E. J. BRASSEUR.

SHEET COUNTING AND INDICATING APPARATUS.

APPLICATION FILED MAR. 18, 1915.

1,183,529.

Patented May 16, 1916.

4 SHEETS—SHEET 1.

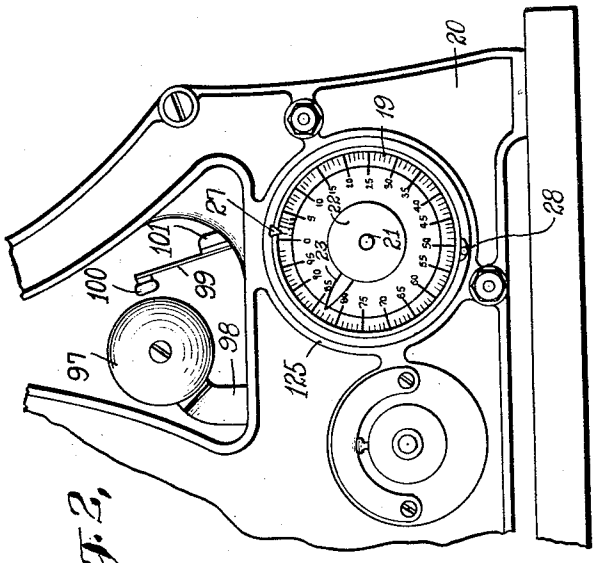


Fig. 2.

Fig. 1.

WITNESSES

Dyer Smith

Frank D. Graham

INVENTOR

Ernest J. Brasseur

BY

J. C. Edmonds

ATTORNEYS

E. J. BRASSEUR.

SHEET COUNTING AND INDICATING APPARATUS.

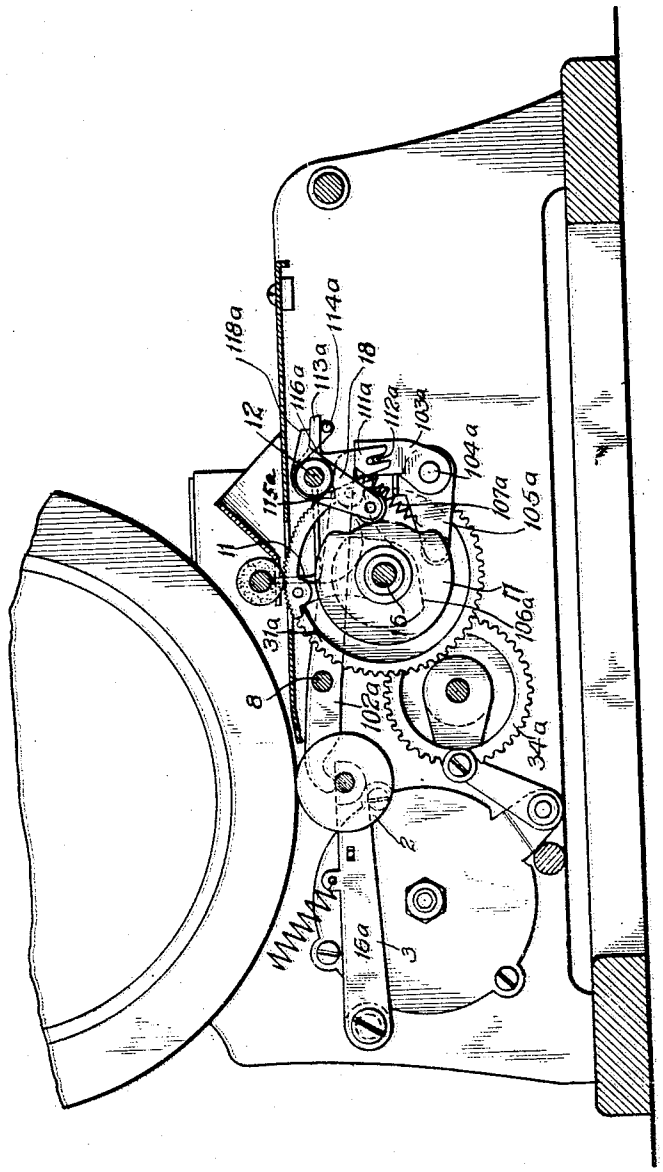
APPLICATION FILED MAR. 18, 1915.

1,183,529.

Patented May 16, 1916.

4 SHEETS—SHEET 2.

Fig. 1a,



INVENTOR

Ernest J. Brasseur

BY

J. O. Edmonds

ATTORNEY

E. J. BRASSEUR.

SHEET COUNTING AND INDICATING APPARATUS.

APPLICATION FILED MAR. 18, 1915.

1,183,529.

Patented May 16, 1916.

