No. 707,540. Patented Aug. 26, 1902.

A. BARUCH.

PRINTING PRESS.

(Application filed Aug. 10, 1901.)

(No Model.)

Fig. 1.

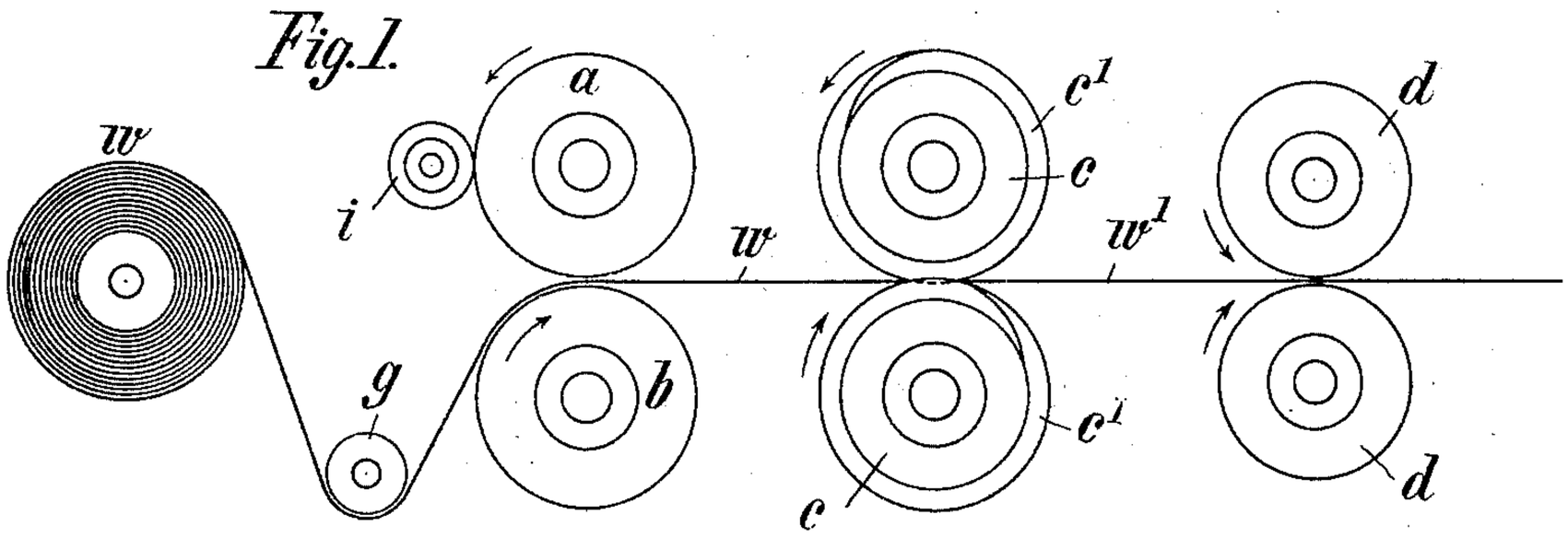


Fig. 2.

