

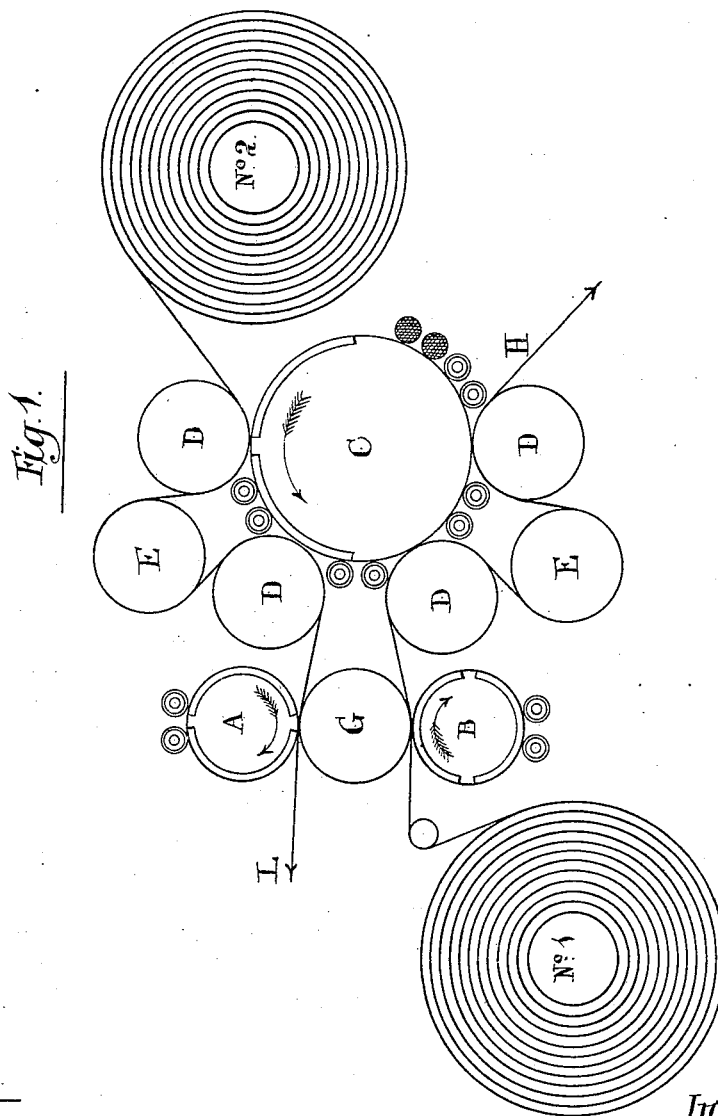
(No Model.)

5 Sheets—Sheet 1.

E. ANTHONY.
PRINTING MACHINE.

No. 267,313.

Patented Nov. 7, 1882.



Witnesses:

J. C. Buttery
William J. Betts

Inventor:-

Edw. Anthony
per *Daniel Whitehead & Co. dra*
Attorneys

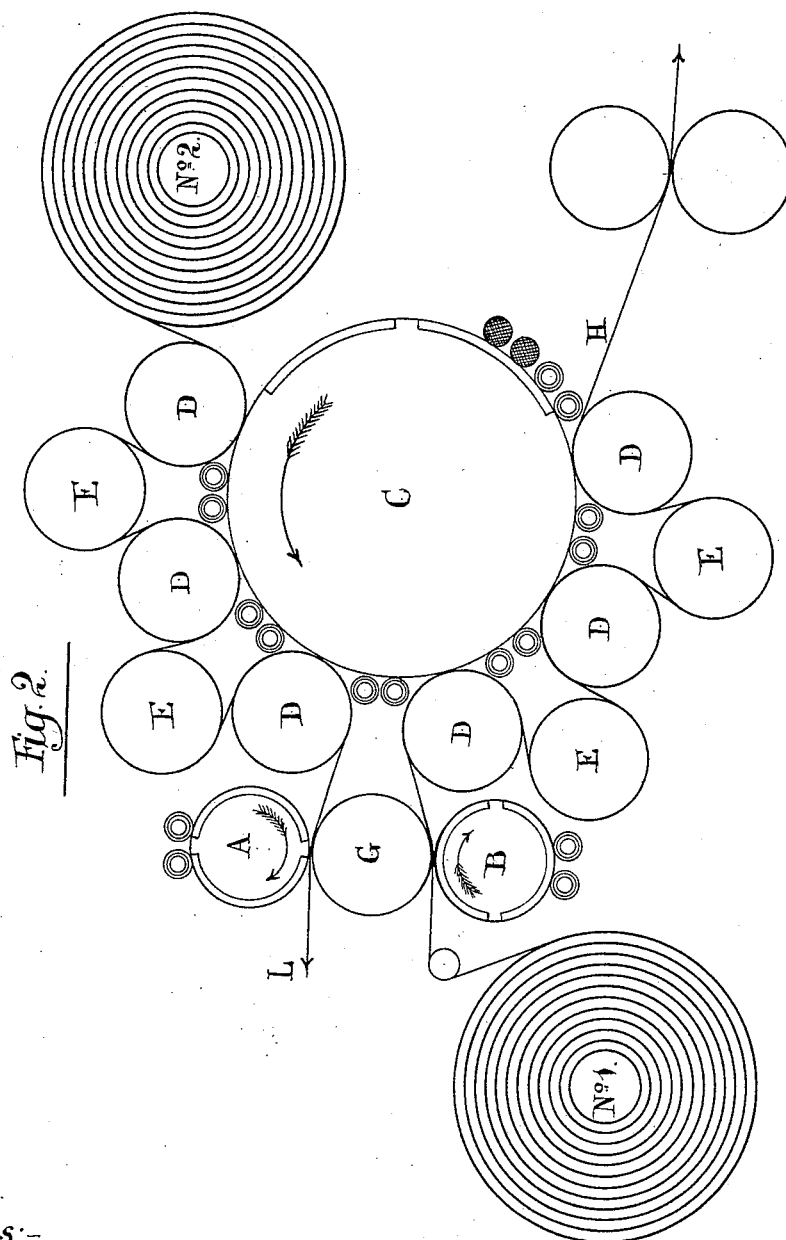
(No Model.)

5 Sheets—Sheet 2.

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Patented Nov. 7, 1882.



Witnesses:-

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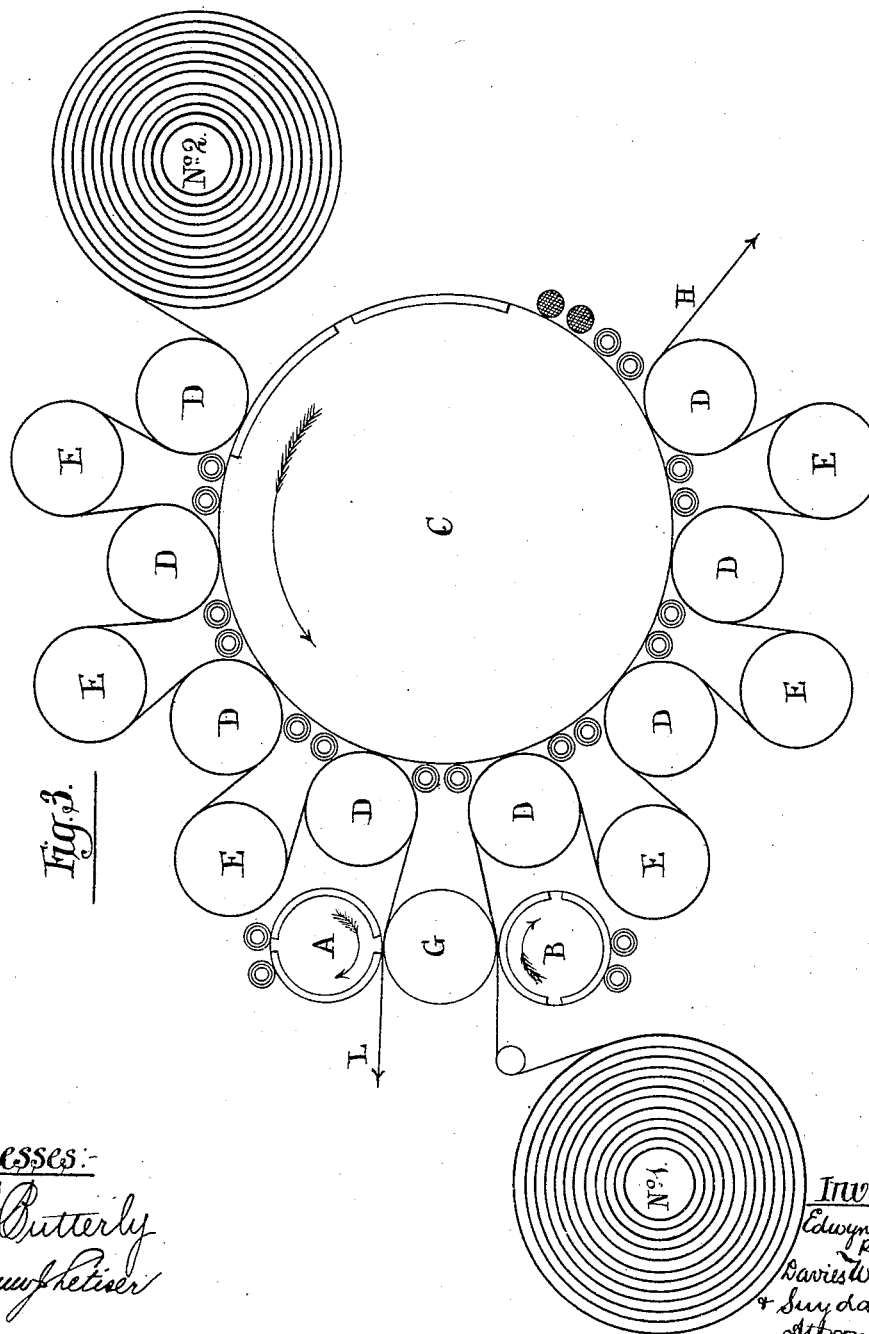
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E. ANTHONY.
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(No Model.)