4 SHEETS—SHEET 3.

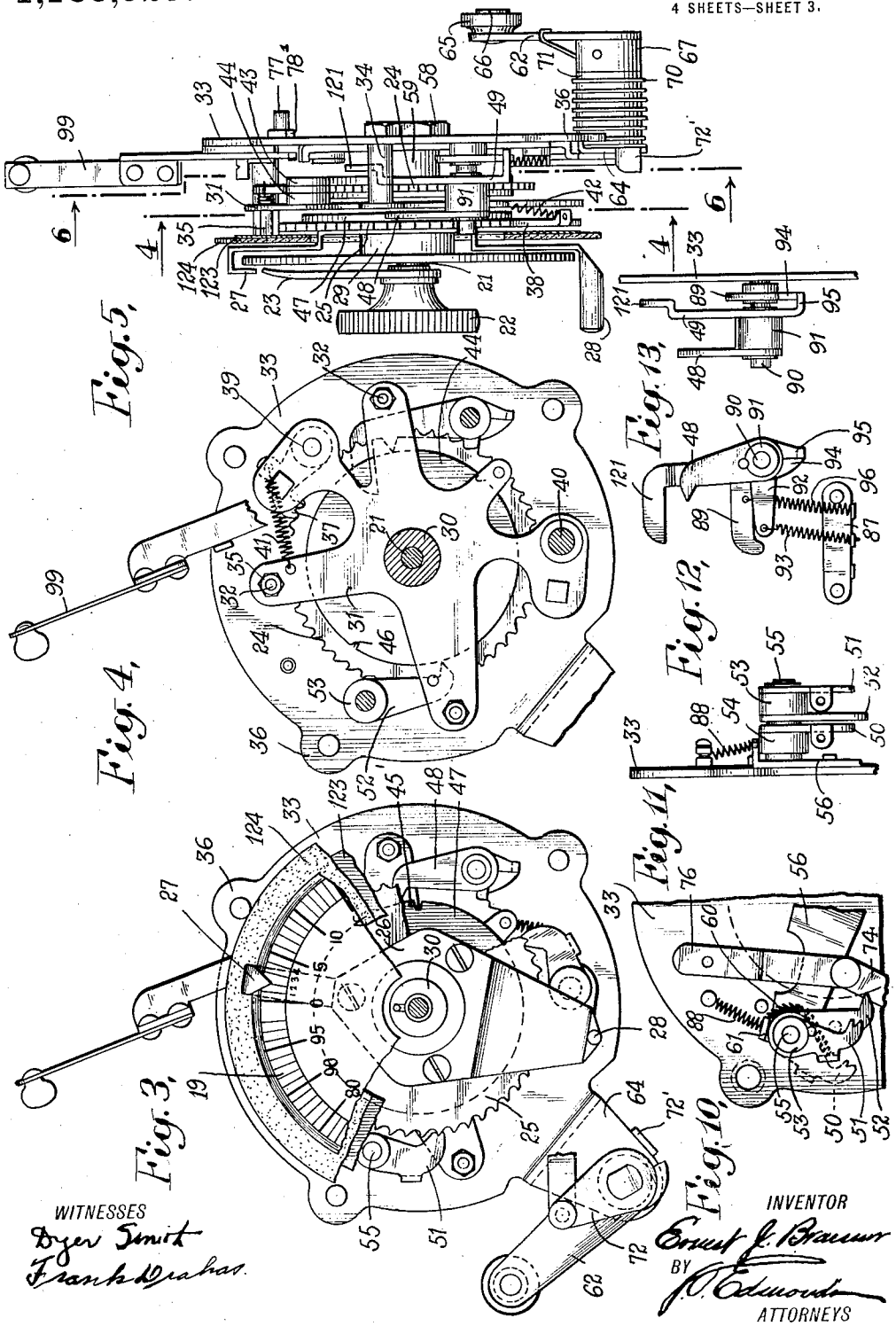


Fig. 5.

Fig. 13.

Fig. 4.

Fig. 12.

Fig. 11.

Fig. 3.

Fig. 10.

WITNESSES

Dyer Smith

Frank D. Graham

INVENTOR

Ernest J. Brasseur

BY

J. C. Edmunds

ATTORNEYS

E. J. BRASSEUR.

SHEET COUNTING AND INDICATING APPARATUS.

APPLICATION FILED MAR. 18, 1915.

1,183,529.

Patented May 16, 1916.

4 SHEETS—SHEET 4.

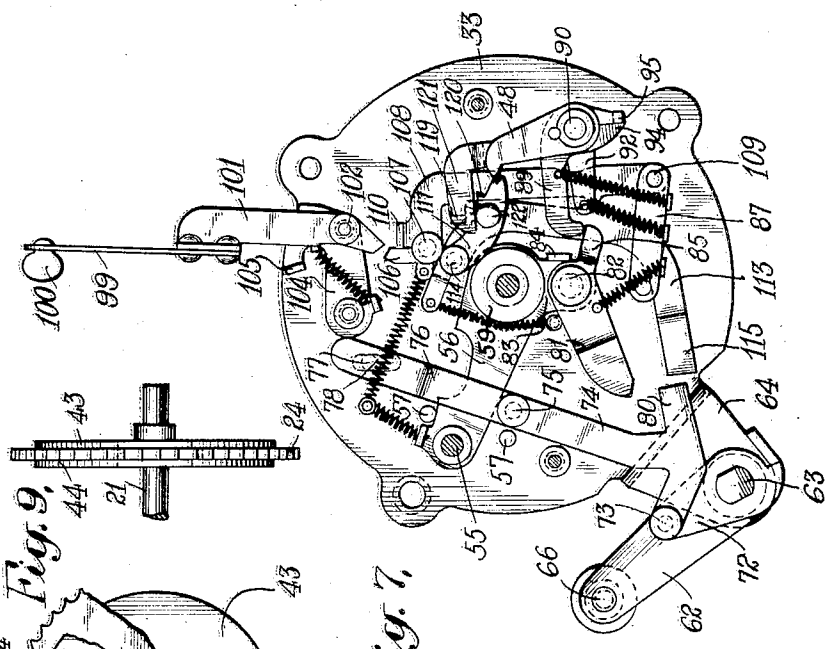


Fig. 9.

