(No Model.) 2 Sheets—Sheet 1.

C. B. COTTRELL.

SET OFF MECHANISM FOR PRINTING PRESSES.

No. 414,680. Patented Nov. 12, 1889.

Fig. 1.

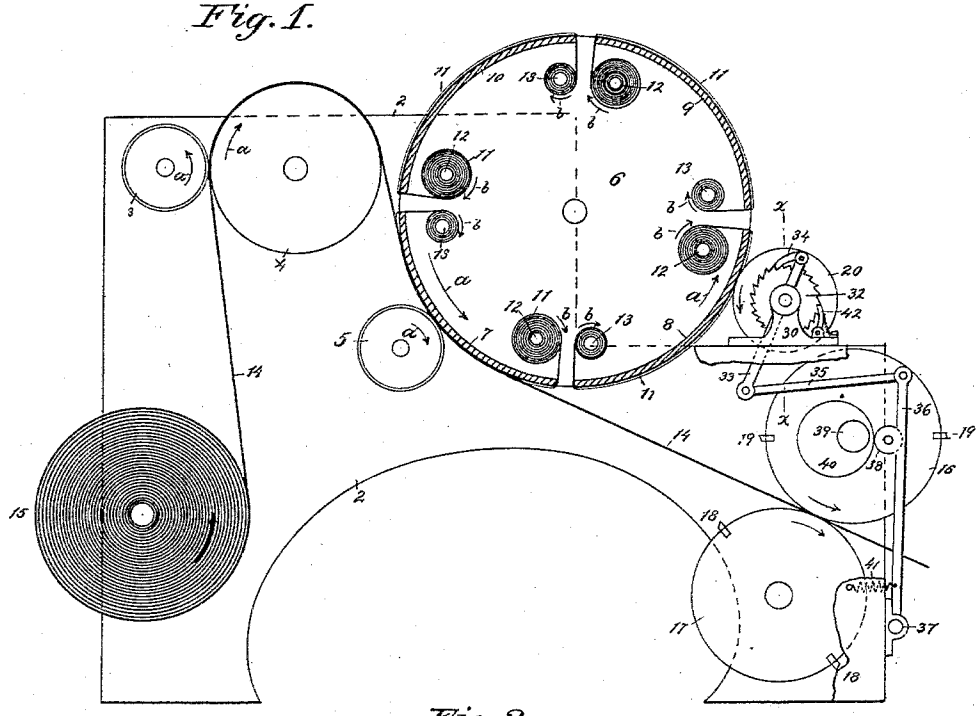
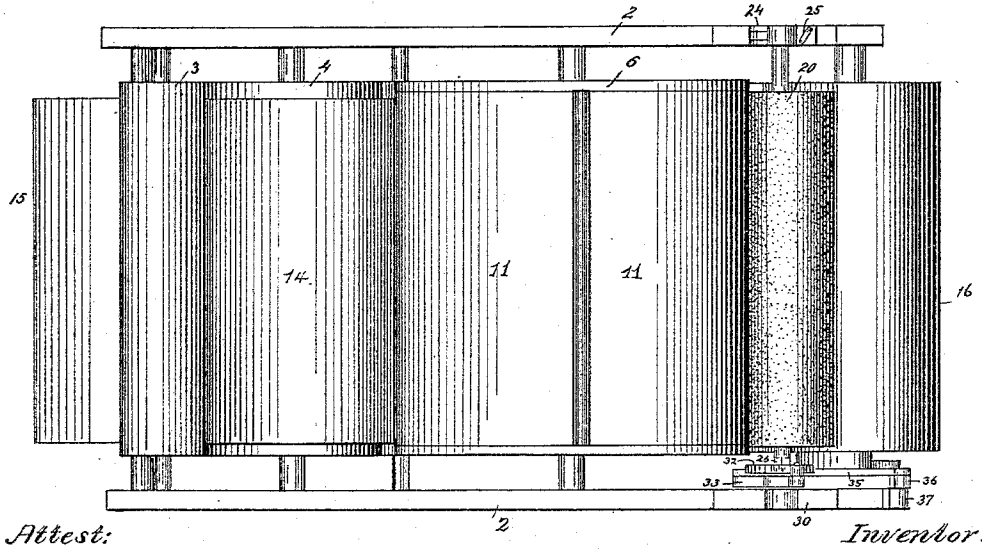


Fig. 2.



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Inventor:

Calvert B. Cottrell

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(No Model.) 2 Sheets—Sheet 2.

C. B. COTTRELL.

SET OFF MECHANISM FOR PRINTING PRESSES.

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Fig. 3.

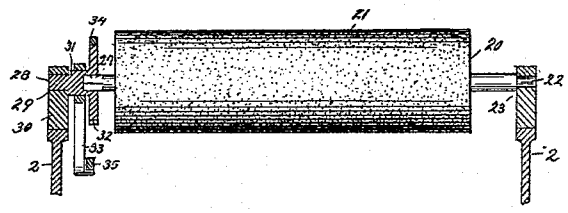


Fig. 8.