5 Sheets—Sheet 4.

E. ANTHONY.
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Patented Nov. 7, 1882.

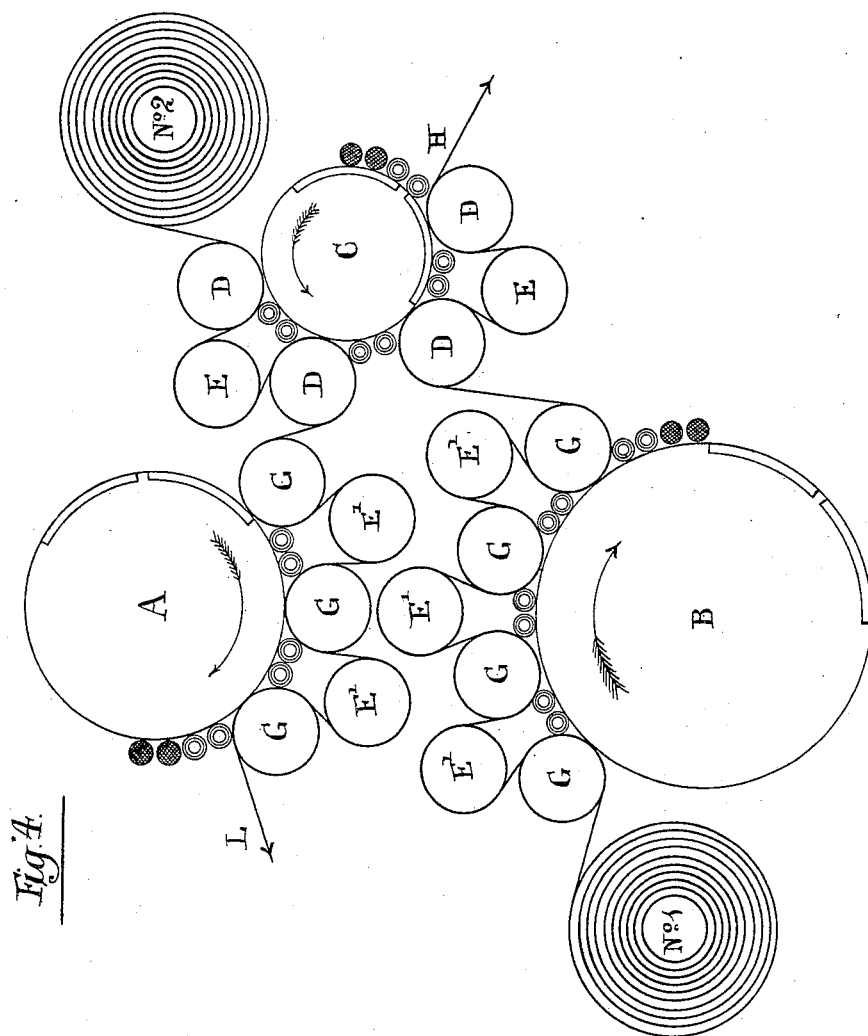


Fig. 4.

