

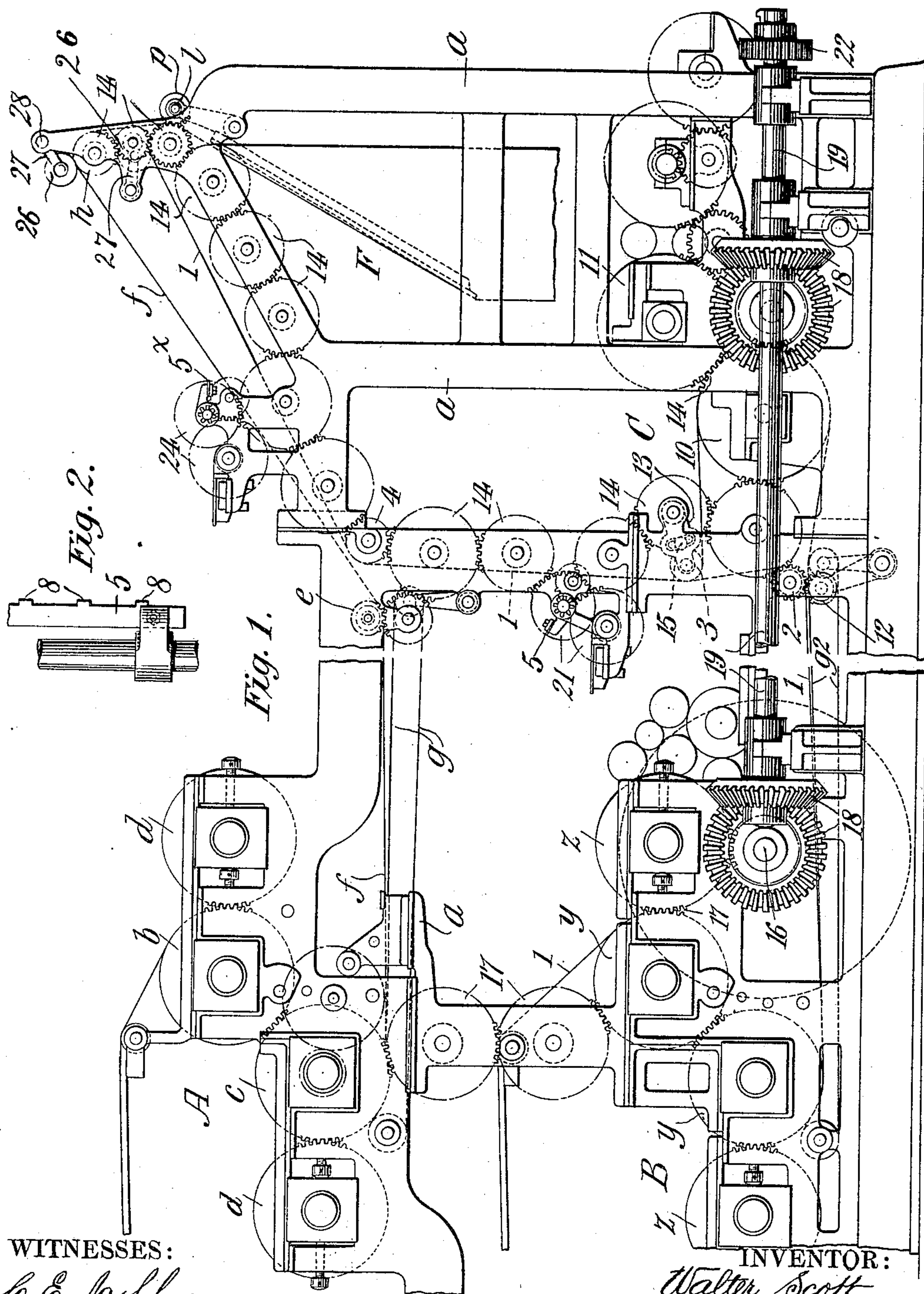
No. 810,886.

PATENTED JAN. 23, 1906.

W. SCOTT.
PRINTING AND DELIVERY MECHANISM.

APPLICATION FILED MAR. 26, 1901.

