

(No Model.)

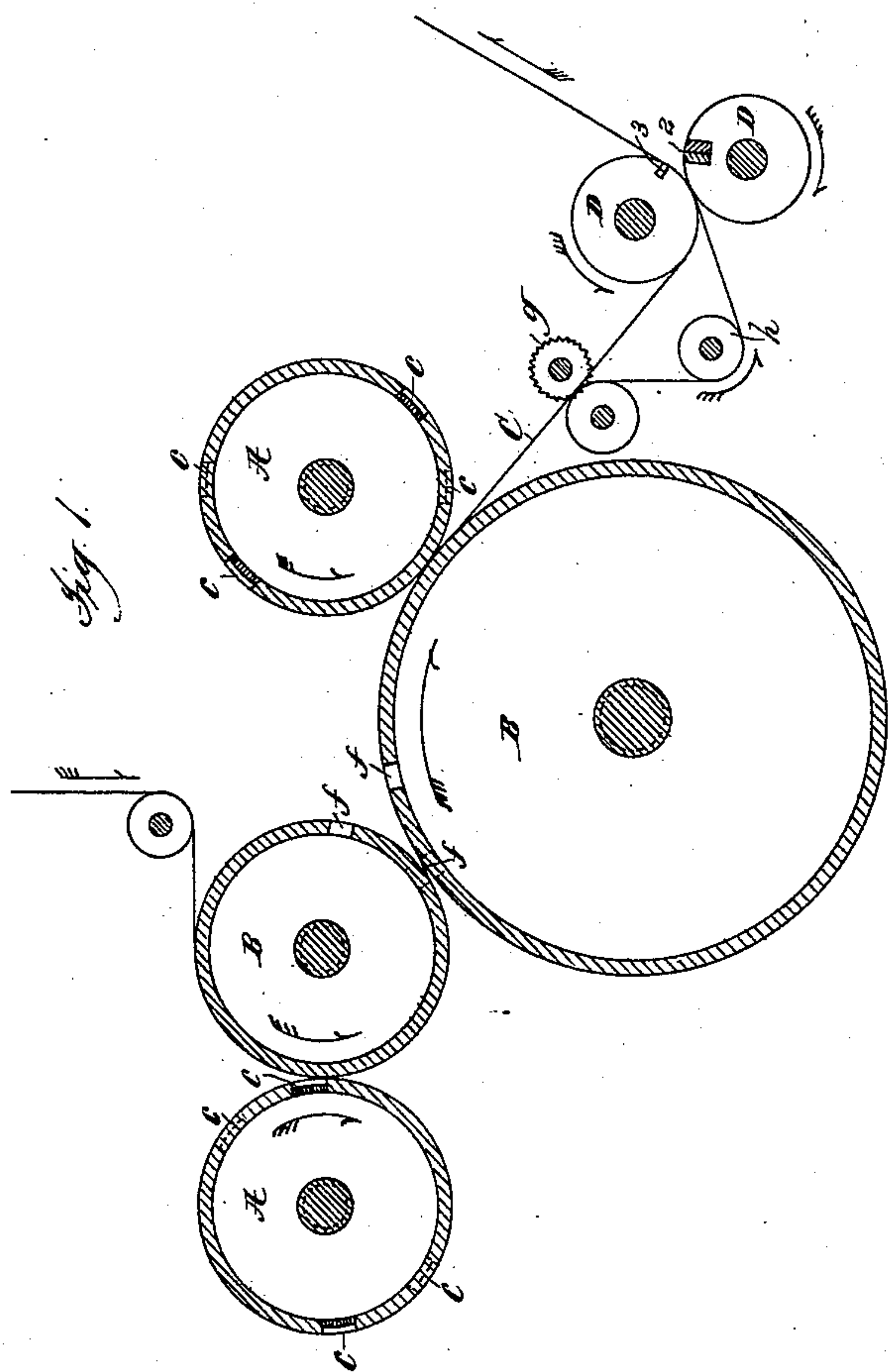
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S. D. TUCKER.

METHOD OF IMPOSING FORMS UPON PRINTING CYLINDERS.

No. 408,393.

Patented Aug. 6, 1889.



Attest:

Chas. H. Little

G. M. Borst

Inventor:

