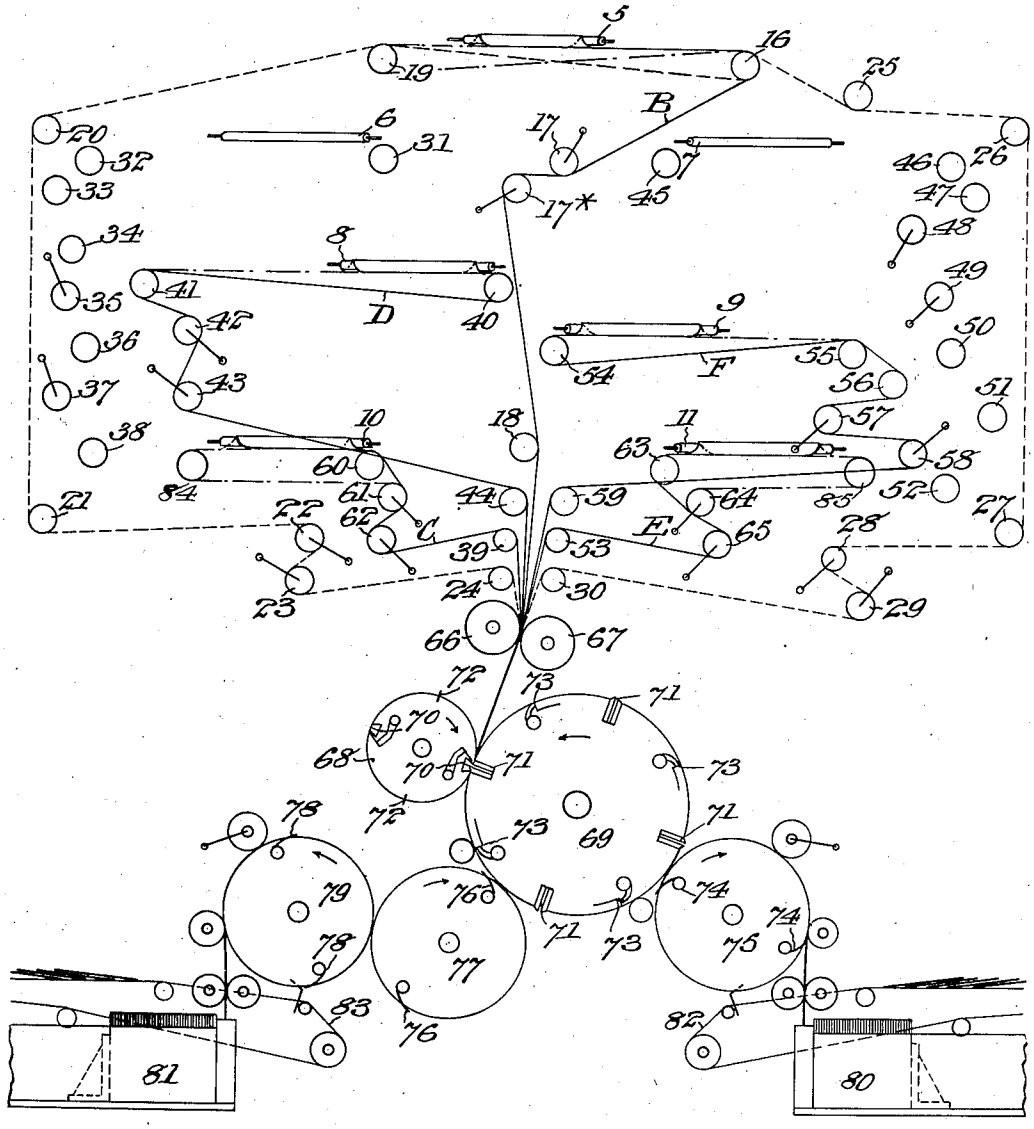
March 4, 1941. J. E. MEYER 2,233,793

FOLDING MECHANISM FOR PRINTING PRESSES

Filed Jan. 4, 1939 6 Sheets-Sheet 1

Fig. 1.