3 SHEETS—SHEET 1.



WITNESSES:

C. E. Ashley
Esq. C. Hemming.

INVENTOR:

INVENTOR:
Walter Scott,
By his Attorney
Richard W. Barkley.

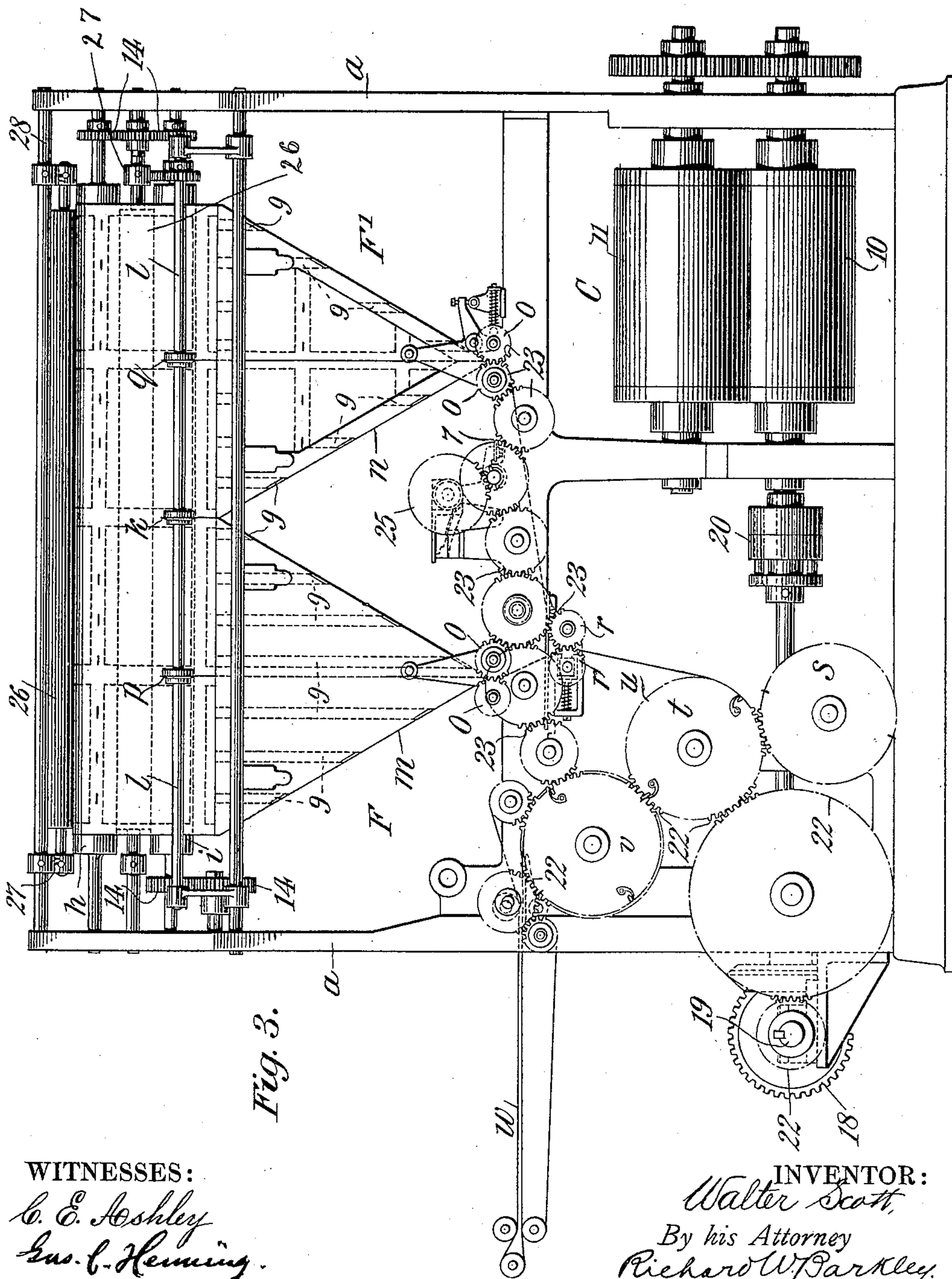