Stephen D. Tucker

by *Philip Phelps & Avery*
Attys

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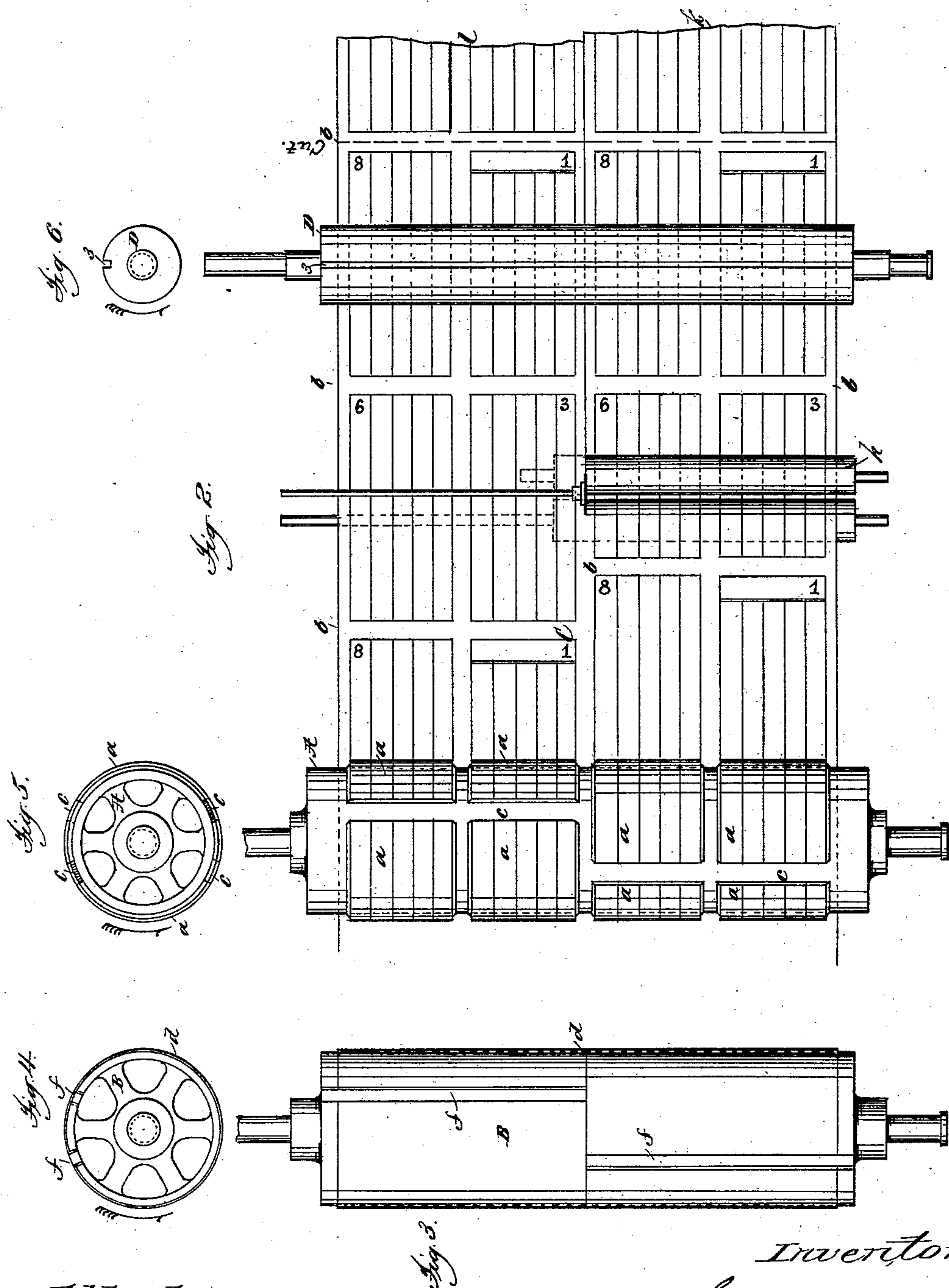
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Attest:
Geo. H. Borst
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Inventor:
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UNITED STATES PATENT OFFICE.

STEPHEN D. TUCKER, OF NEW YORK, N. Y.

METHOD OF IMPOSING FORMS UPON PRINTING-CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 408,393, dated August 6, 1889.

Application filed June 28, 1888. Serial No. 278,445. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN D. TUCKER, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Methods of Imposing the Forms upon Printing - Cylinders, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

It has heretofore been common in web-printing machines where two or more forms were carried lengthwise of the form-cylinders to so impose the forms upon the cylinders that the ends or sides of the forms, as the case might be, would be in line with each other lengthwise of the cylinder.

It has been found in practice that where the form-cylinders are of considerable length—say of sufficient length to carry three or four forms abreast, and the forms are arranged in this manner—the quality of the printing produced by different parts of the forms is not quite uniform—that is to say, there will appear in the impression of each form, near the advance end of the impression, a portion which is lighter or of poorer quality than the remainder of the impression—and this is particularly noticeable in the impressions produced by those forms located at or near the middle of the length of the cylinders. This defect, while it is not sufficiently marked to present a very serious objection in ordinary newspaper-work, is such as to be quite objectionable where a fine quality of printing is required.

It is the object of the present invention to overcome this defect, and this I have found can be accomplished by so arranging the forms upon the form-cylinders that their ends or sides, as the case may be, will break joints lengthwise of the cylinders.

