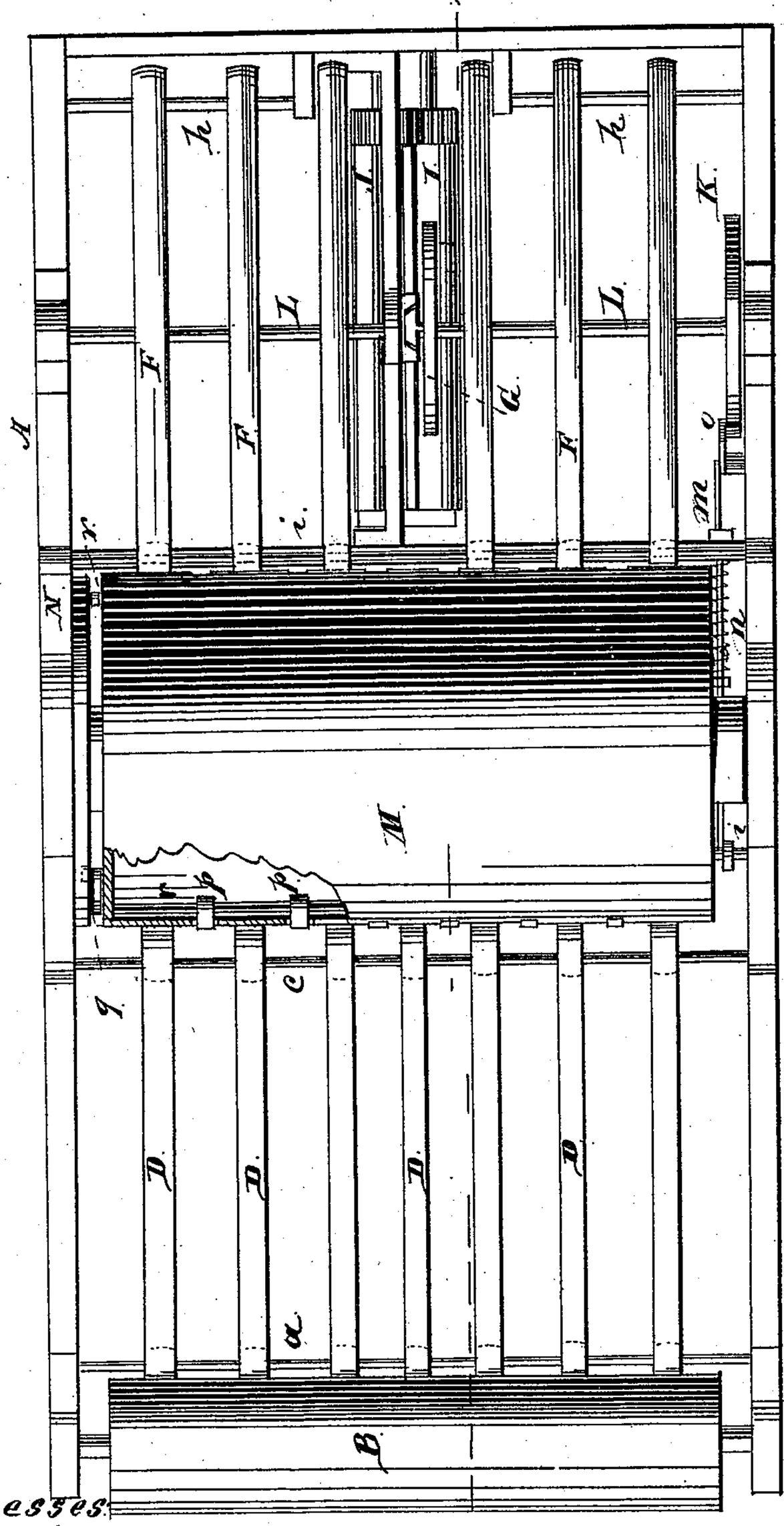
(No Model.) 2 Sheets—Sheet 1.

C. KAHLER.

DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 291,912. Patented Jan. 15, 1884.

Fig. 1.



Witnesses:
Albert H. Adams.
Edgar J. Bond.