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(No Model.)

5 Sheets—Sheet 5.

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PRINTING MACHINE.

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Patented Nov. 7, 1882.

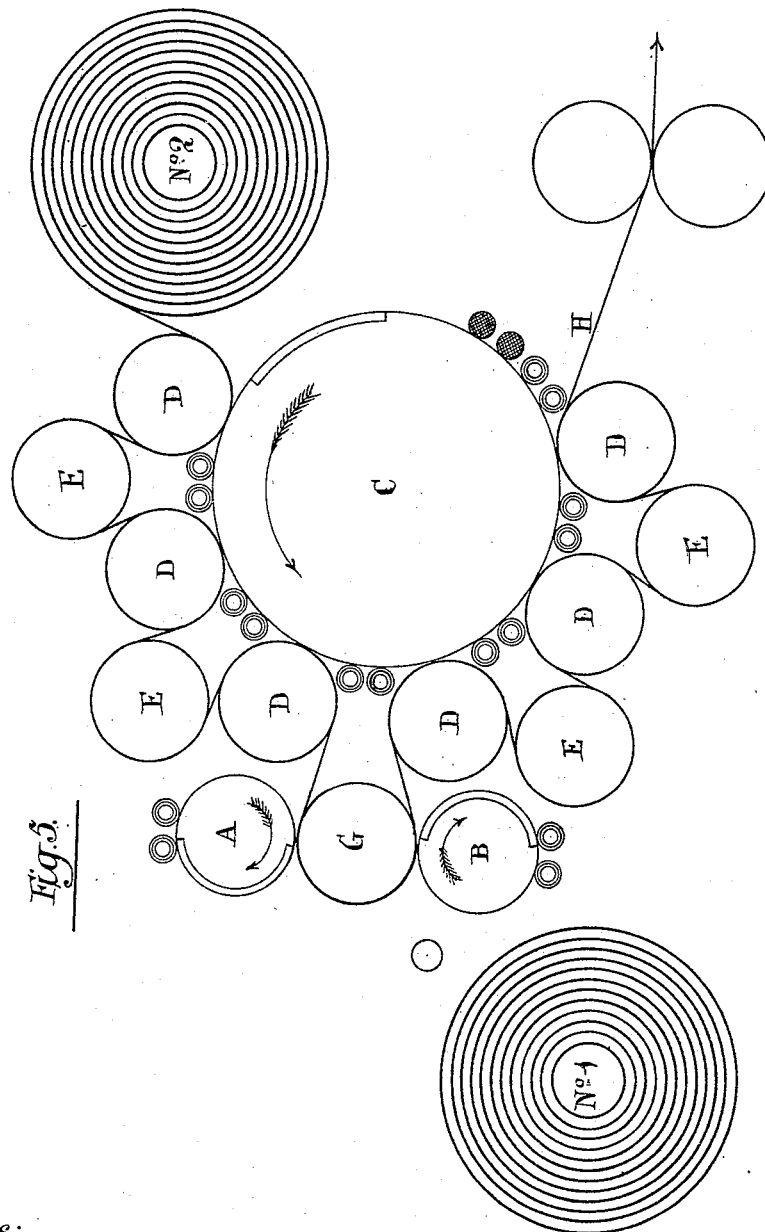


Fig. 3.

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UNITED STATES PATENT OFFICE.

EDWYN ANTHONY, OF NEW YORK, N. Y.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 267,313, dated November 7, 1882.

Application filed May 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDWYN ANTHONY, a subject of the Queen of Great Britain, residing in the city of New York, in the State of New York, have invented a new and useful Improvement in Printing-Machines, of which the following is a specification.

The object of my invention is to print on two rolls of paper by means of three form-bearing cylinders, a portion of the forms being necessarily duplicated and a portion of them not necessarily so.

Figure 1 shows a combination of three form-bearing cylinders, whereof one is twice the circumference of the breadth of the forms on its surface, and the surfaces of the others are entirely covered. In Fig. 2 the said cylinder is three and in Fig. 3 four times the breadth of the forms. In Fig. 4 all three cylinders are only partially covered with forms; and Fig. 5 illustrates the way of using Fig. 2 when it prints a paper of half the number of pages that it does when arranged as in Fig. 2.