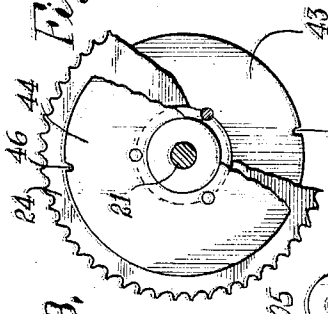


Fig. 8.

Fig. 7.

Fig. 6.

WITNESSES

Dyer Smith

Frank D. Graham

INVENTOR

Ernest J. Brasseur

BY

J. Edmonds

ATTORNEYS

UNITED STATES PATENT OFFICE.

ERNEST J. BRASSEUR, OF CHICAGO, ILLINOIS, ASSIGNOR TO A. B. DICK COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SHEET COUNTING AND INDICATING APPARATUS.

1,183,529. Specification of Letters Patent. Patented May 16, 1916.

Application filed March 18, 1915. Serial No. 15,188.

To all whom it may concern:

Be it known that I, ERNEST J. BRASSEUR, a subject of the King of Belgium, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sheet Counting and Indicating Apparatus, of which the following is a specification.

My invention relates to a counting or registering, and indicating apparatus particularly adapted for coöperation with a duplicating or printing machine to which sheets are successively fed. Its more particular use is in connection with a stencil-duplicating apparatus having a drum and pressure roller, which latter moves upwardly into printing position when a sheet is passed between the drum and pressure-roller, mechanism, however, being provided to prevent the pressure-roller from rising into its operative position when no sheet is positioned, in the regular operation of the machine, between the drum and roller. My improved attachment or device is intended to be mounted on such a machine and so connected as to count the sheets printed. In its operation a controlling member moves with the pressure-roller of the machine and serves to connect or disconnect the registering device for operation. An actuating member is moved each operation of the machine and serves to advance the counting mechanism one unit each rotation of the drum provided that a sheet is in position to be printed upon, and accordingly the controlling device is in position to form a connection between the actuating device and the counter-advancing means. When, however, no sheet is in position to be imprinted, the controlling device is in such a position as to break the connection between the actuating and counter-advancing mechanisms, and accordingly the counter is not advanced.

In the operation for which this device is chiefly intended, the indicating means are set to indicate the number of sheets which it is desired to print. Upon the operation of the machine, the indicating pointer or pointers move in such direction past the dial or dials of the device as to always indicate the number of sheets remaining unprinted of the predetermined number. Upon the completion of the desired number of printing operations, suitable indication of this fact is given, as by the striking of a bell, after which the counting and indicating members remain stationary, if the machine is further operated.

While my device is particularly intended for coöperation with a duplicating machine of the character mentioned, it is adapted for coöperation with, and actuation by, other forms of mechanism, particularly those in which the presence or absence of an article to be counted, or the like, in its expected position in the mechanism, should exert a control over the operation or non-operation of the counting, indicating and signaling devices.

The objects of my invention accordingly are the provision of improved counting and indicating devices of the character referred to, and the combination of the same with operating and controlling mechanisms, such as duplicating machines or other printing devices, in which the members of a printing couple move into operative position when a sheet to be printed and counted is positioned between the same, but not otherwise.

Other objects of my invention reside in the construction and combination of parts as will be hereinafter fully pointed out.

In order that a clearer understanding of my invention may be had, attention is hereby directed to the accompanying drawings forming part of this application and illustrating certain embodiments of my invention.

In the drawings, Figure 1 represents a partial vertical section through a stencil-duplicating machine equipped with my invention, taken inside one of the side-frames of the machine, Fig. 1ª is a view similar to Fig. 1, showing mechanism for controlling the movements of the pressure roller of the duplicating machine, Fig. 2 is a side elevation of a portion of such a machine equipped with my invention, Fig. 3 is a front elevation of my improved counting and indicating device, various parts being broken away to show the parts beneath, Fig. 4 is a vertical section taken on line 4—4 of Fig. 5, Fig. 5 is an end elevation of the counting and indicating device removed from its casing, Fig. 6 is a section on line 6—6 of Fig. 5, looking in the direction of the arrow, Fig. 7 is a view similar to Fig. 6, showing the parts in a different position, Figs. 8 and

9 are respectively front and side elevations of the units-indexing ratchet wheel and connected parts, Figs. 10 and 11 are detail views, in front and side elevations respectively, showing the assembly of the ratchet-actuating and advance pawls, and Figs. 12 and 13 are similar views, showing the assembly of the tumbler pawls governing the striking of the bell.

