April 21, 1925. 1,534,884

W. G. TRAUTMAN

PAPER FOLDING MACHINE

Filed May 16, 1924 4 Sheets-Sheet 1

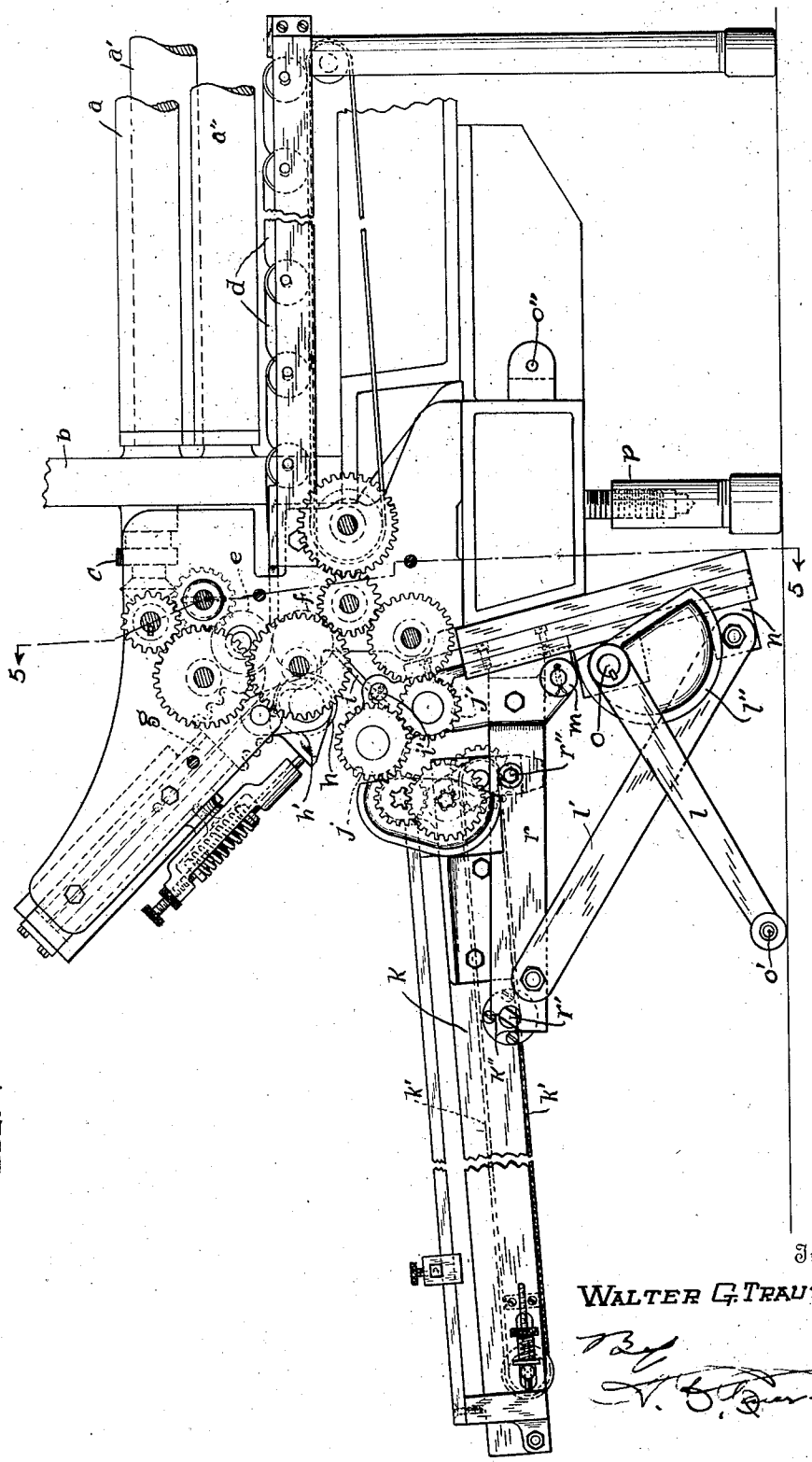


FIG. 1.

