

No. 653,188.

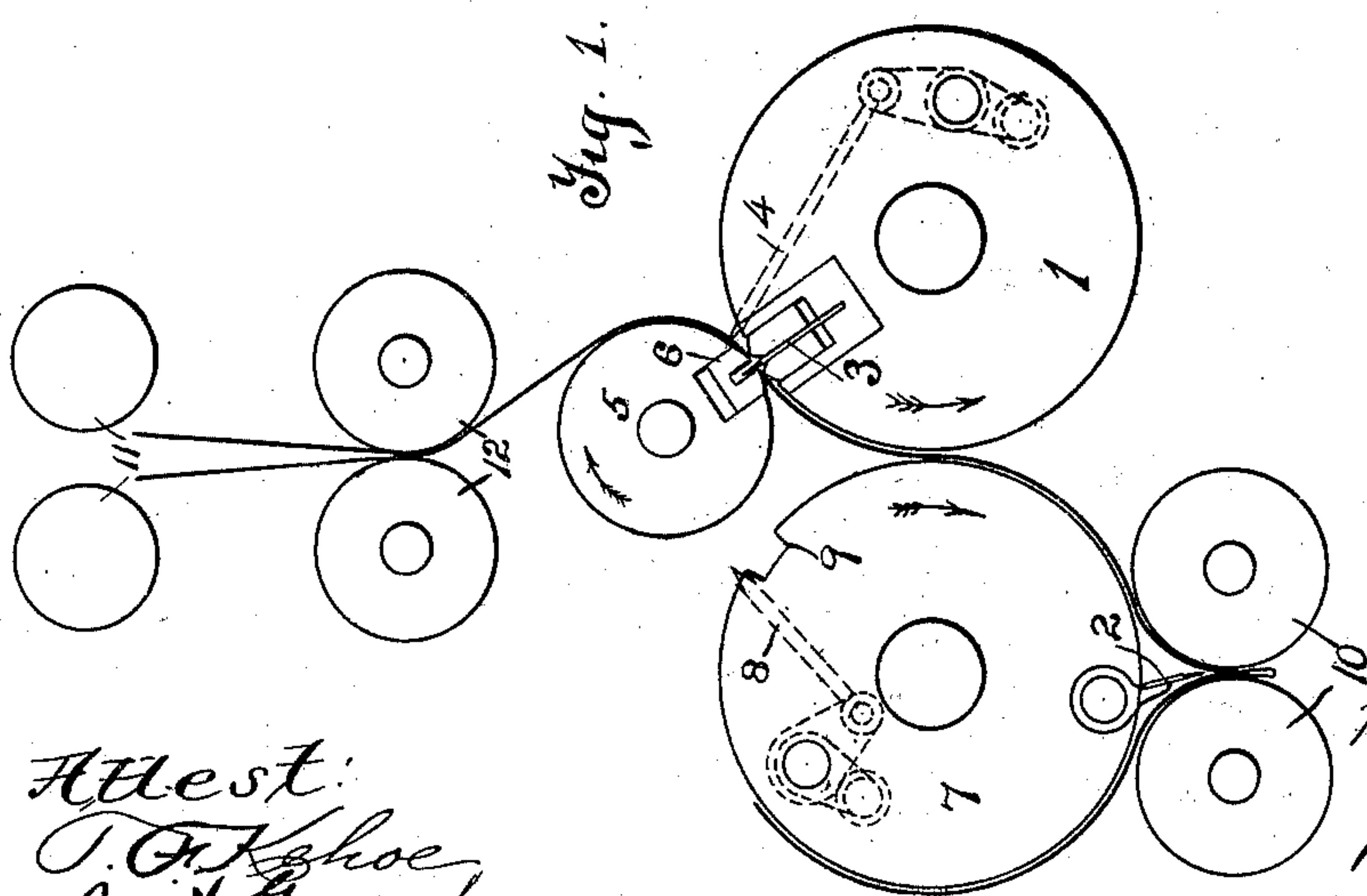
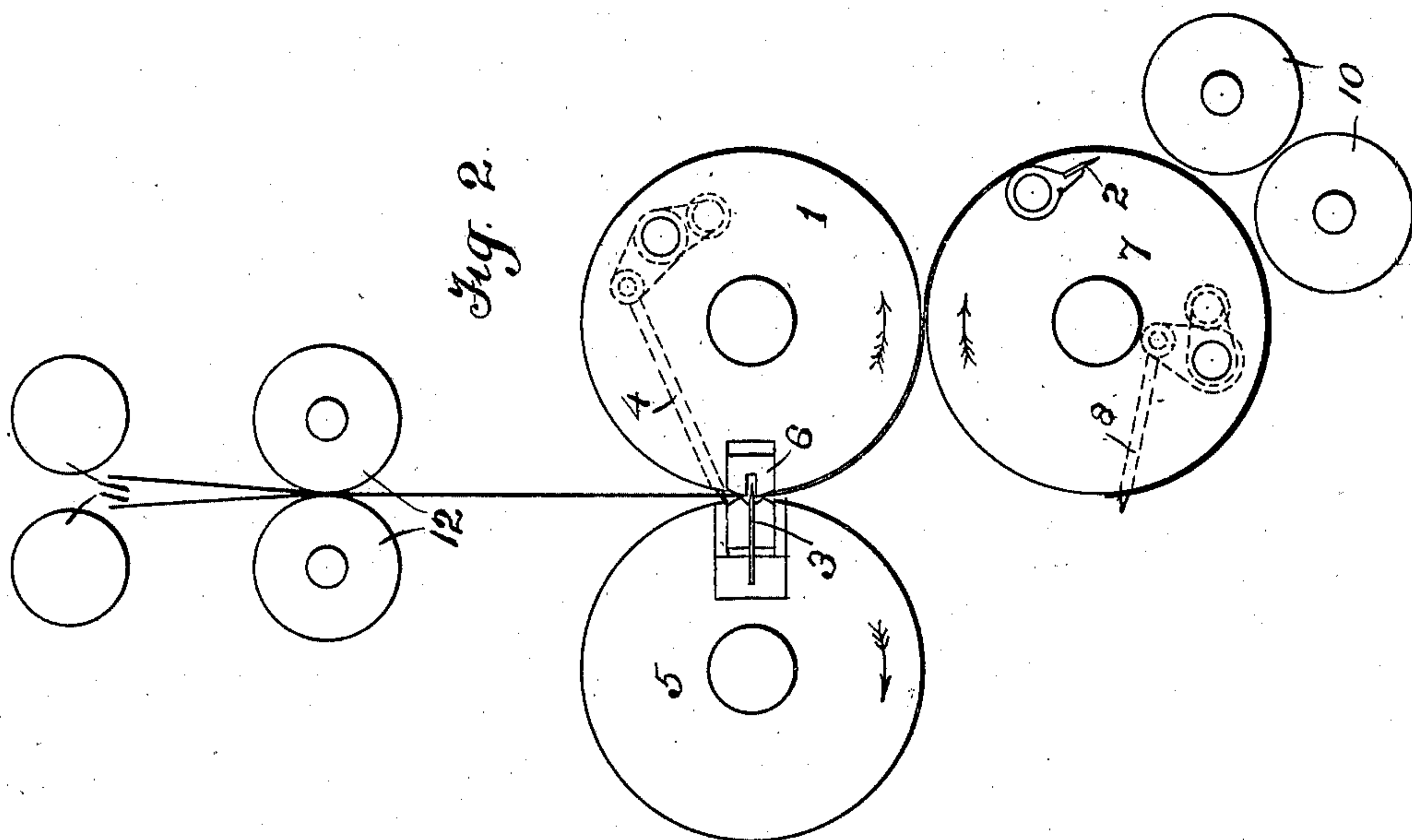
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CUTTING, FOLDING, AND COLLECTING MECHANISM.