Referring to the drawings, I have illustrated the rotatable drum 1 of a stencil-duplicating machine, having a pressure-roller 2 carried by arms 3, only one of which is shown, pivotally mounted at 4 and resiliently pressed into upper or operative position by spring 5. A roller 6 is carried by an arm 7, pivoted at 8, arm 7 having a lug 9 below roller 6, bearing on the end of arm 3. The drum 1 is provided with a cam 10 which depresses roller 6 each rotation of the drum, to move the pressure-roller 2 away from its operative position.

Means are provided to prevent the rising of the pressure-roller into its operative position, when no sheet is fed forward between the drum and pressure-roller, since the pressure-roller should not be permitted to contact the stencil or printing surface of the drum. A suitable mechanism for preventing the upward movement of pressure-roller 2, when no sheet is positioned between the drum and pressure-roller is described and illustrated in patent of Albert B. Dick, No. 1,140,883, dated May 25, 1915, stencil-duplicating machine, which patent describes a duplicating machine of a character adapted to coöperate with my counting and indicating mechanism. As is described in said patent, a series of feelers 11 are mounted on a rock-shaft 12, feelers 11 being spring pressed into upper position and adapted to extend through openings in a plate 13 over which sheets are successively fed. Sheet-forwarding devices are illustrated as comprising roller 14 and the sectors 15 adapted to coact therewith, the sectors being mounted on a shaft 16 which is continuously rotated during the operation of the machine. A cam 17 on shaft 16 coacts with a roller carried by arm 18 mounted on rock-shaft 12. Feelers 11 move upwardly through the openings in feed plate 13, when permitted to do so by cam 17, when no sheet is positioned between the sectors 15 and roller 14, the consequent rocking of rock-shaft 12 serving to actuate mechanism whereby roller 2 is prevented from rising into contact with drum 1. This mechanism comprises a lever 102^a pivoted on shaft 8, having one end contacting the upper bearing of pressure-roller 2 adjacent one end thereof and having its opposite end coacting with an automatic stop mechanism, positioned by the rocking of rock-shaft 12, to prevent the upward movement of arms 3 and pressure-roller 2. When, however, a sheet is positioned between sectors 15 and roller 14, the feelers 11 cannot rise through the openings in plate 13, the roller on arm 18 is held away from the surface of cam 17, and the automatic stop referred to is not moved into position to obstruct upward movement of the pressure-roller. This mechanism may be briefly described as follows:—The lever 102^a is pivoted upon the adjacent side frame and has one end overlying the free end of one of the arms 3. As the pressure roller moves down, this lever 102^a rocks on its pivot and if the roller is to be held down, a stop is placed under the opposite end of lever 102^a so as to prevent turning movement of that lever and turning movement of arms 3 carrying roller 2. The stop consists of an arm 103^a loosely mounted upon a stud 104^a on the side-frame. This stud also carries a pivoted lever 105^a having a roller at its end adapted to coact with a cam 106^a on shaft 16. A spring 107^a connects arms 105^a and 103^a. A rock-shaft 12 extending between the side frames has a lever 18 secured thereon and carrying a roller adapted to ride on the surface of the cam 17 also secured on the shaft 16. Loose on shaft 12 is a lever 111^a bifurcated at its end to embrace a pin 112^a on the arm 103^a. The lever 111^a has an extension 113^a which may engage a pin 114^a on the side frame to limit the movement of arm 111^a. A spring 115^a acts on lever 111^a to turn it in a counter-clockwise direction, (referring to Fig. 1^a) carrying extension 113^a into engagement with a lateral projection 118^a of arm 18. A spring 116^a acts on arm 18 in a direction to hold its roller in engagement with cam 17. The pin 114^a projects inwardly from the adjacent side frame of the machine under the extension 113^a of arm 111^a to limit the turning movement of the arm 111^a and support one end of spring 116^a.

Secured to shaft 12 are a plurality of feelers 11 whose ends are turned upwardly as shown in Fig. 1 and may be projected through openings in plate 13 so as to coact with a sheet, the movement of these feelers being arrested by a sheet if the latter is in position, but in the absence of such a sheet, being continued to the position in which the feelers are shown in Figs. 1^a and 1. The rotation of shaft 16 and cam 17 thereon permits shaft 12 to be rocked by spring 116^a so as to raise the free ends of the feelers. If the feelers engage a sheet, the rocking of shaft 12 in its bearings is arrested in position where the roller on arm 18 is away from the periphery of cam 17. At this time the lever 111^a will be held by its spring 115^a with its arm 113^a engaging the projecting end 118^a of the arm 18 and the position of arm 111^a at this time is such that the arm 103^a is retracted so that its end is out from

under the end of lever 102ª. Consequently the lever 102ª can rock on its pivot and allow the pressure roller to be raised in operative position. But if no sheet has been in position when the feelers were raised, the roller on arm 18 would be permitted to follow the contour of cam 17 to the position in which it is shown in Fig. 1ª. As arm 18 moved so its end 118ª would depress the extension 113ª of arm 111ª. This would cause the end of arm 103ª to be carried under the end of lever 102ª so that it would obstruct downward movement of this end of lever 102ª and hence upward movement of the opposite end of the lever and the pressure roller. If it should happen that the movement of arm 103ª from its inoperative position to its operative or stopping position shown in Fig. 1ª were obstructed by the end of lever 102ª because this movement of arm 103ª occurred in advance of the upward movement of the adjacent end of lever 102ª, the cam 106ª would depress the free end of arm 105ª so as to place the spring 107ª under tension. Then when the adjacent end of lever 102ª moved upwardly the arm 103ª would be at once moved by spring 107ª to the position in which it is shown in Fig. 1ª for obstructing the upward movement of the pressure roller.

