E. H. COTTRELL.

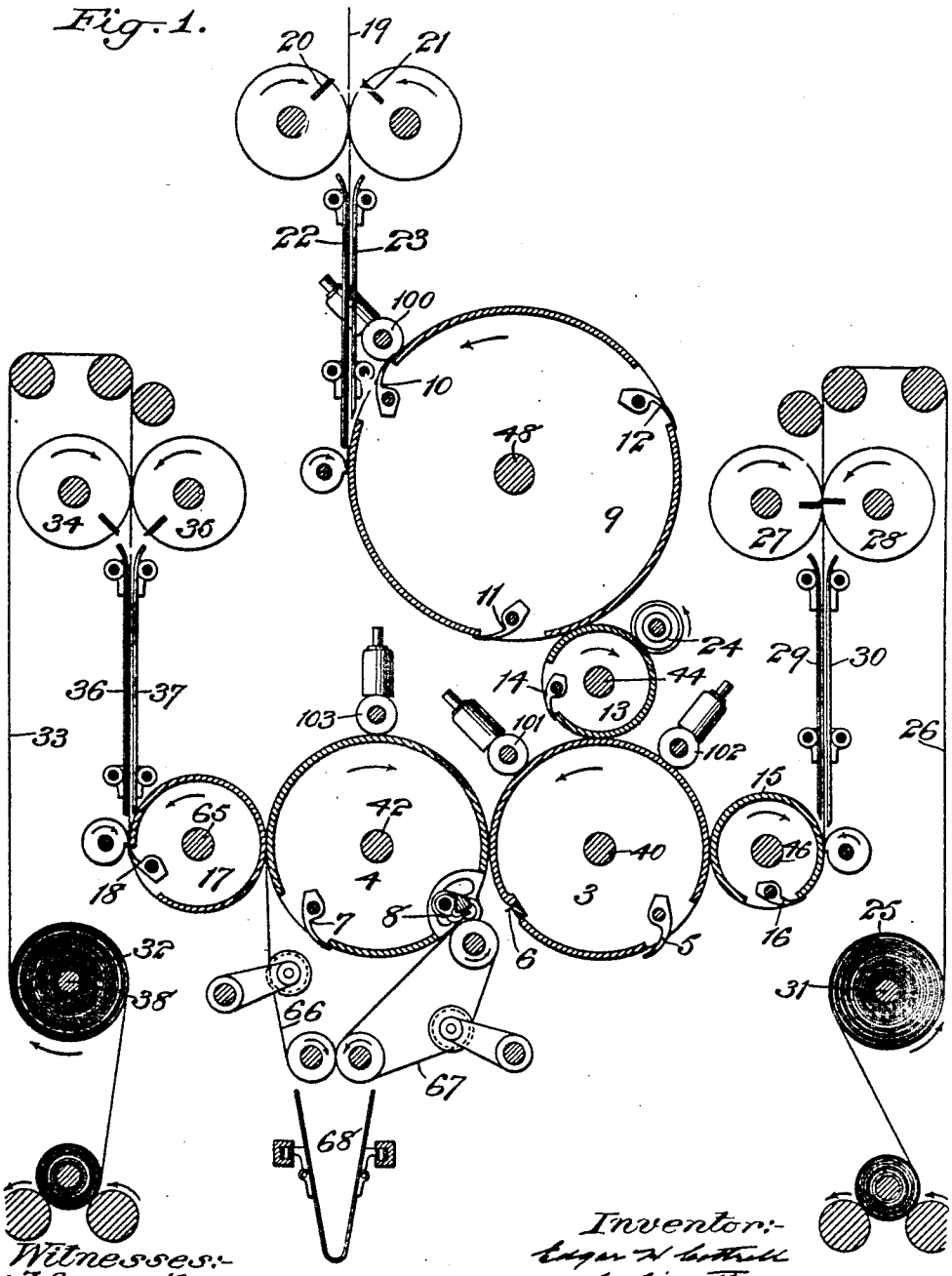
CUTTING AND FOLDING MACHINE.

APPLICATION FILED APR. 19, 1912.

1,067,471. **Patented July 15, 1913.**

5 SHEETS—SHEET 1.

Fig. 1.



