

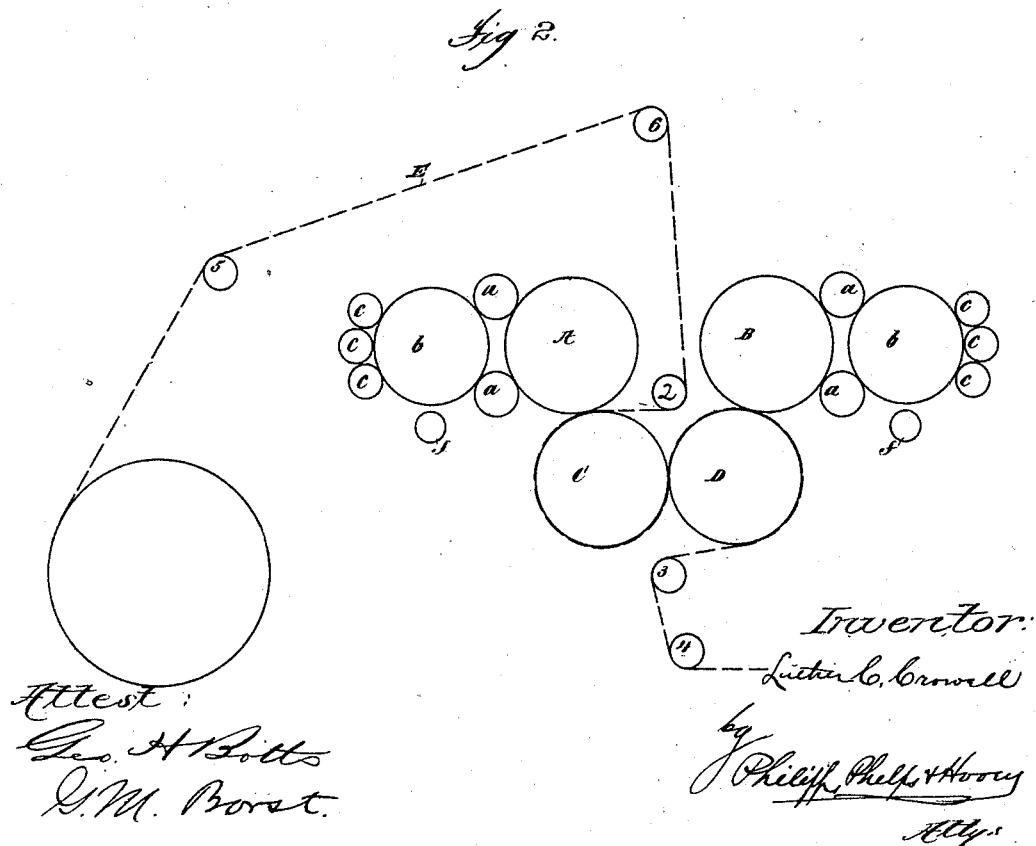
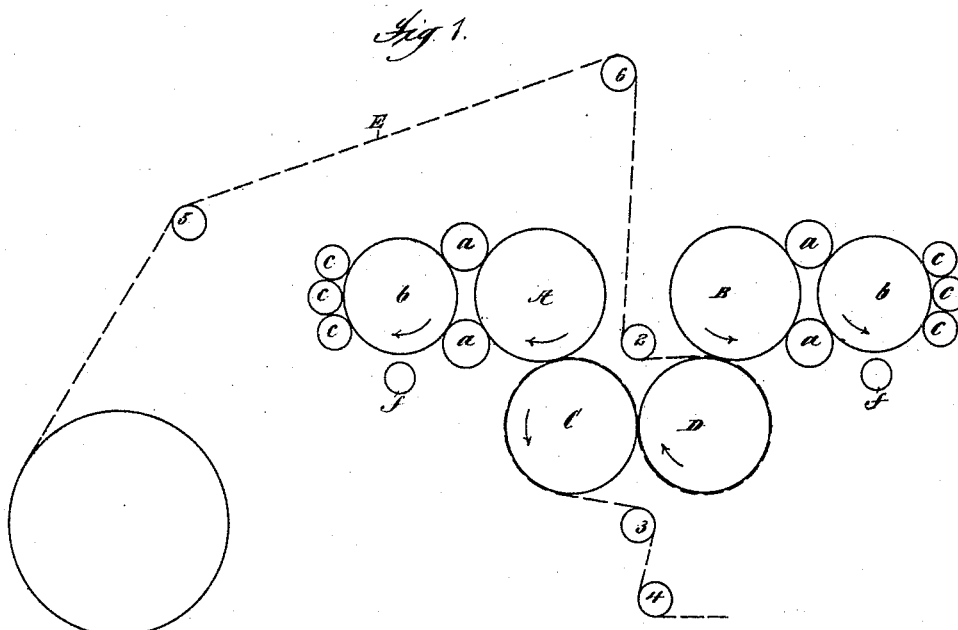
(No Model.)