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BY

Howson & Howson

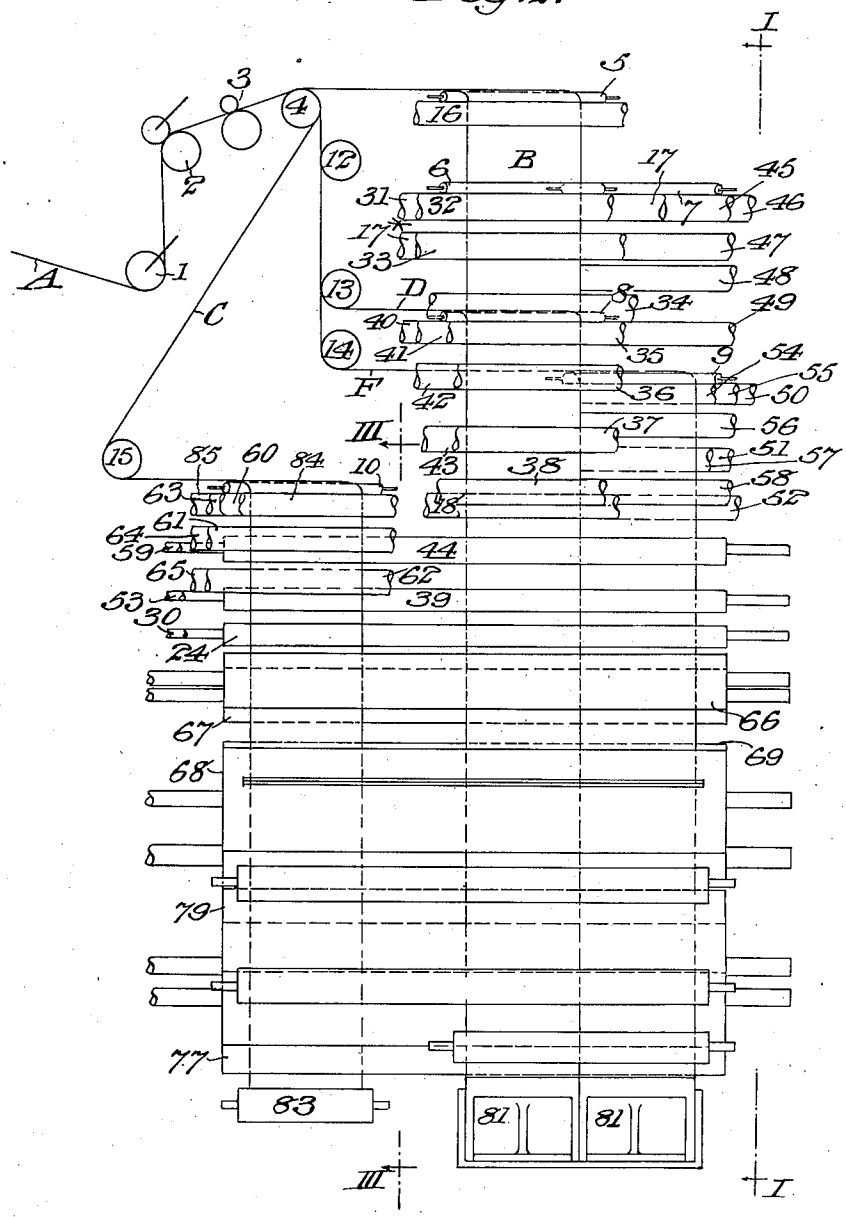
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FOLDING MECHANISM FOR PRINTING PRESSES

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Fig. 2.




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FOLDING MECHANISM FOR PRINTING PRESSES

Filed Jan. 4, 1939 6 Sheets-Sheet 3

Fig. 8.