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Inventor:-
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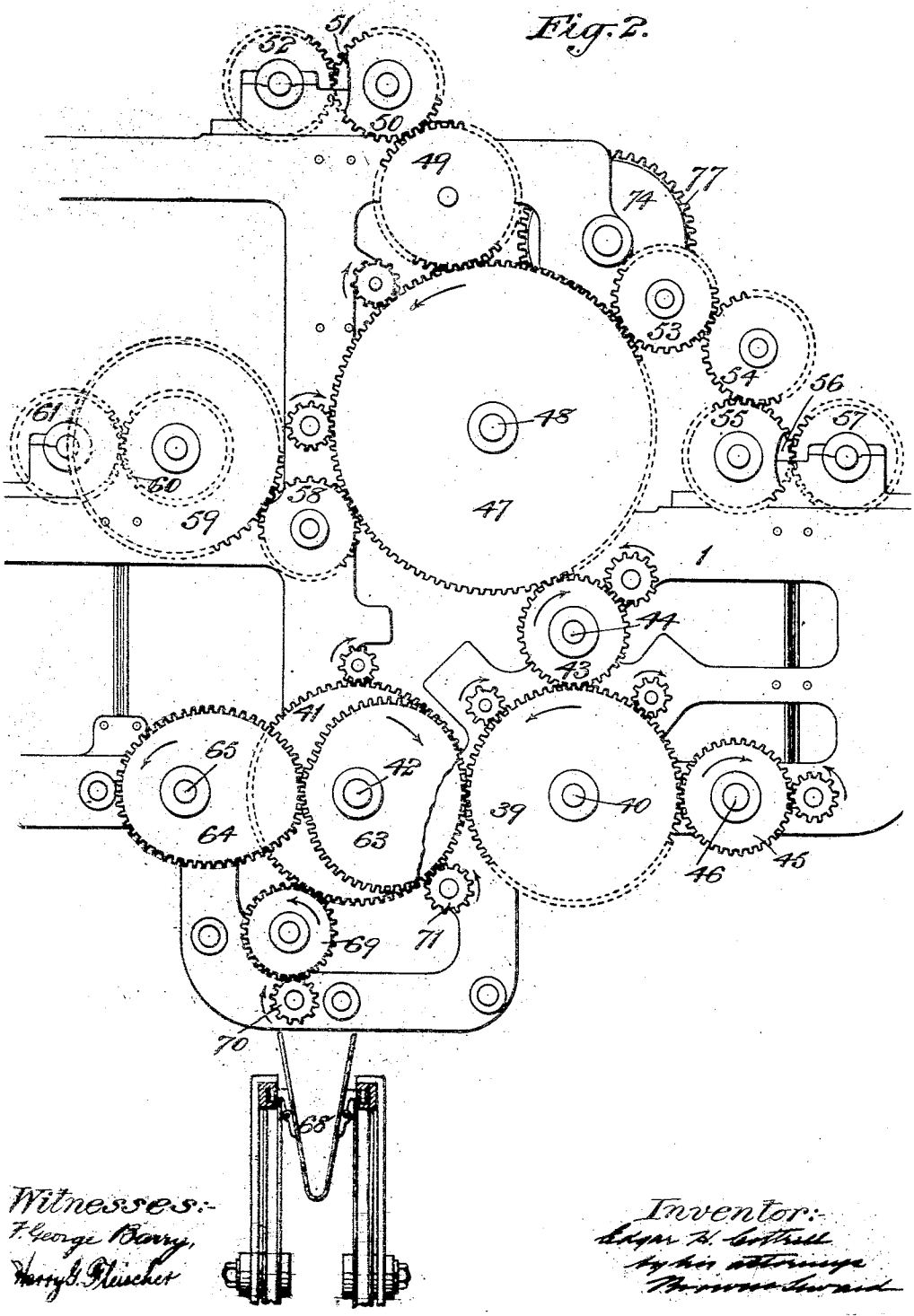
CUTTING AND FOLDING MACHINE.

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1,067,471. Patented July 15, 1913.

5 SHEETS—SHEET 2.

Fig. 2.



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CUTTING AND FOLDING MACHINE.

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5 SHEETS—SHEET 3.

Fig. 3.

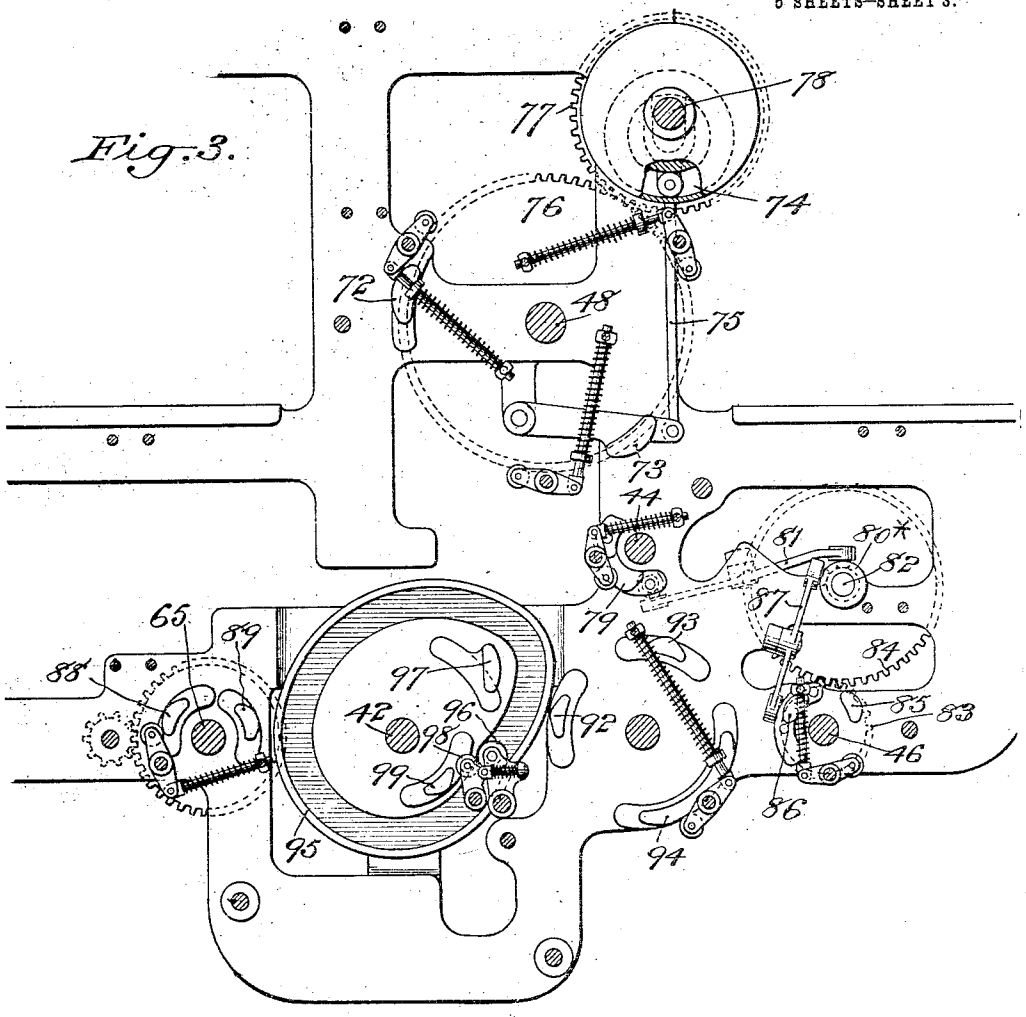
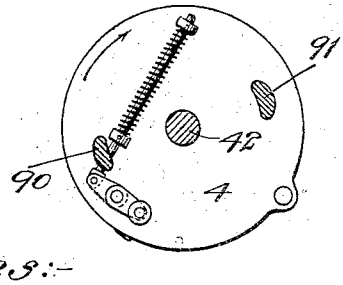


Fig. 4.