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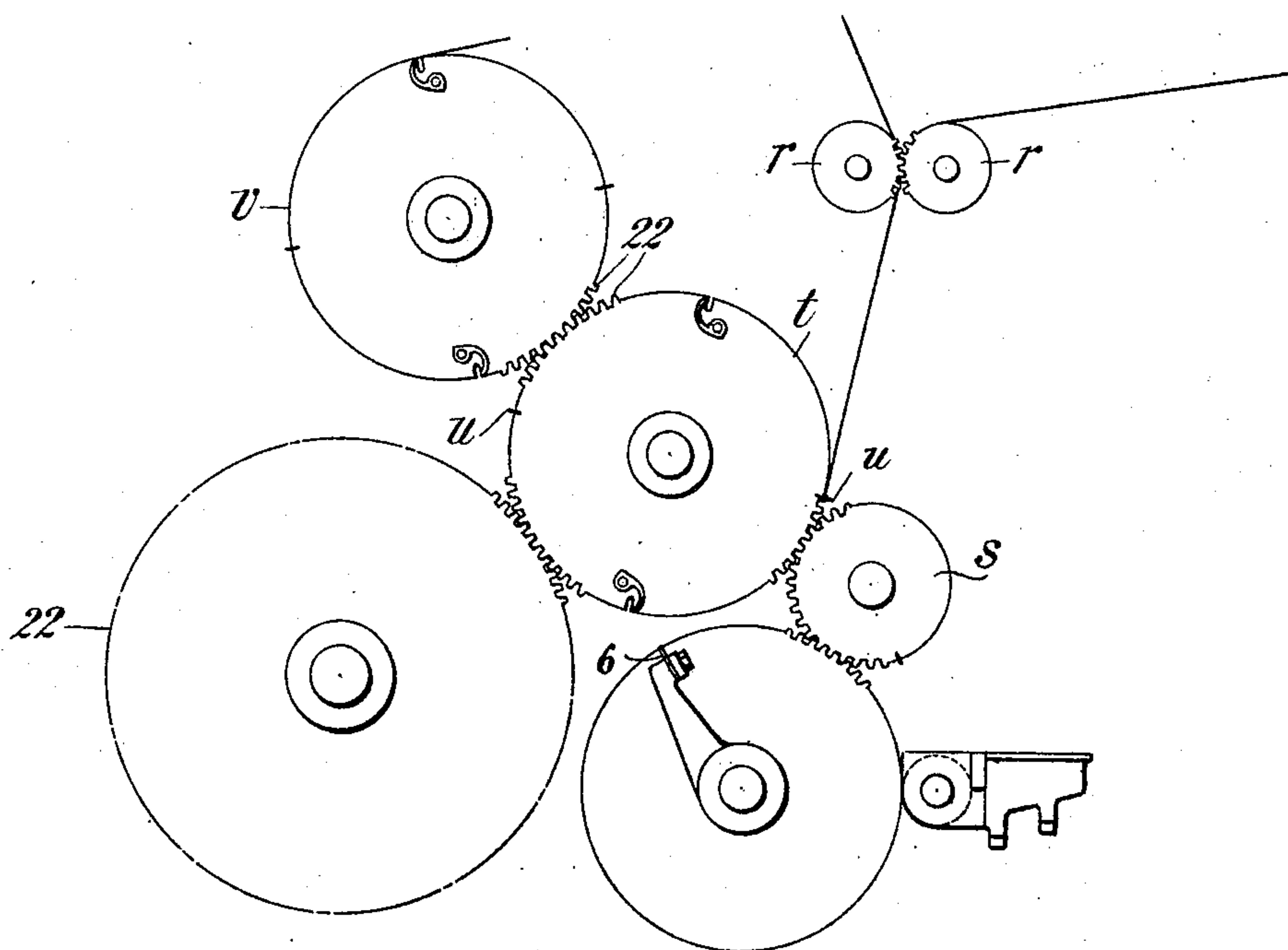
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3 SHEETS—SHEET 3.

