W. A. PRINGLE.

PRINTING AND DELIVERY MECHANISM.

APPLICATION FILED SEPT. 6, 1912.

1,200,758.

Patented Oct. 10, 1916.

2 SHEETS—SHEET 1.

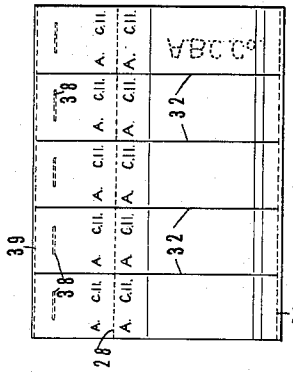


Fig. 2.

Fig. 1.

WITNESSES

P. A. Blair

INVENTOR

W. A. Pringle.

BY

Duell, Coonfield & Duell

ATTORNEYS

W. A. PRINGLE.

PRINTING AND DELIVERY MECHANISM.

APPLICATION FILED SEPT. 6, 1912.

1,200,758.

Patented Oct. 10, 1916.

2 SHEETS—SHEET 2.

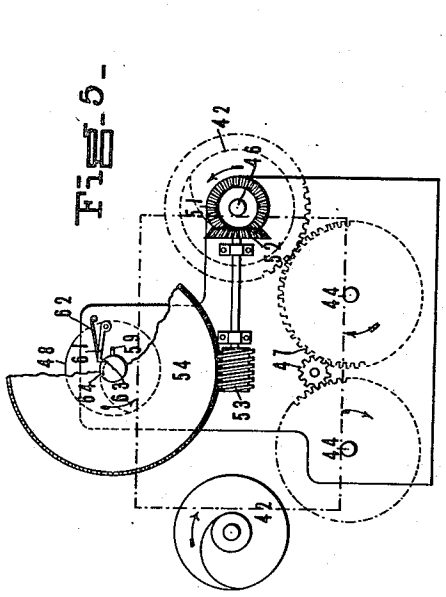


Fig. 5.

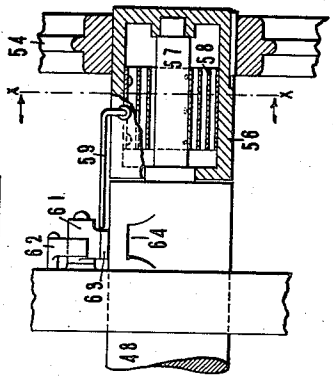


Fig. 6.

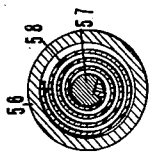


Fig. 7.

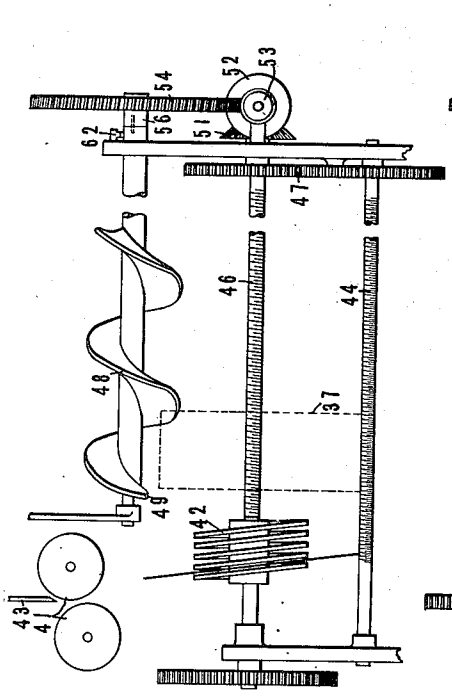


Fig. 3.