Witnesses:-

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CUTTING AND FOLDING MACHINE.

APPLICATION FILED APR. 19, 1912.

1,067,471

Patented July 15, 1913.

5 SHEETS—SHEET 4.

Fig. 5.

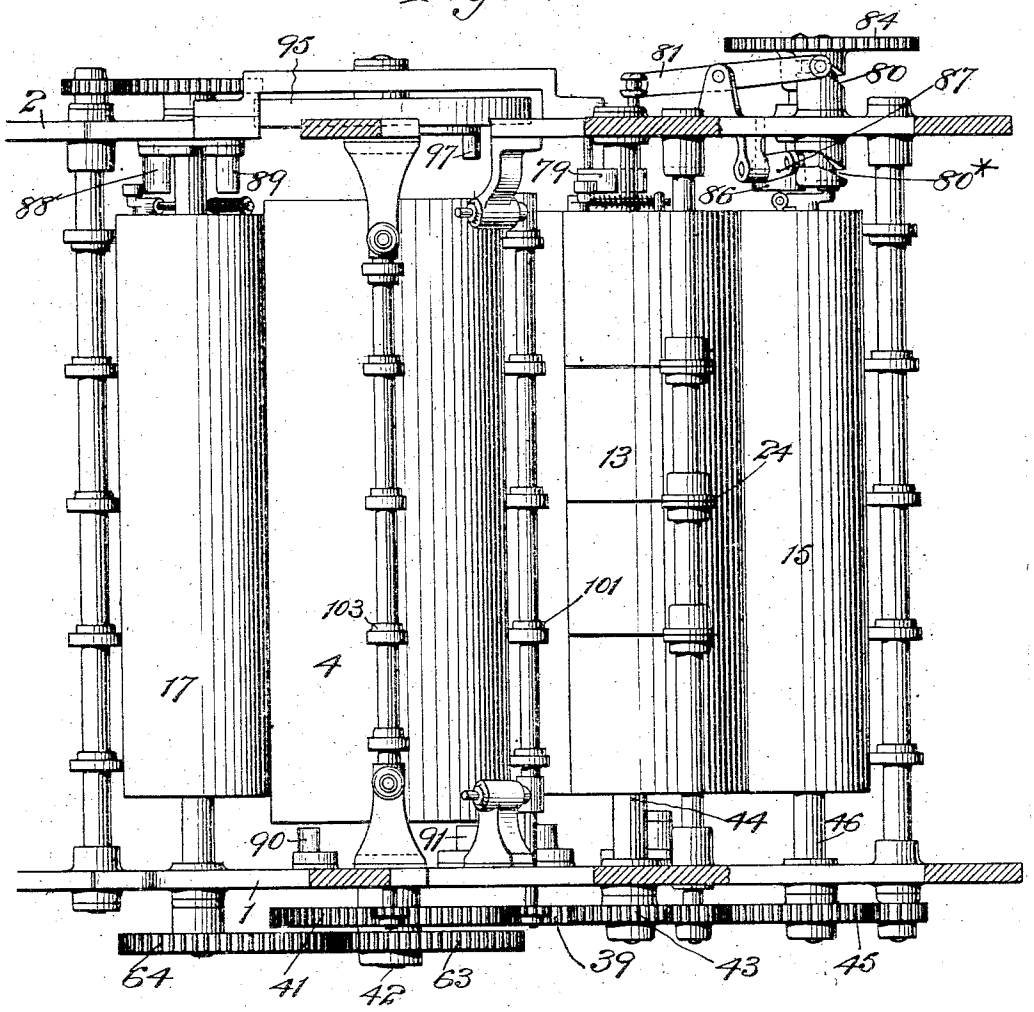


Fig. 10. Fig. 11. Fig. 12. Fig. 13. Fig. 14.



Witnesses:
F. George Barry,
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CUTTING AND FOLDING MACHINE.

APPLICATION FILED APR. 19, 1912.

1,067,471. Patented July 15, 1913.

5 SHEETS—SHEET 5.

Fig. 6.

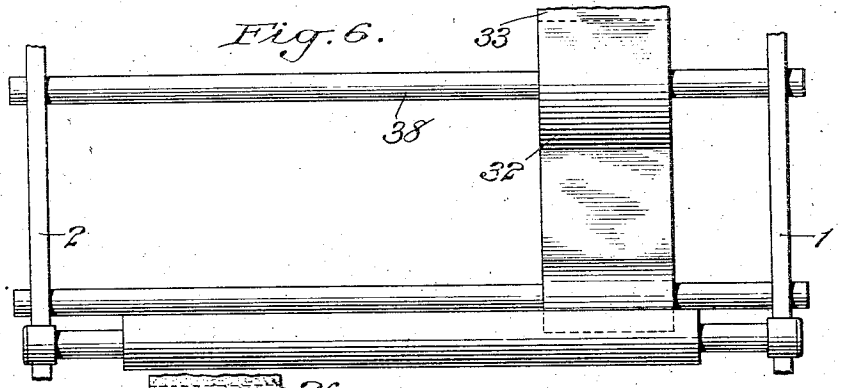


Fig. 7.

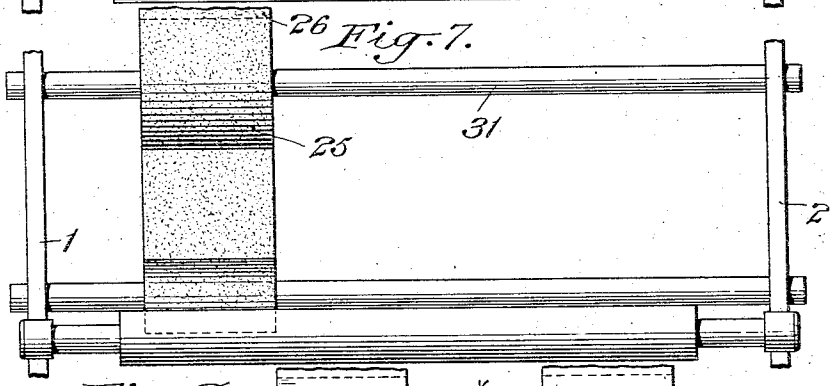


Fig. 8.