Fig. 4.



WITNESSES:

C. E. Ashley
Esq. - V. Herring.

INVENTOR:

INVENTOR:
Walter Scott,
By his Attorney
Richard W. Barkley.

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

PRINTING AND DELIVERY MECHANISM.

No. 810,886.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed March 26, 1901. Serial No. 52,876.

To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented a certain new and useful Improvement in Printing and Delivery Mechanism, of which the following is a specification.

This invention relates to printing and delivering mechanism, and has for its main object the production of various-sized products the sheets of which may be secured together permanently.

Another object is to print an outside sheet or cover in a plurality of colors and to attach the same to the remainder of the sheets forming the product.

Other objects will appear hereinafter.

In the practice of the present invention the page-columns are arranged lengthwise of the plate-cylinders, the pages being two or more abreast, and the webs or web-sections where a wide web is split longitudinally are associated and pasted together along transverse lines before being cut into sheets, or the webs may be cut into sheets and these associated and pasted without departing from my invention. One or more web-perfecting presses may be used, and the webs therefrom may be split, associated, and folded and pasted to secure products having four, eight, twelve, sixteen, twenty, twenty-four, twenty-eight, or more pages. Thus a half-width web furnishes the four-page product, no pasting being required. For an eight-page product a single-width web having two pages abreast thereon may be split into sections, which are associated after one or both receive paste along transverse lines or margins and are then cut into sheets, which are folded transversely and delivered as eight-page products. By using a double-width press and a web three-quarters as wide twelve-page products may be secured by splitting the web into three sections, applying paste to at least two of them along transverse lines or margins, and then associating the sections, cutting them into twelve-page products, and folding and delivering, or a double-width web may be used, being split into four sections, which are associated by twos after receiving paste along transverse lines or margins to form two-ply webs, which are also associated and pasted to form a four-ply web, and this web may then be cut and folded transversely to form the desired products,

having sixteen pages each. It is obvious that by the use of a plurality of web-perfecting presses each capacitated to print four pages abreast upon its web products containing twenty, twenty-four, and more pages may be secured, according to the widths of the webs employed and associated. In all cases this method of pasting together by sections may be used whether the webs are cut transversely after they pass over the folders or associators or are cut into sheets before they so pass and the sheets be carried over said folders or associators by tapes, &c. The folders or associators are provided with grooves extending in the direction of travel of the webs or sheets thereover, and the blades for applying paste along transverse lines or margins of the webs or sheets are notched, so that the paste applied thereby will pass over said grooves, the lines of paste applied to one web-section being so located thereon as to come between the lines of paste applied to the web-section associated therewith, whereby the two are attached together at substantially all points transversely along lines or margins, or the short lines of paste may be applied to only one of two web-sections that are associated.

To these and other ends the invention consists of features of construction, arrangements, and combinations of devices hereinafter described, and more particularly pointed out in the appended claims.

One embodiment of the invention is illustrated in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation with parts omitted of a machine in which the invention is embodied. Fig. 2 is a detail view of a paste-blade. Fig. 3 is an end view from the right in Fig. 1, showing certain parts omitted in Fig. 1; and Fig. 4 is a view of a modified arrangement.

Referring to Figs. 1, 2, and 3 of the drawings, the reference-letter *a* designates a suitable framework in which the moving parts are mounted in appropriate ways. A B designate web-perfecting presses, and C a press for adding matter in a color different from that applied by the press B on one side of the web 1 or a section thereof. F F' are web associating or folding mechanisms. The presses A B are shown as being sufficiently wide to print four full-sized pages abreast upon double-width webs, or two single or four half width webs may replace either or both