3 Sheets—Sheet 1.

L. C. CROWELL.
WEB PRINTING MECHANISM.

No. 419,832.

Patented Jan. 21, 1890.



(No Model.)

3 Sheets—Sheet 2.

L. C. CROWELL.
WEB PRINTING MECHANISM.

No. 419,832.

Patented Jan. 21, 1890.

Fig. 3.

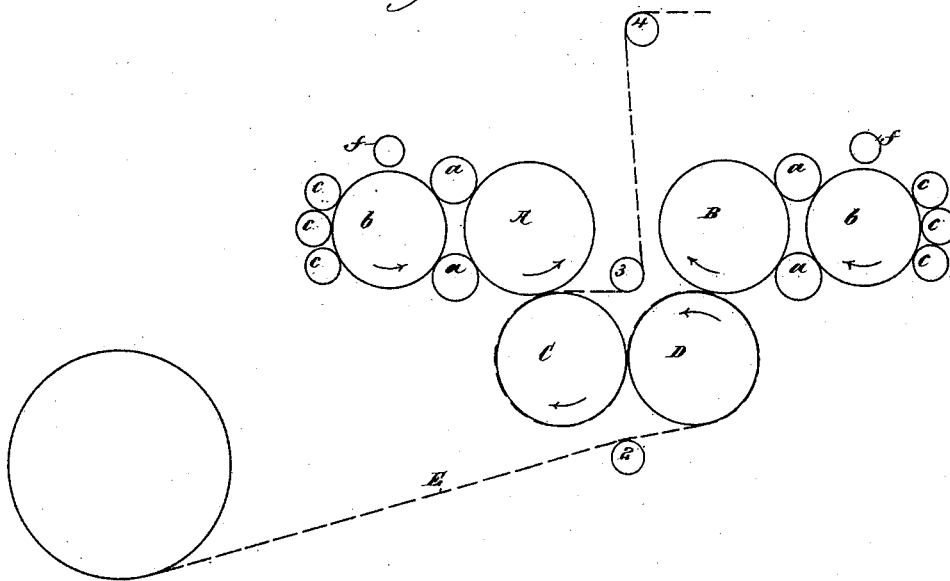
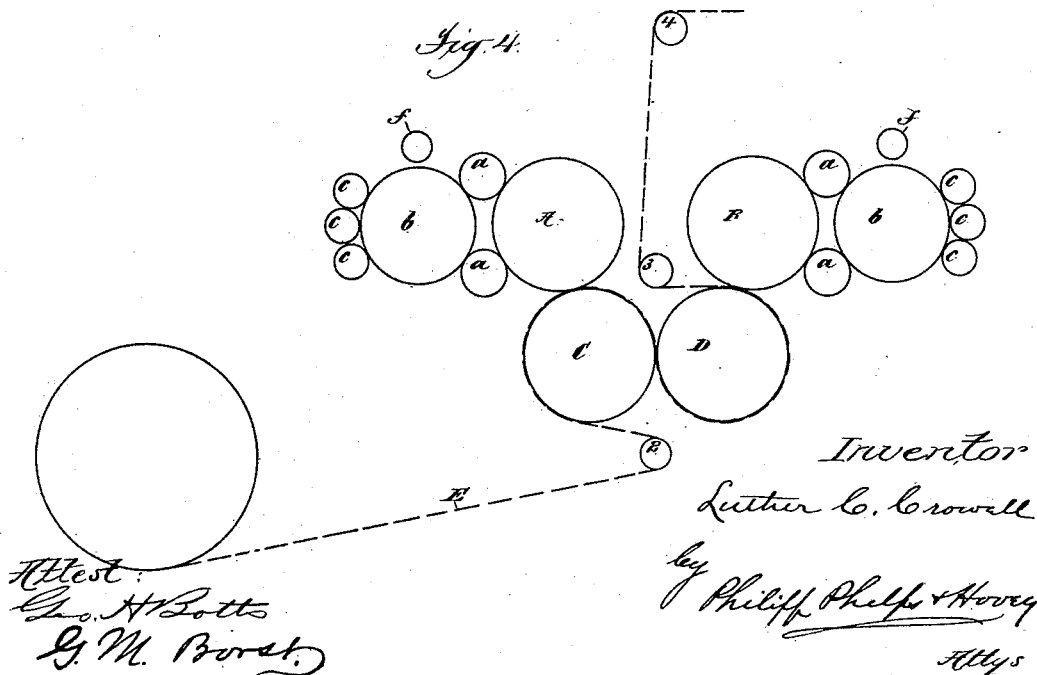


Fig. 4.