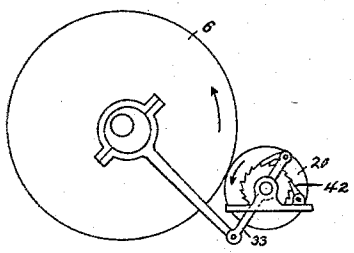


Fig. 4.



Fig. 5.

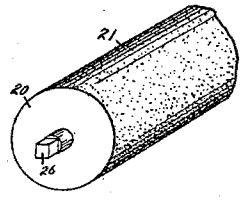


Fig. 6.

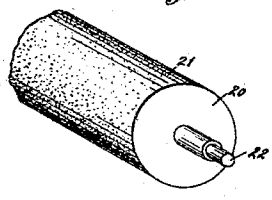
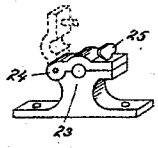


Fig. 7.



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UNITED STATES PATENT OFFICE.

CALVERT B. COTTRELL, OF WESTERLY, RHODE ISLAND.

SET-OFF MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 414,680, dated November 12, 1889.

Application filed May 9, 1889. Serial No. 310,092. (No model.)

To all whom it may concern:

Be it known that I, CALVERT B. COTTRELL, a citizen of the United States, and a resident of Westerly, in the county of Washington and State of Rhode Island, have invented certain new and useful Improvements in Set-Off Mechanism for Printing-Presses, of which the following is a specification.

My invention relates to that kind of printing-machines known as "perfecting-presses."

Previous to my invention numerous contrivances have been devised and suggested for preventing "offset" from the second impression-cylinder to the paper being printed while the latter is undergoing its perfecting operation, or receiving its impression on the second side.

In patents granted to me March 21, 1876, Nos. 175,036 and 175,037, are shown, combined with the second impression-cylinder, automatically-shifting tympans for preventing accumulation of the ink, and hence for lessening the liability of set-off upon the second side of the sheet or web being printed.

The object of my present invention is to provide simple and effective means for overcoming the objection alluded to; and to this end it consists in the features of construction and combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a side view of a perfecting-press embodying my invention, with the frame-work broken away for the sake of clearness. Fig. 2 is a top or plan view of the same. Fig. 3 is a vertical section taken in a plane represented by the line *x x*. Fig. 4 is a perspective view of the scraping-roller ratchet-wheel. Fig. 5 is a similar view of one end of the scraping-roller. Fig. 6 is a similar view of the other end of the scraping-roller. Fig. 7 is a like view of the bearings for the end of the roller shown at Fig. 6. Fig. 8 is a side elevation showing a modification of my invention.

In the several views the same parts will be found designated by the same numerals of reference.

2 represents the frame-work of the machine; 3, the first form or type cylinder; 4, the first impression-cylinder; 5, the second form-cylinder, and 6 the second impression-cylinder. The gearing usually employed for rotating these various cylinders is purposely omitted to simplify the drawings.

Those skilled in the art will readily understand how to build the machine to obtain the requisite movement of the parts.

The second impression-cylinder 6 is preferably divided into four impression-surfaces 7, 8, 9, and 10. For each of such impression-surfaces is provided a shifting tympan 11, which is adapted to operate in the manner described, and illustrated in my aforesaid patent, No. 175,037. The means for shifting said tympans may be constructed as shown in either of my before-mentioned patents, or may be differently constructed. The arrows *a* indicate the directions of rotation of the cylinders, and the arrows *b* the directions of movement of the tympans. The tympans wind from rollers 13 in a direction opposite that in which the impression-cylinder 6 travels and while the latter is in motion.

14 designates the paper to be printed, which may be supplied from a roll, as indicated at 15.

16 and 17 represent a pair of cutting or severing cylinders provided with cutting-blades 18 and 19, adapted to shear or separate the web 14 into sheets subsequent to the printing operation.

20 designates a scraping-roller provided with a soft absorbent covering or surface 21, which is arranged to contact with the surface of the tympans as they pass it. This roller 20 is designed to remain stationary for a given length of time, and thus serve the function of a scraper for the tympans. It is also designed to be periodically partially rotated to bring in contact with the tympans a fresh portion of its periphery.

One end of the scraping-roller is provided with a cylindrical journal 22, adapted to fit in a box-bearing or support 23, affixed to the main frame. This bearing is provided with a hinged cap or cover 24 and a thumb-screw 25, which engages with a threaded hole in the box 23, and forms a convenient means for maintaining the journal 22 in operative position. The other end of the scraping-roller is formed or provided with a square or angular stud 26, which is fitted into a corresponding seat 27 in line with a cylindrical journal 28, which is seated in a bearing 29, formed in

a bracket or block 30, secured to the main frame.