the webs f 1, as will be understood. The plate-cylinders $d z$ of the presses A B may be arranged to have four forms in each circumferential row thereof, and the matter in one pair of successive forms in each row may be like or unlike the matter in the remaining pair of forms in the same row, the matter in adjacent rows forming one pair of longitudinally-extending rows belonging to one product and the matter in the remaining pair of such rows belonging to another product whenever the matter in circumferential pairs is unlike and belongs to different products. In case the said unlike matter forms part of one final product the successive cuts are by preference collected before the delivery takes place, paste being applied transversely of the cuts, if desired, in order to secure them together. When the unlike matter belongs to different products, as books relating to different subjects, every second cut (folded and pasted) may be delivered at one point and every remaining cut (folded and cut) at another point, thus avoiding mixing the two. The web 1 is perfected by the cylinders $y z$ of the press B and then passes or is carried along by moving tapes g^2 to the guide-roller 2, and thence passes about rollers 3 4 to a roller i , where, if it be a double-width web, it is split into four sections by the splitters $k p q$, and whence it passes over the V-shaped formers $m n$ to and between rollers o . The former m is shown as a plate and the former n is shown as a triangular open frame. A rubber-faced pressure-roller 26 coacts with the roller i to feed the web forward, and I remark that the roller i is preferably driven faster than the web. The formers $m n$ are each provided with longitudinally-extending grooves across the faces thereof which come into contact with the webs or sheets passing thereover, these grooves being located as follows: The grooves 9 of each former, which are at one side of the central longitudinal line thereof, are at distances from said line different from the distances therefrom of the grooves 9 at the other side of said line. The purpose of said grooves is to permit short lines of paste on that side of the web coming against the working faces of the formers to pass the formers without touching them, said short lines of paste being applied along lines or margins extending transversely of the webs or sheets and being applied by a revolving paste-blade to every other transverse margin, as indicated at 5 in Fig. 1. The blade 5 for applying paste, as above described, is arranged with notches, leaving paste-applying projections 8, which are so placed and are of such length that the short lines of paste applied thereby pass over the grooves 9 without touching the formers $m n$, and I remark that the grooves 9 curve around the edges of the formers, so as to provide for the change in direction of travel of said short lines of paste.

The web-sections are associated by twos at the rolls o , the short lines of paste on one section falling in the intervals between the like lines on the section associated with it, so that the web-sections are united at intervals along transverse lines, the points of union being so arranged or placed that the lines extend substantially all the way across the web, (or sheets.) From the rolls o the associated webs or sections lead between rolls r , where they are associated to form a four-ply web, (when a double-width web and one press are used or when single widths are used in two presses at opposite ends thereof, in which case one web passes over former m and the other over former n .) A revolving paste-blade 7, located between the folders $F F'$, may apply paste to the upper side of the web coming from the folder F' before it reaches the rolls r , the said blade 7 applying the paste transversely along the same margins or lines as does the blade 5, but at the opposite side of the web or sheet. The webs from the folders $F F'$ are thus pasted together as they are associated at the rolls r . Either rolls o or rolls r may act as drawing-rolls. The web after leaving the rolls r is taken between suitable cutting and folding mechanism or cylinders, where it is cut transversely along the non-pasted margins, after which the cuts are folded along the pasted margins. The cuts may receive an additional fold at right angles to said pasted lines and then be delivered in any known manner. Cutting-cylinders $s t$ are shown in the drawings, the cylinder t being provided with sheet-retainers, as pins, and with folding-blades u , which may be drawn inwardly of the cylinder as they pass the cylinder s . The pins and folding-blades on the cylinder t may be operated as above described by any suitable means. Since such means are known in the art, I have not herein shown them. A delivery-cylinder v coacts with the cylinder t to fold the sheets transversely and delivers the cuts upon guides and between tapes w , the guides being shown in dotted lines in Fig. 3. It is observed that the tapes w may carry the cuts over a pair of folding-rollers between which a reciprocating blade may fold the sheets at right angles to the fold given by the cylinders $t v$. Such rollers and blade are shown at Fig. 3 of Letters Patent of the United States granted November 24, 1896, and numbered 571,982, and are besides well known in the art. It is noted, further, that unlike publications, as newspapers or books, may be printed upon the same web, the pages for one being sandwiched in pairs between the pairs of pages belonging to the other, reference being had, of course, to the pages on either side of the web, and that these products may be delivered separately after being folded down off the tapes w , as above described, by the use of the delivery mechanism shown in Letters Patent of the

United States granted December 25, 1900, and numbered 664,589, at Figs. 1 and 2, one publication going one way and the other going the other way. As these mechanisms and their modes of operation are fully set forth in said Letters Patent I have not herein shown them.