My improved attachment is provided with a stationary dial 19, mounted on the front of the counter device, which is positioned in a circular opening in one of the side-frames 20 of the machine, as shown in Fig. 2. The device is provided with a main spindle 21 which carries at its front end the knurled head 22 for turning the same and the pointer 23 adapted to move over the surface of dial 19. The units ratchet wheel 24 is mounted on spindle 21. The hundreds ratchet wheel 25 is secured to a plate 26, carrying a pointer 27, adapted to be positioned in line with one of the characters indicating hundreds on dial 19, as shown in Fig. 3, the plate 26 having a handle 28 extending forwardly beyond the dial, whereby the hundreds ratchet 25 may be set. The plate 26 and ratchet, with the parts moving therewith, are provided with a hub 29 rotatably mounted on the boss 30 of the spider 31, through which boss extends the spindle 21. The spider 31 is supported in proper position by pins 32, extending upwardly from the main or base plate 33, spacers 34 being interposed between spider 31 and base plate 33, and nuts 35 being mounted on the screw-threaded ends of pins 32 to hold the spider 31 in position. Base plate 33 is provided with peripheral lugs 36 through which screws pass to secure plate 33 to lugs on the side-frame 20 of the machine.

To set the units pointer 23, the knurled head 22 is moved in a counter clockwise direction as shown in Fig. 2, and to set the hundreds pointer 27, the handle 28 is also moved in a counter clockwise direction, the indexing ratchet wheels 24 and 25 being rotated accordingly, reverse movement of these ratchets being prevented by pawls 37 and 38 mounted on pivot pins 39 and 40, on the rear and front faces of spider 31 respectively, these pawls being pressed by springs 41 and 42 respectively, into contact with their respective ratchet wheels to prevent backward movement thereof.

The units ratchet wheel 24 is provided with a circular index plate 43 on the rear or right side thereof, referring to Figs. 5, 8 and 9, and a corresponding index plate 44 on the left or front side thereof, these plates being provided with notches 45 and 46, respectively. The hundreds ratchet wheel 25 is provided with an index plate 47 on the right or rear side of the said ratchet wheel, referring to Fig. 5, this index plate 47 having a notch 45′ in alinement with the notch 45 of the rear index plate 43 of the units ratchet wheel. Tumbler pawls 48 and 49, referring to Figs. 3, 4, 7, 12 and 13, are adapted to ride on the peripheries of index disks 47 and 43, respectively, and to drop into the notches in the same when the latter have moved into alinement with the operative ends of the tumbler pawls, which occurs when the units and hundreds pointers are in alinement with the zero of the dial 19. This permits the bell to be rung by mechanism hereinafter to be described, to indicate that the desired number of sheets have been printed.

The pawls for advancing the units and hundreds ratchet wheels respectively, are illustrated at 50 and 51 respectively, Figs. 3, 10 and 11, the hundreds advancing pawl 51 being kept out of engagement with the hundreds ratchet wheel 25 until the completion of one revolution of the units ratchet wheel, by tumbler pawl 52, mounted integral with a sleeve 53 from which the hundreds advance pawl 51 is also integral, tumbler pawl 52 riding on the periphery of index disk 44, which is secured to the units ratchet 24. When the units ratchet 24 has completed one revolution, pawl 52 drops into notch 46 of index disk 44, permitting pawl 51 to drop into engagement with the hundreds ratchet wheel to advance the same one revolution and thereby move the hundreds pointer 27 one unit to the left on dial 19.

The manner in which the units ratchet wheel 24 is rotated step by step will now be described.

Pawl 50 is integral with a sleeve 54 loosely mounted on a pin 55, which is carried at the end of an arm 56. Arm 56 is pivotally mounted on its opposite end to the frame plate 33 at the axis thereof, arm 56 being adapted to oscillate between stop pins 57, 57

on plate 33. Arm 56 is pivoted on a short sleeve extending a short distance through plate 33, this being held in place by the nut 58 threaded on the rear end of the sleeve to the rear of plate 33, this sleeve having a portion 59 of enlarged diameter on its inner end, between which and the plate 33 arm 56 is held, so as to be able to oscillate over the inner or front surface of plate 33. A spring 60 secured to pawl 50 and to the end of lever 56, as indicated at 61, holds pawl 50 in engagement with units ratchet wheel 24 to actuate the same. At the same time advance pawl 51 for advancing the hundreds ratchet wheel 25 is in alinement with the toothed periphery of ratchet wheel 25 but is kept out of engagement therewith by tumbler pawl 52 riding on the periphery of disk 44 until pawl 52 drops into notch 46 in disk 44 as stated, when pawl 51 engages a tooth of ratchet 25, on the next forward or downward oscillation of arm 56, to advance the hundreds ratchet wheel one unit.