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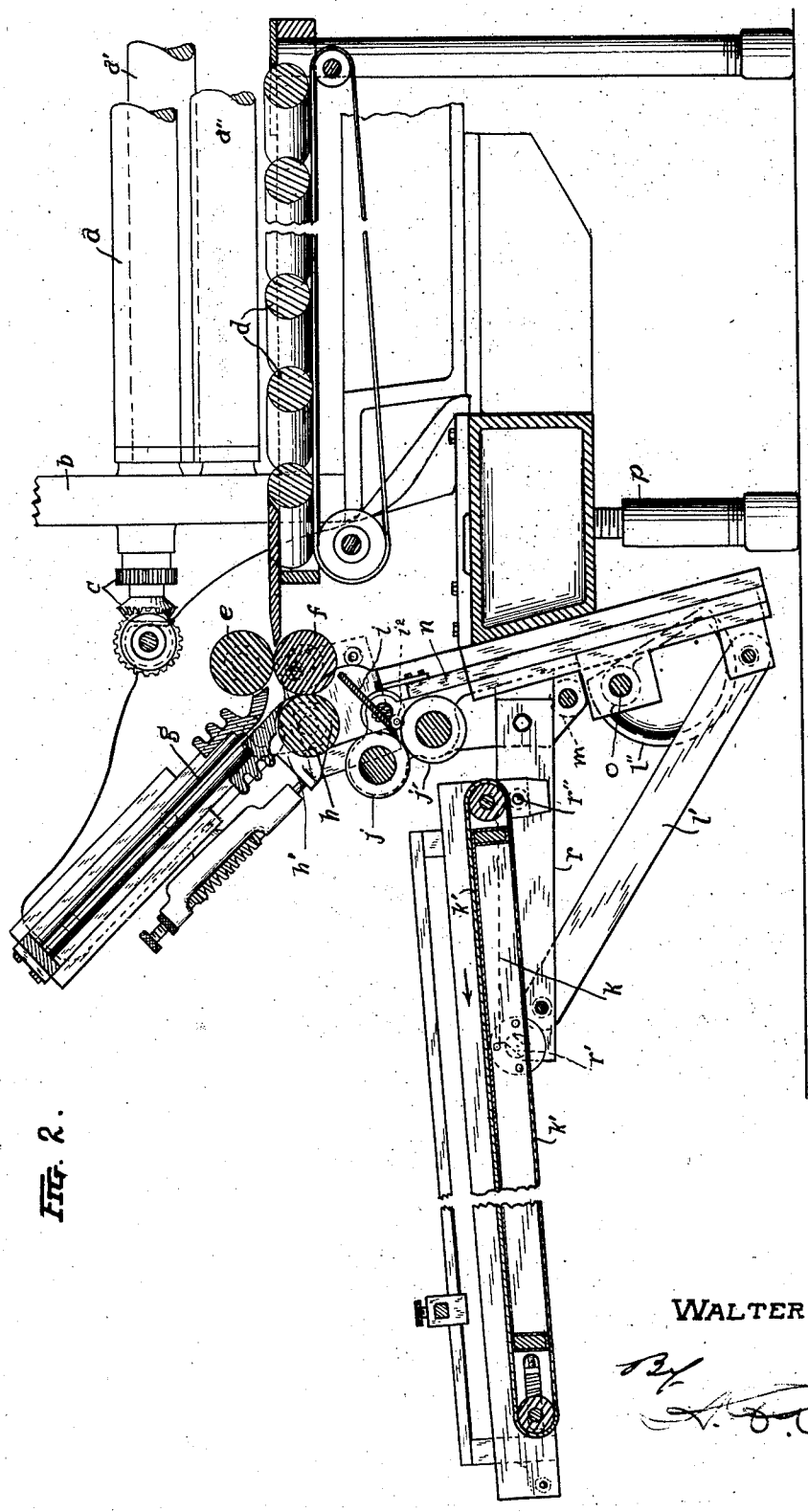


Fig. 2.