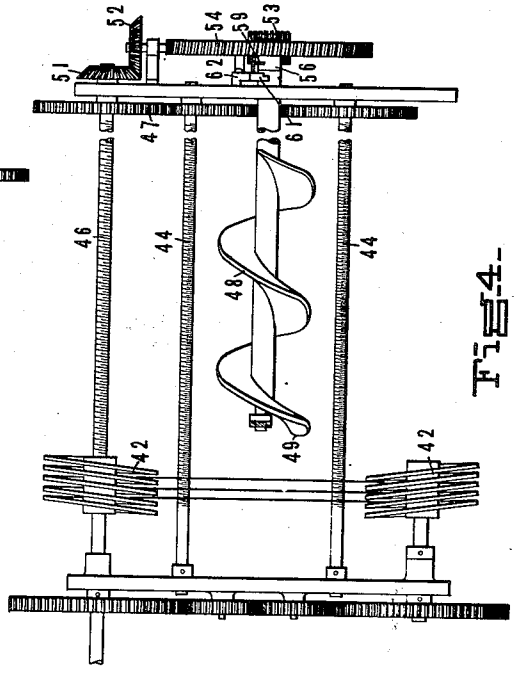


Fig. 4.

WITNESSES

T. A. Blair.

INVENTOR

W. A. Pringle

BY

Duell, Warfield & Duell

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM A. PRINGLE, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO AMERICAN SALES BOOK COMPANY, LIMITED, OF TORONTO, CANADA, A CORPORATION OF ONTARIO.

PRINTING AND DELIVERY MECHANISM.

1,200,758. Specification of Letters Patent. Patented Oct. 10, 1916.

Application filed September 6, 1912. Serial No. 718,797.

To all whom it may concern:

Be it known that I, WILLIAM A. PRINGLE, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Printing and Delivery Mechanisms, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to printing and delivery mechanisms and with regard to certain more specific features to mechanisms adapted to print and cut a web into cards and deliver the cards.

One of the objects of the present invention is to provide a simple and practical mechanism of the above general type, characterized by rapid and reliable action.

Another object is to provide a printing and delivery mechanism that will be durable and compact in construction and practically automatic in operation.

A further object is to provide an improved form of delivery mechanism to printing presses which will count and deliver the sheets or cards in stacks in a predetermined number convenient for subsequent handling.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is shown one of many various possible embodiments of this invention, Figure 1 is a side elevation, largely diagrammatic, of the complete machine; Fig. 2 is a view of one of the cards as printed and cut by the particular mechanism herein shown; Figs. 3, 4 and 5 are respectively a side elevation plan and end elevation of the delivery mechanism, certain parts being shown in section or broken away for the sake of clearness; Fig. 6 is a detailed view of a peculiar form of shaft coupling; and Fig. 7 is a section taken on the line X—X of Fig. 6.

Similar reference characters refer to similar parts throughout the various views of the drawings.

The embodiment of the invention herein illustrated and described is particularly adapted to print and cut a web into sheets to be subsequently bound in pad form for use as restaurant check pads, that is, the general character used in lunch rooms where the total amount of the various dishes ordered is indicated thereon by punching the corresponding one of a series of numbers printed upon the check.

Referring now to the drawings, and more particularly to Fig. 1, 1 denotes a rolled web of paper rotatably mounted upon brackets 2, carried by a standard 3. The web passes through suitable feed rolls 4 and under a tension roll 5, which is movable up and down upon a rod 6 as the tension upon the web varies. The web then passes over feed rolls 7 and enters at the top of the printing press as shown. This printing press comprises two side plates, only one of which, 8, is shown in the diagrammatic view, supporting therebetween a plurality of printing and feed rolls to deliver the cards in their finished form at the lower end of the machine.

The web first passes between a set of printing and platen rolls 9, the printing roll being inked from a reservoir indicated at 11. This particular set prints the name of the restaurant where the checks are subsequently used, upon the reverse side of the web at a plurality of points, according to the number of checks into which the card is subsequently divided, so it will finally appear on the back of each check. The web then passes over suitable feed rolls 12 and through a second set of printing and platen rolls 13 which prints the directions for use and numbers to be punched upon the obverse side. Immediately beneath this printing mechanism are two revolving numbering heads 14 and 16 coacting with a single platen roll 17. These numbering heads, which are automatic in their operations, are designed to print the serial number of the check at a plurality of points; that is, the numbering head 14 prints the serial number "C11" upon the stub portion of the check, for example, while the numbering head 16 prints the same number upon the body portion of the check. Each numbering head is provided