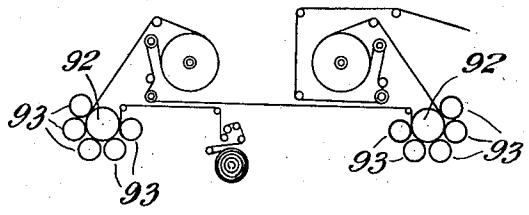
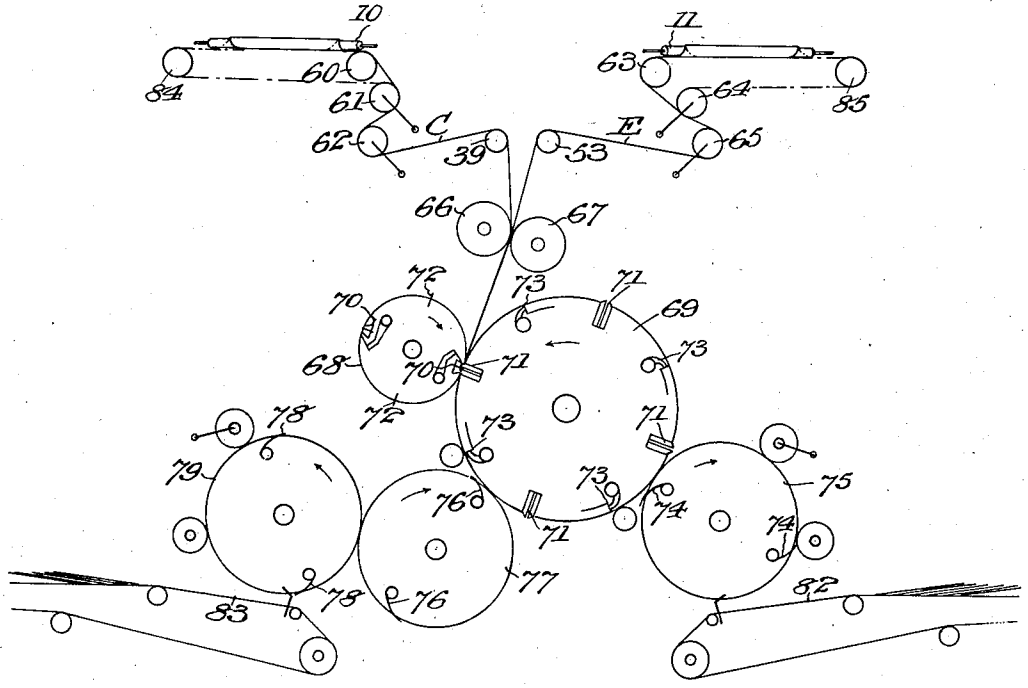



Fig. 3.



