Dec. 29, 1936. G. SPIESS 2,065,989

FOLDING ATTACHMENT

Filed May 29, 1935 2 Sheets-Sheet 1

Fig. 1

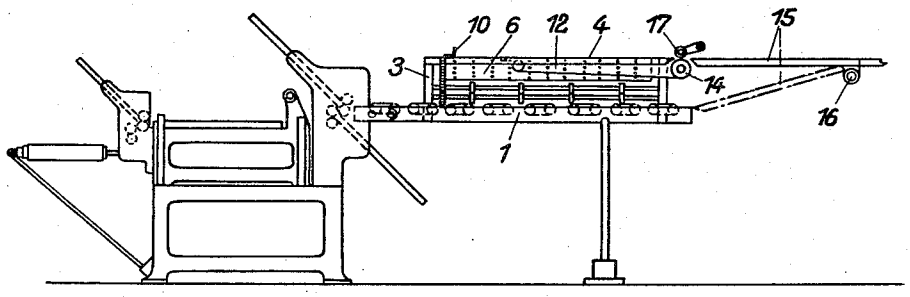


Fig. 2

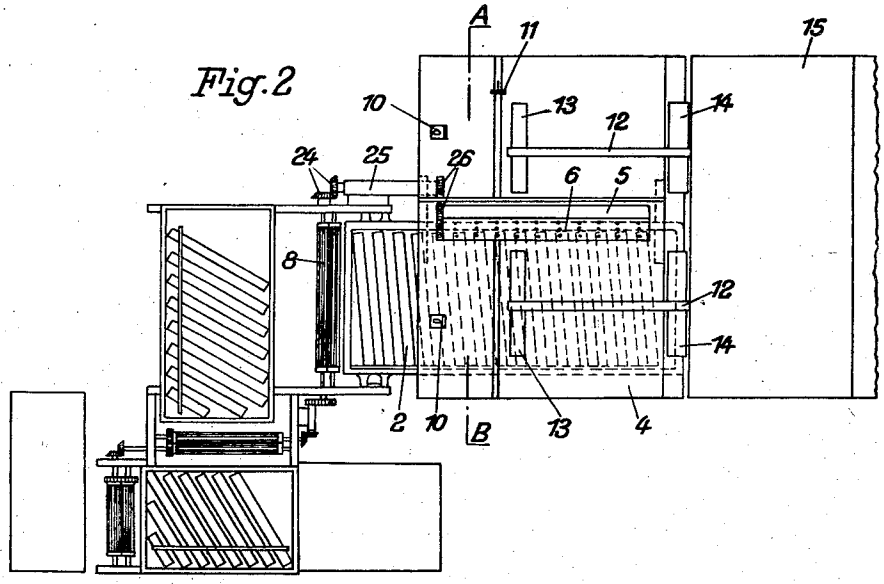
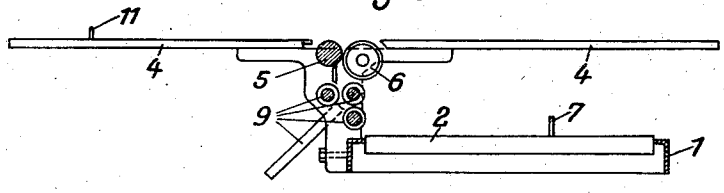