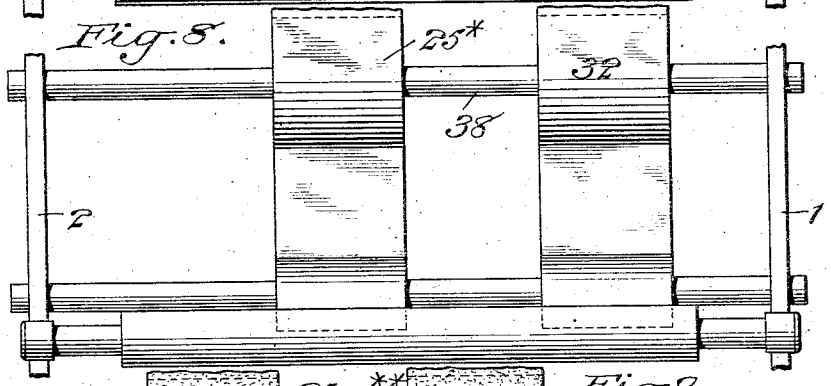
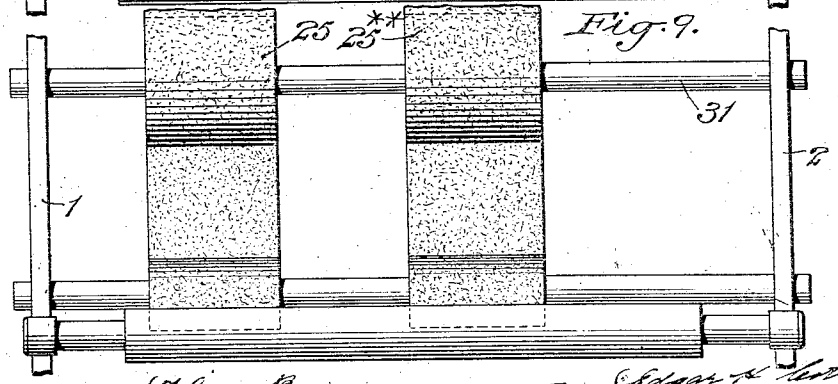


Fig. 9.



Witnesses: J. George Bavin, Harry G. Fischer

Inventor: Edgar H. Cottrell by his attorneys Brown & Swan

UNITED STATES PATENT OFFICE.

EDGAR H. COTTRELL, OF NEW YORK, N. Y., ASSIGNOR TO C. B. COTTRELL & SONS COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CUTTING AND FOLDING MACHINE.

1,067,471. Specification of Letters Patent. Patented July 15, 1913.

Application filed April 19, 1912. Serial No. 691,868.

To all whom it may concern:

Be it known that I, EDGAR H. COTTRELL, a citizen of the United States, and resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Cutting and Folding Machines, of which the following is a specification.

This invention relates to improvements in cutting and folding machines and has for its object to provide means for so associating extra sheets fed from one or more separate sources of supply with sheets cut and fed from the main press web that the said extra sheets may each occupy any one of a plurality of positions in the completed signature.

This invention is more particularly directed to means for so associating sheets from the main press web with a cover sheet and one or more insert sheets that the position of the insert sheet or sheets may be varied to suit different requirements, the source or sources of insert sheet supply being independently adjustable so that each of the insert sheets may be fed to any one of a transverse row of main press sheets or groups of sheets.

This invention is distinguished from my copending application filed July 12, 1907, Serial No. 383,402, in that the main press web is cut transversely and longitudinally and before the main press sheets reach the folding cylinders so that each extra sheet is fed to any one of a plurality of transversely arranged main press sheets or groups of sheets at the folding cylinders rather than to different positions transversely in the width of the main press sheets before they receive their longitudinal cut as in the copending application above referred to.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a portion of the cutting and folding machine embodying my invention, Fig. 2 is a view in side elevation showing the geared connections for driving the several parts at their proper speeds with relation to one another, Fig. 3 is a detail section taken inside the side framing showing the arrangement of cams for controlling the operations of the grippers on certain of the cylinders, Fig. 4 is a detail section showing the cams for controlling the movement of the gripper on one of the folding cylinders, Fig. 5 is a horizontal section through the machine with certain of the parts removed to show the parts beneath the same more clearly, Fig. 6 is a fragmentary view in elevation of the cover supply end of the machine, Fig. 7 is a similar view of the insert supply end of the machine, Fig. 8 is a view similar to Fig. 6, showing a source of insert supply on the same end of the machine as the source of cover sheet supply and so arranged that it will be associated with the third group of collected sheets cut from the main press web, Fig. 9 is a view similar to Fig. 7 showing two sources of insert supply on one end of the machine instead of one source of insert supply, as in Fig. 7, the two sources of insert sheet supply being so arranged that they will be associated with the second and fourth groups of insert sheets cut and collected from the main press web, Figs. 10, 11, 12, 13 and 14 represent several different combinations of main press, insert and cover sheets which may be obtained by shifting the insert supply and varying the number of sources of insert supply, Fig. 10 representing the combination produced in the form shown in Figs. 1 to 7 inclusive; and Fig. 12 showing the combination produced in the form shown in Figs. 8 and 9.