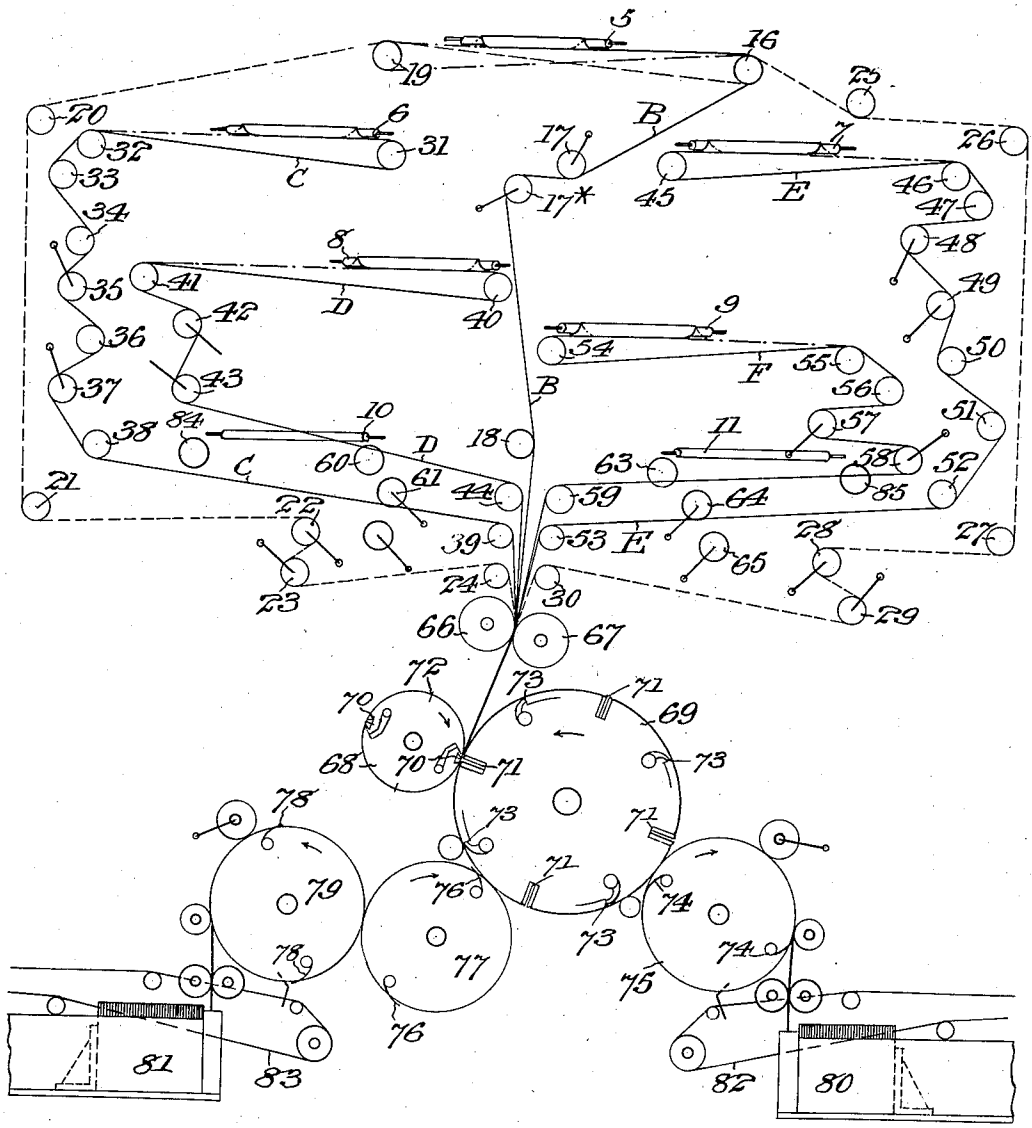

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FOLDING MECHANISM FOR PRINTING PRESSES

Filed Jan. 4, 1939 6 Sheets-Sheet 4

Fig. 4.




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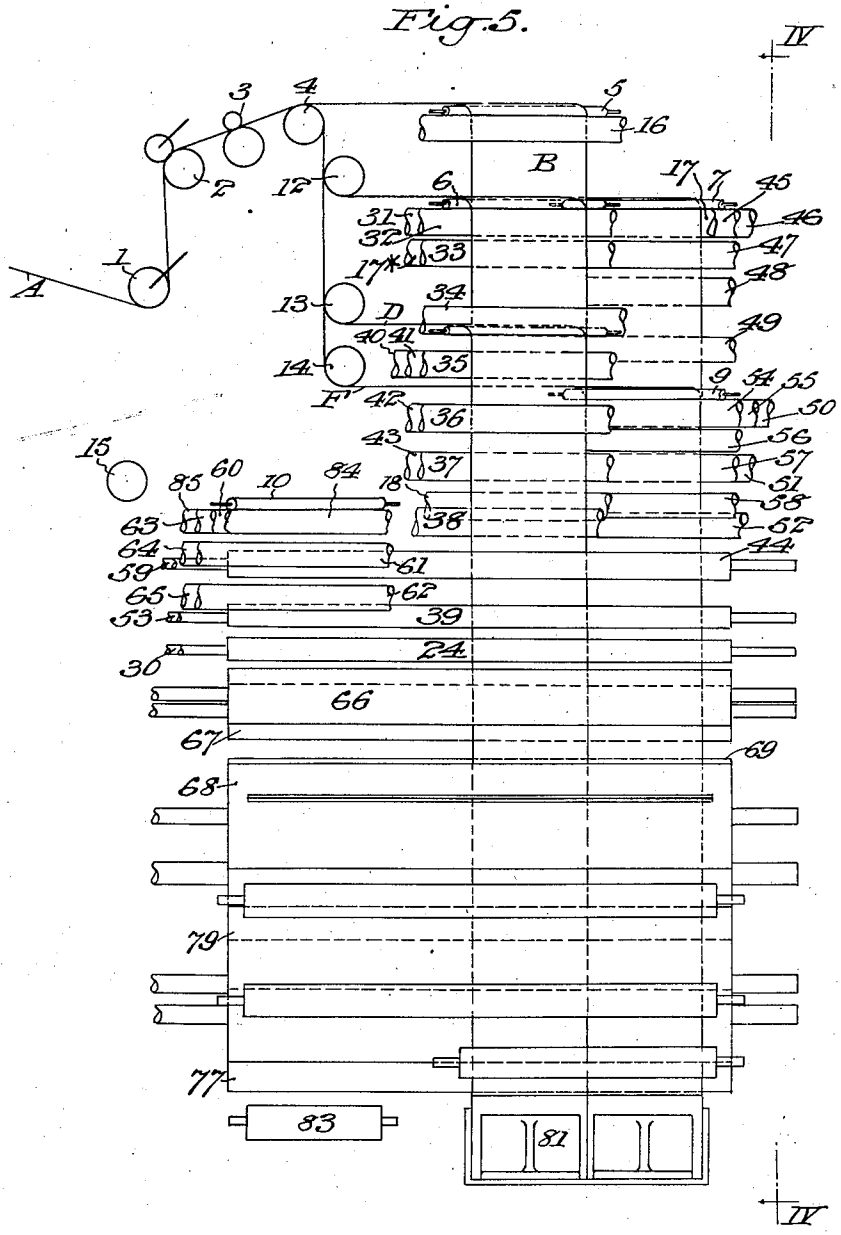
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Fig. 5.




