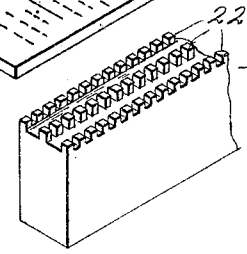


Fig. 6.

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UNITED STATES PATENT OFFICE.

GEORGE H. VINING, OF KANSAS CITY, MISSOURI, ASSIGNOR TO VINING'S NEWS BUREAU, OF KANSAS CITY, MISSOURI, A CORPORATION OF MISSOURI.

MEANS FOR PRODUCING FOLDING MATRICES.

No. 813,261. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed December 9, 1904. Serial No. 236,244.

To all whom it may concern:

Be it known that I, GEORGE H. VINING, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Means for Producing Folding Matrices, of which the following is a specification.

My invention relates to means for producing folding matrices; and my object is to produce paper matrices which may be folded to a convenient size for transit through the mails or by express. By folding the matrices they can be inclosed in smaller envelops and mailed at less cost than when they are in an unfolded condition. In producing matrices of this character means must be provided for preventing their type impressions from being either compressed or drawn out of shape when the matrices are folded. I provide said means in the form of folding grooves along which the matrices are folded and supplemental grooves paralleling said folding grooves. The folding grooves permit easy folding of the matrices, while the supplemental grooves take up any expansion or contraction which may result from said folding, and consequently prevent the type impressions from becoming distorted or disturbed.

In the accompanying drawings, which illustrate my invention, Figure 1 represents a plan view of a form of type containing means for producing folding matrices. Fig. 2 is a broken detail perspective view of the devices employed for forming the folding grooves and the supplemental grooves in matrices. Fig. 3 is a broken vertical section taken on line III of Fig. 1, showing the manner in which the outer end of one of my devices is held in position in the form of type. Fig. 4 is a detail perspective view of a matrix provided with folding grooves and supplemental grooves formed with my devices. Fig. 5 is an end view of a matrix folded made in accordance with my invention. Fig. 6 is a broken modification of one of my devices for producing perforations instead of grooves in the matrices.

In said drawings, 1 designates a chase provided at one end with adjusting-screws 2 and 3, respectively, the latter of which bears against one end of a quoin 4, located at one side of the chase, while the former bears against one side of a foot-bar 5, located at one end of said chase. 6 designates a head-bar bearing against the inner surface of the opposite end of the chase. Both of said bars are provided at their under sides with transverse grooves 7 and 8, respectively, the grooves on one bar being arranged in alinement with those on the other for the reception of the reduced ends 9 of column-rules 10, employed in spacing types A in the usual manner. Said types are forced into close contact with each other and the column-rules by means of quoin 4 and foot-bar 5, which are operated by adjusting-screws 2 and 3.

All of the above parts except head-bar 6 are in general use and require no further explanation.

My devices for producing folding matrices comprise three members 11, 12, and 13, arranged in the form of a cross, dividing the columns of type into four equal portions, as shown in Fig. 1. Member 11, which is oblong in cross-section, is arranged transversely in the chase and provided at its upper surface with a centrally-disposed longitudinal rib 14 and two marginal ribs 15, paralleling rib 14. All of said ribs are of inverted-V form in cross-section, as shown in Fig. 2. Rib 14 is slightly higher than ribs 15 and more than type-high in order to form a transverse folding groove 14^a in matrix 16, along which the latter may be readily folded. Ribs 15 form supplemental grooves 15^a in the matrix, which take up all expansion and contraction resulting from folding said matrix, and thus prevent the distortion of the type impressions in the latter. Member 12, which is similar in shape to member 11, is slightly wider than the latter and abuts at its inner end against same, while its outer reduced end 12^a underlaps the central grooved portion of the foot-bar, as shown in Figs. 1 and 3. Said member 12 is provided at its upper surface with a centrally-disposed longitudinal rib 17 and two marginal ribs 18, paralleling rib 17. Rib 17 is slightly longer at one end than its companions in order to abut against rib 14, a notch 15^b being left in the adjacent rib 15 for this purpose, and is equal in height to rib 14, so that it will form a folding groove 17^a, communicating with groove 14^a in the matrix.