The side frames of the machine are denoted by 1 and 2. Male and female folding cylinders 3, 4, are mounted between the side frames, the male cylinders being provided with a set of grippers 5 and a folding blade 6 and the female folding cylinder being provided with a set of grippers 7 and floating folding jaws 8, which jaws are arranged to coact with the blade 6 of the folding cylinder 3. A collecting cylinder 9 is also mounted between the side frames 1 and 2, which cylinder is provided, in the present instance, with three sets of grippers 10, 11, 12. A main press sheet transfer and slitting cylinder 13 is mounted between the side frames 1 and 2, which cylinder is provided with a set of grippers 14 arranged to transfer successive collected groups of main press sheets from the grippers 10, 11 and 12, of the collecting cylinder 9 to the grippers 5 of the folding cylinder 3.

An insert sheet transfer cylinder 15 is provided with a set of grippers 16 arranged to transfer the insert sheets to the grippers

5 of the folding cylinder 3. This insert transfer cylinder 15 also serves as an insert sheet collecting cylinder.

A cover sheet transfer cylinder 17 is provided with grippers 18 arranged to transfer the cover sheets to the grippers 7 of the folding cylinder 4.

The main press web 19 is cut transversely by the pair of rotary cutters 20, 21. Guides 22, 23, serve to direct the transversely cut sheets of the main press web successively to the grippers 10, 11 and 12, of the collecting cylinder 9.

The collected sheets are transferred from the grippers 14, of the transfer cylinder 13 and the collected sheets are cut longitudinally into a plurality of groups of narrower sheets by the slitters 24 which coact with the transfer cylinder 13. In the present instance, the collected transversely cut main press sheets are cut longitudinally into four different groups by the coaction of the slitters 24 with the transfer cylinder 13.

The insert sheets are fed from a separate source of supply, in the present instance from a roll 25. The insert web 26 leads from the roll 25 through a pair of rotary cutters 27, 28, and from thence between stationary guides 29, 30, into position to have the advance edges of the insert sheets engaged by the grippers 16 on the insert sheet collecting and transferring cylinder 15. This insert web roll 25 is shiftable laterally on its shaft 31 into any desired position so that the sheets which are cut from the insert web 26 will be fed to any one of the groups of main press sheets which are being fed to the folding cylinders.

The cover sheet is fed from a source of supply, in the present instance a cover roll 32. The cover web 33 is led through a pair of rotary cutters 34, 35, and from thence through stationary guides 36, 37, into position to have the advance edges of the cover sheets engaged by the grippers 18 of the cover sheet transfer cylinder 17.

The cover web roll 32 is shiftable laterally along its shaft 38 so as to permit the cover sheets to be fed to any desired group of main press sheets at the folding cylinders.

The geared connection between the several parts is as follows: A gear 39 fixed on the shaft 40 of the folding cylinder 3 meshes with a gear 41 fixed to the shaft 42 of the folding cylinder 4. These two cylinders are of the same diameters and are driven at the same speed.

The main press sheet transfer and slitting cylinder 13 is one-half the diameter of the folding cylinders 3 and 4 and is driven two revolutions for each revolution of the folding cylinders through a gear 43 fixed to the shaft 44 of the cylinder 13 and meshing with the gear 39. The insert sheet transfer cylinder 15 is one-half the diameter of the folding cylinders 3 and 4 and is driven two revolutions for each revolution of the folding cylinders, by means of a gear 45 fixed to the shaft 46 of the cylinder 15 and meshing with the gear 39.

The main press sheet collecting cylinder 9 is three times the diameter of the transfer and slitting cylinder 13 and is driven one and one-half revolutions for every two revolutions of the said cylinder through a gear 47 fixed to the shaft 48 of the cylinder 9, meshing with the gear 43 of the cylinder 13. The rotary cutters 20, 21 are driven from the gear 47 through a train of gears 49, 50, 51, 52. The rotary cutters 27, 28 are driven from the gear 47 through a train of gears 53, 54, 55, 56, 57. The rotary cutters 34, 35, are driven from the gear 47 through the train of gears 58, 59, 60, 61.

The cover sheet transfer cylinder 17 is driven a revolution for every revolution of the folding cylinders 3 and 4 but at varying speeds by an irregular gear 63 fast on the shaft 42 and an irregular gear 64 fast on the shaft 65 of the cylinder 17. Carrying tapes 66, 67, are arranged to convey the assembled and folded group of main press, insert and cover sheets from the cylinders 3 and 4 to a collecting pocket carrier 68 like that shown in my United States Letters Patent No. 749,362, dated January 12, 1904, for example.

The tapes 66 are driven from the gear 41 through the gears 69, 70, and the tapes 67 are driven from the gear 41 through the gear 71.

A fixed cam 72 is arranged to open each set of grippers 10, 11 and 12 at the proper time to receive a transversely cut main press sheet from the guides 22, 23.

A movable cam 73 controlled by a rotary cam 74 through a connection 75 acts upon every other set of grippers 10, 11 and 12, or for every full collection on the cylinder 9 for permitting the collection to be transferred to the cylinder. The rotary cam 74 is driven from the gear 76 fixed to the shaft 48 through a gear 77 fixed to the cam shaft 78.

A cam 79 is operated by a rotary cam 80 through a rock lever connection 81 for opening the grippers 14 of the cylinder 13 every other revolution for receiving the transversely cut main press product from one of the grippers 10, 11, 12, and for delivering the product both transversely and longitudinally cut to the grippers 5 of the folding cylinder 3. The shaft 82 of the rotary cam 80 is driven from the shaft 46 of the insert sheet collecting and transfer cylinder through the gears 83, 84.

A fixed cam 85 is arranged in position to open the grippers 16 every revolution of the insert collecting and transfer cylinder 15 for receiving an insert sheet from the guides 29, 30. A movable cam 86 operated

from a rotary cam 80* fast on the shaft 82 through the rock lever connection 87 serves to open the gripper 16 every second revolution of the cylinder 15 for delivering a collected group of two insert sheets to the grippers 5 of the folding cylinder 3.

A fixed cam 88 is arranged in position to open the grippers 18 of the cover sheet transfer cylinder 17 every revolution to receive a cover sheet from the guides 36, 37. Another fixed cam 89 is arranged in position to open the said grippers 18 every revolution of the cylinder 17 for transferring the cover sheet to the grippers 7 of the folding cylinder 4.