with two sets of numbers, that is, 18 and 19, one of which prints the odd numbers and the other the even numbers. Thus the numbering device 18, for instance, will print "C1", "C3", etc., while the numbering device 19 will print "C4", "C6", etc. This construction not only permits a more rapid operation of the machine, but also permits a larger roll to be used upon which the mechanism may be more conveniently mounted. The web is then delivered to another printing mechanism immediately below comprising two sets of numbering heads, 21 and 22, coacting with a platen roll 23 similar in construction and operation to those just described. This mechanism puts the department letter or number upon the stub and body portion of the checks as indicated by the letter "A", Fig. 2. These numbering devices are automatic in their operation and change as often as desired to print other letters and numbers in succession as may be necessary. All of these numbering heads are suitably inked from reservoirs 24 of any well known or desired style. The web then passes suitable feed rollers 26 to a set of perforating rolls 27 which makes a line of perforations 28, Fig. 2, separating the stub and body portions of the check. Rolls 29 iron these perforations whereby the card will lie flat when finally delivered. Rolls 31 immediately following slit the web longitudinally into the desired number of checks. These slits 32 separate the web into the proper number of checks and are periodically interrupted adjacent the lines along which the web will be subsequently cut in forming the cards, that is, slitters 33 upon the roll 31 have an interrupted portion 34, which leaves an unslit portion in the web as it passes therethrough. The web is then cut transversely by cutting mechanism 36 between the adjacent ends of the slits 32. It will thus be seen that when the cards are finally delivered in stacks or piles 37, they will have an unbroken outer edge whereby all five checks of each card may be more conveniently handled. These cards, which are usually delivered in piles of fifty, are placed in a stapling machine (not shown) which binds them together, as indicated by the staples 38. The stack is then passed to a trimming machine which cuts along the dotted line 39 at the ends of the slits at both top and bottom, thus separating the pile into five distinct pads.

As above stated, the web is cut by the rolls 36 into separate cards, or sheets of cards, which after passing through suitable feed rollers 41 are automatically delivered between the convolutions of a pair of spiral conveyers 42. A guide plate 43 is preferably provided to direct the cards through the lower feed rolls 41. The spiral conveyers 42 rotate in opposite directions and make one complete revolution for each card delivered from the cutters 36; thus a card falls automatically between each convolution thereof.

The cards are supported and guided on edge by means of rods or shafts 44 which are very finely threaded throughout their entire length to urge the cards toward the right or delivery end, as shown in Fig. 4. The direction of rotation of these shafts 44 is such as to urge the cards also toward a side guide shaft 46 along the rear side of the delivery mechanism. This maintains the edges of the cards in alinement whereby they may be more conveniently grasped and handled in stacks later. The shafts 44 and 46 are geared together by any suitable gearing 47 designed to give the proper speed and direction of rotation.

As the cards are delivered from the spiral conveyers 42 they are urged against one of the convolutions of another conveyer 48 positioned therebetween with the center slightly above the top edge of the card. When fifty or any other predetermined number of cards have been urged against the edge of the first complete convolution, the conveyer 48 suddenly completes its revolution and carries the stack 37 a distance to the right equal to the pitch of the conveyer whereupon a second stack, or pile of fifty cards, may be successively positioned.

