

L. HUFFMAN.
IMPRESSION APPARATUS.
APPLICATION FILED OCT. 4, 1907.

946,224.

Patented Jan. 11, 1910.
2 SHEETS—SHEET 1.

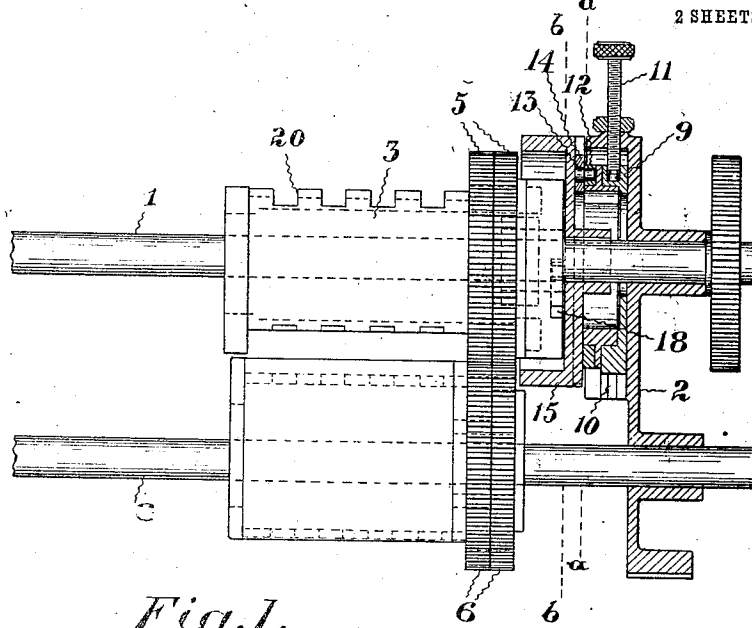


Fig. 1.

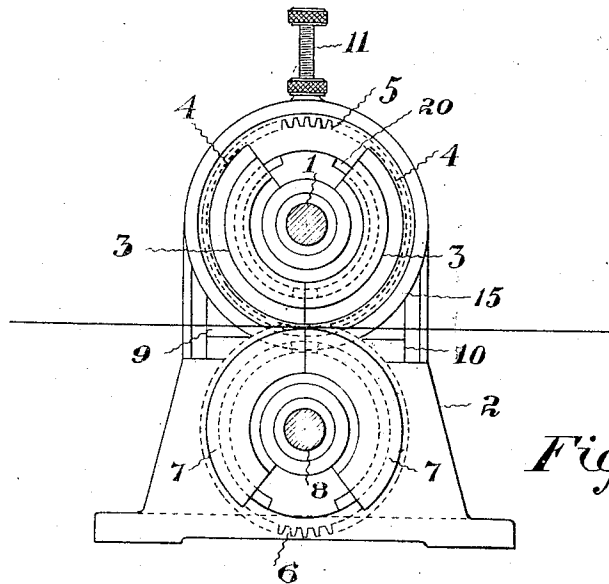


Fig. 2.

WITNESSES:

W. G. Morrison
M. M. Kendrick

INVENTOR.

Louis. Huffman.

BY

Ridout & Maylee
ATTORNEYS.

L. HUFFMAN.
IMPRESSION APPARATUS.
APPLICATION FILED OCT. 4, 1907.

946,224.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 2.

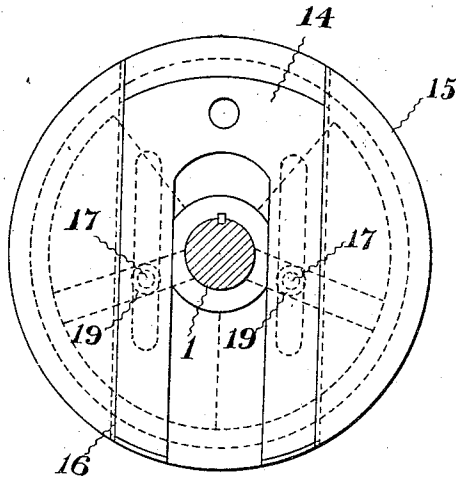


Fig. 4.

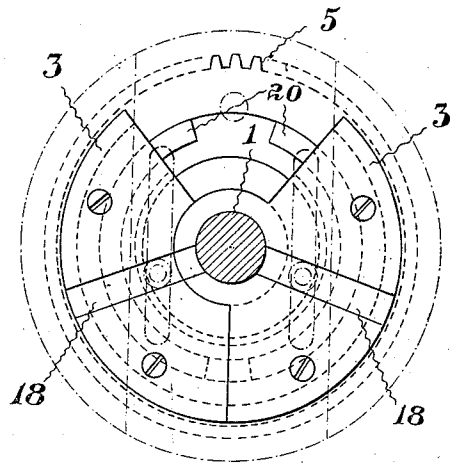


Fig. 5.