Fig. 3



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Fig. 4

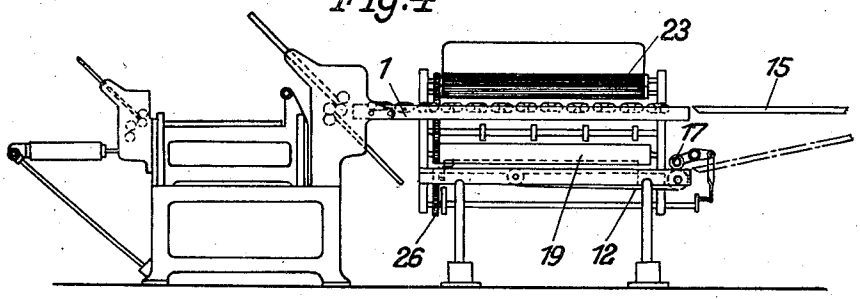


Fig. 5

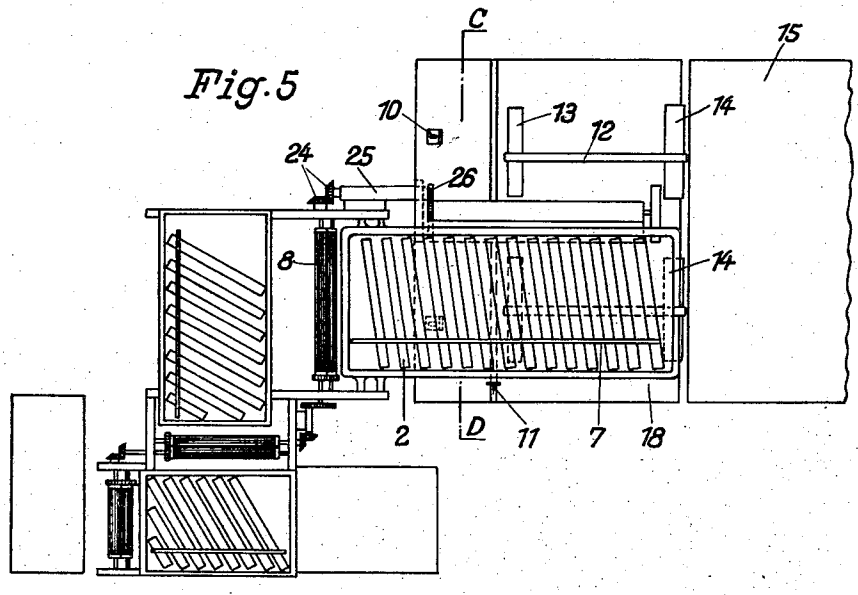
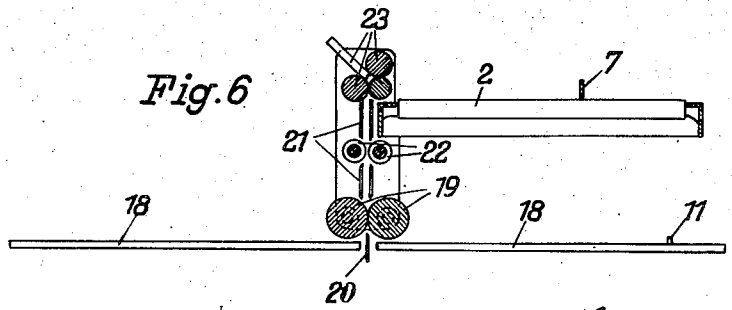


Fig. 6



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UNITED STATES PATENT OFFICE

2,065,989

FOLDING ATTACHMENT

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In Germany May 19, 1934

6 Claims. (Cl. 270—62)

This invention relates to a folding attachment.

Bookbinding establishments frequently fail to purchase a folding machine, particularly a cross folding machine, capable of handling sheets of large sizes, because such work is comparatively rare, or the cost of the machine is too high, or because space is lacking. There is, however, a general desire to have means available for folding larger sheets if necessary than the dimensions of the smaller machines permit. According to the invention, this requirement is met by the provision of a folding attachment adapted to fold sheets having several times the width of the largest sheet size that can be handled by a smaller folding machine and to be connected, possibly with one or several parallel folding mechanisms, to a main folding machine in such a way that the sheets coming from the attachment pass to the main machine over the feed table thereof.

The invention further provides the folding attachment preferably with an adjustable feeding table for hand, semi-automatic or automatic feeding so as to have the sheets fed either to the attachment or the feed table of the main folding machine, according to requirements. With respect to the first folding mechanism of the main folding machine, the attachment is arranged as a cross folding mechanism and combined into a unit with one or several parallel folding mechanisms, as desired. The folding attachment according to the invention may be constructed either as buckling folder operating without any rhythm or as a folding mechanism, such as a blade folder, which maintains a certain rhythm. In the first case, the motion of the sheets in the attachment is directed transversely to the feeding direction of the main machine and thus a second feeding table is required, whereas, in the second instance, the path of the sheets in the attachment has the same direction as the feed of the main machine, so that the same feeding device or table can be used for feeding the sheets to both the attachment and the machine, and this latter construction is the preferred embodiment.