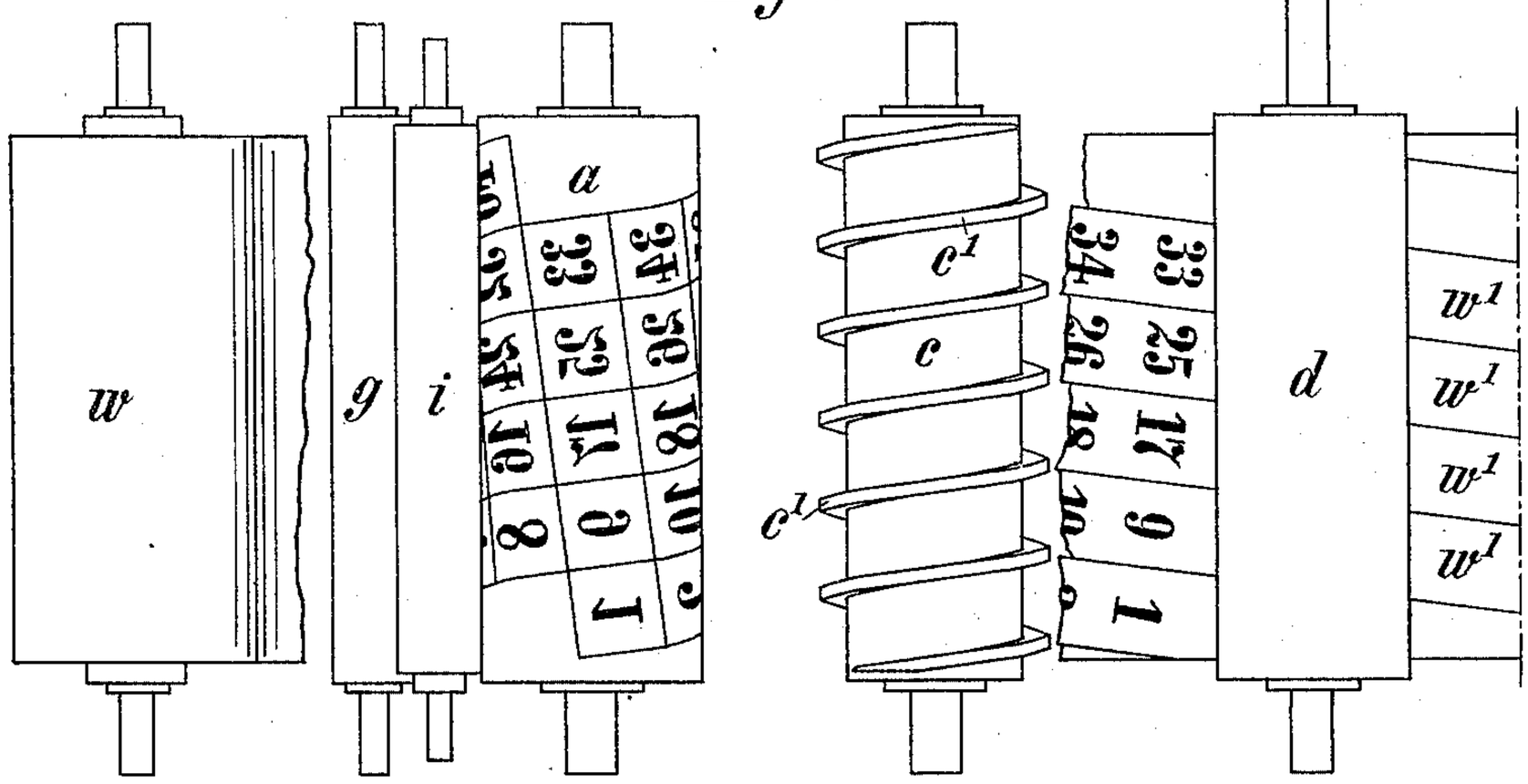
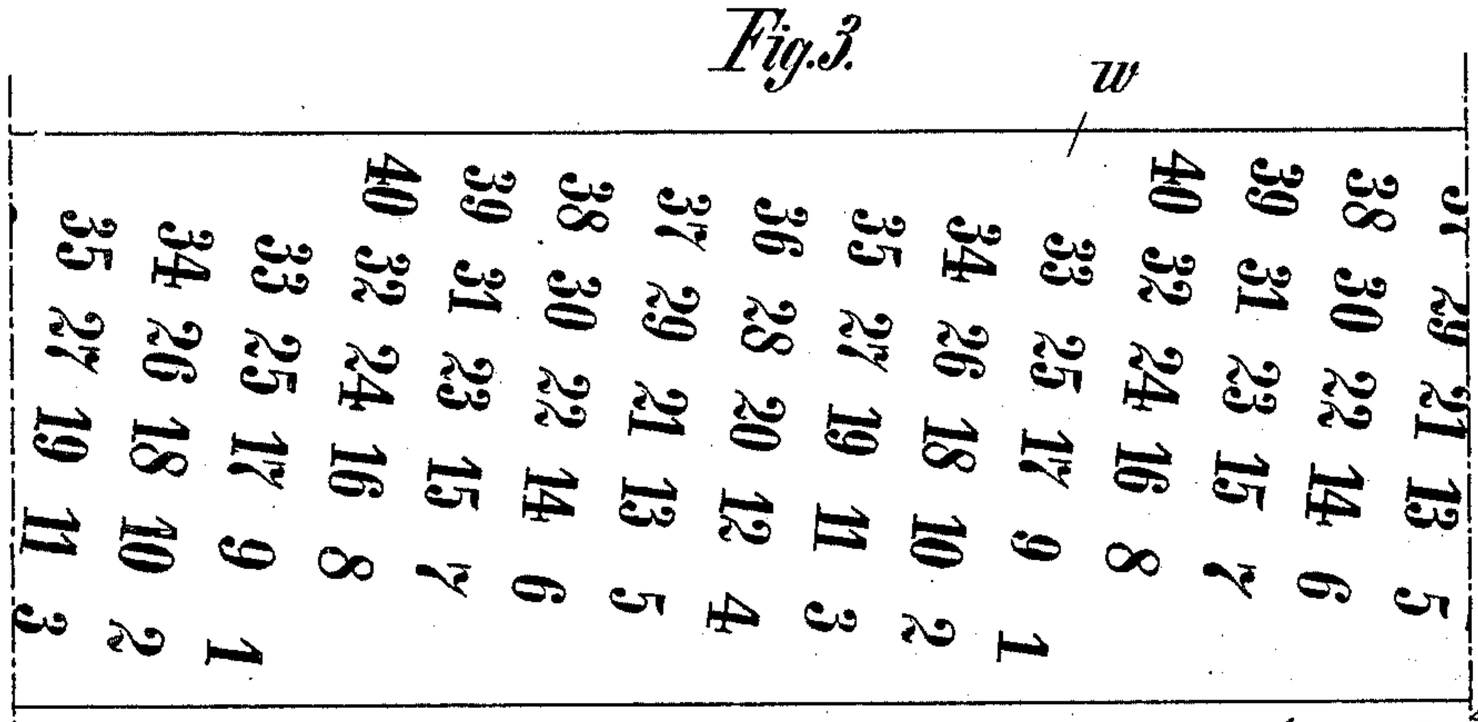