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FIG. 4

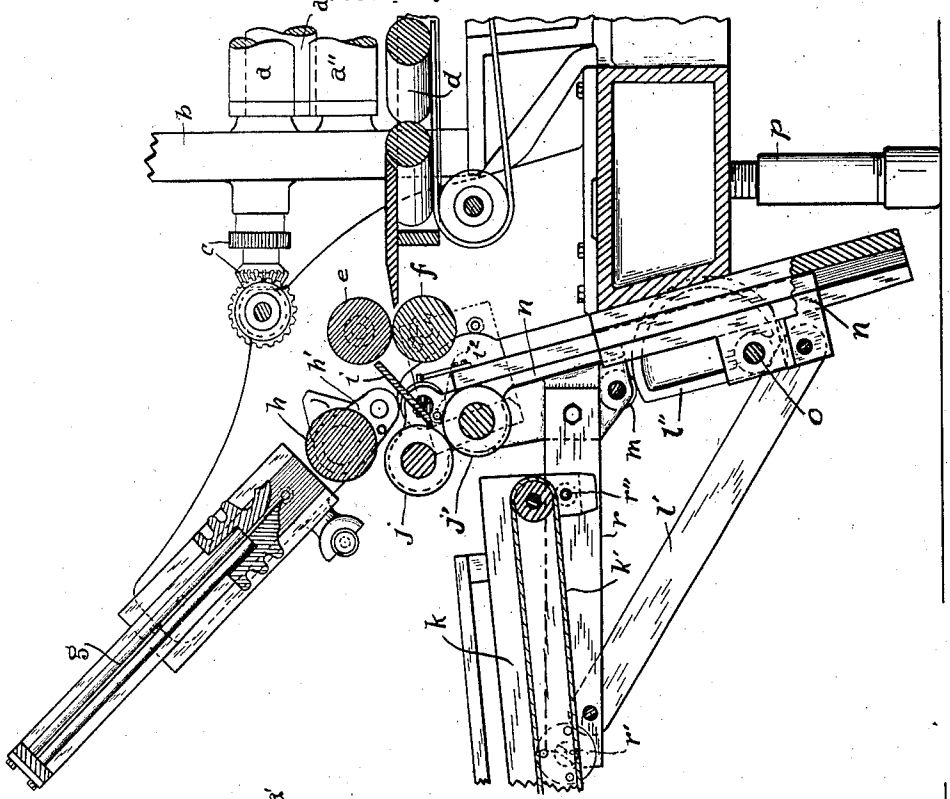
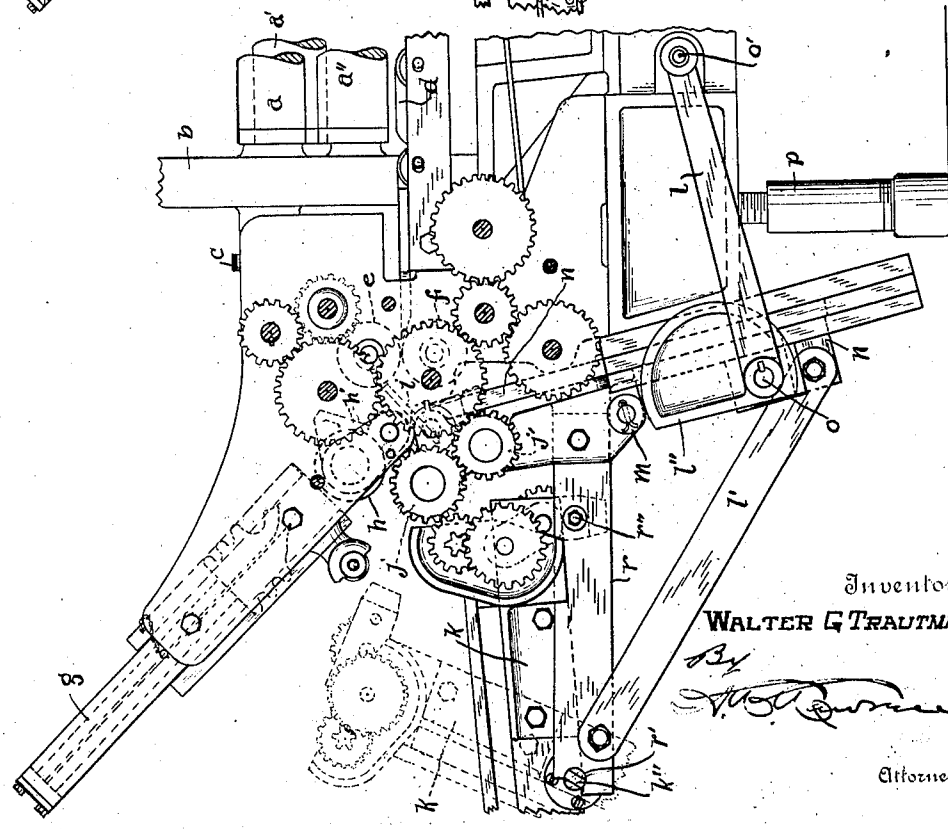