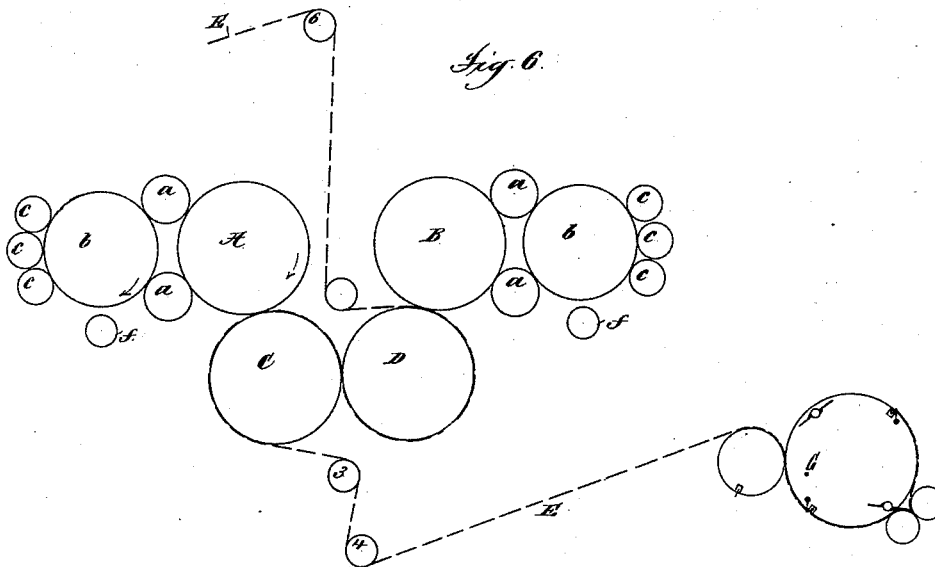
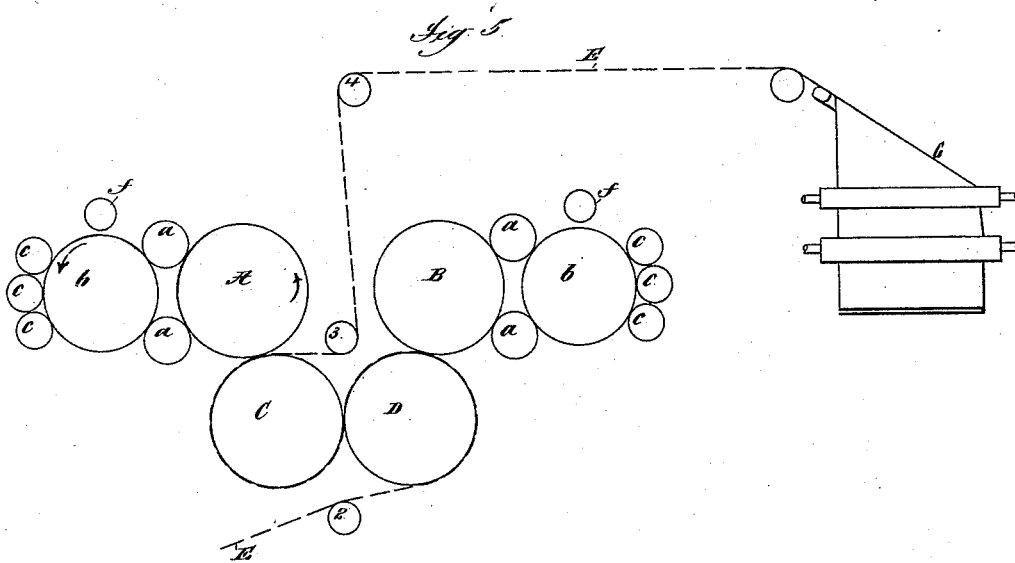
(No Model.)

3 Sheets—Sheet 3.

L. C. CROWELL.
WEB PRINTING MECHANISM.

No. 419,832.

Patented Jan. 21, 1890.



Attest:

Geo. H. Rott
G. M. Borat.

Inventor

Lucien C. Browell
by Philip Phelps & Hovey
Attys.

UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF BROOKLYN, NEW YORK.

WEB-PRINTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 419,832, dated January 21, 1890.

Application filed March 7, 1888. Serial No. 266,393. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Web-Printing Mechanism, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to web-perfecting printing mechanism which is so organized as to permit either side of the web to be first printed, according as it may be desired in any particular case.