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(No Model.)



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UNITED STATES PATENT OFFICE.

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CUTTING, FOLDING, AND COLLECTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 653,188, dated July 3, 1900.

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To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, a citizen of the United States, residing at New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Cutting, Folding, and Collecting Mechanisms, fully described and represented in the following specification and the accompanying drawings, forming a part
10 of the same.

This invention relates to certain improvements in the cutting and collecting mechanism of fast rotary printing-machines.

In fast rotary printing-machines as now
15 usually constructed one cylinder of the pair of cutting-cylinders also acts as the collecting-cylinder, the heads of the successive sheets being taken by sheet-taking devices, such as pins, and the sheets being cut off in
20 succession by the cutting agencies carried by the cylinders. While the cutting mechanism is intended to cut only each successive sheet, it has been found in actual practice that it operates not only to cut a sheet from
25 the web which is presented to it for that purpose, but it also in many instances cuts a slight shaving or narrow strip from the tail of the preceding sheet which is to be associated with the freshly-cut sheet, this being
30 due either to the fact that the sheet stretches somewhat or becomes in some way displaced. The shavings or thin strips thus cut off are exceedingly troublesome to get rid of, and various devices have been resorted to to prevent this second cutting of the sheet. Such
35 devices have, however, been complicated and expensive, have not been adapted for use with fast machinery, and have not always been reliable in operation.

40 It is the object of this invention to so construct cutting, folding, and collecting mechanisms of a fast rotary press as to enable the successive sheets to be collected and at the same time to keep the tail of the sheet from
45 being a second time cut or clipped by the action of the cutters in cutting the succeeding sheet.

50 With this and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter described, and

then pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like
55 characters of reference indicate the same parts, Figure 1 illustrates a cutting and folding mechanism embodying the invention. Fig. 2 is a modification of the construction shown in Fig. 1.
60

Referring to the drawings, 1 indicates a cutting-cylinder of ordinary construction, said cylinder being provided with a knife 3 of any well-known form. The cylinders shown
65 is provided with a single knife; but the number of knives will be varied according to the product to be formed. The cylinder 1 is further provided with any suitable form of sheet-taking devices. In the construction shown
70 the sheet-taking devices consist of the usual sheet-taking pins, (indicated at 4,) these pins being controlled by cams and spring-rods in the ordinary manner. Inasmuch, however, as the construction and operation of the sheet-taking devices are not material to the invention said devices have not been fully illustrated.
75

Coöperating with the cutting-cylinder 1 is a cutting-cylinder 5, said cylinder being provided with a cutting-block 6, having a cutting-groove therein, which groove coöperates
80 with the knife 3. In the form of construction shown in Fig. 1 the cutting-cylinder 5 is smaller than the cutting-cylinder 1, the proportion shown in this figure being as one to
85 two, so that the cylinder 1 is actuated to cut a sheet on every second revolution of the cylinder 5. If desired, however, the cylinders 1 and 5 may be of the same diameter, and such a construction is shown in Fig. 2.
90

In printing-machines as now ordinarily constructed one of the pair of cutting-cylinders which has just been described is caused also to act as a collecting-cylinder. The result of
95 this has been that when the first sheet has been taken by the pins on the collecting-cylinder and the pins while carrying this sheet are brought around into position to receive the leading end of the web which is to form the second sheet and a length of web has been
100 superposed on the first sheet, the tail of the first sheet becomes so positioned with rela-

tion to the cutter that the cutter in cutting off the second sheet also cuts a small trimming or shaving from the tail of the first sheet. To avoid this difficulty, there is provided an independent collecting - cylinder which operates to receive the sheet after it is cut directly from the cutting-cylinder, the sheets being superposed and collected on this independent cylinder.

10 In the construction shown in Fig. 1 the independent collecting-cylinder is indicated at 7, said cylinder being provided with any suitable form of sheet-taking devices, as pins 8. In this form of the invention the cylinder is also provided with a small gap 9, which registers with the knife 3 on the cylinder 1, and thus allows the said knife to pass the cylinder 7. The cylinder 7 is further provided with a folding-blade 2, which coöperates with a pair of folding-rolls 10 of any usual construction. This folding-blade may be operated by any ordinary form of cam such as is commonly used for this purpose. It will be readily seen that by taking the sheets directly away from the cutting - cylinders and collecting them on an independent cylinder the cutting-cylinders can only operate upon one sheet at a time, and therefore the cutting devices carried by them cannot cut the tail of the preceding sheet.

30 In the construction shown, after a given number of sheets have been collected upon the cylinder 7 they are folded off by the folding-blade 2 between the pair of folding-rolls 10, which, as has been heretofore said, coöperate with said folding-blade 2.

11 and 12 indicate any suitable guide-rolls by which the web is presented to the cutting, folding, and collecting mechanism—as, for instance, the draw-off rolls of a longitudinal folder.

