Nov. 17, 1931. E. FRISCH 1,832,376

FOLDING MACHINE

Filed Jan. 5, 1931

Fig. 1.

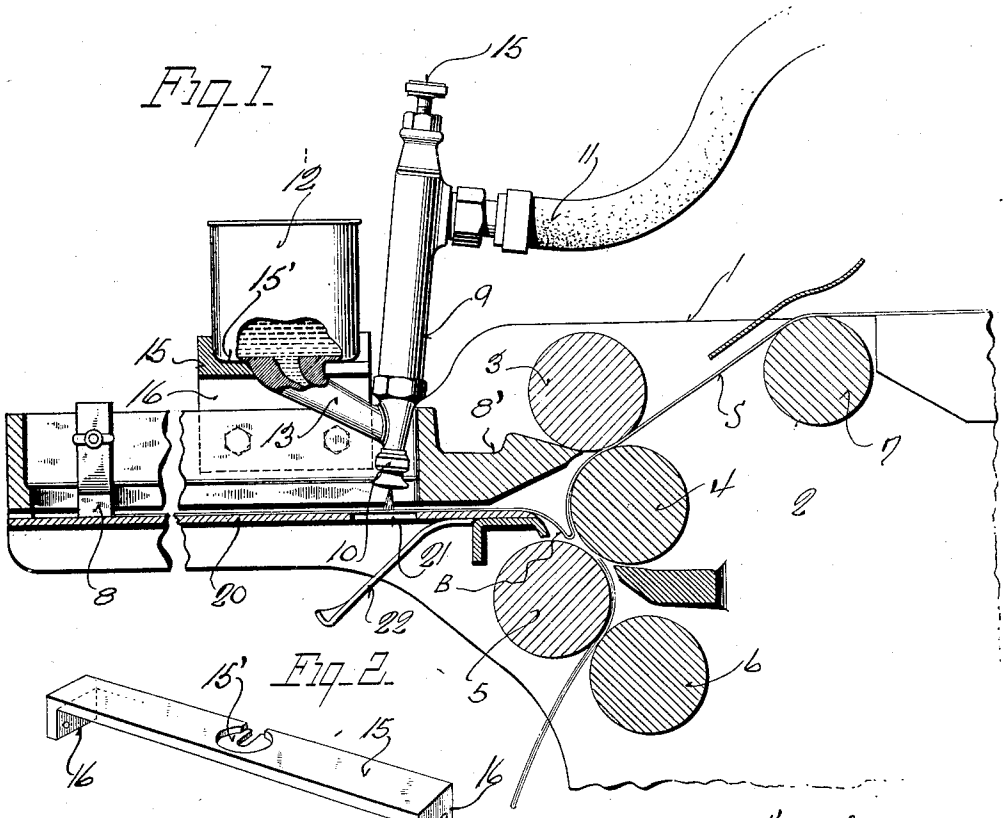


Fig. 2.

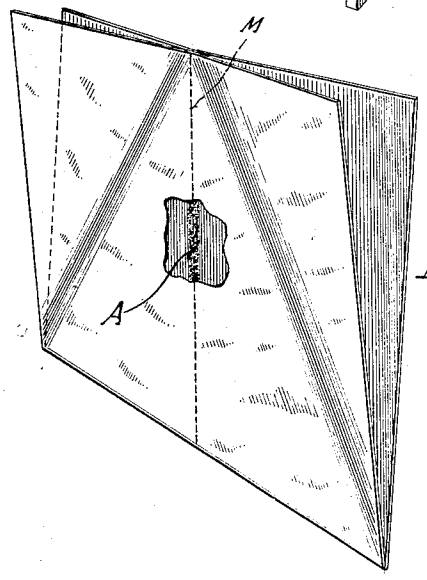


Fig. 3.

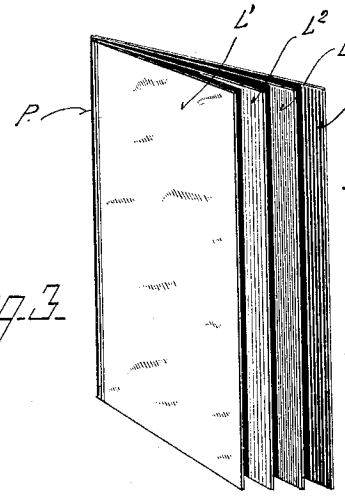


Fig. 4.

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UNITED STATES PATENT OFFICE

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FOLDING MACHINE

Application filed January 5, 1931. Serial No. 506,597.

This invention relates in general to folding machines and more particularly of the type in which the leaves folded from a sheet are adhesively united along a line of fold.

An inherent disadvantage in this type of machine as heretofore constructed has been the liability of the paste applied to the sheet to gum the feed rollers. Patent 1,543,354, granted June 23, 1925, to F. T. Zacher for a folding machine discloses a folding machine of the same general type as that embodied in the present invention but has its paste applying mechanism in the form of a notched disc arranged in advance of the buckling rolls. In this construction an attempt is made to avoid gumming of the buckling or feed rolls by scoring or grooving the roll liable to have contact with the line of paste or adhesive. In practice it has been found that notwithstanding the provision of the scoring or grooving some paste will find its way onto the active or unbroken surface of the exposed buckling roll and as a consequence the roll will be gummed and the product of the machine impaired or rendered unfit for use.