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FOLDING MECHANISM FOR PRINTING PRESSES

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Fig. 6.

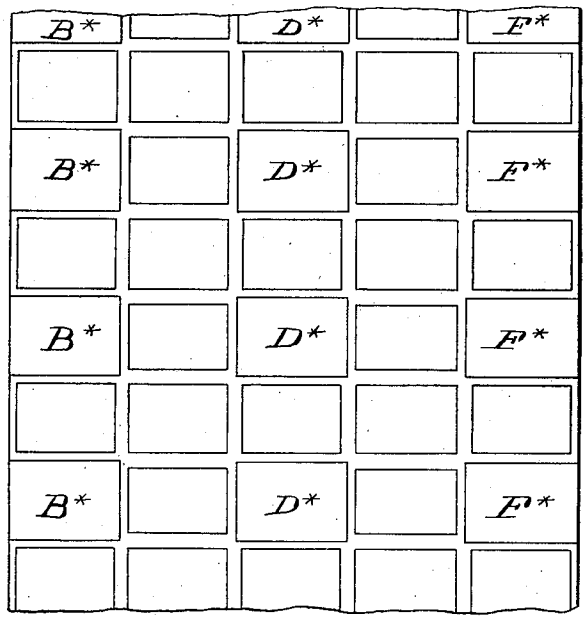
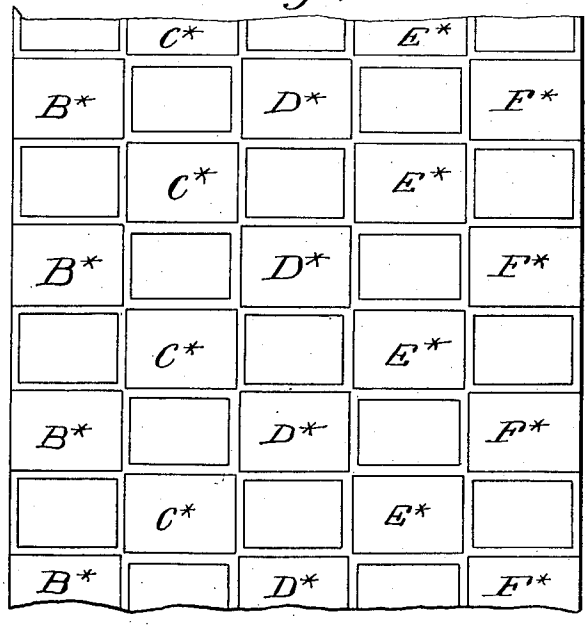



Fig. 7.




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Patented Mar. 4, 1941 2,233,793

# UNITED STATES PATENT OFFICE

2,233,793

## FOLDING MECHANISM FOR PRINTING PRESSES

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Application January 4, 1939, Serial No. 249,257

22 Claims. (Cl. 270—4)

The number of pages in a particular signature might be determined by the desire to have certain bleed pages in predetermined relationships in the printed product. For example, the continuous printed impression is particularly desirable to advertisers who wish the entire page utilized and to illustrators who do not wish to be limited to one page in their illustration.

Since if bleed page plates were arranged adjoining each other the reciprocation of the distributing rolls of the inking mechanisms for the respective form cylinders would transfer some ink from each fountain or division thereof to each plate on the cylinder, thereby resulting in a surplus of ink or mixed colors, the required plate arrangements may result in the webs being associated so as to produce both light and heavy products.

In folders for high speed printing presses it has been found difficult to properly handle light products, i. e., folded signatures having relatively few pages, when they were delivered to packer boxes, because of the said high speed.

The object of my invention is to obviate this difficulty by providing the folder with both packer and traveling endless carrier deliveries, said deliveries being preferably arranged side by side across one or both ends of the folder. This will permit the heavy products to be delivered to the packer deliveries and the light products to the traveling endless delivery carriers.

A practical embodiment of my invention is represented in the accompanying drawings, in which the folder there illustrated is arranged to handle five narrow webs slit from a wide traveling web; means being provided for variously associating the narrow webs, cutting the so-associated narrow webs into two page length signatures of different sizes, folding said signatures and delivering them in various sized products to the selected deliveries.

Fig. 1 represents a diagrammatic vertical section taken in the plane of the line I—I of Fig. 2, looking in the direction of the arrows, with certain of the guide rollers omitted.