45 The construction shown in Fig. 2 does not differ in mode of operation from that shown in Fig. 1. In Fig. 2, however, the folding-cylinder 7 is somewhat differently located with respect to the cutting-cylinder 1, and in this figure the cutting devices on the cylinders 1 and 5 are transposed, the cylinder 1 having the cutting-block and the cylinder 5 carrying the knife. With this construction, therefore, it is unnecessary to provide the cylinder 7 with a gap in order to allow the cutting-blade to pass.

55 Constructions are well known in the art in which a separate associating mechanism—such, for instance, as a collecting-cylinder—is used with a pair of cutting-cylinders, each sheet after being cut by the cutting-cylinders being carried to the associating mechanism or collecting-cylinder by means of tapes. Such mechanisms are, however, cumbersome and unreliable and are not all adapted for use in a fast rotary press. By arranging the construction, however, so that the independent collecting-cylinder takes the sheet directly from one of the cutting-cylinders the intermediate objectionable tape-pathways are

done away with, and a mechanism is produced which is very compact—a most important point in the construction of large fast presses—which can be run at any desired speed, and which is positive and reliable in its operation. Furthermore, if the invention be embodied in constructions similar to those shown in Figs. 1 and 2, one of the cutting-cylinders can be made very small, and the mechanism as a whole takes up little, if any, more room in the machine-frame than mechanisms in which one of the cutting-cylinders is used as a collecting-cylinder.

It is to be understood that the number and position of the several cutting and folding devices may be varied in accordance with the product which it is desired to produce and the position which these parts are to occupy in the printing-machine. Other variations may also be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be limited to the precise details of construction herein shown and described.

What I claim is—

1. In a cutting, folding and collecting mechanism, the combination with a pair of cutting-cylinders, of a collecting-cylinder independent of the cutting-cylinders, and means whereby said collecting-cylinder is caused to take each sheet directly from one of the cutting-cylinders, substantially as described.

2. In a cutting, folding and collecting mechanism, the combination with a pair of cutting-cylinders, one of said cylinders being provided with sheet-taking devices, of a collecting-cylinder independent of the cutting-cylinders, said collecting-cylinder being provided with sheet-taking devices, and means whereby the sheet-taking devices on the collecting-cylinder are caused to take each sheet directly from the sheet-taking devices on the cutting-cylinder, substantially as described.

3. In a cutting, folding and collecting mechanism, the combination with a pair of cutting-cylinders, one of said cylinders having sheet taking and retaining pins, of an independent collecting-cylinder having sheet taking and retaining pins, and means whereby the pins on the collecting-cylinder are caused to take each sheet directly from the sheet taking and retaining pins of the cutting-cylinder, substantially as described.

4. In a cutting, folding and collecting mechanism, the combination with a pair of cutting-cylinders, of a collecting-cylinder independent of the cutting-cylinder, means whereby said collecting-cylinder is caused to take each sheet directly from one of the cutting-cylinders, and suitable folding-off means carried by said collecting-cylinder, whereby the collected sheets are folded off said cylinder, substantially as described.

5. In a cutting, folding and collecting mechanism, the combination with a pair of cutting-cylinders, one of said cutting-cylinders having sheet taking and retaining pins, of an in-

dependent collecting-cylinder having sheet taking and retaining pins, means whereby the pins on the collecting-cylinder are caused to take each sheet directly from the sheet taking and retaining pins of the cutting-cylinder, and a folding-blade on the collecting-cylinder for folding off the collected sheets, substantially as described.

6. In a cutting, folding and collecting mechanism, the combination with suitable web-guides, of cutting-cylinder 1 having a cutting-blade, as 3, and sheet taking and retaining pins 4, coöperating cutting-cylinder 5 provided with cutting-block 6, independent folding and collecting cylinder 7 having sheet taking and retaining pins 8 and provided with gap 9, and means whereby the pins 8 are caused to take each sheet directly from the pins 4, substantially as described.

7. In a cutting, folding and collecting mechanism,

the combination with a pair of cutting-cylinders, one of which is provided with sheet taking and retaining devices, of an independent collecting and folding cylinder having sheet taking and retaining and folding-off devices and having a gap to permit the cutting devices on the cutting-cylinder to pass it, the sheet taking and retaining devices of the folding and collecting cylinder operating to take each sheet directly from the sheet taking and retaining devices of the cutting-cylinder, substantially as described.

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

WILLIAM SPALCKHAVER.

Witnesses:

T. F. KEHOE,

G. M. BORST.