The present invention provides a folding machine of this character which has paste applying means so organized therewith as to preclude any possibility of the buckling rolls or other rolls of the machine being gummed with the paste and does this while avoiding the necessity of grooving or scoring the rolls. Furthermore, a folding machine constructed in accordance with the present invention is adapted for high speed operation.

Another object is to provide a folding machine of this character which is of simple and durable contruction, reliable and effective in operation and easy and comparatively inexpensive to manufacture.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification, and in which:

Figure 1 is a fragmentary view partly in side elevation and partly in longitudinal vertical section showing a folding machine embodying the present invention;

Figure 2 is a detail perspective view of the supporting bracket for the adhesive reservoir; and

Figures 3 and 4 are perspective views illustrating the manner in which the machine folds and adhesively unites a sheet to provide a pamphlet.

Referring to the drawings, the numeral 1 designates the folding machine generally. This type of folding machine is well known and widely used and is known in the art as the Cleveland folder. For this reason the details of the machine structure are not shown as it is sufficient for the purposes of the present invention to understand that the machine has a suitable frame 2 supporting the buckling, feeding and folding rolls designated at 3, 4, 5, 6 and 7. The sheet S is fed through the buckling rolls 3 and 4 across a supporting plate or table 20 until it strikes the stops or abutments 8 whereupon it is buckled as indicated at B and thus comes under the influence of the rolls 4 and 5 and is folded thereby. Subsequently, the sheet is again folded along its median line M and afterwards the lower edge of the sheet is cut so as to provide the pamphlet designated generally at P and made up of leaves L^1, L^2, L^3 and L^4 by conventional mechanism (not shown) of the folder. The leaves of the pamphlet are adhesively united as indicated at A in Figure 3 and the adhesive uniting the leaves extends along the median line M. With the present invention, the adhesive is applied to the portion of the sheet S that passes under the guide 8′ and along the table 20. For applying the adhesive a spray gun designated generally at 9 is provided and has an atomizer 10 of any suitable construction supplied with compressed air from an air line 11 and supplied with liquid adhesive from a reservoir 12 through a connection 13, the connection 13 extending from the bottom of the reservoir 12 to the tip portion of the spray gun. The spray gun 9 is provided with a conventional needle valve 15 which coacts

with the discharge orifice of the atomizer to regulate the amount of atomized adhesive or glue sprayed or issuing from the orifice of the atomizer. The reservoir is carried by a cross bar 15 provided with a seat 15′ for the reservoir and having depending attaching portions 16 fastened to the side members of the machine. The tip portion of the spray gun is located just behind the guide 8 and close up to the path of travel of the sheet S. The critical relation between the spray gun and the machine is the positioning of the same just beyond the buckling roll 3 so that the paste or adhesive is not applied until after the paper leaves the buckling roll. In this way gumming of the rolls is avoided for the portion of the paper which passes through the buckling roll and is exposed to the air gun is thereafter covered during the next folding operation and before it can come into contact with any roll. As a consequence any possibility of any of the rolls being gummed is avoided.

The adhesive is sprayed along the median line of the sheet as it travels toward and away from the abutments 8 and at the times when no sheet underlies the spray gun 9 the adhesive issues through an opening 21 in the table 20 and onto a collector 22.

The invention claimed is:

1. A folding machine comprising in combination with sheet folding and feeding mechanism including upper and lower buckling rolls, of means for applying adhesive to a portion of the sheet to be folded and comprising a spray gun supported just beyond the buckling rolls and in close proximity to the path of travel of the portion of the sheet initially fed through the buckling rolls whereby to apply the adhesive to a portion of the sheet which in the subsequent operations of the machine is covered by an unsprayed portion of the sheet.

2. A folding machine comprising in combination with sheet folding and feeding mechanism including upper and lower buckling rolls, of means for applying adhesive to a portion of the sheet to be folded and comprising a spray gun supported just beyond the buckling rolls and in close proximity to the path of travel of the portion of the sheet initially fed through the buckling rolls whereby to apply the adhesive to a portion of the sheet which in the subsequent operations of the machine is covered by an unsprayed portion of the sheet, a reservoir for the adhesive having an outlet connected to the spray gun and means coacting with the reservoir for supporting the same and the air gun.

3. A folding machine comprising upper and lower buckling rolls, a folding roller coacting with the lower buckling roller abutment means engageable with an edge of the sheet fed through the buckling rolls to buckle an intermediate portion of the sheet in between the lower buckling roll and its cooperable folding roller, and a spray gun positioned to spray a line of adhesive to the sheet as it is fed from the buckling rolls to the abutment means and then back from the abutment means through the lower buckling roll and its cooperable folding roller.

4. A folding machine comprising upper and lower buckling rolls, a folding roller coacting with the lower buckling roller, abutment means engageable with an edge of the sheet fed through the buckling rolls to buckle an intermediate portion of the sheet in between the lower buckling roll and its cooperable folding roller, a table supporting the sheet between the buckling rolls and the abutment means, and a spray gun positioned to spray a line of adhesive to the sheet as it is fed from the buckling rolls to the abutment means and then back from the abutment means through the lower buckling roll and its cooperable folding roller, said table having an opening underlying the spray gun, and a collector underlying said opening.

In witness whereof, I hereto affix my signature.

EDWIN FRISCH.