The forms are distributed among three cylinders, A B C, Figs. 1 to 5. On two of them, A B, the forms for printing one side of the web are placed. There must be a duplicate set of these forms, so that each cylinder has on it the same number and kind of forms. The forms for printing the other side of the webs are placed on the cylinder C, and they need not be duplicated. The forms do not go all round the cylinder, but occupy one-half, as Figs. 1, 4, or one-third, as Fig. 2, or one-fourth, as Fig. 3, or any other aliquot part of the circumference. For printing each roll, impression-cylinders D D, &c., are placed round the cylinder C, and their number (for each roll) must be whatever multiple the whole circumference of the cylinder C is of the part of it occupied by the forms. Thus, if the forms occupy one-half of the circumference, there must be two impression-cylinders for each roll; if a third, three; if a fourth, four, and so on. From any impression-cylinder to the next the web is carried by a conveying-roller, (or rollers,) E E, &c., the distance of travel of course being adjusted so that no part of the web is printed on twice. One side of each web is thus continuously printed on by the cylinder C. By this arrangement we obtain two advantages that

have never been attained by any combination previously disclosed, which consists of three form-bearing cylinders, and which is capable of printing simultaneously on two rolls with the use of one and one-half set of plates. These advantages are, first, we may place type instead of stereotype on the cylinder C, thus enabling one side of the paper to be printed entirely from type; second, more room is obtained for placing on the forms and less inking apparatus is needed than when the forms occupy the whole surface of the cylinder. We take the circumference of the cylinder C the least multiple of the breadth of the forms, which will render it large enough for type to be placed thereon, and this multiple will of course vary with the size of particular papers.

Since the forms on cylinders A and B are duplicates of one another, in general it will be more convenient to have them stereotyped. Moreover, only one inking apparatus is required for each of those cylinders, and there is plenty of room for placing the forms on them. Hence usually it is better for the forms to go all round these cylinders, as shown in Figs 1, 2, 3. Occasionally it may be useful to make them larger, as illustrated by Fig. 4. Here the forms go one-third round cylinder A and one-fourth round cylinder B.

By using only one roll, taking off half of the forms, and passing the one roll under all the impression-cylinders, a paper may be printed of half the number of pages which are printed when two rolls are used. Thus, if Fig. 2 is printing a four-page paper, Fig. 5 will be printing a two-page paper. Only one roll (No. 2) is used and only one form is put on the cylinder A, and a duplicate on the cylinder B; or the two may be placed on A and none on B, or vice versa.

The course of the webs is apparent from an inspection of the diagrams. Web No. 1 passes between the form-bearing cylinder B and the impression-cylinder or (cylinders) G; it thus receives a continuous imprint on one side. Next it passes between the form-bearing cylinder C and impression-cylinders D, getting a continuous impression on the other side, and finally issues at H completely printed on both sides. Its after course depends on the cut-

ting, folding, &c., mechanism. Similarly web No. 2 passes between C and impression-cylinders D D, &c., and thence between A and G, issuing completely printed at L. In Fig. 5, A prints half of one side the web and B the other half of the same side.

I do not give details of the cutting, folding, inking mechanism, &c., because those parts may be constructed in any suitable way.

In all the preceding, when I say that the forms must make up an aliquot part of the circumference of the cylinder, I mean that the space so taken up, plus proper margins, must be an aliquot part thereof. All the foregoing also applies to the case of cutting before printing, the aliquot part then becoming the space taken up by the forms, plus proper margins, plus whatever distance there may be between successive sheets at the time they are printed.

I do not claim the method of printing by putting the forms on an aliquot part of the circumference of the cylinder and placing around a corresponding number of impression-cylinders, because that device is disclosed in Greene's Provisional British Specification No.

1,845, year 1853, and Bond and Foster's British Specification No. 774, year 1871; nor do I claim the method of printing on two rolls by placing the forms on three cylinders, those on two of them being duplicates of one another, because that device is shown in Bodmer's British Specification No. 12,741, year 1849, and in Buchhol's Specification No. 13,453, year 1851.

What I do claim is—

The combination of three form-bearing cylinders (the forms on two of them being duplicates of one another, and the circumference of the non-duplicate form-bearing cylinder being a multiple of the portion occupied by the forms) with carrier-cylinders and impression-cylinders, all substantially as described, whereby without turning devices two webs are simultaneously printed on both sides, one side of each web being printed from type, all substantially as described.

EDWYN ANTHONY.

Witnesses:

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WILLIAM J. LETISER.