The crank 62 has a crank pin 63 pivotally mounted on a lug or extension 64 extending from the lower surface of frame plate 33, crank 62 carrying a roller 65 on a pin 66 at its free end. Crank 62 is preferably formed with a hub 67 which is pinned to crank pin 63 as illustrated in Fig. 5. Crank 62 is mounted on the rear side of lug 64 as illustrated, and roller 65 engages a cam 68 on a shaft 69 of the duplicating machine as shown in Fig. 1. Shaft 69 is continuously rotated during the operation of the machine by gear connection with shaft 16, cam 68, as well as the sheet-feeding sectors 15 of the machine, completing one revolution each rotation of the drum 1. A spiral spring 70 is coiled about the spacer 71 on crank pin 63, the spring having one end secured to crank 62 and the other end secured to lug 64 on plate 33 as shown in Fig. 5, to hold roller 65 at all times in contact with the surface of cam 68.

A crank 72 is secured to crank pin 63, on the inner or forward face of lug 64, to oscillate with crank arm 62, its motion being limited by a stop 72′ on lug 64. Crank 72 is pivoted at 73 to a lever 74, the upper end of which is pivoted at 75 to a link 76. Link 76 carries at its upper end a pin 77, which extends through a slot 78 in base plate 33, pin 77 having a boss 78′ thereon on the rear surface of plate 33, as shown in Fig. 5. The upper portion of link 76 is thereby caused to slide upon the inner surface of plate 33 when pin 77 is moved in its slot 78, link 76 having a forward bend 79 therein to enable the same to clear arm 56. Lever 74 and link 76 are oscillated each rotation of the drum 1 by the oscillation of crank 62, lever 74 and and link 76 moving as a toggle during such oscillation. Lever 74 has a portion 80 extending to the right from the lower end thereof, referring to Figs. 6 and 7, and this foot portion 80 travels in an arc which is higher or lower with respect to the axis of plate 33 according to whether pin 77 is at the upper end or the lower end of its slot 78 in plate 33. Pin 77 extends into and is rotatably mounted in the adjacent arm 3, pivotally supporting the pressure-roller 2 of the duplicating machine as shown in Fig. 1. Accordingly, pin 77 and the parts connected thereto constitute the controlling means for the registering mechanism, the pin rising to the upper portion of its slot, as shown in Figs. 6 and 7, when arms 3 move to their upper position to coöperate with a sheet of paper passing between pressure-roller 2 and drum 1, foot portion 80 of lever 74 actuating devices to oscillate arm 56 when the pin is in this position, portion 80 of lever 74 being out of position to contact such actuating devices for arm 56 when the pin 77 is in its lower position. The cam 68 on shaft 69 is so located as to oscillate crank 62 and lever 74 at the moment when pressure-roller 2 is in its upper position, provided that a sheet of paper is passing between the pressure-roller and the drum. As stated above, arms 3 are prevented from moving to their upper position at such times if no sheet of paper is being fed forward to printing position, and accordingly at such times the forward oscillation of lever 74 is ineffective to oscillate arm 56.

A lever or pawl 81 which I term an advance lever is pivotally mounted on a pin 82 carried by an arm 83 of lever 56 depending below the pivotal point of arm 56. Arm 83 of lever 56 is provided with an upwardly extending stop lug 84 and advance lever 81 has a tail portion 85 adapted to contact lug 84. A spring 86 is secured to advance lever 81 and to a fixed member 87 which is mounted on base plate 33, the function of spring 86 being to depress advance lever 81, when permitted so to do, into the position shown in Fig. 6, in which tail 85 of lever 81 contacts lug 84. When the parts are in this position, and pin 77 is in the upper portion of its slot, the portion 80 of lever 74 contacts advance lever 81 and oscillates levers 81 and 56 together about the fulcrum of lever 56, the units ratchet wheel 24 thereby being advanced one unit each oscillation of crank 62. A spring 88 returns lever 56 to its upper position in each forward or downward oscillation of the same caused by the connections described.

As stated, the advancing movement of the ratchet wheels 24 and 25 should cease when the number of sheets for which the device is set have been printed, at which time tumbler pawls 48 and 49 drop into the notches of the disks 43 and 47 mounted on the rear sides of ratchet wheels 24 and 25.

Fig. 5. Accordingly, a release pawl 89 is pivotally mounted on the same pin, 90, as the tumbler pawls 48 and 49 referred to. As is shown in Figs. 12 and 13, pawls 48 and 49 are mounted to move together, being integral with a hub 91 having a forwardly extending arm 92 connected by a spring 93 to the fixed member 87, this spring drawing the pawls 48 and 49 forwardly when their pointed ends come in line with the notches in the disks 43 and 47. The release lever 89 is mounted between the lower pawl 49 and the base plate 33. Release lever 89 carries a depending arm 94 adapted to engage a lug 95 extending downwardly from pawl 49. A spring 96 connected to release pawl 89 and fixed member 87 tends to move the release pawl 89 downwardly, but this is prevented so long as tumbler pawls 48 and 49 are in contact with the peripheries of disks 43 and 47 by the engagement of portion 94 of the release lever with lug 95 on the tumbler pawl 49. When, however, the tumbler pawls 48 and 49 drop into their notches, release pawl 89 is moved downwardly to contact the tail 85 of advance pawl 81 and move the latter into the position shown in Fig. 7 in which pawl 81 is out of the path of portion 80 of lever 74, pawl 81 also being out of contact with lug 84 on arm 56, so that at this time the oscillation of lever 74 is ineffective to rock arm 56.

