

Nov. 9, 1926.

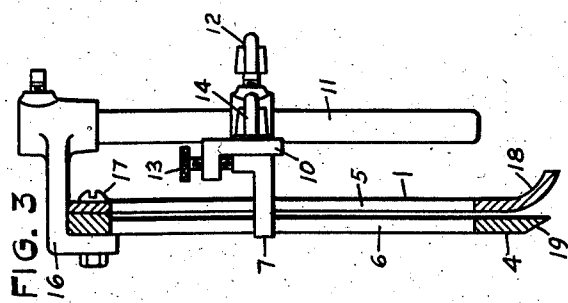
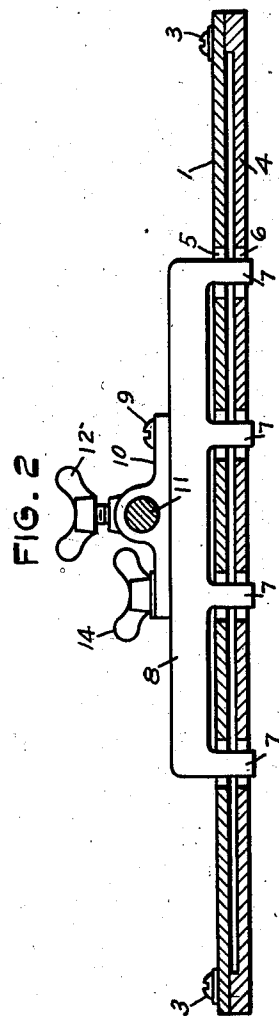
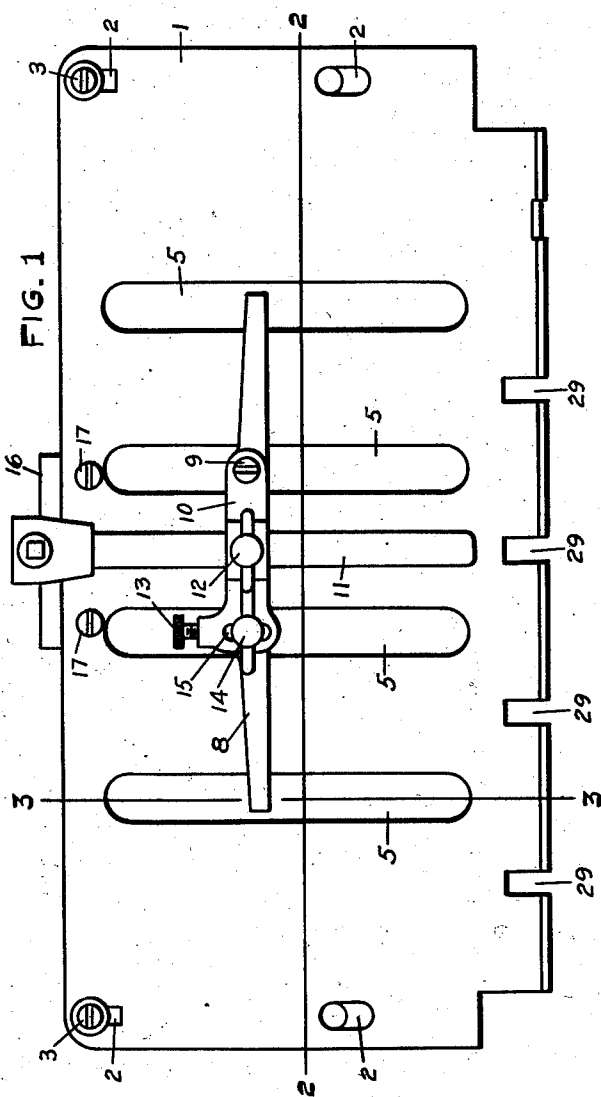
1,606,459

