(No Model.) 2 Sheets—Sheet 1.

L. C. CLARK.

COUNTING MECHANISM FOR PRINTING PRESSES.

No. 591,246. Patented Oct. 5, 1897.

Fig. 1.

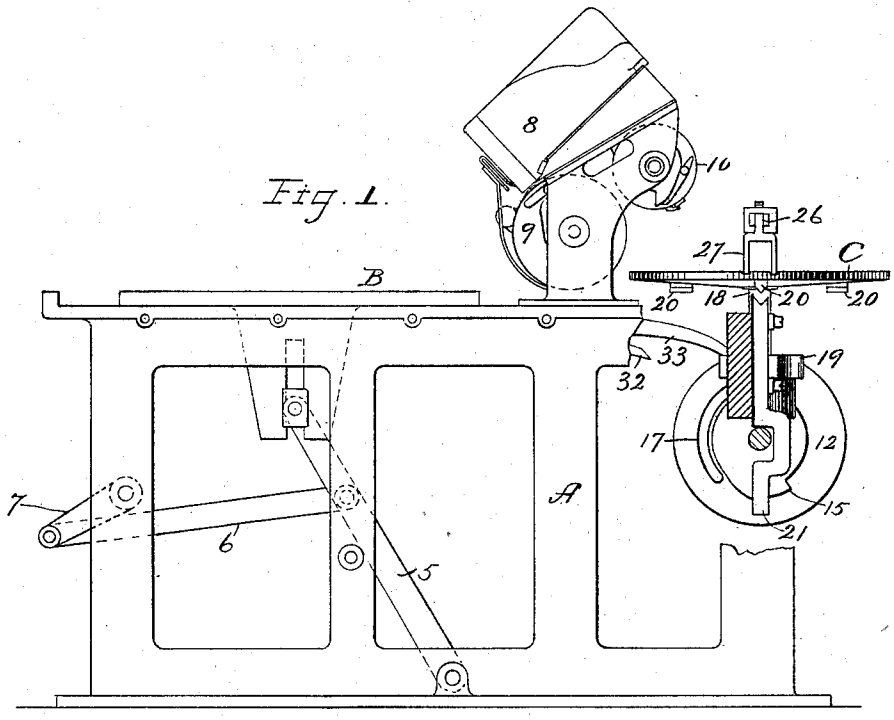
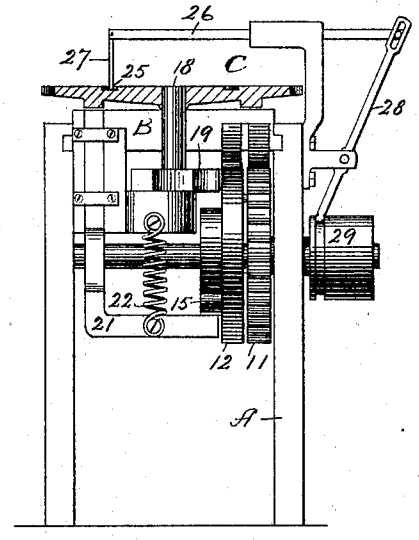


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

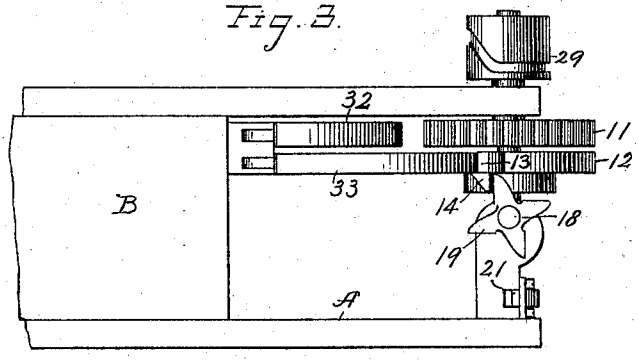


Fig. 4.