The bell 97, as shown in Fig. 2, is carried by a bracket 98 secured to the side frame 20 of the machine and is adapted to be struck by a striker 99, when the predetermined number of sheets have been printed and counted. Member 99 comprises a resilient strip of steel carrying a striker head 100, the lower end of strip 99 being secured to a lever 101 pivoted at 102 to the frame 33. A spring 103 is secured to lever 101 and to a lug on the bracket 104 which is secured to frame member 33, the forward or striking movement of lever 101 under the influence of spring 103 being limited by a stop 105 on bracket 104. The bell lever 101 is actuated by a trigger 106 pivotally mounted at 107 on a lever 108 pivoted at 109 to frame member 33. Lever 108 is provided with a stop lug 110, and a spring 111 is secured to trigger 106 and to a pin 112 on frame plate 33, to hold the trigger against lug 110.

A curved lever 113 is pivotally mounted at 114 to plate 33. This lever has a forward end 115 positioned to be contacted by the forward end 80 of lever 74, each oscillation of the latter, to rock lever 113 about its pivot. Lever 108 has a small projection 116 on its side adjacent to lever 113, and in contact with a surface of the latter as shown, so that oscillation of lever 113, each oscillation of crank 62, serves to rock lever 108. The oscillation of lever 108 is not sufficient to operate bell lever 101 except at such times as tumbler pawls 48 and 49 are in the notches provided therefor in disks 43 and 47. This is provided for by a latch lever 117 pivoted on pin 114 to which lever 113 also is pivoted. Latch lever 117 is spring pressed into its upper position shown in Fig. 6 by a spring 118 secured to the tail of lever 117 and to a pin on frame member 33. Lever 108 is provided with a lug 119 which is adapted to coöperate with a notch 120 on latch lever 117, when the latter is in its raised position, as shown in Fig. 6, this latch holding lever 108 so far to the right, as shown in Fig. 6, as to prevent sufficient oscillation of the same, during the oscillation of lever 113, to operate the bell lever. Latch lever 117 is depressed to unlatch lug 119 and lever 108, when pawls 48 and 49 drop into their notches on disks 43 and 47. This is accomplished by a forwardly extending arm 121 of the units tumbler pawl 49, which engages a pin or lug 122 on latch lever 117, when the tumbler pawls 48 and 49 move forward into their respective notches as stated. This swings latch lever 117 in a clockwise direction, against the spring 118, from the position shown in Fig. 6 to that shown in Fig. 7. In the position of the parts shown in Fig. 7, the bell is about to be struck, latch lever 117 having been released, trigger 106 having moved bell lever 101, against the tension of spring 103, into its rear position, and trigger 106 having moved past the depending short arm of bell lever 101. Spring 103 now causes the bell to be struck and if the machine is continued in operation, the bell will be struck each oscillation of crank 62, the latch lever 117 being held in unlocking position and the ratchet wheels remaining stationary because of the inoperative position of advance lever 81 shown in Fig. 7.

In the assembly of the device, the axle 21 of the units registering wheel 24 extends through the sleeve 59 and into a bearing therefor in the base plate 33, disk 43 secured to ratchet wheel 24 rotatably resting on the forward surface of sleeve 59. Hundreds ratchet wheel 25, with disk 47 on the under side thereof and member 26 carrying pointer 27 and handle 28 on the upper or forward side thereof, is rotatably mounted as stated on the hub 30 of spider 31. The front of the device is protected by a thin washer 123 of metal, a washer 124 of felt, or the like, and the dial 19 as shown in Fig. 3, the whole device being mounted within a circular opening in the side frame 20 of the machine, as shown in Fig. 2, the side frame having a flange 125 surrounding the opening and covering the edge of the opening, the felt washer 124 being bent inwardly

over the metal washer 123 about the periphery in the opening of the frame to prevent the entrance of dust.

It will be noted that in the operation of the device, the pointers 23 and 27 are set respectively for the desired number of units and hundreds corresponding to the number of sheets to be printed, and that as the pointers move in a counter-clockwise direction over the scales on the dial the number of sheets still to be printed is always indicated, the graduations on the dial progressing in a clockwise direction. When both pointers have returned to the zero of the scale, tumbler pawls 48 and 49 drop into their respective notches in disks 43 and 47 permitting the striking of the bell and rendering the indicator and advancing mechanism ineffective for further movement until the pointers have again been set to a new number.

Having now particularly described my invention, what I claim and desire to protect by Letters Patent is as follows:

1. In a duplicating machine, the combination of a printing couple, means for bringing the same together each time a sheet of paper is positioned between the same to be imprinted, in the regular operation of the machine, means for holding the same apart when no sheet is so positioned, indicator actuating means, a controlling device, automatieally movable in the regular operation of the machine into positions corresponding to the operative and inoperative positions of said printing couple, and connections between said actuating means and a periodically movable element of the machine, controlled as to operativeness by the position of said controlling device, substantially as set forth.

2. In devices of the character described, the combination of a ratchet wheel, an operating pawl therefor, a main actuator, pivoted connections for operating said pawl from said actuator, and a controller movable to render said connections effective or ineffective, substantially as set forth.