Ribs 18 form supplemental grooves 18ª in the matrix, which like grooves 15 take up all expansion or contraction resulting from folding said matrix the second time. Ribs 17 and 18 like ribs 14 and 15 are of inverted-V form in cross-section. Member 13 is of equal thickness and arranged in alinement with member 12. It has a reduced end 13ª underlapping the grooved central portion of head-bars 7 and abuts at its inner end against one side of member 11 as shown in Fig. 1. It is provided at its upper surface with a pair of longitudinal ribs 19 and two marginal ribs 20, paralleling the former. Ribs 19 are slightly longer at one end than their companions in order to abut against rib 14, notches 15ᶜ being left in the adjacent rib 15 for this purpose. The upper surfaces of ribs 19 are flush with those of ribs 14–17 in order to form a pair of folding grooves 19ª in the matrix communicating with groove 14. Ribs 20 form supplemental grooves 20ª in the matrix, which assist grooves 18ª in taking up any expansion or contraction resulting from folding the matrix the second time. By providing the matrix with a pair of folding grooves 19ª the four thicknesses 16ª formed by folding the matrix the second time will lie close together, as shown in Fig. 5.

21 designates a pair of filling-strips interposed between wedge 4 and the adjacent column-rule to prevent said wedge from contacting with the adjacent end of member 11, and thus preventing the latter from moving longitudinally with the type when screws 2 are adjusted inwardly.

By introducing head-bar 6 and filling-strips 21 into the form members 11, 12, and 13 will not interfere with the operation of forcing the types into close contact with each other and the column-rules, because grooves 8 in the head-bar permit the column-rules to move forward until the types have been forced tightly into contact with each other and said head-bar, while the filling-strips prevent the quoin from contacting with the adjacent end of member 11 when said quoin is expanded to force the types tightly into contact with each other and the column-rules.

When preparing small matrices requiring but a single fold, members 12 and 13 are dispensed with.

If desired, the folding ribs and supplemental ribs may be dispensed with by providing the devices with rows of studs 22, as shown in Fig. 6. Said studs may be of sufficient length to penetrate the matrix; but if depressions are found in practice to answer the purpose said studs will be made shorter than the thickness of the matrix.

A matrix made upon a form like that shown in Fig. 1 may be cut into four parts preparatory to casting stereotype-plates therefrom, or, if preferred, the stereotype-plates may be cast from the complete matrix and then either sawed along the grooves or parallel therewith.

While I have shown but three members in the present drawings containing groove-forming elements, it is obvious that this number may be increased or diminished in accordance with the number of times it is desired to fold the matrices. I also reserve the right to make such changes as properly fall within the scope of the appended claims.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a form of type, of a member arranged in said form, and a series of ribs on said member for rendering matrices foldable.

2. The combination with a form of type, of a plurality of members suitably arranged in said form, and means on said members arranged parallel to each other for rendering matrices foldable.

3. The combination with a form of type, of a member arranged transversely therein, and longitudinal ribs on the upper central surface of said member, for rendering matrices foldable.

4. The combination with a form of type, of a member arranged transversely therein, a longitudinal rib on the upper surface of said member, a second member arranged in said form, a longitudinal rib on the upper surface of said second member abutting at one end against one side of the rib on the first-mentioned member, a third member arranged in the form in alinement with the second member, and a pair of longitudinal ribs on the upper surface of said third member abutting at their inner ends against one side of the rib on the first-mentioned member.

5. The combination with a form of type, of a member arranged transversely therein, parallel ribs on the upper surface of said member, a second member arranged in the form, abutting at one end against one side of the first-mentioned member, parallel ribs on the upper surface of said second member, a third member arranged in the form in alinement with the second member abutting at its inner end against one side of the first-mentioned member, and a plurality of parallel ribs on the upper surface of said third member.

6. The combination with a form of type, of a member arranged in said form, and a rib on said member more than type-high for rendering matrices foldable.

7. The combination with a form of type, of a grooved head-bar interposed between the type and the chase of said form, of members arranged in the form of a cross one of said members having a reduced end loosely fitting into one of the grooves of the head-bar, and ribs on the upper surfaces of said members.

8. The combination with a form of type, and an adjustable foot-bar located at one end of the form and provided with transverse grooves, a head-bar located at the opposite end of the form and provided with transverse grooves, a transverse member arranged in the form, means on said member for rendering matrices foldable, and column-rules arranged with their adjacent ends abutting against the transverse member and their opposite ends in the grooves of the foot-bar and the head-bar.

9. The combination with a form of type and a quoin located at one side thereof, of a transverse member arranged in the form, means on said member for rendering matrices foldable, and filling-strips terminating at opposite sides of the transverse member and interposed between the type and the quoin so that the latter cannot contact with the adjacent end of the transverse member.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORGE H. VINING.

Witnesses:
E. R. THRELKELD,
F. G. FISCHER.