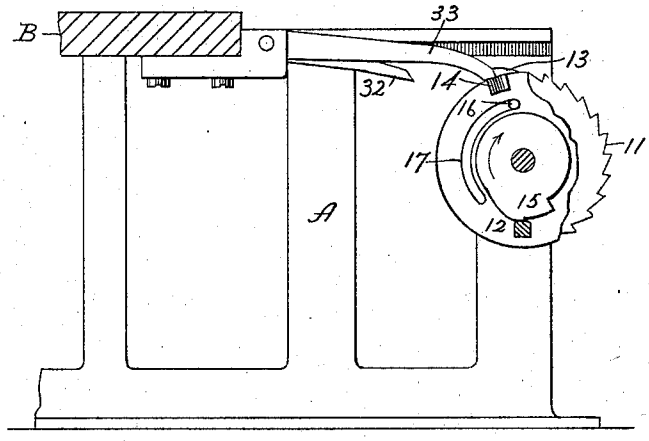
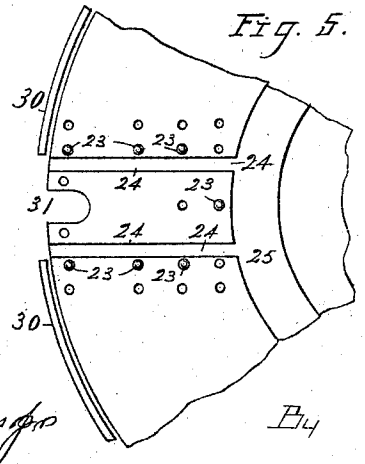


Fig. 5.



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UNITED STATES PATENT OFFICE.

LUCAS C. CLARK, OF PLANTSVILLE, CONNECTICUT.

COUNTING MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 591,246, dated October 5, 1897.

Application filed April 1, 1895. Serial No. 544,122. (No model.)

To all whom it may concern:

Be it known that I, LUCAS C. CLARK, a citizen of the United States, residing at Plantsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Receivers and Counters for Printing-Machines, of which the following is a specification.

My invention relates to improvements in receivers and counters for printing-machines; and the main objects of my improvement are to automatically receive the work in piles until a given number is deposited, then move the same out of the way for receiving another pile while the first pile remains on its receiver to dry and so on, and finally to bring each pile to the operator for removal or to a removing device.

In the accompanying drawings, Figure 1 is a side elevation of my receiver and counter, together with so much of a printing-machine as is necessary to show its connection therewith. Fig. 2 is an end view of my receiver and counter, with the carrier in section. Fig. 3 is a plan view with the carrier removed. Fig. 4 is a sectional side elevation of parts thereof, and Fig. 5 is an enlarged plan view of a portion of the carrier.

A designates the frame of a printing-machine, having mounted thereon a reciprocating bed B, operated in any ordinary manner—as, for example, by the lever 5, link 6, and crank 7—and having also a hopper 8, impression-cylinder 9, and delivering-cylinder 10, all of which are of a known construction, not of my invention, and for which other known substitutes may be employed.

An illustration of a suitable printing-press for which my counter and receiver is applicable may be found in Patent No. 525,999, dated September 11, 1894.

I have illustrated my improvement as adapted to count twenty-five, thereby making it adapted for receiving and counting envelops as printed by the machine and delivered one by one from the delivering-cylinder 10 for each reciprocating movement of the bed B.

At one end of the machine is a ratchet-wheel 11, having twenty-five teeth, the same being supported in any proper manner to rotate when driven, but not loosely enough to permit of accidental movement or of moving in excess of the movement of its driver. This ratchet-wheel constitutes the counting mechanism. Mounted by the side of this ratchet-wheel is a cam-disk 12, having a peripheral cam 13 and side cam 14. By the side of this cam-disk is the cam 15, which may be formed as a hub on the side of said disk. This cam-disk is free to move independently of the movement of the ratchet-wheel 11 and like said wheel should not be loose enough to move in excess of its driver. In one side of the ratchet-wheel there is a pin 16, which lies in a curved slot 17 in the cam-disk.