If the conveyer were continually and gradually turned there would be some chance of having either too many or not enough cards in each pile. It is therefore desirable to provide a mechanism which will gradually turn the conveyer through substantially seven-eighths of a revolution and then hold it until the proper number of cards are delivered, whereupon it will be suddenly released to have the sharp end 49 dropped down between the fiftieth and fifty-first card. A simple and practical mechanism for accomplishing this desired result is shown more clearly in Figs. 6 and 7. The end of the shaft 46, which may be considered the driving shaft, being connected with the printing press mechanism in any desired manner, is provided with a beveled gear 51 at its left hand end which meshes with a similar gear 52 mounted upon a shaft at right angles thereto, having a worm 53. This worm meshes with a gear wheel 54 mounted at the outer end of the conveyer shaft carrying the conveyer 48. Instead, however, of providing a rigid connection, there is a yielding or spring connection as shown in Fig. 6, that is, the central part of the gear 54 is provided with a sleeve 56 which fits over the reduced portion 57 of the conveyer shaft 48. Between the sleeve 56 and the reduced portion 57 is wound a spiral spring 58. It will thus be seen that the driven shaft 48 is yieldingly connected with the driving gear 54 and is rotated

thereby only after the spring assumes its normal driving tension.

Connected with the sleeve 56 is a trip 59 which is adapted to coact with a pawl 61 forced into contact with the shaft 48 by a spring 62. The end of the pawl 61 is provided with a catch 63 adapted to engage the recess 64 in the shaft 48 and hold the same against rotation until the catch is raised and released by the trip 59. The recess 64 is so positioned in the shaft 48 with relation to the sharp end 49 of the conveyer as to hold the end 49 slightly above the top of the cards as delivered. Of course, as this shaft 48 is held against rotation, the spring 58 will gradually tighten until the trip 59 releases the pawl 61. The shaft 48 then suddenly turns under the action of the spring 58 while assuming its normal degree of tension, thus allowing the end 49 of the conveyer to separate the cards at exactly the desired point. It is, of course, to be understood that suitable mechanism may be provided, where necessary, to set the delivering mechanism in registry with the printing mechanism, that is, the conveyer shaft 48 should complete its revolution immediately after the card numbered "C50", for example, has been delivered from the conveyer 42.

As the operation of this machine is believed to be clear from the above description, a repetition thereof will be omitted. It is thus seen that this invention provides a simple and practical device, particularly adapted to accomplish, among others, all of the objects and advantages above set forth.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to assemble a plurality of the severed sections with corresponding ends of the longitudinal slits of respective sections substantially in alinement.

2. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to assemble a plurality of the severed sections in a stack with corresponding ends of the longitudinal slits of respective sections substantially in a single plane extending through the depth of said stack.

3. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to assemble a plurality of the severed sections and aline, respectively, adjacent edges of said sections.

4. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means adapted to assemble a plurality of the severed sections in a stack, and means adapted to deliver said stack.

5. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means adapted to assemble a plurality of the severed sections, and means adapted to deliver a predetermined number of said sections respectively uniformly alined in a stack.

6. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means adapted to assemble a plurality of the severed sections, and means adapted to deliver a predetermined number of said sections in a stack having adjacent edges of said sections respectively in alinement.

7. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, means for severing the web transversely between the

ends of adjacent slits, and means comprising a rotary screw conveyer whereby successive severed sections are fed to aline respective edges thereof.

8. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, means for severing the web transversely between the ends of adjacent slits, a rotary screw conveyer, and a guide coöperating with said conveyer to cause severed sections of said web to be assembled in alinement.

9. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, means for severing the web transversely between the ends of adjacent slits, a set of rotary screw conveyers adapted to feed successive severed sections of said web, means adapted to urge said severed sections in a common edgewise direction, and an alining guide.

10. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, means for severing the web transversely between the ends of adjacent slits, a set of rotary screw conveyers adapted to feed successive severed sections of said web, and a guide coöperating with said conveyer to cause respective edges of successive sections to be alined, said guide comprising means adapted to urge said severed sections in a common edgewise direction against an alining guide to aline edges of said sections respectively adjacent said first edges.

11. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, and means coacting with said last means adapted to deliver said plurality of sections in a stack.

12. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, and means coacting with said last means adapted to deliver said plurality of sections in a stack of a predetermined number.

13. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, means adapted to aline respective adjacent edges of said sections, and means adapted to deliver said plurality of sections in a stack.

14. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, means adapted to aline respective adjacent edges of said sections, and means adapted to deliver said plurality of sections in a stack of a predetermined number.

15. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, and means adapted to segregate a plurality of said sections and deliver the same in a uniform stack.

16. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, and means comprising a set of rotary screw conveyers adapted to segregate a plurality of said sections and deliver the same in a uniform stack.

17. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, and means adapted to segregate a predetermined number of said sections and discharge the same in a uniform stack.

18. In an apparatus of the character described, in combination, means adapted to print and feed a web, means for slitting the web longitudinally at intervals, means for severing the web transversely between the ends of adjacent slits, means whereby a plurality of said severed sections are assembled, and means comprising a rotary screw

conveyer adapted to complete a revolution at a predetermined time to segregate a predetermined number of said sections and discharge the same in a uniform stack.

19. In an apparatus of the character described, in combination, means adapted to print and feed a web, means adapted to perforate the web transversely at intervals, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits, and means adapted to cut the web into cards transversely between the ends of the slits.

20. In an apparatus of the character described, in combination, means adapted to print and feed a web, means adapted to perforate the web transversely at intervals, means for slitting the web longitudinally at intervals, leaving web material between the ends of adjacent longitudinal slits across the line of perforation, and means adapted to cut the web into cards transversely between the ends of the slits.

21. In an apparatus of the character described, in combination, means adapted to print and feed a web, means adapted to perforate the web transversely at intervals, means for slitting the web longitudinally at intervals across the line of perforation, means adapted to cut the web into cards transversely between the ends of the slits, and means adapted to assemble a plurality of said cards with their adjacent edges respectively in alinement.

22. In an apparatus of the character described, in combination, means adapted to print and feed a web, means adapted to perforate the web transversely at intervals, means adapted to iron said perforations, means for slitting the web longitudinally at intervals across the line of perforation, and means adapted to cut the web into cards transversely between the ends of the slits.

23. In an apparatus of the character described, in combination, means adapted to print and feed a web, means adapted to slit the web longitudinally at intervals leaving the web intact between the ends of the slits, means adapted to sever the web transversely into cards without intersecting the longitudinal slits, and means adapted to assemble a plurality of the severed cards in a stack.

24. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to assemble a plurality of the severed sections.

25. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to assemble a plurality of the severed sections respectively in alinement.

26. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to assemble a plurality of the severed sections and aline, respectively, adjacent edges of said sections.

27. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means adapted to assemble a plurality of the severed sections, and means adapted to deliver a plurality of severed sections in a stack.

28. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means adapted to assemble a plurality of the severed sections, and means adapted to deliver a predetermined number of said sections in a stack.

29. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, means for severing the web transversely between the ends of adjacent slits, and means comprising a set of rotary screw conveyers adapted to assemble a plurality of the severed sections.

30. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, means for severing the web transversely between the ends of

adjacent slits, means comprising a rotary screw conveyer, and a guide member cooperating with said conveyer to cause severed sections of said web to be assembled in alinement.

31. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, means adapted to assemble a plurality of the severed sections, means adapted to move the severed sections transversely, and an alining guide member cooperating therewith to aline the side edges of the severed sections, respectively.

32. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, leaving web material between the ends of adjacent longitudinal slits, means for severing the web transversely between the ends of adjacent slits, and means adapted to stack a plurality of the severed sections with respective printing and respective cut portions respectively in alinement through the stack.

33. In an apparatus of the character described, in combination, means adapted to print a web at different points transversely thereof, means adapted to slit the web longitudinally at intervals between said transverse printing points, means for severing the web transversely between the ends of adjacent slits, assembling means for the severed sections, alining means for the severed sections, a rotary screw conveyer having a spiral ridge, a sharp end on said spiral ridge, driving means for said rotary screw conveyer comprising a retard adapted to delay the rotation of said conveyer, and spring means adapted to cause said conveyer to move suddenly at a predetermined time, bringing the spiral ridge of said conveyer in position to feed severed sections.

In testimony whereof I affix my signature, in the presence of two witnesses.

WILLIAM A. PRINGLE.

Witnesses:
A. J. DOBBIE,
JOHN J. FOSTER.