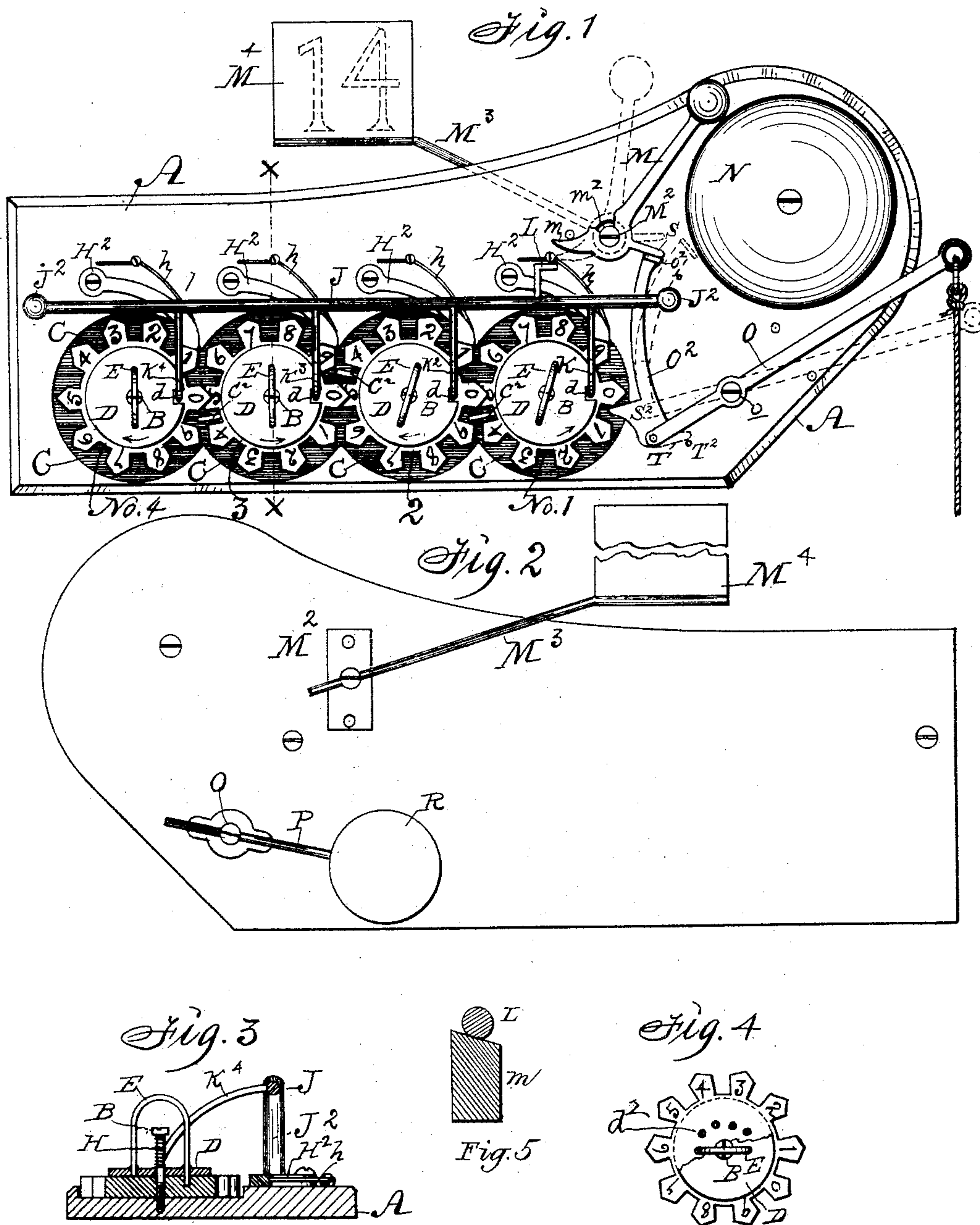


(No Model.)

T. C. DEXTER.  
AUTOMATIC COUNTER AND ALARM.

No. 470,290.

Patented Mar. 8, 1892.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## AUTOMATIC COUNTER AND ALARM.