Fig. 2 represents an end view of the same with the guide rollers for the alternate paths of one of the narrow webs omitted.

Fig. 3 represents a longitudinal vertical section taken in the plane of the line III—III of Fig. 2, looking in the direction of the arrows.

Fig. 4 represents a diagrammatic vertical section taken in the plane of the line IV—IV of Fig. 5, looking in the direction of the arrows, when the products are delivered to the packers only.

Fig. 5 represents an end view of the same with the guide rollers for the alternate paths of one of the narrow webs omitted.

Fig. 6 represents a fragment of a traveling web having bleed pages printed thereon, which bleed pages are spaced both laterally and longitudinally but not in staggered order.

Fig. 7 represents a fragment of a traveling web having bleed pages printed thereon, which bleed pages are spaced both laterally and longitudinally in staggered order.

The term "bleed page" as used herein means a page on which some or all of the printed matter extends entirely to one or more edges of the page in the final product, thereby eliminating the usual unprinted margin or margins at that or those portions of the page.

Fig. 8 represents a diagrammatic side elevation on a reduced scale of a multicolor printing press including five form cylinders in each printing unit.

The impression cylinders are denoted herein by 92, 92 and their respective form cylinders which are arranged to coact therewith in the usual manner are denoted by 93.

The traveling wide web A has printed at laterally and longitudinally spaced portions thereon, so called bleed pages of one or more colors. In some instances these bleed pages may be arranged in staggered order on the wide web. This wide web A, which is herein shown as five pages wide, is engaged by rollers 1, 2 on its way to the slitting mechanism 3 where it is divided longitudinally into five narrow webs B, C, D, E, F. All, certain, or alternate narrow webs bear bleed pages.

In the form shown in Fig. 6 the bleed pages are denoted by B*, D* and F* and they are spaced from one another both laterally and longitudinally of the wide web A, but not in staggered order. In the form shown in Fig. 7, the additional bleed pages are denoted by C* and E* and they are spaced so that the bleed pages are not only spaced laterally and longitudinally but also in staggered order on the wide web A. These narrow webs are engaged by the roller 4 and from thence, according to the final relative positions of the narrow webs and their bleed pages, travel in different selected paths around certain of the reversible turning bars 5 to 11 inclusive and certain of the guide rolls 12 to 65 inclusive, to the coacting narrow web associating rollers 66, 67. From thence the associated nar-

row webs pass to the coacting cutting and folding cylinders 68, 69, where the narrow webs are cut into two page lengths by one of the pairs of coacting cutters 70, 71.

The groups of sheets are then folded onto the cylinder 69 by one of the pairs of coacting tucking blades 72 and folding jaws 73. The folded various sized products to be delivered at one end of the folder are taken from the folding jaws 73 of the cutting and folding cylinder 69 by the proper set of grippers 74 on the delivery cylinder 75.

The folded sheets of various sized products to be delivered at the other end of the folder are taken from the folding jaws 73 on the cutting and folding cylinder 69 by the grippers 76 on the transfer cylinder 77 and transferred thereby to the grippers 78 on the delivery cylinder 79.

These cylinders 75, 77, 79 rotate at a slower surface speed than the cylinders 68, 69, to permit the accurate delivery of the various sized products to their selected deliveries.

In the present instance I have shown the cylinder 68 as provided with two equally spaced cutting blocks 70 and two equally spaced tucking blades 72, and the cylinder 69 as provided with four equally spaced cutting knives 71 and four equally spaced folding jaws 73; the cylinder 69 being twice the diameter of the cylinder 68.

The deliveries are herein shown as a double packer and a single endless carrier, arranged side by side across the folder at each end thereof, the double packer deliveries being denoted by 80, 81 and the traveling endless carriers by 82, 83.

It will be understood that the narrow webs B, C, D, E, F may be passed through different desired paths over certain of the turning bars 5 to 11 inclusive, to be engaged by certain of the guide rollers 12 to 65 inclusive, to produce any desired association of the narrow webs at the rollers 66, 67 in line with either one or both types of delivery. For instance, in Fig. 1 I have shown in full lines the narrow web B as passing from the roller 16 to be guided by the rollers 17, 18 for occupying a position in the middle of the associated narrow webs in line with the packer deliveries 80, 81.

I have also shown in dotted lines the narrow web B as passing from the roller 16 to be guided by the rollers 25 to 30 inclusive, for occupying an exterior position on one side of the associated narrow webs; and as passing from the roller 16 to be guided by the rollers 19 to 24 inclusive, for occupying an exterior position on the opposite side of the said associated narrow webs.