Preferably formed integral with the journal 28 is a hub 31 and a ratchet-wheel 32, in which is formed or provided the angular seat 27. Journaled or fulcrumed upon the hub is a lever 33, provided with a pawl 34 for driving the ratchet-wheel and through it the scraping-roller. The lower end of the lever 33 is pivoted to one end of a link 35, whose other end is pivoted to another lever 36, (see Fig. 1,) which is fulcrumed at 37 and provided with an anti-friction roller 38. On the shaft 39 of the cylinder 16 is provided an eccentric or cam 40, which runs in contact with said anti-friction roller and actuates the lever 36, and through its connections the driving pawl or finger 35. A spring, as 41, suitably arranged, serves to hold the lever 36 in operative engagement with the cam 40. Pivoted in the bracket 30 is a dog 42 for preventing rotation of the scraping-roller by the frictional contact of the second impression-cylinder surfaces, so that at the desired periods of time the said roller may remain motionless and perform its intended function of a scraper.

As illustrated, the paper passes between the form-cylinder 3 and the first impression-cylinder 4, thence between the second form-cylinder 5 and the perfecting or second impression-cylinder 6, and finally between the severing-cylinders 16 and 17. In passing between the cylinders 3 and 4 one side of the paper is printed, and in passing between the cylinders 5 and 6 the opposite side of the paper is printed. While the printing of the second side of the paper takes place the freshly-printed opposite side is presented to one of the tympans of the second impression-cylinder and portions of the ink thereof are transferred to said tympan, forming thereby what is known as the "offset." When said tympan has passed beyond the form-cylinder 5 and the scraping-roller, it is shifted or fed lengthwise in the direction of the arrow from the roller 12 to the roller 13 in the manner and for the purpose set forth in my previously-obtained Letters Patent. The doubly-printed or perfected portion of the web then passes between the cylinders 16 and 17 and is cut off or severed. After leaving the form-cylinder 5 the tympan is presented to the action of the scraping-roller for the removal of the ink obtained by the offset. The scraping-roller covering or sheath of cotton flannel, felt, or other soft material is dampened or moistened with benzine or its equivalent. As the tympan is carried past the stationary dampened scraping-roller the ink on the tympan is softened or dissolved and scraped off and absorbed by said roller. At the desired time the scraping-roller is partially rotated to bring into play a fresh or clean portion of its surface. Preferably the scraping-roller is given two forward movements, or turned the distance of two notches of its ratchet-wheel to each complete revolution of the second impression-cylinder. This relative movement of the scraping-roller and the second impression-cylinder may, however, be changed at the pleasure of the builder. It is desirable, however, to effect the step-by-step or periodic rotations of the scraping-roller as seldom as possible, in order that the scraped-off ink may have full opportunity to be absorbed by or dried upon the roller before that portion of the roller containing it is brought around again in contact with the impression-cylinder. As the second impression-cylinder revolves in a direction opposite to that in which the shifting tympans are moved, it will be seen that the clean portions of the tympans come on at the front edges of the impression-surfaces of the cylinder and the soiled portions pass off at the rear edges thereof.

By the employment together of the shifting tympans and the scraping-roller there is little or no liability of offset occurring, because, besides the continual presentation of new portions of the tympans, the exposed surfaces of the tympans are constantly subjected to the action of the scraping-roller. If desired, the tympans may be shifted by hand in lieu of automatically.

So far as some of the features of my invention are concerned the tyman may be immovable, or may be dispensed with entirely.

When it may be desired to remove the scraping-roller and insert a new one, the cap 24 is unfastened and swung up, the journal 22 raised from its bearing, and the roll pulled endwise to withdraw the angular stud 26 from its seat.

In the modification shown at Fig. 8 the eccentric for operating the scraping-roller is mounted on the shaft of the second impression-cylinder instead of the cutting-cylinder.

Various other modifications in detail construction and arrangement may be made without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a perfecting-press, the combination, with the second impression-cylinder, of a roller adapted to be held stationary to act as a scraper, substantially as set forth.

2. In a perfecting-press, the combination, with the second impression-cylinder, of a scraping-roller normally stationary, and means, substantially as described, for periodically partially rotating it, substantially as described.

3. In a perfecting-press, the combination, with the second impression-cylinder, of a scraping-roller having a ratchet-wheel, a dog engaging therewith to normally hold said roller stationary, and a driving-pawl for periodically partially rotating said roller, substantially as described.

4. In a perfecting-press, the combination, with the second impression-cylinder provided with a series of shifting tympans, of a stationary roller adapted to scrape the sur-

faces of the same, substantially as set forth.

5. In a perfecting-press, the combination, with the second impression-cylinder provided with a series of shifting tympans, of a roller adapted to scrape the surfaces of the same, means, substantially as described, for normally holding said roller stationary, and means, substantially as described, for periodically partially rotating the same, substantially as set forth.

6. In a perfecting-press, the combination, with the second impression-cylinder, of a scraping-roller having a cylindrical journal at one end and an angular stud at the other, and a hub provided with an angular seat for the said stud, and with a cylindrical journal and journal-bearings for said journals, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 8th day of May, A. D. 1889.

CALVERT B. COTTRELL.

Witnesses:
PHILLIPS ABBOTT,
JACOB FELBEL.