Inventor:
Conrad Kahler

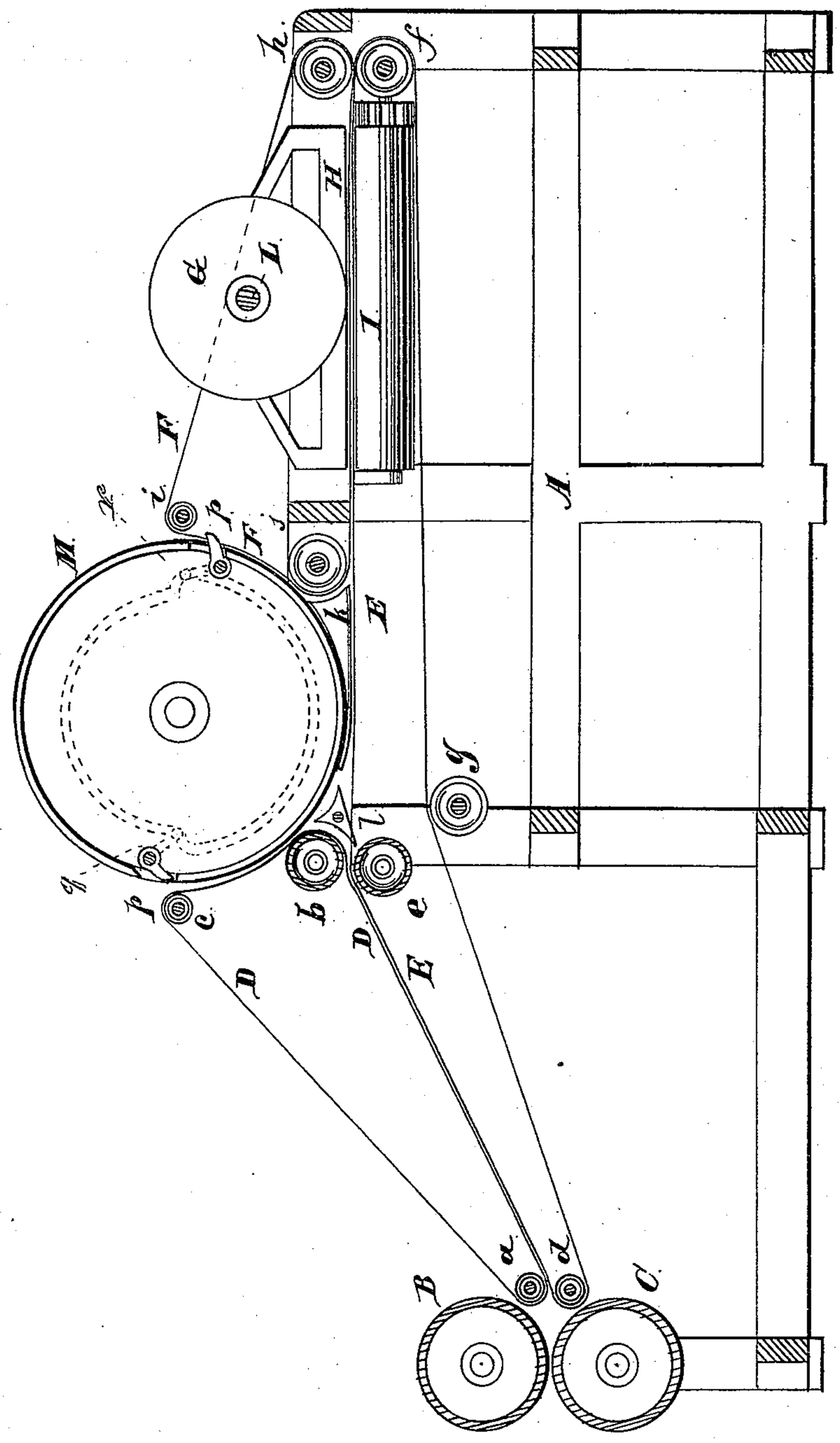
(No Model.) 2 Sheets—Sheet 2.

C. KAHLER.

DELIVERY APPARATUS FOR PRINTING MACHINES.

No. 291,912. Patented Jan. 15, 1884.

Fig. 2.



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Inventor:
Conrad Kahler

UNITED STATES PATENT OFFICE.

CONRAD KAHLER, OF CHICAGO, ILLINOIS.

DELIVERY APPARATUS FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 291,912, dated January 15, 1884.

Application filed November 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, CONRAD KAHLER, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Delivery Apparatus for Printing-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, a longitudinal vertical section on line *x x* of Fig. 1.

The object of this invention is to improve the construction and operation of folding-machines to be connected with or attached to web-printing presses in such a manner that the newspaper can be cut into four-page sheets, sometimes called "half-sheets," and laid one over the other, for delivery to the folding-rollers; and its nature consists in providing the folder with three sets of tapes and a gripping-cylinder so combined and arranged that the first sheet will be taken and carried by a positive movement around or through a sufficiently-longer path or course to cause its front edge or end to meet the front edge or end of the following sheet, and the two travel together from the point of meeting to a point over the folding-rollers, ready for delivery thereto, and in the several and improved parts and combinations of parts hereinafter set forth and claimed as new.

In the drawings, A indicates the frame-work; B C, the cutting-cylinders; D, the upper front set of tapes; E, the lower tapes; F, the upper rear set of tapes; G, the disk or cam-wheel for operating the folding-blade of the first pair of rollers; H, the folding-blade; I J, the upper rollers of an ordinary newspaper-folder; K, cam wheel or disk for operating the switch; L, shaft carrying the cam wheels or disks G K; M, gripper-cylinder; N, cam disk or plates for operating the grippers; *a b c*, rollers for the tapes D; *d e f g*, rollers for the under tapes; *h*, *i*, *j*, rollers for the upper rear tapes; *k*, guides; *l*, switch; *m*, rod for operating the switch; *n*, spring; *o*, lever working against the cam K, and operating the rod *m*; *p*, grippers; *q*, cranks or bends on the end of the gripper-rods, for operating them by the cam-plate N; and *r*, gripper-rods.