By reversing the turning bar 5 and leading the narrow web B directly to the turning bar 19 and from thence to and around the turning bar 16 as indicated in dot and dash lines, the web B will be reversed, thereby producing another page combination as far as the top and underside of the web is concerned.

Also, by reversing the turning bar 5, different combinations of pages as far as the top and underside of the web is concerned, may be produced by passing the narrow web B to the right or left along the paths indicated by the dotted lines.

Also, by reversing one or more of the other turning bars one or more of the other webs may be reversed as indicated in dot and dash lines in the drawings. In this instance the guide rollers 84 and 85 would be necessary for the reverse turning bars 10 and 11.

It is obvious that the paths of the narrow webs C, D, E, F may also be varied to bring them into the desired association in the final products.

It will be noted that the web guide rollers 17, 17*—22, 23—28, 29—35, 37—42, 43—48, 49—57, 58—61, 62 and 64, 65 for the several narrow webs are compensator rollers, which rollers may be swung to change, i. e., lengthen or shorten, the travel of the several narrow webs so as to bring any two of their bleed pages into facing relationship with each other in the final product, irrespective of the location of the bleed page printing plates on the form cylinders. In other words, the relation of the cut and the fold may be changed with respect to the position of the bleed page plates on the form cylinders to accomplish the result desired in the final product.

In Fig. 1, the narrow web C leads from the turning bar 10 to be engaged by the rollers 60, 61, 62, 39, on its way to the associating rollers 66, 67 in line with the endless delivery carriers 82, 83; while in Fig. 4 the web C leads from the turning bar 6 to be engaged by the rollers 31 to 39 inclusive, on its way to the associating rollers 66, 67 in line with the packer deliveries 80, 81. Also, in Fig. 1 the narrow web E is shown as leading from the turning bar 11 to be engaged by the rollers 63, 64, 65, 53 on its way to the associating rollers 66, 67, in line with the packer deliveries 80, 81; while in Fig. 4 the web E is shown as leading from the turning bar 7 to be engaged by the rollers 45 to 53 inclusive, on its way to the associating rollers 66, 67, in line with the packer deliveries 80, 81.

In practice, it is intended that the heavy and light products should be delivered in opposite directions, side by side, to both the packers and the traveling endless carriers, or, if they are all heavy products, to the packers only, or, if they are all light products, to the endless carriers only.

As above stated, the turning bars may be so arranged that each narrow web may be turned either side up on its way to the associating rollers 66, 67.

The parts shown and described but not claimed herein form the subject matter of my copending applications filed of even date herewith, their Serial Nos. being 249,255 and 249,256.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described, but what I claim is:

1. In combination, a folder for concurrently producing heavy and light products, said folder including signature collecting and folding devices, packer and endless tape carrier deliveries, and means for forwarding the heavy products from the signature collecting and folding devices to the said packer delivery and the light products to the said tape carrier delivery.

2. In combination, a folder for concurrently producing heavy and light products, said folder including signature collecting and folding devices, packer and endless tape carrier deliveries arranged side by side, and means for forwarding the heavy products from the signature collecting and folding devices to the said packer delivery and the light products to the said tape carrier delivery.

3. In combination, a folder for concurrently

producing heavy and light products, said folder including signature collecting and folding devices, packer and endless tape carrier deliveries arranged side by side at one end of the folder, and means for forwarding the heavy products from the signature collecting and folding devices to the said packer delivery and the light products to the said tape carrier delivery.

4. In combination, a folder for concurrently producing heavy and light products, said folder including signature collecting and folding devices, two packer deliveries and two endless tape carrier deliveries, and means for forwarding the heavy products from the signature collecting and folding devices to one or both of the packer deliveries and the light products to one or both of the tape carrier deliveries.

5. In combination, a folder for concurrently producing heavy and light products, said folder including signature collecting and folding devices, packer and endless tape carrier deliveries arranged at each end of the folder, and means for forwarding the heavy products from the signature collecting and folding devices to one or both of the packer deliveries and the light products to one or both of the tape carrier deliveries.

6. In combination, a folder for concurrently producing heavy and light products, said folder including signature collecting and folding devices, packer and endless tape carrier deliveries arranged side by side at each end of the folder, and means for forwarding the heavy products from the signature collecting and folding devices to one or both of the packer deliveries and the light products to one or both of the tape carrier deliveries.

7. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, packer and endless tape carrier deliveries, and a delivery cylinder for forwarding the heavy products from the cutting and folding cylinders to the said packer delivery and the light products to the said tape carrier delivery.

8. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged at one end of the folder, and a delivery cylinder for forwarding the heavy products from the cutting and folding cylinders to the said packer delivery and the light products to the said tape carrier delivery.

9. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged side by side at one end of the folder, and a delivery cylinder for forwarding the heavy products from the cutting and folding cylinders to the said packer delivery and the light products to the said tape carrier delivery.

10. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, two packer deliveries and two endless tape carrier deliveries, and two delivery cylinders for forwarding the heavy products from the cutting and folding cylinders to one or both of the packer deliveries and the light products to one or both of the tape carrier deliveries.

11. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged at each end of the folder, and two delivery cylinders for forwarding the heavy products from the cutting and folding cylinders to one or both of the packer deliveries and the light products to one or both of the tape carrier deliveries.

12. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged side by side at each end of the folder, and two dleivery cylinders for forwarding the heavy products from the cutting and folding cylinders to one or both of the packer deliveries and the light products to one or both of the tape carrier deliveries.

13. In combination, a folder for concurrently producing heavy and light products, said folder including coacting cutting and folding cylinders, a transfer cylinder coacting with one cutting and folding cylinder, packer and endless tape carrier deliveries located at each end of the folder, and two delivery cylinders, one coacting with one of the said cutting and folding cylinders for forwarding heavy products to the packer delivery and light products to the tape carrier delivery at one end of the folder; and the other delivery cylinder coacting with the said transfer cylinder for forwarding the heavy products to the packer delivery and the light products to the tape carrier delivery at the opposite end of the folder.

14. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for changing the length of travel of one or more of the narrow webs on their way to the associating rollers, coacting cutting and folding cylinders, packer and endless tape carrier deliveries, and a delivery cylinder arranged to forward the heavy folded products from the cutting and folding cylinders to the packer delivery and the light folded products to the tape carrier delivery.

15. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for changing the length of travel of one or more of the narrow webs on their way to the associating rollers, coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged at one end of the folder, and a delivery cylinder arranged to forward the heavy folded products from the cutting and folding cylinders to the packer delivery and the light folded products to the tape carrier delivery.

16. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for changing the length of travel of one or more of the narrow webs on their way to the associating rollers, coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged side by side at one end of the folder, and a delivery cylinder arranged to forward the heavy folded products from the cutting and folding cylinders to the packer delivery and the light folded products to the tape carrier delivery.

17. In combination, a folder for concurrently producing heavy and light products, said folder

including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for reversing one or more of the narrow webs on their way to the associating rollers, coacting cutting and folding cylinders, packer and endless tape carrier deliveries, and a delivery cylinder arranged to forward the heavy folded products from the cutting and folding cylinders to the packer delivery and the light folded products to the tape carrier delivery.

18. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for reversing one or more of the narrow webs on their way to the associating rollers, coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged at one end of the folder, and a delivery cylinder arranged to forward the heavy folded products from the cutting and folding cylinders to the packer delivery and the light folded products to the tape carrier delivery.

19. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for reversing one or more of the narrow webs on their way to the associating rollers, coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged side by side at one end of the folder, and a delivery cylinder arranged to forward the heavy folded products from the cutting and folding cylinders to the packer delivery and the light folded products to the tape carrier delivery.

20. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for reversing one or more of the narrow webs, means for changing their length of travel, coacting cutting and folding cylinders, packer and endless tape carrier deliveries, and delivery cylinders arranged to forward the heavy folded products from the cutting and folding cylinders to their respective packer deliveries and the light folded products to their respective tape carrier deliveries.

21. In combination, a folded for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for reversing one or more of the narrow webs, means for changing their length of travel, coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged at each end of the folder, and delivery cylinders arranged to forward the heavy folded products from the cutting and folding cylinders to their respective packer deliveries and the light folded products to their respective tape carrier deliveries.

22. In combination, a folder for concurrently producing heavy and light products, said folder including coacting web associating rollers, means for leading a plurality of narrow webs through different selected paths to the associating rollers, means for reversing one or more of the narrow webs, means for changing their length of travel, coacting cutting and folding cylinders, packer and endless tape carrier deliveries arranged side by side at each end of the folder, and delivery cylinders arranged to forward the heavy folded products from the cutting and folding cylinders to their respective packer deliveries and the light folded products to their respective tape carrier deliveries.

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