Fig. 3.



Witnesses:
C. A. Snow.
B. W. Sommers.

Inventor:
Alphons Baruch
by Munn & Co
Attys.

UNITED STATES PATENT OFFICE.

ALPHONS BARUCH, OF HAMBURG, GERMANY.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 707,540, dated August 26, 1902.

Application filed August 10, 1901. Serial No. 71,641. (No model.)

To all whom it may concern:

Be it known that I, ALPHONS BARUCH, a subject of the German Emperor, and a resident of Hamburg, in the German Empire, have invented certain new and useful Improvements Relating to Printing-Presses, of which the following is a specification.

This invention relates to printing, and has for its object an improved machine whereby a length of printed matter exceeding the length of the printing-surface at command may yet be produced from such printing-surface notwithstanding the limited length of the latter.

My invention consists in the special arrangement of the type or the like on the form, platen, or printing-cylinder whereby the type carried by such printing-surface is arranged at an angle to the longitudinal axis of the latter, so that repeated prints follow one another and form continuous strips or columns.

My invention also consists in the arrangement of the knives of a cutting device for cutting the printing-web into strips.

In order that my invention may be more fully understood by one skilled in the art to which it appertains, I shall now proceed to describe the same in detail, reference being taken to the accompanying sheet of drawings, wherein—

Figures 1 and 2 are a diagrammatic side elevation and plan, respectively, of a rotary printing-machine constructed in accordance with and embodying the invention. The said views represent only so much of the printing-machine as is necessary to illustrate the invention. Fig. 3 shows a portion of the imprinted web and illustrates the abutment or order of succession of the impressions on the said web.

Similar letters refer to similar parts throughout the several views.

Presuming, for example, that it is required to print strips bearing numbers, say, from "1" to "40," which strips exceed the limited length of the printing-surface, for this purpose the numbers or types are to be so arranged in inclined columns of even lengths upon the printing-surface that the end of each column, starting from the direction of movement of the paper-web, registers with the beginning of the next column in succession. If my invention is to be applied to a rotary printing-machine, the principle of the arrangement is the same, the type or the like being placed in inclined columns around the type-cylinder *a*, Figs. 1 and 2, and the beginning and end of the columns belonging to one another fall together, so that the columns form a single or several convolutions of a helical-shaped composition.