18 designates a vertical shaft, upon the upper end of which is a revolving carrier C, arranged with reference to the delivering-cylinder 10 to receive at or near its edge the envelops or other printed product of the printing-machine. Upon this shaft is a four-armed wheel 19, arranged by the side of the cam-disk, so that the arm nearest said disk lies within the path of the side cam 14. The under side of the carrier is provided with four stops 20, preferably V-shaped, and on the frame is a vertical slide 21, having a V-shaped groove in its upper end and preferably with one lip of the V slightly longer than the other. This slide is forced downwardly by the cam 15 and upwardly by a spring 22.

When a four-armed wheel is on the shaft of the carrier, the top of said carrier will have four places of deposit for the printed matter—that is, four receivers or pockets. These may be formed in any desired manner. A very simple and convenient way is to provide the carrier with holes, into which pins 23 may be placed for holding the piles of printed work, and by putting the pins in different holes work of different sizes may be accommodated. I also prefer to cut notches in the edge of the carrier to facilitate the removal of the piles by hand, and for removing the work automatically I form radial grooves 24 in the carrier and one annular groove 25, Fig. 5, at the inner end of the radial grooves. Upon any suitable support there is a slide 26, carrying knock-out fingers 27, the lower end of said fingers when at rest lying in said annular groove. A lever 28 has one end connected with said finger-slide, while its opposite end lies in the grooved cam 29, that is

rigidly connected to and moves with the ratchet-wheel 11.

If desired, the carrier may have a stationary band or guard 30 placed adjacent to its edge to prevent the piles from escaping radially, said guard having an opening, as at 31, through which the piles of work may be discharged, as shown in Fig. 5.

The operator should be near the hopper 8 of the printing-machine, so as to keep the same supplied with envelops or sheets to be printed, which sheets will be deposited by the printing-press one by one on the intermittingly-moving carrier. A pawl 32, connected with the bed B, engages the teeth of the ratchet-wheel 11 and moves said wheel one twenty-fifth of a revolution for each reciprocating movement of the bed B. The pin 16 in the side of the ratchet-wheel strikes the end of the curved slot 17 in the cam-disk, and when so engaged causes said disk to make one twenty-fifth part of a revolution for every like movement of said ratchet-wheel. In time this will bring the peripheral cam 13 in front of the second pawl 33, which is also connected with the bed B, but which is longer than the pawl 32, so that its end is in advance of the same. The end of this pawl strikes the shoulder of the cam 13 and carries the cam-disk forward ahead of the ratchet-wheel, the pin-and-slot connection of said disk and wheel permitting said disk to so move. The movement of the cam-disk first causes the cam 15 to act on the tail of the slide 21 to unlock the carrier, and during the time that said disk is moved under the influence of the second pawl 33 the side cam 14 acts upon one arm of the wheel 19, as shown in Fig. 3, to carry said wheel with its shaft and carrier one-quarter of a revolution.

When one lip of the V-shaped end of the slide 21 is longer than the other, I form a short drop in the cam 15, so as to permit a slight upward movement of said slide as soon as the stop 20 has passed its longer arm. Then the cam should hold the slide in a fixed position until the point of the next succeeding stop has passed the short arm of the V-shaped end of said slide, after which the cam runs out and the slide rises under the influence of the spring 22 and brings the V-shaped stop and slide into engagement for again locking the carrier against accidental movement until the proper time for releasing it.