FIG. 3.



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Fig. 7.

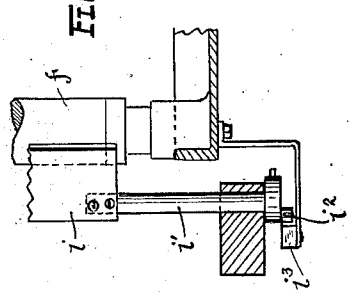


Fig. 6

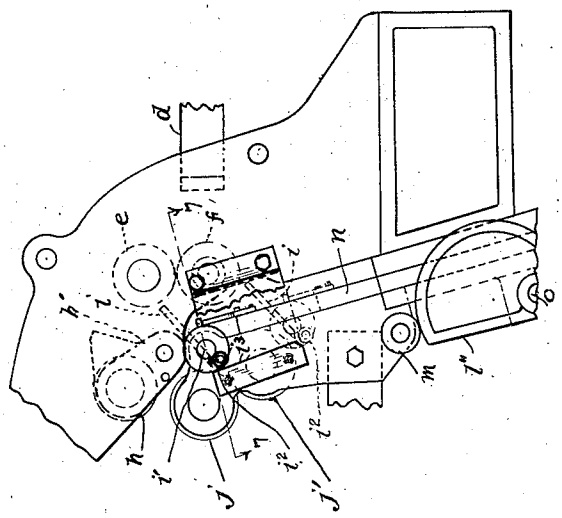
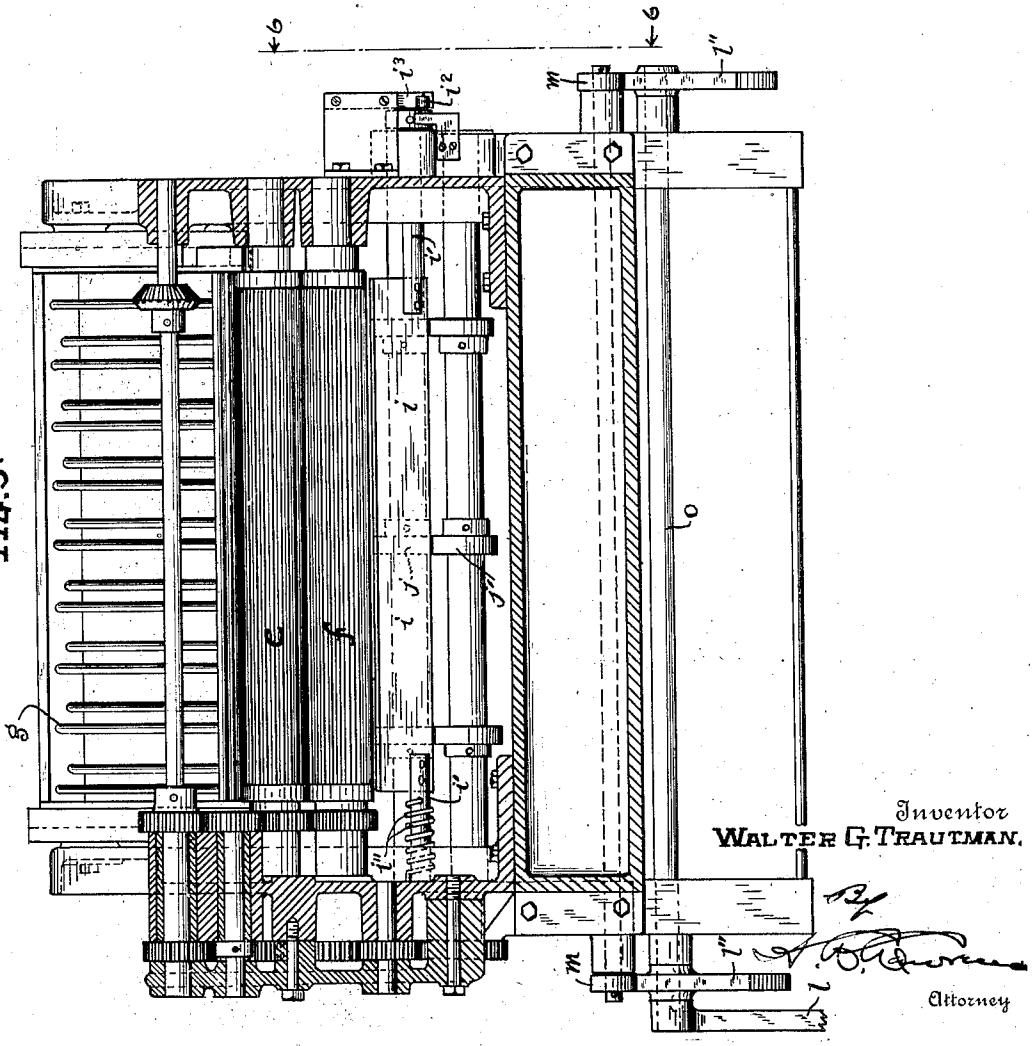


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALTER G. TRAUTMAN, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO THE CLEVELAND FOLDING MACHINE CO., OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PAPER-FOLDING MACHINE.

Application filed May 16, 1924. Serial No. 713,718.

To all whom it may concern:

Be it known that I, WALTER G. TRAUTMAN, a citizen of the United States of America, residing at Cleveland Heights, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Paper-Folding Machines, of which the following is a specification.

My invention relates to improvements in paper folding machines and more particularly to an auxiliary paper-folding machine adapted alternatively for making the final transverse fold in the signature or conveying said signature unfolded to the stacker device. The object of my invention is the provision of means for converting such auxiliary folding apparatus from one purpose to the other with ease and dispatch.

I may explain my invention briefly as applied to the well-known type of paper-folding machine adapted to produce a signature of sixteen or less pages, in association with which my novel auxiliary paper-folding mechanism is adapted to be used for producing a signature of thirty-two pages at will, or merely delivering the sixteen page signature to the stacker device. Thus, my improvements comprise a conveyor table intermediately positioned between the paper-folding machine and a set of buckling and folding rolls, one of which is made adjustable in connection with the folding plate for rendering the latter inoperative. The stacker mechanism associated therewith is provided with means for elevating it approximately to the level of the buckling rolls or lowering it to a position for receiving the signatures from the folding rolls. In addition, a deflector is provided with automatic means for adjusting it to engage and direct the signatures alternatively in the upper or lower position of the stacker device.