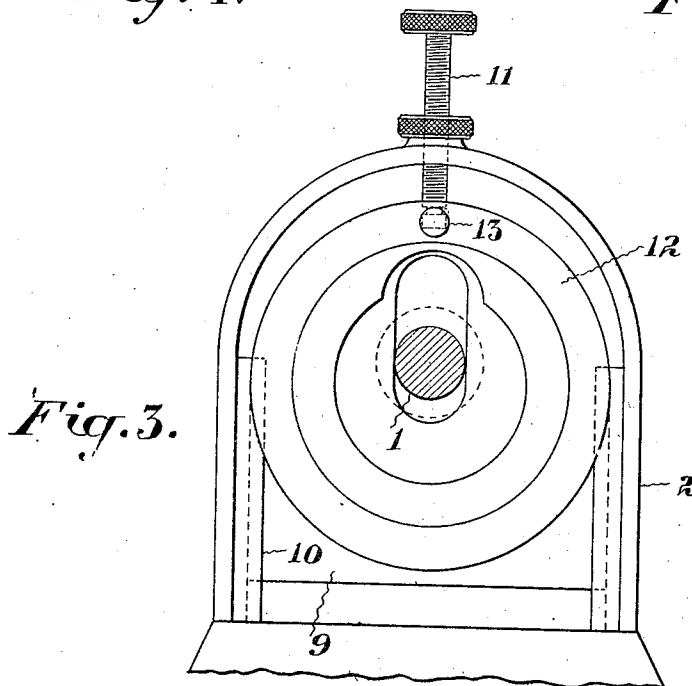


Fig. 3.

WITNESSES:
J. J. McMillan
J. M. Hendrick

INVENTOR.
Louis. Huffman.
BY Ridout & Maybee
ATTORNEYS.

UNITED STATES PATENT OFFICE.

LOUIS HUFFMAN, OF TORONTO, ONTARIO, CANADA.

IMPRESSION APPARATUS.

Specification of Letters Patent. Patented Jan. 11, 1910.

946,224.

Application filed October 4, 1907. Serial No. 395,922.

To all whom it may concern:

Be it known that I, LOUIS HUFFMAN, of the city of Toronto, in the Province of Ontario, Canada, have invented certain new and useful improvements in Impression Apparatus, of which the following is a specification.

My invention relates to apparatus in which rotary means are employed to produce a series of impressions at regular intervals on a continuous band of material drawn through the apparatus at a substantially uniform speed. Such impressions may, for example, be printed impressions as in a cylinder printing press, perforations as in a rotary perforator, or may amount to a complete severing of the material as in machines for dividing a band of material into sheets. In such apparatus, taking a cylinder printing press as a concrete example, it has heretofore only been possible to print impressions at intervals represented by the circumference of the cylinder, or aliquot parts thereof, and my object is to render it possible to make, at will and with a given cylinder, impressions at intervals other than said intervals whether such impressions be in the nature of printing, or perforating, or dividing or any like operations. I attain my object by carrying the rotating impressing means in such a manner that while, during the time of making an impression, the impressing means are moving at the same speed as the band of material yet immediately after an impression is made the speed of rotation of the impressing means may be increased to cause the next impression to be made after an interval less than that at which it would be made had the normal speed of the impressing means been maintained. In practice a plurality of impressing means will be employed each shaped as a segment of a cylinder.

Figure 1 is front elevation of my device. Fig. 2 is a side elevation of the same partly in section. Fig. 3 is a section on the line *a-a* Fig. 1, looking toward the right. Fig. 4 is a similar view looking toward the left. Fig. 5 is a section on the line *b-b* Fig. 1, looking toward the left.

In the drawings like characters of reference indicate corresponding parts in the different figures.

1 is a shaft suitably journaled on the frame 2. On this shaft are concentrically

journaled the segments 3 which are formed as segments of a cylinder and carry the impressing means. While the impressing means may be of any form I show a stereotype plate 4 secured to each segment. (See Fig. 2.) The segments 3 being independent of each other and of the shaft may be rotated as desired at the same speed as the shaft, or at a different speed. Each segment carries a gear wheel 5, and these gear wheels mesh with similar gear wheels 6 secured to segments 7, which are independently journaled on the shaft 8 suitably carried by the frame of the machine. These segments form the impression roller which coöperates with the impressing means when an impression is being made on the paper or other material fed through the device. The gearing insures that the same part of each segment 7 will always coöperate with a given part of one of the segments 3. This is important in printing as it is usually necessary to pad certain portions of the impression rollers in order to produce uniform imprints.