The folding mechanism may be constructed as an ordinary blade folder, wherein the blade folds the sheets between rollers, or as a folding mechanism having a fixed blade inclined in feeding direction and pressing the sheets running up against it between the folding rollers. The invention preferably employs a folding mechanism of the kind described in the United States Patent No. 1,998,337, issued to me April 16, 1935, in which the sheets moving in the direction of the gap between the folding rollers against front stops are conveyed by one of the folding rollers, constructed as a suction roller, against a lateral stop and, owing to the buckling effected thereby, are drawn in between the rollers. A folding mechanism of this type is particularly suited as an attachment for a buckling folder, inasmuch as it is best adapted to the high output of such a machine.

If an automatic feeder is used in connection with the folding attachment it is preferably arranged and equipped so as to be adjustable to uninterrupted operation for feeding the sheets to the buckling folder as well as to intermittent feeding for an attachment folding in a certain rhythm.

The folding attachment can be disposed above or below the feed table of a standard folding machine, for instance a buckling folder, and both embodiments of the invention, in connection with a three crease cross folding machine of the buckling type, are illustrated, by way of example, in the accompanying drawings, in which

Figures 1, 2 and 3 are, respectively, an elevation, plan and section on the line A—B, of Fig. 2, of a folding attachment arranged above the feeding table of the main folding machine; and

Figs. 4, 5 and 6 are, respectively, an elevation, plan and section on the line C—D, of Fig. 5, of a folding attachment arranged below the feeding table of the main folding machine.

Referring to the drawings, the frame 1 of the feeding table 2 of a standard three crease cross folding machine of the buckling type is supported in any suitable manner (not shown) and carries a frame 3 having folding table leaves 4 mounted thereon in spaced relation and below the space between leaves 4 is a folding mechanism of the buckling type, as described in the United States Patent No. 1,998,337. Of the two rollers 5, 6 of this mechanism the roller 6 is constructed as a suction roller with controlled or uninterrupted suction effect. The feed table as well as the folding rollers are dimensioned for a sheet size up to several times the width of the largest size that can be worked on the main machine with which the present device is used, and the folding rollers are disposed approximately above the side edges of the main machine table opposite the guide rule of the feed table of the main folding machine, so that a sheet of largest size coming out of the attachment 5, 6 and deflected towards the rule or

guide 7 of the table 2, after the first folding and, possibly, parallel folding, is taken up by the feed table 2 and passed along the guide 7 to the first folding mechanism 8 of the buckling folder. In the construction shown, as indicated in Fig. 3, a parallel folding mechanism 9 is arranged between the roller pair 5, 6, which can be rendered operative and inoperative at will.

The folding table of this attachment is equipped in known manner with the front stops 10, a lateral mark 11 and, possibly with a sheet drawing device and the sheet guiding tapes 12 which pass over the rolls 13, 14. Further, a feed table 15 is provided which can be swung about a horizontal shaft 16 and is adjustable so as to permit, in one position, delivery of the sheets to the folding table 4 of the folding attachment mechanism 5, 6 and, in another position, delivery to the roller feeding table 2 of the folding machine. The control rolls 17 serve in known manner for conveying the fed sheets into folding position in the working rhythm of the folding attachment if the latter operates intermittently.

In the second embodiment the folding attachment is of the blade type and mounted below the feed table 2 of the cross folding main machine with the folding rollers 19 arranged above the folding table 18 of the invention and a folding blade 20 working from below, but otherwise constructed like the first form as described above. The sheets folded upwardly between the folding rollers 19 pass between the guides 21 and the intermediate rollers 22, provided as required with cutting, scoring or creasing tools, to a parallel folding mechanism 23 which is disposed slightly above the feed table 2 and extends along a side edge thereof for ejecting the pre-folded sheets in the direction towards the guide 7 and delivering them to the feeding table of the main machine.

In both instances, the drive of the folding attachment and the contrivances arranged thereon is derived from the first folding mechanism 8 and transmitted to a shaft of the attachment by means of the bevel gear 24, the shaft 25 and the toothed gearing 26.