The features of my improvements may be more readily explained by making reference to the accompanying drawings wherein

Fig. 1 is a view of my improved mechanism in side elevation; the stacker being shown in its lowermost position.

Fig. 2 is a longitudinal sectional view thereof; certain rolls of the associated paper-folding machine and the frame being shown broken away in both of said figures to indicate the relationship.

Fig. 3 is another view of my improved mechanism in side elevation showing the stacker device in its upper position of adjustment and the folding plate and folding roll in inoperative position.

Fig. 4 is a longitudinal sectional view thereof; both of said figures being shown laterally broken away.

Fig. 5 is a transverse sectional view on the irregular line 5—5, Fig. 1.

Fig. 6 is a fragmentary detail view showing the adjusting means for the deflector and for the folding roll, and

Fig. 7 is a fragmentary section thereof on line 7—7, Fig. 6.

Throughout the several figures of the drawings I have employed the same characters of reference to indicate similar parts.

Reference may first be made to Figures 1 and 2 wherein the rolls a a' a'' of the associated paper-folding machine are shown with the frame b and gear c in position for delivering the signatures to the conveyor table d of my improved auxiliary apparatus. This conveyor table is adapted to deliver said signatures to the buckling rolls e f which will direct them into the folding plate g and from which these signatures will issue to be folded between the folding rolls f h. From thence said signatures will be directed by the adjustable deflector plate i between the paired feeding rolls j j' which normally pass said signatures in the illustrated positions of adjustment to the traveling belt k' of the stacker device k. This is the normal adjustment of the apparatus for producing the thirty-two page folded signature and the operation will be readily understood from the above by those skilled in the art.

However, it commonly is found desirable to omit certain folds in a paper-folding machine, including the last folding operation above indicated, while delivering the signatures to the stacker device as before. My present improvements contemplate this altered operation by means of the features of construction and adjustment which I shall now describe.

Referring now to Figs. 3 and 4, it will be seen that the folding plate g has been elevated and retained out of normal operative position while the pivotally mounted folding roll h has been turned on brackets h' above the level of the buckling rolls e f. In addition thereto, it will be ob-

served that the stacker device k has also been elevated from its lower receiving position, together with the rolls j j' and the deflector i, so that the latter is above the meeting plane of the rolls e f. This is accomplished by means of the interconnected lever mechanism l l' and the laterally positioned interposed cams l'' which operate against the rolls m and serve to elevate the stacker and its associated mechanism upon the slide n. The lever l is secured to the cam shaft o and is held in its upper position by means of a bolt o' which enters the socket o'' provided on the frame. Said frame is adjustable as a whole by means of the screw-actuated standard p, so that the auxiliary mechanism may be adjusted to insure the proper level thereof with respect to the associated paper-folding machine.

Further details of the automatic actuation of the deflector plate i may be explained by referring to Figs. 5, 6 and 7 showing said plates mounted upon the shaft i' and tensioned by the spring i''. A roller i^2 is adapted to engage the side-rail i^3 as the stacker and its associated mechanism are elevated by the cam, so that the deflector plate will be turned sufficiently to clear the lower roll f and assume the upper dotted line position of Fig. 6. This enables it to deflect the signatures from the rolls e f to the rolls j j', and thence to the belt k' of the stacker, as previously explained.

Referring now to Fig. 3, it will be observed from the dotted line showing at the left, that the stacker device is supported on terminally flattened trunnions k'' which may be inserted within the recess r' of frame r by inclining the stacker device approximately in a 45° position with respect thereto. It is then actuated into a substantially horizontal, full-line-position where it is held by the bolt r'' with its gearing in operative relation with the gearing of the auxiliary mechanism as shown in Figs. 1 and 3.