A full understanding of the invention can best be given by an illustration and a somewhat detailed description of a web-printing mechanism equipped according to the invention. All further preliminary description of the invention will therefore be omitted and a detailed description given, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic elevation of the

principal parts of a web-printing machine, showing also such parts of the delivery mechanism as are necessary to illustrate the application of the invention. Fig. 2 is a plan view of one of the form-cylinders, showing also a portion of the printed web and illustrating the manner in which the printed pages upon the two parts of the web are brought into proper register, and showing also a plan view of one of the cutting-cylinders. Fig. 3 is a plan view of one of the impression-cylinders, showing the blanket and tympan-sheet in section. Fig. 4 is an end view of the same. Fig. 5 is an end view of one of the form-cylinders. Fig. 6 is an end view of one of the cutting-cylinders.

Referring to said figures, it is to be understood that A represents the form-cylinders, and B the impression-cylinders, of an ordinary form of web-printing mechanism. These cylinders may be arranged in any suitable manner and may be of any suitable size.

As illustrated in the drawings, the printing mechanism is what is termed a "double-width" mechanism, and the form-cylinders are capacitated to carry four forms *a* abreast or lengthwise of the cylinders and two forms circumferentially. As shown in the drawings, these forms are arranged with their columns of matter extending circumferentially of the cylinders; but this is not material, as the forms may be arranged so that the columns extend longitudinally of the cylinders, if preferred.

The forms *a*, instead of being so arranged upon the cylinder that their adjacent ends are in line with each other lengthwise of the cylinder, as has heretofore been the common arrangement, are so arranged, as best shown in Fig. 2, that their ends break joints or lap past each other, thus causing the blank margins *b* between the printed pages, which correspond to the spaces *c* between the ends of the forms, to fall in different positions lengthwise of the web C, as also indicated in Fig. 2. The forms *a* are secured upon the form-cylinders by the usual locking devices, which are suitably positioned to correspond to the desired position of the forms.

The impression-cylinders B are provided with the usual blankets and tympan-sheets *d*, the ends of which are secured in the recesses

f, formed in the cylinders in the usual manner, the only difference being that the recesses *f* are arranged to correspond with the arrangement of the forms *a*, so that the spaces *c* between the forms will fall opposite the recesses *f* as the cylinders revolve together.

It is found in practice that by thus arranging or imposing the forms so that they break joints longitudinally of the cylinders the lack of uniformity between the different parts of the impression made by each form is entirely overcome. This is probably due to the fact that in the old arrangement, where all of the forms were arranged in line lengthwise of the cylinder, the ends of all the forms in each row were caused to come into engagement with the impression-cylinder at the same time, and this probably caused a slight vibration in the form-cylinder, which resulted in the defective impression given by the advance portion of the forms, whereas by the present arrangement some of the forms are always in contact with the impression-cylinder, and thus this tendency to vibrate is destroyed. The defect referred to was probably also in part due to a similar vibration of the inking-rolls caused in the same manner.

When the web *C* has been perfected by forms arranged as has been described and as indicated in Fig. 2, it is of course necessary in order to sever the same transversely into sheets to either so organize the transverse cutting mechanism that it will operate to sever one half of the web at one point and the other half at another point to correspond to the difference in position lengthwise of the web of the blank margins *b*, as described in my companion application, Serial No. 278,446, or else, after slitting the web longitudinally, to so manipulate one or both of the narrow webs thus formed as to bring the pages upon the two webs into register. In many cases it will be preferable to adopt the latter method, and when this is desired it may be accomplished in the manner illustrated in the present case. For this purpose the web *C*, after having been perfected, is operated upon by a slit-ter *g*, by which it is divided into two nar-

row webs *k l*, one of which passes directly between the cutting-cylinders *D*, while the other is led around a register-roll *h* and then passes between the cutting-cylinders by the side of the first web.

The register-roll *h* is so positioned that the extra travel given to the portion of the web which is led around it is just equal to the distance which the blank margins *b* upon the web *k*, which is led around the roll, are in advance of the corresponding margins upon the web *l*, which passes directly to the cutting-cylinders. By this means the blank margins and the printed pages upon the two webs are brought into exact register as they arrive at the cutting-cylinders, so that the blade 2 and groove 3 upon those cylinders can extend the entire length of the cylinders and operate to sever or partially sever the web in the usual manner, after which the web is operated upon by any suitable form of delivery mechanism and treated in the same manner as a web perfected in the ordinary way as heretofore practiced.

Of course, where it is desired to associate the two parts of the web after it has been split longitudinally by the slit-ter and before it is separated into sheets by the use of turning bars, the turning bar or bars around which one of the webs passes may be so adjusted as to perform the function of the register-roll *h*, or in those cases where a roll forms part of the web-associating mechanism such roll may be adjusted to perform the same function.

What I claim is—

The herein-described method of imposing the forms upon a printing-cylinder to secure uniformity in the printing, which consists in placing the forms upon the cylinder so that they break joints longitudinally of the cylinder, substantially as described.

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

STEPHEN D. TUCKER.

Witnesses:

J. A. HOVEY,
FRED. W. H. CRANE.