A web imprinted by the above-described printing-surface or type-cylinder has the appearance as shown in Fig. 3, from which it is obvious that the successive or repeated prints or impressions on the paper-web *w* follow one another, while the several columns of such impressions form continuous strips exceeding the length of the circumference of the type-cylinder *a* and bearing (in the present case) numbers or numerals running from "1" to "40." If the printed matter is to be cut up between the continuous columns into separate strips, a cutting device may be employed having its knives or cutters arranged also at an angle, so as to cut the continuous columns parallel with the direction of the arrangement of the printing-surface, as hereinbefore described. A preferred form of such cutting device is shown in Figs. 1 and 2 in connection with and forming part of a rotary printing-machine. In this machine the paper, &c., to be printed is taken from the web or roll *w*. The paper from the web being guided by a suitable guide-roller *g* passes between the type-cylinder *a* and an impression-cylinder *b*. The type-cylinder has its periphery covered with stereotype-plates of the matter to be printed and arranged at an angle to its longitudinal axis and is supplied in the usual manner by an inking device *i* with ink. The other cylinder is covered, as usual, with blanket, and as they revolve together with the paper between them they print one side of the paper in the manner above explained. The paper then passes between a pair of cutting-cylinders *c*, the peripheries of which are provided with projecting knife-blades or cutters *c'*, arranged at the same angle as the type of the type-cylinder, so as to form helical cutter-blades around the cylinders *c*. At the revolution of the cylinders *c* their coöperating blades *c'* cut or sever the paper between the columns printed thereon into separate

strips w', each paper strip containing thus a continuous printing-column. These paper strips are conveyed and delivered by two delivering-rolls d, between which the said strips are passing. The arrangement of the transmitting-gearing between the several cylinders and rollers must be such that while the type and impression cylinders and the delivering-rollers have the same circumferential velocity that of the cutting-cylinders must be somewhat greater in order to avoid upsetting or balling of the paper before the cutters c'.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a printing-press, a printing-surface containing columns of symbols set at an angle to the length of the material to be printed upon and arranged to successively print said column of symbols, the bottom of one column to register with the top of another column, whereby a plurality of columns of symbols will be successively printed in alinement, and means for feeding the material, substantially as and for the purpose set forth.

2. In a printing-press, a printing-surface containing parallel columns of symbols set at an angle to the length of the material to be printed upon and to register the foot of a column with the top of the next adjacent column, whereby the columns of symbols will be successively printed in alinement, and means to feed the material, substantially as and for the purpose set forth.

3. In a printing-press, a printing-cylinder, columns of symbols thereon spirally arranged and the symbols arranged at an angle to the elements of said cylinder to simultaneously print all the columns of symbols and cause the bottom of one column to register with the top of an adjacent one, whereby the columns of symbols will be successively printed in alinement, an impression-cylinder and means to feed the material to be printed upon, substantially as and for the purpose set forth.

4. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of one column to register with the top of the next adjacent column in the next succeeding impression, whereby the columns of symbols will be successively printed in alinement, an impression-cylinder and means to feed a continuous web, substantially as and for the purpose set forth.

5. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of one column to register with the top of the next adjacent one, whereby the columns of symbols will be successively printed in alinement, an impression-cylinder, means to feed a continuous web and means to cut the columns of symbols into diagonal strips, substantially as and for the purpose set forth.

6. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of one column to register with the top of the next adjacent one, an impression-cylinder, means to feed a continuous web and a spiral cutter having the same pitch as the symbols on the printing-cylinder to cut the web into diagonal strips, substantially as and for the purpose set forth.

7. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of a column to register with the top of the next adjacent column, an impression-cylinder, means to feed a continuous web and coöperating spiral cutters having the same pitch as the columns of symbols on the impression-cylinder, one above and the other below the continuous web to cut said web into columns of symbols diagonally and between the columns, substantially as and for the purpose set forth.

ALPHONS BARUCH.

Witnesses:
MAX KAEMPFF,
E. H. L. MUMMENHOFF.