The above-described mechanism provides for copies containing four, eight, twelve, and sixteen pages. The capacity of the press as a whole may be increased by using the press A and a web *f*, the impression-cylinders of press A being marked *b c* and the plate-cylinders *d*. A guide *e* directs the web *f* from the carrying-tapes *g*, which support it between the press and the roller *e*. The web *f* passes from roller *e* upward and over a roller *h* and then down over roller *i* aforesaid, where it is slit into sections, as will be understood, by the splitters *k p q*. The webs *l* and *f* are associated upon the roller *i*. The web *f* may receive paste along every other transverse margin from a revolving blade 5^x, and I remark that this blade 5^x is similar to the blade 5 above described and for the same purpose. The result is that the web *f* when slit and folded longitudinally has its long halves pasted together at the rolls *o*, the spots of paste passing over the grooves 9, as described. A rubber-faced roller 26 coacts with the roller *h* for feeding the web forward. The rollers 26 are carried by arms 27, extending from journaled shafts 28. The paste applied by the blades 5 5^x may be prevented from being wiped off on or taken up by the rolls 26 by grooving these rolls opposite those places where the paste is applied to the webs, as shown in Letters Patent No. 592,887, dated November 2, 1897, or by equivalent means.

When using double-width webs in presses A B and pasting, splitting, associating, and cutting them and then folding the cuts, a thirty-two page product is secured. By using narrower webs in one or both presses A B products containing twenty-eight, twenty-four, twenty, sixteen, twelve, or eight pages may be secured, all as will be understood by those skilled in the art.

A cover-sheet in colors may be secured by splitting the web *l* by a slit 12 and running one section thereof through the press C, the section passing under the impression-cylinder 10 and back between that cylinder and the plate-cylinder 11 and to the adjustable guide-roller 3 and up over rollers 4 and *i* to the associating mechanism, where it is manipulated in the same manner as hereinbefore described, and I remark that the web passing through the press C may be of different stock, quality, or thickness from web *l* and that it may only be of a width for receiving but one page across its width, being separately mounted from the web passing through the remainder of the press B.

In the modification shown at Fig. 4 the

cylinder *s* is one-half the size of the cylinder *t* and has but one cutting-blade and is also provided with sheet-retainers, as pins, being thus adapted to carry sheets around on itself, as well as to cut them from the web in conjunction with the cylinder *t*. These pins may be operated by any suitable known means to cause them to pierce the webs as the knife cuts off sheets and to retain the leading end of the web until it has been carried completely around by the cylinder *s* and to release the same as it is nipped again between cylinders *s t*, so that the sheet on cylinder *s* and the web are now taken around by the cylinder *t* and delivered after the knife of cylinder *s* severs the web as the tail of the sheet passes it, as above described. The next sheet is carried around by cylinder *s*, and the cycle is repeated indefinitely. The pins of the cylinder *t* are withdrawn to pass the cylinder *s* without taking the web whenever the latter carries the web end around and are protruded whenever that end again passes between cylinders *s t*. In this way successive cuts are associated to form a single product. When the cylinder *s* carries every other sheet around, as just described, lines of paste may be applied transversely of the sheets thereon by a revolving blade 6, which revolves once to every two revolutions of the cylinder *s* and applies paste to the sheets along central margins, which extend lengthwise of the cylinder *s*.

The register-roller 3 may be made adjustable in any manner, as by having the arms 13 in which it is journaled themselves journaled on the shaft or studs on which a gear-wheel 14 rotates and from which gear the roller 3 is driven, said arms 13 being held in adjusted position in any suitable manner—as, for example, by means of slots therein, through which set-bolts 15 pass and engage with threaded holes in the framework *a*.

The power for operating the machine may be applied through a main drive-shaft 16, which is connected with the presses A B by gear-wheels 17, and I remark that the press A may be thrown out of operation by means of disconnecting-gearing. The press C is connected with the shaft 16 by bevel or miter gears 18 and shaft 19 and may be thrown out of operation by disconnecting the clutch 20. Gears 14 connect a gear 18 with and operate the rollers *e 2 3 4 h i*. The shaft 19 is connected to and drives the cylinders *s t v* by gears 22, which include the driving of tapes *w* and other parts (not shown) of the delivery. The cylinder *v* is connected with the rolls *o r* by means of gears 23, and I remark that the surface speed of the rollers *o r 2 3 4 e h i* is, preferably, slightly greater than the like speed of the cylinders of the presses and the cutting and folding mechanism, the purpose being to keep these rollers clear or free of ink. The paste-blade 5^x