It is necessary in the operation of my device to provide means for imparting the variable motion hereinbefore referred to to the segments 3, but before describing these means I will set out the mode of operation of the device.

As two segments 3 are shown the impressing means will be in practice usually secured to each segment, which impressing means we will assume to be stereotype plates. During the time that each segment 3 is coöperating with the corresponding segment 7 the segments in coöperation are rotating at substantially the same speed as the shaft 1, which speed will substantially correspond with the speed at which the paper is fed through the machine. As soon, however, as one of the segments 3 has made its impression its speed is accelerated in order to advance it an angular distance greater than that due to the rotation of the shaft. This enables it to make its next impression after a shorter interval than would otherwise be the case, so that impressions are made at less intervals than represented by the circumference of the complete cylinder of which 3 are segments, and at intervals which may be other than aliquot parts of the said circumference.

It will be noted that the segments 3 do not form a complete cylinder a substantial

gap being left when two ends of the segments are in contact. The length of the interval between impressions may therefore be varied by causing any segment, during the time it is not in coöperation with one of the segments 7, to close a lesser or greater portion of this gap.

The means I will now describe not only cause the periodical acceleration of the speed of each segment 3 but also enables the regulation referred to to be effected.

On the frame 2 is carried a slide 9 working in suitable guideways 10. This frame is adjustable up and down by means of the screw 11, which is threaded through the top of the frame and journaled in the slide 9. The slide has an annular way formed therein in which is carried the rotatable ring 12. This ring carries a pin 13, which pin engages a slide 14, adapted to move transversely of the disk 15 in the guideway 16 formed therein. The disk 15 is secured to the shaft 1, and the slide is suitably slotted to pass on each side of the shaft. The disk is also slotted parallel to the guideway 16, and through these slots project the pins 17 extending out from the slide 14. These pins engage the radial slots 18 formed in the segments 3. To lessen friction the pins are preferably provided with the friction rollers 19. The operation of this mechanism is as follows;—The pin 13 being secured to the ring 12 remains at a constant distance from the center of the ring, and if the ring be eccentric to the shaft the pin, owing to its engagement with the slide 14, will move in a circle eccentric to the shaft, and hence will cause the reciprocation of the slide 14 in its guideway on the disk 15. This reciprocation of the slide causes a reciprocating movement of the pins 17, which engaging the slots 18 cause each segment for part of a rotation to rotate substantially synchronously with the shaft and then to accelerate its movement, the original rate of rotation being subsequently resumed. The place may be varied by varying the eccentricity of the pin 13 by means of the screw 11. If the ring be drawn up concentric with the shaft the pins 17 will lie diametrically opposite one another, and the segments 3 will also be diametrically opposite one an-

other, and their speed will remain the same as that of the shaft throughout the revolution. The limit of adjustment in the other direction is obtained when the segments 3 alternately come together at their opposite ends in the course of each revolution.

For printing purposes the segments are preferably provided with complementary teeth 20, which serve to support stereotypes longer than the arcs subtended by one of the segments and which may intermesh when short stereotypes are employed. (See Fig. 5.) Any of the ordinary well known devices may be employed to hold the stereotypes in position. Instead of stereotypes, perforating, dividing, or other impression devices may be employed.

What I claim as my invention is:

1. In rotary impression apparatus a rotary impression means formed of a plurality of independent, concentrically-journaled segments forming less than the complete periphery of a cylinder; and means for driving each segment at a given speed during the operative part of its rotation and at a different speed during the non-operative part of its rotation.

2. In rotary impression apparatus a rotary impression means formed of a plurality of independent, concentrically-journaled segments forming less than the complete periphery of a cylinder; means for driving each segment at a given speed during the operative part of its rotation and at a different speed during the non-operative part of its rotation; and means for varying the length of the arc in which each segment is non-operative.

3. In rotary impression apparatus a cylinder formed in a plurality of independent concentrically journaled segments forming less than the complete periphery of the cylinder; means for independently rotating each segment and for driving each of said segments at an accelerated speed during part of each rotation; and means for varying the length of the arc in which the acceleration takes place.

Toronto, Ont., 26th September, 1907.

LOUIS HUFFMAN.

Signed in the presence of—

J. EDW. MAYBEE,

F. W. M. KENDRICK.