In perfecting a web from an ordinary rotary web-perfecting printing mechanism the side of the web first printed is necessarily brought in contact with the second impression-cylinder as the second side of the web is printed, and from this it results that the side of the web first printed necessarily receives more or less offset, and is thus smutted to a greater or less degree. This is a difficulty which is inherent in this class of printing-machines, and in order to prevent this offset from injuring the appearance of the printed product it has always been customary to so organize the machine and arrange the forms that the side of the web first printed would, in the product which was to be produced upon the machine, contain the matter which it was least important should present a perfectly-clean appearance—that is to say, if the publisher of a particular newspaper desired the inside pages, or what are usually the editorial pages, of his paper to present the cleaner appearance, then the machine would be so organized and the forms so arranged that the side of the web containing these pages would be printed last; or, on the other hand, if the publisher desired the outside pages or newspaper pages to present the cleaner appearance, then the machine would be so organized and the forms so arranged as to print the side of the web containing these pages last. If the machine was not provided with a folding delivery apparatus, it was not necessary to take this matter into consideration, as the order of printing the inside and outside pages of the paper could be changed at pleasure by simply changing the forms from one form-

cylinder to the other; but where the machine was provided with a folding delivery apparatus, which of late years has almost always been required, this could not be accomplished, because the direction in which the sheet was folded was always the same, and if the forms for one side of the sheet were changed from one cylinder to the other the folding would not be accomplished so as to bring the pages in proper relation to each other in the folded product. This being the case, it was always necessary before constructing the machine to ascertain from the publisher which pages of his paper he desired should present the cleaner appearance or should be free from offset, and then construct the machine accordingly. As the requirements of publishers were not uniform in this particular, it was impossible to construct the machines in advance and have them in stock to fill orders, except by constructing and keeping on hand two styles from which to select, and this, owing to the expensive character of the machines, was of course very undesirable. Again, it frequently happened that publishers desired, after obtaining a machine, to change the arrangement of the matter in their papers in such a way that the matter which it was desired should present the cleaner appearance would be upon the opposite side of the web from what was originally intended, and their inability to accomplish this resulted in much annoyance and inconvenience. Again, it frequently happened that the same machine was used for printing different papers or different editions of the same paper—as, for example, a daily and a weekly edition—and in these different papers or editions it was frequently desirable that the cleaner pages should be upon one side of the web in one case and upon the reverse in another, and the inability to accomplish this also resulted in annoyance and detracted materially from the value of the machines.

It is the object of the present invention to remove this difficulty and to so organize a printing mechanism that either side of the web can be printed first; and to that end the invention consists in an organized printing-machine having its form and impression

cylinders and leading-rolls for presenting the web thereto arranged in such a manner as to permit this result to be accomplished.

In the accompanying drawings, Figure 1 is a diagrammatic view of a web-perfecting printing mechanism organized according to the present invention. Fig. 2 is a similar view showing the course of the web when presented to the machine so as to be first printed upon the side opposite to that which is first printed when the web is presented as shown in Fig. 1. Figs. 3 and 4 are similar views illustrating an organization in which the web is led into the machine below instead of above the printing-cylinders. Figs. 5 and 6 are similar views showing the printing mechanism combined with two forms of folding delivery mechanism.

Referring to said figures, it is to be understood that A B represent the form-cylinders, and C D the impression-cylinders, of the machine. These cylinders are of the ordinary form and are equipped in the usual manner. The relative arrangement of the cylinders shown is, all things considered, that which I regard as the best; but this arrangement may be widely varied without departing from the essential features of the invention. The form-cylinders A B are provided with the usual form-rolls *a* and with ink-distributing mechanisms, (represented by the cylinder and rolls *b c*.)

Located upon that side of the impression-cylinders from which the web is led into the machine is a leading-roll 2, around which the web passes to the printing-cylinders, and this roll is so positioned that the web may be led around it and pass thence to either pair of the printing-cylinders.

Located upon the side of the impression-cylinders from which the web is led from the machine there is or are located one or more leading and register rolls 3 4, around which the web passes as it leaves the printing mechanism, and these rolls are so positioned with relation to the impression-cylinders and to each other that the web, being led to them from either of the cylinders C D, will travel exactly the same distance before arriving at the delivery mechanism, so that it will preserve the proper register with the cutting-cylinders and other parts of that mechanism.