and the fountain-roller coacting with it may be driven by gears 24, connecting them with gears 14, and the paste-blade 5 and its fountain-roller may be driven by gears 21, connecting with a gear 14. The blade 7 may be driven by gears 25, connecting it and its fountain-roller with a gear 23. The gearing for driving the paste-blades and their fountain-rollers may be arranged for throwing these parts out of operation whenever desired. The rollers *o* may be pressed toward each other by springs, as shown, and suitable stops for regulating and limiting such motion may be used.

Suitable inking, oiling, and other devices may be used in connection with the parts shown in the drawings, as will be understood. It will also be understood that the principle of this invention is equally applicable with more than two webs and more than two perfecting-presses. I do not, therefore, limit myself to the precise form of the invention shown in the drawings and above described.

The folders *F F'* may fold the webs, the slitters *p q* being omitted and the webs carrying two pages abreast, and the webs may pass in that condition to the cutting, folding, and delivering mechanism, or the webs so folded may be split after being folded by known devices. All the methods of use hereinbefore indicated are included within the claims hereinafter made—that is, while reference may be made to longitudinal folders it is intended thereby to include also the function of merely associating webs or web-sections.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with means for supplying a web or sheets, of a longitudinal folder having its **V**-shaped former provided with grooves extending longitudinally thereof at each side of its central longitudinal line, the grooves at one side of said line being at distances from said line different from the distances therefrom of the grooves at the other side of said line, and a notched paste-blade for applying paste transversely of the web or sheets at points that pass over said grooves with the paste next the former, substantially as described.

2. The combination with web-perfecting presses, of two longitudinal folders each having its **V**-shaped former provided with grooves extending longitudinally thereof at each side of its central longitudinal line, the grooves at one side of said line being at distances therefrom different from the distances therefrom of the grooves at the other side of said line, and means for applying paste along transverse lines of the web or sheets at points which pass over said grooves with the paste next the former, substantially as described.

3. The combination with means for supplying and associating webs or sheets, of means for applying paste along transverse lines of

the web or sheets before the association thereof, said paste being applied at intervals along said lines and the paste on one web or sheet coming against the other web or sheet in the intervals between the paste on that other web or sheet, and said associating means having cut-away portions or recesses over which the paste passes, substantially as described.

4. The combination with means for supplying a web or sheets, of two longitudinal folders each having grooves extending longitudinally of its **V**-shaped former, means for applying paste along transverse lines of said web or sheets at intervals thereof which pass over said grooves with the paste next the formers, a paster applying paste to the webs or sheets after they leave said formers and before they are associated again, and means for associating the associated webs or sheets as they move from said formers and after they receive paste from said paster, substantially as described.

5. The combination of means for supplying a plurality of webs printed upon both sides, means for printing an additional color upon one of said webs, means for applying paste at intervals along transverse lines of one of said webs, a longitudinal folder having its **V**-shaped former provided with longitudinally-extending grooves in that face or part coming in contact with the webs, said paste passing along said grooves without touching the former, whereby the webs are united by the paste along transverse lines thereof, and mechanism for severing the webs transversely, substantially as described.

6. The combination of a plurality of web-perfecting presses, means for printing an additional color upon one of or a part of one of said webs, means for associating said webs, means for applying paste to one of said webs to unite them as they are associated, a longitudinal folder having its **V**-shaped former provided with grooves extending longitudinally in that face or part thereof which comes in contact with the paper, and means for applying paste at intervals along transverse lines of the web coming in contact with said former, said paste passing along said grooves without touching the former, substantially as described.

7. The combination of a plurality of web-perfecting presses arranged one above another, a plurality of longitudinal folders arranged side by side on an upper level at one end of the framework of the machine, a printing mechanism arranged under one of said folders, and cutting and delivery mechanism arranged under another of said folders, substantially as described.