A fixed cam 90 is arranged in position to open the grippers 7 of the cylinder 4 at the proper time to receive the cover sheet from the grippers 18 of the cylinder 17. A fixed cam 91 is arranged in proper position to open the said grippers 7 at the proper time to transfer the cover sheet to the grippers 5 of the folding cylinder 3 to be associated with the groups of main press and insert sheets. A fixed cam 92 is arranged in position to open the grippers 5 of the folding cylinder 3 for receiving the cover sheet from the grippers 7 of the cylinder 4. A fixed cam 93 is arranged in position to open the grippers 5 for receiving the groups of main press sheets from the grippers 14 of the slitting and transfer cylinder 13.

A fixed cam 94 is arranged in position to open the grippers 5 for releasing the advance edges of the sheets as they are acted upon by the folding devices 6 and 8 and keeping the said grippers open for receiving the collected group of insert sheets from the grippers 16 of the cylinder 15.

The coaction of the folding devices 6 and 8 is obtained as follows: A fixed box cam 95 is arranged to control the floating of the folding jaws by its engagement with the truck roller 96. A fixed cam 97 is arranged to control the opening of said jaws by its engagement with the stud roller 98 for receiving the blade 6 to fold the product. A fixed cam 99 is arranged to open the jaws for delivering the folded product between the tapes 66, 67, by its engagement with the stud roller 98.

A sheet pressure roller 100 is used in connection with the collecting cylinder 9. Two of these pressure rollers 101, 102, are used in connection with the folding cylinder 3 and one of these rollers 103 is used in connection with the folding cylinder 4. These rollers serve to hold the sheets against the peripheries of their cylinders when disengaged from their grippers.

In operation, the main press web 19 is cut transversely into wide sheets as it passes through the cutters 20, 21. These sheets are fed to the collecting cylinder 9 and collected in groups thereon and transferred at the proper intervals to the cylinder 13 where the said collected groups of main press sheets are cut longitudinally by the slitters 24 into four groups of sheets, in the present instance.

Insert sheets are cut from the web 26 by the cutters 27, 28. Two of these insert sheets are collected by the cylinder 15 and transferred to the grippers 5 of the folding cylinder 3. The cover sheets are cut from the web 33 by the cutters 34, 35, and are transferred by the cylinder 17 to the folding cylinder 4. As the grippers 5 reach the cylinder 13, the main press sheets are transferred thereto. As the grippers 5 reach the cylinder 4 the cover sheet is transferred thereto. In the form shown in Figs. 1 to 7 inclusive, the insert sheets and the cover sheet are associated with the same group of main press sheets. The folding devices 6 and 8 are then brought into coaction for folding the groups of sheets and delivering them into the pocket carrier 68 by means of the tape carriers 66, 67.

While I have shown the cover sheets and insert sheets as combined with the first group of collected sheets from the main press at the folding cylinders, it is evident that these cover and insert sheets may be combined in any other manner with any of the groups of collected sheets from the main press, by shifting the insert and cover sheet sources of supply laterally.

In the form shown in Fig. 8, I have shown an extra insert web roll 25* as mounted on the cover web roll shaft 38 in such a position that sheets cut therefrom will be fed to the third collected group of main press sheets.

In Fig. 9 I have shown an extra insert web roll 25** so mounted on the shaft 31 that insert sheets cut therefrom will be fed to the third group of main press sheets at the folding cylinders.

It is evident that various combinations of insert sheets within the collected groups of main press sheets in the completed signature may be accomplished by varying the number of insert web supply rolls and varying positions of the rolls on both the insert web roll shaft and on the cover web roll shaft.

It will be seen that the machine constructed as hereinabove set forth accomplishes the assembling and folding together of sheets from the main press and from the insert and cover sources of supply without the necessity of employing forms, turning bars or carrying tapes. It will also be seen that the one or more insert sheets cut and fed from one or more previously printed sources of insert sheet supply, may be combined with the sheets cut and fed from the main press web and the sheets cut and fed from the source of cover sheet supply in such a

manner that each insert sheet may occupy any one of a plurality of positions in the completed signature. Also, while I have shown the sources of insert and cover sheet supply as being rolls, it is to be understood that any suitable sources of such extra sheet supply may be used.

What I claim is:—

1. Co-acting folding cylinders, means for feeding main press sheets thereto, means for feeding a sheet from a single source of extra sheet supply into position to be associated at the folding cylinders with any one of said main press sheets and means for combining said sheets according to the position which the sheet is to occupy in the completed signature.

2. Folding cylinders, means for feeding main press sheets thereto, means for feeding a sheet from a single source of extra sheet supply into position to be associated at the folding cylinders with any one of said main press sheets according to the position which the sheet is to occupy in the completed signature, coacting folding devices on the folding cylinders arranged to fold the sheets, and means for combining said sheets.

3. Folding cylinders, means for feeding main press sheets thereto, a laterally shiftable source of extra sheet supply, means for feeding a sheet from the source of extra sheet supply into position to be associated with any one of said main press sheets and means for combining said sheets.

4. Folding cylinders, means for feeding main press sheets thereto, a laterally shiftable source of extra sheet supply, means for feeding a sheet from the source of extra sheet supply into position to be associated with any one of said main press sheets, coacting folding devices arranged to fold the sheets and means for combining said sheets.

5. Co-acting folding cylinders, means for feeding main press sheets thereto, means for feeding extra sheets from a plurality of sources of extra sheet supply, each into position to be associated at the folding cylinders with any one of said main press sheets according to the positions which the sheets are to occupy in the completed signature and means for combining said sheets.

6. Folding cylinders, means for feeding main press sheets thereto, means for feeding sheets from a plurality of sources of extra sheet supply, each into position to be associated at the folding cylinders with any one of said main press sheets according to the positions which the sheets are to occupy in the completed signature, coacting folding devices on the folding cylinders arranged to fold the sheets and means for combining said sheets.