With the machine thus organized let it be assumed that it is desirable to so perfect the web that the printed matter upon what is the under side of the web as it is led to the machine shall present the cleaner appearance. In that case the web E will be led from the roll of paper, and after passing over one or more suitable leading-rolls 5 6 will be led around the roll 2 and between the cylinders B D, as shown in Fig. 1. In passing between the cylinders B D the web will be printed upon its upper side, and after being thus printed it will be led around the cylinder D and between the cylinders A C, where it will be printed upon its opposite side, or

what is the under side of the web as it was led to the machine. In passing around the cylinder C to be printed upon its second side the side of the web first printed will be brought next the blanket upon the cylinder C, and thereby be caused to receive more or less offset, which will impair the appearance of the printing upon that side of the web to a greater or less extent. The opposite side of the web, however, which is printed by the cylinder A, will receive no offset, and will thus present the cleaner appearance. After being perfected the web will pass around the rolls 3 4 and thence to the folding delivery mechanism G. If the folding delivery mechanism is of the form and arrangement shown in Fig. 5, (which is one of the ordinary and well-known forms of longitudinal folders,) the cleaner side of the web will be upon the inside of the folded product; or, if the folder is of the form and arrangement shown in Fig. 6, (which is one of the well-known forms of rotary folders,) the cleaner side of the web will be upon the outside of the folded product. If, however, for any reason, a publisher should prefer that what is the upper side of the web as it is led to the machine should present the cleaner appearance after being printed, the web will be led around the roll 2 in the opposite direction and have its under side first printed by the cylinders A C, after which it will be led between the cylinders B D with its printed side next to the blanket upon the cylinder D. In this case, the same as in the first case, the offset will be taken by the side of the web first printed; but this, instead of being what is the under side of the web as it is led to the machine, is the upper side, and as a consequence the upper side, which is last printed, is the cleaner. After being thus perfected the web is led around the roll 3 in the opposite direction, and thence around the roll 4 to the delivery mechanism. It will be observed that the rolls 3 4 are so positioned with relation to each other and the impression-cylinders that the travel of the web in this case from the impression-cylinder D to the roll 4 is exactly the same as the travel of the web in the former case from the impression-cylinder C to the roll 4, and thus the register with the parts of the delivery mechanism is preserved, no matter which way the web is led.

As shown in Figs. 1 and 2, the web is led to the printing-cylinders from above. In many cases it is preferred to reverse the order and lead the web to the printing-cylinders from beneath. Figs. 3 and 4 illustrate the course of the web when it is led from beneath. When the web is led from beneath and it is desired that what is the upper side of the web as it enters the machine should be the cleaner side after being printed, the web is led past the roll 2, which in this case is below the impression-cylinders, and around the cylinder D to be printed upon its first side, and thence around the cylinder C to be printed upon its

second side, which is the upper side as it enters the machine, and after being thus perfected it passes around the rolls 3 4, which in this case are located above the cylinders, and thence to the delivery mechanism.

If it is desired that the under side of the web should be the cleaner after being printed, the web is led around the roll 2 and the impression-cylinder C to be printed upon the first side, and thence around the impression-cylinder D to be printed upon the second side, as shown in Fig. 4. After being thus printed the web is led around the roll 3 in the opposite direction, and thence around the roll 4 to the delivery mechanism, the rolls 3 4 being in this case, the same as in the first case, so positioned that the travel of the web from the cylinder D to the roll 4 is the same as the travel of the web from the cylinder C to the same roll.

It will be observed that the ink-distributing rolls *c* are so positioned as to leave a considerable space upon both the upper and under sides of the distributing-cylinders *b*. When the web is led to the printing-cylinders from above, as in Figs. 1 and 2, the rolls *f*, which transfer the ink from the fountain to the distributing-cylinders *b*, are located below the cylinders *b*, so that the ink will be distributed by the rolls *c* before being transferred to the form-rolls *a*. The only change in the inking mechanism necessary when the web is led to the printing-cylinders from beneath, as shown in Figs. 3 and 4, is to transfer the rolls *f* and

fountains from the position beneath the cylinders *b* to a corresponding position above the cylinders, as indicated.

From the foregoing it will be seen that with the machine thus organized it is possible without any change whatever to lead the web to the printing-cylinders so that either side will be printed last, and thus present the cleaner appearance, thus capacitating the machine to meet the wants of different users in this respect; and it will further be seen that by very slight changes which can readily be made in the completed machine the web can be led to the printing-cylinders from either above or below, and thus also meet the requirements of different users in this respect.

What I claim is—

The combination, with form and impression cylinders for perfecting the web and a delivery mechanism for operating upon the perfected web, of leading-rolls located to direct the web to either pair of the printing-cylinders at will and to direct it from either pair of said cylinders to the delivery mechanism with its printed pages in proper register with the parts of said delivery mechanism, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:

T. H. PALMER,
G. M. BORST.