R. J. WATERWORTH

ALUMINUM PLATE FOR FOLDING MACHINES

Filed Jan. 28, 1925

2 Sheets-Sheet 1



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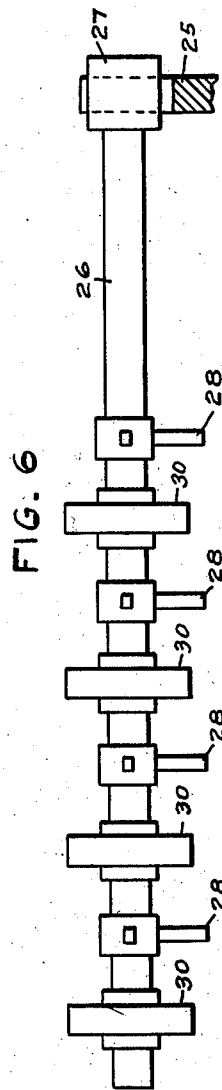
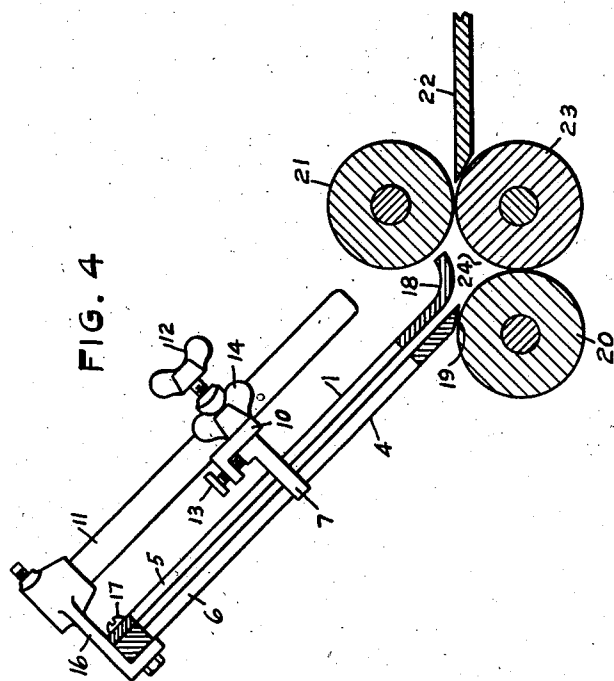
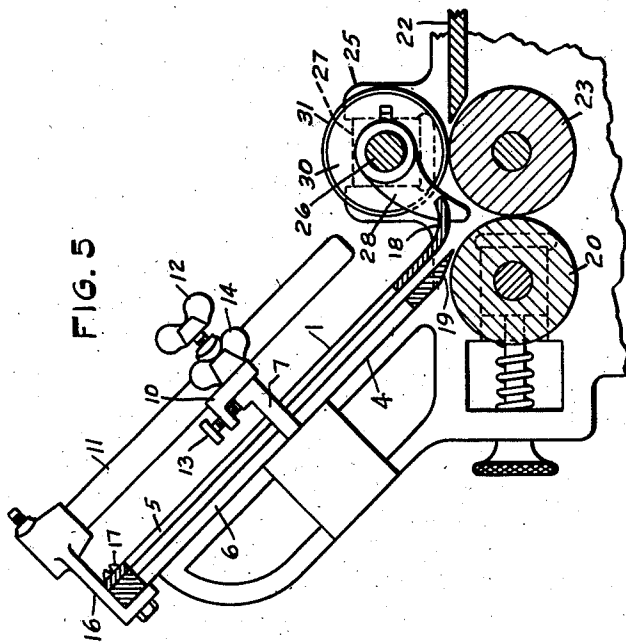
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ALUMINUM PLATE FOR FOLDING MACHINES

Filed Jan. 28, 1925

2 Sheets-Sheet 2



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Patented Nov. 9, 1926.

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UNITED STATES PATENT OFFICE.

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ALUMINUM PLATE FOR FOLDING MACHINES.

Application filed January 28, 1925. Serial No. 5,930.

My invention relates to folding machines and in particular to guiding mechanism used in connection therewith.

It is the object of my invention to provide guiding plates which will not be subject to the static electricity generated in the sheets by the rapid handling, which may be easily and cheaply manufactured, and which may be easily adjusted in position.

It is an additional object of my invention to provide such plates so arranged that they will accommodate guiding fingers which fingers are substituted for the continuous feed roll when the guiding plates are eliminated from the operation of the machine.

Referring to the drawings:

Figure 1 is a plan view of the guiding plates;

Figure 2 is a section on the line 2—2 of

Figure 1;

Figure 3 is a section on the line 3—3 of Figure 1;

Figure 4 is an end elevation of the guiding plates with the rolls in section;

Figure 5 is a similar view with the guiding fingers and independent guiding rolls in position in the place of the solid guiding roll shown in Figure 4; and

Figure 6 is a plan view of the substitute shaft of the guiding fingers and independent guiding rolls.

It will be understood that in a folding machine of this character the sheets are handled at the rate of from eight to twenty thousand sheets per hour. A very large amount of static electricity is thus set up in the machine and paper with the result that the paper sticks and the guiding plates prevent the sheets from traveling to the full extent of the throw and engaging with the stop fingers. This throws out all of the calculations as to adjustment and accuracy and prevents the folding of the sheets as desired.

I have found that by the use of aluminum plates that I am enabled to eliminate this difficulty due to static electricity entirely. The sheets, no matter how highly charged pass over the plates to the full extent of the desired throw. This has made possible for the first time, the use of very high rates of folding with the accompanying economy in operation as well as construction. The measure of a folder's usefulness in the trade is not only its mechanical perfection and

operation, but the speed with which the work can be turned out in order to meet modern competitive conditions as to cost and service in the printing industry and in effecting mailings in large quantities of folders and the like.