7. Folding cylinders, means for feeding main press sheets thereto, laterally shiftable sources of extra sheet supply, means for feeding sheets therefrom, each into position to be associated with any one of said main press sheets and means for combining said sheets.

8. Folding cylinders, means for feeding main press sheets thereto, laterally shiftable sources of extra sheet supply, means for feeding sheets therefrom, each into position to be associated with any one of said main press sheets, coacting folding devices arranged to fold the sheets and means for combining said sheets.

9. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply and means for feeding an insert sheet from another source of supply into position to be associated with any one of said main press sheets and means for combining said sheets.

10. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply and means for feeding an insert sheet from another source of supply into position to be associated with any one of said main press sheets, coacting folding devices arranged to fold the sheets and means for combining said sheets.

11. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply, a laterally shiftable source of insert sheet supply, means for feeding a sheet from the source of insert sheet supply into position to be associated with any one of said main press sheets and means for combining said sheets.

12. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply, a laterally shiftable source of insert sheet supply, means for feeding a sheet from the source of insert sheet supply into position to be associated with any one of said main press sheets, coacting folding devices arranged to fold the sheets and means for combining said sheets.

13. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply, means for feeding insert sheets from a plurality of sources of insert sheet supply, each into position to be associated with any one of said main press sheets, and means for combining said sheets.

14. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply, means for feeding insert sheets from a plurality of sources of insert sheet supply, each into position to be associated with any one of said main press sheets, coacting folding devices arranged to fold the sheets and means for combining said sheets.

15. Folding cylinders, means for feeding

main press sheets thereto, means for feeding a cover sheet from one source of supply, a plurality of laterally shiftable sources of insert sheet supply, means for feeding sheets therefrom, each into position to be associated with any one of said main press sheets and means for combining said sheets.

16. Folding cylinders, means for feeding main press sheets thereto, means for feeding a cover sheet from one source of supply, a plurality of laterally shiftable sources of insert sheet supply, means for feeding sheets therefrom, each into position to be associated with any one of said main press sheets, coacting folding devices arranged to fold the sheets and means for combining said sheets.

17. Coacting folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement at the folding cylinders with any one of said main press sheets whereby the said extra sheet may occupy any one of a plurality of positions between different plies in the completed signature and means for combining the said main press sheets and extra sheet.

18. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply, to the folding cylinders into engagement at the folding cylinders with any one of said main press sheets whereby the said extra sheet may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices on the folding cylinders arranged to fold the main press sheets and extra sheet together, and deliver them at a predetermined point.

19. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby said extra sheet may occupy any one of a plurality of positions between different plies in the completed signature and means for combining said main press sheets and extra sheet.

20. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby said sheet may occupy any one of a plurality of positions between different plies in the completed signature and coacting folding devices arranged to fold the main press sheets and extra sheets together and deliver them at a predetermined point.

21. Co-acting folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders each into engagement at the folding cylinders with any one of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different plies in the completed signature and means for combining the said main press and extra sheets.

22. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different plies in the completed signature and means for combining said main press and extra sheets.

23. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders into engagement at the folding cylinders with any one of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices on the folding cylinders arranged to fold the sheets together and deliver them at a predetermined point.

24. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

25. Folding cylinders, devices for cutting a main press web transversely and longitudi-

nally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of said main press sheets whereby said insert sheet may occupy any one of a plurality of different positions between different plies in the completed signature and means for combining said main press, cover and insert sheets.

26. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby said insert sheet may occupy any one of a plurality of different positions between different plies in the completed signature and means for combining said main press, cover and insert sheets.

27. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of said main press sheets whereby said insert sheet may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

28. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby the insert sheet may occupy any one of a plurality of different positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

29. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any one of said main press sheets whereby each insert sheet may occupy any one of a plurality of positions between different plies in the completed signature and means for combining the main press, cover and insert sheets.

30. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different plies in the completed signature and means for combining the main press, cover and insert sheets.

31. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders each into engagement with any one of said main press sheets, whereby each insert sheet may occupy any one of a plurality of positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

32. Folding cylinders, devices for cutting a main press web transversely and longitudinally into a plurality of sheets and feeding said sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

33. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of the groups of main press sheets and means for combining said groups of main press sheets and extra sheet.

34. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra

sheet supply being shiftable laterally whereby the said extra sheet may occupy any one of a plurality of positions between different groups in the completed signature and means for combining said groups of main press sheets and extra sheet.

35. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of the groups of main press sheets and coacting folding devices arranged to fold the main press sheets and extra sheet together and deliver them at a predetermined point.

36. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby the said extra sheet may occupy any one of a plurality of positions between different groups in the completed signature and coacting folding devices arranged to fold the main press sheets and extra sheet together and deliver them at a predetermined point.

37. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders each into engagement with any group of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and means for combining the said main press and extra sheets.

38. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and means for combining said main press and extra sheets.

39. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders each into engagement with any group of said main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

40. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

41. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of the groups of main press sheets and means for combining said main press, cover and insert sheets.

42. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby said insert sheet may occupy any one of a plurality of different positions between different groups in the completed signature and means for combining said main press, cover and insert sheets.

43. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of the groups of main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

44. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby the insert sheet may occupy any one of a plurality of different positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

45. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders each into engagement with any group of said main press sheets and means for combining the main press, cover and insert sheets.

46. Folding cylinders, means for feeding

a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different groups in the completed signature and means for combining the main press cover and insert sheets.

47. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any group of said main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

48. Folding cylinders, means for feeding a plurality of groups of main press sheets thereto, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between the different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

49. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of the groups of main press sheets and means for combining said groups of main press sheets and extra sheet.

50. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby the said extra sheet may occupy any one of a plurality of positions between different groups in the completed signature and means for combining said groups of main press sheets and extra sheet.

51. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of the groups of main press sheets and coacting folding devices arranged to fold the main press sheets and extra sheet together and deliver them at a predetermined point.

52. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby the said extra sheet may occupy any one of a plurality of positions between different groups in the completed signature and coacting folding devices arranged to fold the main press sheets and extra sheet together and deliver them at a predetermined point.

53. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, each into engagement with any group of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and means for combining the said main press and extra sheets.

54. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and means for combining said main press and extra sheets.

55. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding

cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders each into engagement with any group of said main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

56. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

57. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of the groups of main press sheets and means for combining said main press, cover and insert sheets.

58. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby said insert sheet may occupy any one of a plurality of different positions between different groups in the completed signature and means for combining said main press, cover and insert sheets.

59. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of the groups of main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

60. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby the insert sheet may occupy any one of a plurality of different positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

61. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any group of said main press sheets, and means for combining the main press cover and insert sheets.

62. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different groups in the completed signature and means for combining the main press cover and insert sheets.

63. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any group of said main press

sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

64. Folding cylinders, devices for cutting a main press web transversely, collecting a plurality of said transversely cut sheets, cutting said collected sheets longitudinally into a plurality of groups of sheets, and feeding said groups of sheets to the folding cylinders, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

65. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of said main press sheets whereby the said extra sheet may occupy any one of a plurality of positions between different plies in the completed signature and means for combining the said main press sheets and extra sheet.

66. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding an extra sheet from a single source of extra sheet supply, to the folding cylinders into engagement with any one of said main press sheets whereby said extra sheet may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices arranged to fold the main press sheets and extra sheet together, and deliver them at a predetermined point.

67. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby said extra sheet may occupy any one of a plurality of positions between different plies in the completed signature and means for combining said main press sheets and extra sheet.

68. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby said sheet may occupy any one of a plurality of positions between different plies in the completed signature and coacting folding devices arranged to fold the main press sheets and extra sheets together and deliver them at a predetermined point.

69. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, each into engagement with any one of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different plies in the completed signature and means for combining the said main press and extra sheets.

70. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different plies in the completed signature and means for combining said main press and extra sheets.

71. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the

sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, each into engagement with any one of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

72. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

73. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of said main press sheets, whereby said insert sheet may occupy any one of a plurality of different positions between different plies in the completed signature and means for combining said main press, cover and insert sheets.

74. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby said insert sheet may occupy any one of a plurality of different positions between different plies in the completed signature and means for combining said main press, cover and insert sheets.

75. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of said main press sheets whereby said insert sheet may occupy any one of a plurality of positions between different plies in the completed signature, and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

76. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby the insert sheet may occupy any one of a plurality of different positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

77. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any one of said main press sheets whereby each insert sheet may occupy any one of a plurality of positions between different plies in the completed signature and means for combining the main press, cover and insert sheets.

78. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder ar-

ranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different plies in the completed signature and means for combining the main press, cover and insert sheets.

79. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any one of said main press sheets, whereby each insert sheet may occupy any one of a plurality of positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

80. A device for cutting a main press web transversely, a cylinder for receiving the so cut sheets thereon, a transfer cylinder arranged to receive the sheets from the first-named cylinder, a device for cutting the sheets longitudinally while they are on the transfer cylinder, folding cylinders for receiving the sheets from the transfer cylinder, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different plies in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

81. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of the groups of main press sheets, and means for combining said groups of main press sheets and extra sheet.

82. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby the said extra sheet may occupy any one of a plurality of positions between different groups in the completed signature and means for combining said groups of main press sheets and extra sheet.

83. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders into engagement with any one of the groups of main press sheets and coacting folding devices arranged to fold the main press sheets and extra sheet together and deliver them at a predetermined point.

84. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding an extra sheet from a single source of extra sheet supply to the folding cylinders, the source of extra sheet supply being shiftable laterally whereby the said extra sheet may occupy any one of a plurality of positions between different groups in the completed signature and coacting folding devices arranged to fold the main press sheets and extra sheet together and deliver them at a predetermined point.

85. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder ar-

ranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, each into engagement with any group of said main press sheets whereby each of the extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and means for combining the said main press and extra sheets.

86. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and means for combining said main press and extra sheets.

87. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, each into engagement with any group of said main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

88. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding extra sheets from a plurality of sources of extra sheet supply to the folding cylinders, the sources of extra sheet supply being shiftable laterally whereby each of said extra sheets may occupy any one of a plurality of positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

89. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of the groups of main press sheets and means for combining said main press, cover and insert sheets.

90. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby said insert sheet may occupy any one of a plurality of different positions between different groups in the completed signature and means for combining said main press, cover and insert sheets.

91. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders into engagement with any one of the groups of main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

92. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cut-

ting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding an insert sheet from another source of supply to the folding cylinders, the source of insert sheet supply being shiftable laterally whereby the insert sheet may occupy any one of a plurality of different positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

93. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any group of said main press sheets and means for combining the main press, cover and insert sheets.

94. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders and means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different groups in the completed signature and means for combining the main press, cover and insert sheets.

95. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, each into engagement with any group of said main press sheets and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

96. A device for cutting a main press web transversely, a cylinder for collecting the so cut sheets thereon, a transfer cylinder arranged to receive the collected sheets from the first-named cylinder, a device for cutting the collected sheets longitudinally into a plurality of groups of sheets while they are on the transfer cylinder, folding cylinders for receiving the said groups of sheets thereon, means for feeding a cover sheet from one source of supply to the folding cylinders, means for feeding a plurality of insert sheets from separate sources of supply to the folding cylinders, the sources of insert sheet supply being shiftable laterally whereby each of said insert sheets may occupy any one of a plurality of different positions between different groups in the completed signature and coacting folding devices arranged to fold the sheets together and deliver them at a predetermined point.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this seventeenth day of April, 1912.

EDGAR H. COTTRELL.

Witnesses:
F. GEORGE BARRY,
C. S. SUNDGREN.