The frame A will be adapted in size and shape to the press with which and the room where it is to work.

The cutting-cylinders B C, when the printing-press and the folder are not made together, will belong to the printing-press, and the rollers *a b* will be supported by additional or other posts, which will maintain them in the relative position shown, it being understood that this folder may be made as an extension of the printing-press, or be made so as to be separate and removable.

The rollers I J are the upper rollers of an ordinary folding-machine, and such additional pairs of rollers will be placed under them as will give the number of folds desired. These additional rollers are not shown, as I have not improved this part of the folder.

The rollers *a*, *b*, *c*, *d*, *e*, *f*, *g*, *h*, *i*, and *j* are made according to the usual construction of rollers designed to carry tapes, and they are arranged in the position shown. The rollers *a*, *b*, and *c* are so arranged as to carry the tapes D parallel to the tapes E, from the roller *a* to the roller *b*; thence around the roller *b* and against the cylinder M to the roller *c*, from which point the tapes pass back to the beginning.

The tapes F are parallel with the tapes E from the roller *j* to *h*, and from *j* to *i* the tapes are made to press against the cylinder M, as shown.

The guides *k* are formed as shown in Fig. 2—that is to say, so that they will guide the undeflected sheets on a straight path, and so that they will turn the deflected sheets between the tapes F and E. The tape E is continuous between the rollers *d* and *f*, the roller *g* being simply a return-roller, which may be used as a tightener.

The switch *l* has its rod provided with a short depending arm, to which the rod *m* is attached. The opposite end of the rod *m* is attached to a lever, *o*, working against the cam-face of the disk K, which, in its rotation, gives the switch its proper movements in one direction, and the spring *n* in the opposite direction, by holding the arm *o* against the cam-disk. The lever *o* may be dispensed with, and the arm *m* made to act direct against the periphery of the cam-plate K, or in a cam-groove in the face or side of said disk K.

The cylinder is equal in circumference to the length of four of the single sheets or half-sheets taken by it, so that when in operation only one-half of the cylinder is covered by passing sheets. The grippers only take up every other sheet or half-sheet, leaving each alternate sheet or half-sheet to pass undeflected along the tape till it meets the sheet that has been carried around the gripping-cylinder, when the two pass together to the folder, as before described. When only two sets of grippers are used, the first undeflected sheet taken from the web will be lost, because there will be no corresponding sheet to meet it. After that, however, each sheet will meet its proper alternate until the paper web has been exhausted; and if three sets of grippers are used, the first and third sheets will be lost; but after the gripper-cylinder has made one revolution, then each set of grippers will take a sheet and bring it around to correspond with the sheet or half-sheet that is to proceed with it to the folder, and continue to do so until the web of paper is run off. These grippers are operated by the cam-plate N, which has its side or face provided with a suitable cam-groove to operate the grippers at the proper time and place, which said groove is indicated by the dotted lines of Fig. 2.

The cylinder M, instead of being made continuous, as shown, may be made in sections of alternating disks of larger and smaller diameters, which will give greater facility for attaching the guides *k*.

In operation the first sheet passing out from between the cylinders B C passes between the rollers *a d* and between the tapes D E and rollers *b e*, where it is given an upward deflection by the switch *l*, and passes between the tape D and cylinder M to the roller *c*, where it is gripped by the grippers *p* and carried around to the roller *i*, where it is released from the gripper, and passes between the cylinder M and tape F to the guide *k*, where it is deflected onto the lower tapes, E, and between that and the tapes F, to the roller *j*, where it is met by the second sheet, and the two then proceed together to the folding mechanism, as will more fully hereinafter appear. The sheets or halves are given their proper direction by the switch *l*, arranged in connection with the disk K, to alternately deflect and pass without deflection the proper sheets to make a complete newspaper.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the tapes D, E, and F, guides *k*, the switch *l*, arranged to alternately deflect the sheets to the grippers and under the cylinder, and the gripper-cylinder M, mounted between the tapes D and F, and provided with one or more sets of grippers, *p*, adapted to grip and release the alternate sheets fed to the machine, substantially as described.

2. The combination of the tapes D E, adapted to deliver the sheets to the cylinder, the switch *l*, arranged to alternately deflect the sheets to the grippers and under the cylinder, the cylinder M, mounted between the tapes D and F, and provided with grippers *p*, actuated by the cam-disk N, guides *k*, tapes F, and folding mechanism I, all constructed and operating substantially as described.

CONRAD KAHLER.

Witnesses:
ALBERT H. ADAMS,
MARIO L. PRICE.