From the foregoing it will be seen that the apparatus is adapted alternatively for supplying the 32-page fold previous to advancing the signatures to the stacker, or it may readily be adjusted for conveying the 16-page signatures direct to the stacker without imparting a fold thereto. This is accomplished by means of the several adjustments previously described, without loss of time, thereby facilitating the operation of a paper-folding machine very materially.

Having now described the preferred embodiment of my invention and briefly detailed the operation and advantages thereof, I claim as new and desire to secure by Letters Patent the following:

1. In mechanism of the class described, the combination with a sheet conveyor, of an associated set of folding and buckling rolls and their coacting folding plate, means for temporarily rendering inoperative said folding plate, a stacker mechanism adapted to receive the folded signatures from said folding appliance, and means for adjusting said stacker in alternative position to receive the signatures during the inoperative adjustment of the folding plate, substantially as set forth.

2. In mechanism of the class described, the combination with a sheet conveyor, of an associated set of folding and buckling rolls and their coacting folding plate, means for temporarily rendering inoperative said folding plate, a stacker mechanism adapted to receive the folded signatures from said folding appliance, a deflector for directing the signatures thereto and means for adjusting said stacker and deflector in alternative position to receive and direct the signatures during the inoperative adjustment of the folding plate, substantially as set forth.

3. In mechanism of the class described, the combination with a sheet conveyor, of an associated set of folding and buckling rolls and their coacting folding plate, means for temporarily retaining the folding plate and a folding roll out of operative position, whereby the signatures may be directed between the buckling rolls to a deflector, said deflector, a stacker mechanism adapted normally to receive the folded signatures from said folding appliance, and means for adjusting said stacker in alternative position to receive the signatures during the inoperative adjustment of the folding plate and roll, substantially as set forth.

4. In mechanism of the class described, the combination with a sheet conveyor, of an associated set of folding and buckling rolls and their coacting folding plate, means for temporarily rendering inoperative said folding plate, a stacker mechanism adapted to receive the folded signatures from said folding appliance, a deflector for directing the signatures thereto and interconnected lever mechanism supporting said stacker, including a cam interposed therein and adapted to actuate the stacker into alternative positions for receiving the signatures, substantially as set forth.

5. In mechanism of the class described, adapted for association with a paper-folding machine, the combination with a sheet conveyor, of an associated set of folding and buckling rolls and their coacting folding plate, means for temporarily rendering inoperative said folding plate, a stacker mechanism adapted to receive the folded signatures from said appliance, means for adjusting the height of the entire mechanism with respect to the paper-folding machine, and additional means for adjusting said stacker in alternative position to receive the sig-

natures during the inoperative adjustment of the folding plate, substantially as set forth.

6. In mechanism of the class described, the combination with an associated set of folding and buckling rolls and their coacting folding plate, of means for temporarily rendering said folding plate inoperative, a deflector member and associated conveyor rolls adapted to be adjusted before the buckling rolls when the folding plate is rendered inoperative, substantially as set forth.

7. In mechanism of the class described, the combination with an associated set of buckling and folding rolls and their coacting folding plate, of means for adjusting the folding plate and folding roll out of operative position, paired conveyor rolls and a deflector interposed between the same and the buckling rolls during the inoperative relation of the folding plate and folding roll, substantially as set forth.

8. In mechanism of the class described, the combination with associated folding and buckling rolls and their coacting folding plate, of means for temporarily rendering the latter inoperative, a sheet-receiving mechanism, and means for adjusting the latter in alternative positions to receive the folded or unfolded signatures in accordance with the operative condition of the folding plate, substantially as set forth.

9. In mechanism of the class described, the combination with a plurality of rolls, of a sheet-receiving mechanism adapted to be adjusted in alternative positions to receive the sheet from said rolls, and interconnected lever mechanism associated with a cam for immediately adjusting said sheet-receiving mechanism to either of its alternative positions, substantially as set forth.

In testimony whereof I do now affix my signature.

WALTER G. TRAUTMAN.