3. In devices of the character described, the combination of a ratchet wheel, an operating pawl therefor, a main actuator, means intermediate said actuator and said pawl for forming an operative connection between the same, comprising a pair of movable members adapted to contact with each other and be movable together by said actuator to transmit motion to said pawl, and means adapted to move one of said members out of position to contact with the other, to destroy the pawl-operating connection, substantially as set forth.

4. In devices of the character described, the combination of a ratchet wheel, an operating pawl therefor, a frame plate, a link guided thereon for movement into either of two positions, a lever pivotally connected to said link, and an actuating arm connected to oscillate said lever, said lever being positioned to move said pawl when said link is in one position, and not to move said pawl when said link is in another position, substantially as set forth.

5. In a duplicating machine having a part movable in one direction when a sheet is passed to printing position and not so movable when no sheet is so passed, the combination of a counting mechanism, a cam rotatable each operation of the machine, a pivoted member rocked by said cam, operating means for said counting mechanism, and intermediate means, connected to said movable part and positioned thereby, when a sheet is passed to printing position, to form an operative connection between said pivoted member and counter-operating means, and moved out of operative position thereby, when no sheet is so passed, substantially as set forth.

6. In devices of the character described, the combination of a ratchet wheel, an operating pawl therefor, a pivoted arm carrying the same, lever mechanism having a fulcrum of adjustable position, and means for rocking said mechanism about said fulcrum when the latter is in one position to cause the said mechanism to rock said arm and advance said wheel, said mechanism being out of position to rock said arm when said fulcrum is in another position, substantially as set forth.

7. In devices of the character described, the combination of a ratchet wheel, an operating pawl therefor, a pivoted arm carrying the same, a frame plate having a slot therein, a pin extending through said slot, a link carrying said pin at one end thereof, a lever pivotally connected to the other end of said link, and an actuating arm, connected to oscillate said lever, said lever being positioned to rock said pawl-carrying arm when said pin is in one position, and to not rock said arm when said pin is in another position in said slot, substantially as set forth.

8. In devices of the character described, the combination of a ratchet wheel, an operating pawl therefor, a pivoted arm carrying the same, an advance lever pivoted to said arm, having a portion adapted to contact a lug on said arm, spring means for causing said portion to contact said lug, actuating means adapted to oscillate said advance lever and arm when said lever contacts said lug, a release lever adapted to move said advance lever out of contact with said lug, and means preventing such movement of said release lever until said ratchet wheel reaches a predetermined position, substantially as set forth.

9. In devices of the character described, the combination of a ratchet wheel, an oper-

ating pawl therefor, a pivoted arm carrying the same, operative means, a pair of connecting means adapted to be positioned to transmit movement of said operating means to said pawl-carrying arm, means for controlling the movement of one of said connecting means into or out of connecting position, and means for controlling the movement of said other connecting means into or out of connecting position, in accordance with the angular position of said ratchet wheel, substantially as set forth.

10. In devices of the character described, the combination of a ratchet wheel, means for rotating the same step by step, an alarm mechanism, means for actuating the same when said ratchet wheel is in a predetermined position and means for preventing the operation of said actuating means, at other times, comprising a latch for said actuating means, a controlling member rotating with said ratchet wheel, and a member coacting with said controlling member, adapted to trip said latch when said controlling member and ratchet wheel are in the predetermined position and to be held by said controlling member in inoperative position at all other times, substantially as set forth.

11. In devices of the character described, the combination of a ratchet wheel, means for rotating the same step by step, means for setting the same to desired position, a notched index disk movable therewith, a tumbler pawl riding on the periphery of said disk, a signal mechanism, means for actuating the same, comprising a lever, means for holding said lever in inoperative position while said pawl is on the periphery of said disk, and means actuated when said pawl drops into the notch in said disk to release said lever from said holding means, substantially as set forth.

12. In devices of the character described, the combination of a signal mechanism, comprising a lever, a spring pressed lever adapted to operate the same, a periodically operating main actuating member, intermediate means for transmitting the movement of said actuating member to said spring-pressed lever, means for holding said spring-pressed lever and said intermediate means out of operative connection, a rotary member operated by said main actuating member, and means operable when said rotary member arrives at a predetermined position for releasing said holding means, substantially as set forth.

13. In devices of the character described, the combination of a ratchet wheel, a pawl for advancing the same step by step, a periodically-movable actuator, connections for operating said pawl from said actuator, and means for disabling said connections when said ratchet wheel reaches a predetermined position, substantially as set forth.

This specification signed and witnessed this 15 day of March, 1915.

ERNEST J. BRASSEUR.

Witnesses:
M. H. BURKART,
W. G. ARNOLD

Correction in Letters Patent No. 1,183,529.

It is hereby certified that in Letters Patent No. 1,183,529, granted May 16, 1916, upon the application of Ernest J. Brasseur, of Chicago, Illinois, for an improvement in "Sheet Counting and Indicating Apparatus," an error appears in the printed specification requiring correction as follows: Page 7, line 2, claim 9, for the word "operative" read *operating;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of May, A. D., 1916.

[SEAL.]

J. T. NEWTON,
Acting Commissioner of Patents.