I claim:—

1. An attachment for standard folding machines of the type having a primary conveyor and folder and a supporting frame, said attachment including brackets adapted to be attached to said frame at one side of the conveyor of the standard machine, feed table leaves supported by said brackets in spaced relation to each other, one of said leaves extending across the said primary conveyor upon the brackets being attached to said frame, a folding mechanism carried by said brackets in vertical alinement with the space between said leaves, and a delivery mechanism carried by said brackets in vertically spaced relation to and parallel with the folding mechanism, said delivery mechanism being positioned on the brackets to deliver folded sheets to said primary conveyor whereby one of said leaves is spaced above the upper surface of said primary conveyor.

2. An attachment for standard folding machines of the type having a primary conveyor and folder and a supporting frame, said attachment including brackets adapted to be attached to said frame at one side of the conveyor of the standard machine, feed table leaves supported by the said brackets in spaced relation to each other, one of said leaves extending across the said primary conveyor upon the brackets being attached to said frame, a folding mechanism carried by said brackets in vertical alinement with the space between said leaves, and a delivery mechanism carried by said brackets in vertically spaced relation to and parallel with the folding mechanism, said delivery mechanism being positioned on the brackets to deliver folded sheets to said primary conveyor whereby one of said leaves is spaced above the upper surface of said primary conveyor, said leaves having a width transverse the movement of paper thereon substantially greater than the width of said primary conveyor.

3. The combination with a standard folding machine of the type having a primary conveyor and folder and a supporting frame; of an attachment secured to the frame at one side of said conveyor and including a pair of spaced feed table leaves, supports for said leaves, a folder carried by said supports at the space between said leaves, and delivering mechanism carried by said supports and vertically spaced with relation to the last mentioned folder, said delivering mechanism being positioned to deliver folded paper to said conveyor, one of said leaves extending across said conveyor in vertically spaced relation thereto.

4. The combination with a standard folding machine of the type having a primary conveyor and folder and a supporting frame; of an attachment secured to the frame at one side of said conveyor and including a pair of spaced feed table leaves, supports for said leaves, a folder carried by said supports at the space between said leaves, and delivering mechanism carried by said supports and vertically spaced with relation to the last mentioned folder, said delivering mechanism being positioned to deliver folded paper to said conveyor, one of said leaves extending across said conveyor in vertically spaced relation thereto, said leaves having a width transverse the movement of paper thereon substantially greater than the width of said primary conveyor.

5. The combination with a standard folding machine of the type having a primary conveyor and folder and a supporting frame; of an attachment secured to the frame at one side of said conveyor and including a pair of spaced feed table leaves, supports for said leaves, a folder carried by said supports at the space between said leaves, delivering mechanism carried by said supports and vertically spaced with relation to the last mentioned folder, said delivering mechanism being positioned to deliver folded paper to said conveyor, one of said leaves extending across said conveyor in vertically spaced relation thereto, said leaves and the receiving end of the conveyor being substantially coterminous, a feed table extending entirely across the ends of said leaves at the receiving end of the conveyor, and means to mount said table hingedly at the edge remote from said conveyor whereby the table may be selectively tilted to bring its free edge into the plane of the conveyor and into the plane of said leaves.

6. The combination with a standard folding machine of the type having a primary conveyor and folder and a supporting frame; of an attachment secured to the frame at one side of said conveyor and including a pair of spaced feed table leaves, supports for said leaves, a folder carried by said supports at the space between said leaves, delivering mechanism carried by said supports and vertically spaced with relation to the

last mentioned folder, said delivering mechanism being positioned to deliver folded paper to said conveyor, one of said leaves extending across said conveyor in vertically spaced relation thereto, said leaves having a width transverse the movement of paper thereon substantially greater than the width of said primary conveyor, said leaves and the receiving end of the conveyor being substantially coterminous, a feed table extending entirely across the ends of said leaves at the receiving end of the conveyor, and means to mount said table hingedly at the edge remote from said conveyor whereby the table may be selectively tilted to bring its free edge into the plane of the conveyor and into the plane of said leaves.

GEORG SPIESS.