8. The combination with a plurality of web-perfecting presses, of two longitudinal folders each having its **V**-shaped former provided with longitudinally-extending grooves in that part thereof coming in contact with the pa-

per, means for associating and pasting said webs together before they reach said formers, means for applying paste at intervals along transverse lines of the web coming in contact
 5 with said formers, said paste passing over said grooves without touching the formers, whereby longitudinal sections of the multiple-ply web formed by said association and pasting are united to form greater-ply webs, and
 10 means for associating and pasting together the last-named webs, substantially as described.

9. The combination of means for supplying webs, means for applying paste at intervals along transverse lines of one web, a longitudinal folder having its V-shaped former provided with longitudinally-extending grooves in that part thereof which contacts with the paper, said paste passing over said
 15 grooves without touching the former, cutting-cylinders, means whereby one of said cylinders carries cuts around with it to associate them with succeeding cuts, and means for applying paste to the cuts so carried around while
 20 they are on the last-named cylinder, substantially as described.

10. The combination of means for supplying webs, means for applying paste at intervals along transverse lines of one of said webs, a longitudinal folder having its V-shaped former provided with longitudinally-extending grooves in that part thereof which comes in contact with the paper, said paste passing over said grooves without touching the former, cutting-cylinders, means whereby one of
 25 said cutting-cylinders carries cuts around with itself to associate them with succeeding cuts, and a revolving paste-blade coacting with the last-named cylinder longitudinally thereof to apply paste to the cuts thereon, substantially as described.

11. The combination with a plurality of web-perfecting presses, of a plurality of longitudinal folders each having its V-shaped former provided with grooves extending longitudinally of that part thereof coming in contact with the paper, means for associating and pasting together said webs before they reach said formers, means for applying paste
 30 at intervals along transverse lines of the webs coming in contact with said formers, said paste passing over said grooves without touching the formers, whereby longitudinal sections of the multiple-ply web formed by
 35 said association and pasting are united to form greater-ply webs, means for associating and pasting together the last-named webs, cutting-cylinders for severing the last-formed web transversely, means whereby one of said
 40 cutting-cylinders carries around with itself cuts to associate them with succeeding cuts, and means for applying paste to the cuts so carried about on said cylinder, substantially as described.

65 12. The combination with a plurality of

web-perfecting presses, of means for associating and pasting together said webs, a plurality of longitudinal folders each having its V-shaped former provided with grooves extending longitudinally thereof in that face or part
 70 thereof coming in contact with the paper, means for applying paste at intervals along transverse lines of the web coming in contact with the formers, said paste passing over said grooves without touching the formers, whereby longitudinal sections of the associated and
 75 pasted webs are united to form greater-ply webs, means for associating and pasting together the last-named webs, cutting-cylinders for severing the last-formed web transversely, means whereby one of said cylinders carries around with itself cuts to be associated with succeeding cuts, and a revolving
 80 paste-blade applying paste to the cuts on said cylinder, substantially as described.

13. The combination with a web-perfecting press, of two longitudinal folders arranged side by side on an upper level in the same framework, a printing mechanism arranged under one of said folders, and cutting and
 85 folding mechanism arranged under the other of said folders, substantially as described.

14. The combination with a plurality of perfecting-presses each adapted to print wide webs, of printing mechanism adapted to add
 90 color to one side of a section of one of said webs after it has been perfected, means for superimposing said webs, V-shaped associators for the halves of said webs, and means for associating said associated halves with
 100 said color outward.

15. The combination with a plurality of perfecting-presses each adapted to print a wide web, of printing mechanism adapted to add color to a section of one of said webs after
 105 it has been perfected, means for applying dotted lines of paste transversely of said webs, means for associating said webs, means for associating halves of said associated webs, and means for cutting, folding, and delivering
 110 ing.

16. The combination with a plurality of perfecting-presses each adapted to print a wide web, printing mechanism adapted to add color to one side of a section of one of
 115 said webs after it has been perfected, and means for applying dotted lines of paste transversely of said webs, of means for associating said webs, means for associating the sections of each longitudinal half of said webs,
 120 and means for associating the associated sections.

Signed at New York, in the county of New York and State of New York, this 12th day of March, A. D. 1901.

WALTER SCOTT.

Witnesses:

GUS. C. HENNING,
 R. W. BARKLEY.