Following up the movement of the longer pawl 33 the shorter pawl reaches the teeth of the ratchet-wheel and moves it forward one twenty-fifth of a revolution just the same as if the cam-disk had not been moved at all. At each succeeding forward stroke of the bed B said pawl acts in like manner and the cam-disk remains stationary until the pin 16 again reaches the forward end of the slot 17 in the cam-disk, after which the disk and wheel move on together until twenty-five strokes in all are made and until a pile of twenty-five envelops or sheets have been deposited on the carrier from the delivering-cylinder since the last movement of said carrier and the parts again operate to move the carrier one-quarter of a revolution. When the fourth pile is being deposited in its receiver on the carrier, the first pile still in its receiver has been brought to the front within convenient reach of the operator. Meanwhile they have had plenty of time for the ink to dry sufficiently to enable the envelops to be handled without blurring the printing and the operator may remove them by hand and when he is still in the proper position for supplying the printing-machine with more work whenever it is required.

In some cases it may be desirable to remove the piles automatically, and to this end I employ the fingers 27, which, through the cam 29 and connecting mechanism, are made to move outwardly and back to force the pile off from the carrier at any time during its period of rest. When the carrier is moved, the ends of these fingers are in the annular groove 25, so that they offer no obstruction, and at the end of each movement of the carrier the fingers will be directly opposite the inner ends of the radial grooves of the succeeding receiver. When the automatically-removing fingers are not employed, the carrier may have pins set in front of the piles near the edge to prevent a radial displacement of the pile, the operator lifting the pile over the pins as he removes it by hand.

I have shown what I at present deem the best means for carrying out my invention, but no doubt I may improve the same in many respects.

The number of envelops or sheets in each pile can be varied at pleasure by a corresponding change in the counting mechanism to give a different number of teeth to the ratchet-wheel, and the fractional part of a revolution that may be given to the carrier may also be changed by increasing the number of arms in the wheel 19.

The form of the carrier may obviously be changed without changing its function, and other known carriers that may intermittingly move the pile-receivers to bring them repeatedly to the same points I consider the equivalent of my revolving carrier.

I have illustrated the pawls as attached directly to the bed B, but this is not essential, the principal requisite being that the pawls shall make one stroke for every stroke of the bed B.

I claim as my invention—

1. The combination of the reciprocating bed and delivering devices of a printing-press, an intermittingly-moving carrier having a plurality of pile-receivers, a counting mechanism, an actuating device that reciprocates with said bed for moving said counting mechanism intermittingly, and a second actuating device that also reciprocates with said bed for moving said carrier one movement for a given number of strokes of said bed and counting

mechanism, substantially as described and for the purpose specified.

2. The combination of the revolving carrier, shaft, and wheel 19, with the ratchet-wheel 11, cam-disk 12, mounted to move independently and having a pin-and-slot connection with said wheel, a side cam on said cam-disk for acting on the wheel 19, a peripheral shoulder or tooth on said cam-disk, and two reciprocating pawls for acting respectively upon said ratchet-wheel and cam-disk, substantially as described and for the purpose specified.

3. The combination of the revolving carrier, shaft and wheel 19, with the ratchet-wheel 11, cam-disk 12 having side cam and peripheral shoulder and loosely connected with said ratchet-wheel to move independently thereof at times, pawls for acting respectively upon said wheel and disk, the locking-slide 21 and cam 15 moving with said cam-disk, substantially as described and for the purpose specified.

4. The combination of the reciprocating bed of a printing-press, an intermittingly-moving carrier having a plurality of pile-receivers, mechanism for permitting said carrier to remain at rest during a given number of strokes of said bed and then giving it one movement, the knock-out fingers, and mechanism for operating said knock-out fingers to remove a pile during each period of rest of said carrier, substantially as described and for the purpose specified.

5. The combination of the reciprocating bed and delivery devices of a printing-press, an intermittingly-moving carrier having a plurality of pile-receivers, a reciprocating carrier-operating device moving synchronously with the said bed, a counting mechanism actuated intermittingly by a device which reciprocates with said bed, and devices connected with said counting mechanism and carrier, whereby the said carrier is given one movement for a given number of movements of said counting mechanism, substantially as described and for the purpose specified.

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