Referring to the drawings in detail, it will be observed that I have provided an upper plate 1 provided with slots 2 at the four corners through which project set screws 3 so that the upper plate may be adjusted with respect to the lower plate 4. Both the upper and lower plates are provided with coinciding slots 5 and 6 through which project stop fingers 7. These stop fingers are carried on a bar 8 which is pivotally mounted on the bolt 9 to a suspending bracket 10. This bracket is pivotally mounted on the rod 11 which projects over the plates. This rod is adjusted in position by the set screw 12. Thus the positioning of the bracket 10 on a rod 11 will determine the position of the fingers 7 in slots 5 and 6. The pivoting of the bar 8 on the bracket 10 through the bolt 9 is for the purpose of permitting the adjustment about the bolt 9 as a center. This adjustment is effected through the transverse set screw 13 working in the end of the bracket 10 which determines the degree of movement about the bolt 9. The fixing of the adjustment after it has once been determined is effected through the set screw 14. Thus it is possible to adjust this rotation of the arm 8 with its fingers 7 by a coarse adjustment through the set screw 14 working in the slot 15 and by a fine adjustment through the set screw 13. The adjustment can be effected by one hand.

The rod 11 is supported on a vertical bracket 16 which is bolted to the ends of the plates by the bolts 17.

It will be noted that the upper plate is curved upwardly as at 18, while the lower edge of the lower plate is beveled as at 19. The reason for this can be seen in Figures 4 and 5. The beveled edge 19 is so beveled to accommodate the roller 20 so that as the sheets are fed by the rollers 21 and 23 from the feed table 22 they will be guided into the space between the plates 1 and 4. Between the roller 23 and the roller 20 the sheets pass after they buckle in the space designated 24. The sheets are caused to buckle because they are fed between the

rollers 21 and 23 against the stop fingers 7: As they cannot proceed any further and the feeding continues from the rollers 21 and 23, they buckle downwardly in the space 24 and are drawn downwardly between the rollers.

In the event it is desired to eliminate for folding and to feed the sheets directly downwardly between the rollers 20 and 23, I lift the roller 21 out of its bearing support in the frame of the folder designated 25 and insert in the place thereof a shaft 26 with squared ends 27 upon which are mounted a plurality of downwardly curving fingers 28 which are inserted in the slots 29 in the upper plate. Between each of these fingers 28 are freely turning rollers 30 having rubber bands 31 on the periphery thereof. By this substitution it is unnecessary to disturb the guiding plates 1 and 4. Thus a switch from one type of folding to another can be done quickly which is one of the essentials in a modern folder where the labor cost of resetting the folder may make the cost of doing the work prohibitive.

I thus provide plates for guiding which are not subject to the influence of static electricity, which permit the sheets to travel their full length and which permit of the substitution of closely adjacent rollers with fingers for other purposes.

It will be understood that I desire to comprehend within my invention such modifications as may be necessary to adapt it to varying conditions of use.

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

1. A new article of manufacture comprising an aluminum sheet-guiding plate for folders.

2. A new article of manufacture comprising aluminum sheet-guiding plates for folders, said plates consisting of upper and lower members having coinciding slots therein.

3. A new article of manufacture comprising mechanism for guiding and determining the extent of movement of sheets from a folder consisting of adjacent plates of aluminum having coinciding slots, stop fingers and means of adjustably suspending the stop fingers in the coinciding slots in said plates.

4. A new article of manufacture compris-

ing mechanism for guiding and determining the extent of movement of sheets from a folder consisting of adjacent plates of aluminum having coinciding slots, stop fingers means of adjustably suspending the stop fingers in the coinciding slots in said plates, and means of adjusting said plates relative to one another.

5. A new article of manufacture comprising sheet-guiding mechanism for folders consisting of spaced aluminum plates having the forward ends thereof arranged to direct sheets therebetween.

6. A new article of manufacture comprising spaced aluminum plates for guiding sheets in a folder, sheet stopping means, means associated therewith for stopping said sheets at a predetermined point, guide fingers on the folder, one of said plates being cut away to receive the guide fingers carried on said folder.

7. In combination, spaced plates, a plurality of rollers, means for delivering sheets to said rollers, and a plurality of guide fingers projected through one of said plates at intervals to guide said sheets between said rollers.

8. In combination, spaced plates, a plurality of rollers, means for delivering sheets to said rollers, and a plurality of guide fingers projected through one of said plates at intervals to guide said sheets between said rollers, and a plurality of independent rollers rotatably mounted on a shaft carrying said fingers located between said fingers to engage with the sheets as they pass to the fingers and between the rollers.

9. In a folding machine, a plurality of rollers, one of the rollers being in sections and mounted on a shaft, means to deliver sheets of paper to the rollers, and guiding fingers between the roller sections and mounted on the shaft carrying said roller sections.

10. A new article of manufacture, comprising guiding plates in a folder consisting of aluminum plates, one of which is a flat plate with an upturned outer edge and the other of which is a flat plate with a shoulder on each side thereof to space the plates from one another.

In testimony whereof, I affix my signature.

ROBERT J. WATERWORTH.