SPECIFICATION forming part of Letters Patent No. 470,290, dated March 8, 1892.

Application filed June 17, 1890. Serial No. 355,775. (No model.)

*To all whom it may concern:*

Be it known that I, TALBOTT C. DEXTER, a citizen of the United States of America, and a resident of Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Automatic Counter and Alarm for Printing-Presses, of which the following is a specification.

The object of my invention is to automatically count the number of impressions made and cards or sheets printed and to signal the pressman or operator when any given number has been run off the press and counted.

My invention consists in forming, arranging, and combining a plurality of digit or numbering wheels and adjusting-disks, an alarm-bell, and bell-ringing mechanism in such a manner as that the digit-wheels are readily adjustable to each other and to the adjusting-disks, the latter being adapted to be set relative to the digit-wheels, so that when the actuating and ringing mechanism is in place the bell will be automatically and successively struck by a hammer to signal attention when one or more of the digit-wheels have completed the revolutions or parts of revolutions necessary to count the given number desired.

My invention consists, further, in certain details of construction hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal side view of my counter and alarm. Fig. 2 is a like view of the side opposite to that shown in Fig. 1. Fig. 3 is a transverse sectional view on the line  $x$ , Fig. 1. Fig. 4 is a detail view of one of the digit-wheels and adjusting-disk. Fig. 5 is a detail cross-sectional view showing the connection between the tang of the striking-hammer and the arm of the rock-shaft.

A represents the base-board of my machine, preferably made of hard wood and varying in length and breadth to suit the size and number of digit-wheels Nos. 1, 2, 3, and 4, mounted and revolving concentrically loosely about screws or journal-pins B B within the intersecting cavities C C, cut in the front face of the base A, said cavities being formed with bottoms inclined in one direction, so that the cogs of the digit-wheels overlap each other. Each of the digit-wheels is provided with ten projections or cogs formed integrally with

their peripheries, said cogs having respectively marked upon their outer faces the figures or symbols "0 1 2 3 4 5 6 7 8 9," by which the desired number will be indicated in counting and adjusting, and also having tripping-lugs  $C^2 C^2$ , extending from a point on the periphery of each one of said digit-wheels between the cogs bearing the numerals "4" and "5" and adapted to engage in a manner hereinafter described.

Mounted concentrically upon and loosely about the journal-pins B B are adjusting-disks D D, notched at  $d$  on their outer peripheries, said notches being beveled.

E E are thumb-loops secured to the disks D D, one end of the loops extending beyond and below said disks to engage with perforations  $d^2 d^2$  (shown in Fig. 4) on the outer face of the digit-wheels, arranged in a circle, so that a perforation will be in front of each cog bearing a figure.

H (shown in Fig. 3) are spiral springs coiled about each of the journal-pins B B and disposed between the heads of said pins and the outer face of the adjusting-disk, so as to normally cause the disks to rest upon their respective digit-wheels.

$H^2 H^2$  are detents pivoted to the base A, against which the springs  $h h$  bear, causing the detents to engage with the cogs of the digit-wheels.

J is a rock-shaft pivoted within the standards  $J^2 J^2$ , fixed to the base A, and  $K K^2 K^3 K^4$  are teeth fixed to said rock-shaft and, extending at right angles thereto, are bent downwardly toward the disks and digit-wheels, and their beveled free ends thus adapted to engage with notches  $d$  of said disks. Fixed to the upper portion of the rock-shaft J is an upwardly-extended hook L, adapted to engage a tang  $m$  on the lower end of the striking-hammer M, the axis  $M^2$  of which has fixed to and coiled about it a spiral spring  $m^2$ , the resiliency of which causes the striking-hammer to strike the bell N when said hammer is disengaging from the hook L. The striking-hammer M normally tending to advance toward the gong by virtue of the spring  $m^2$  whenever the tang  $m$  is engaged with the upper free end of hook L, their beveled ends are engaged, and since the said tang  $m$  is normally tending to describe an upward arc the



latter bears against the end of the hook L, and when thus engaged the teeth K, K<sup>2</sup>, K<sup>3</sup>, and K<sup>4</sup> are impelled toward the disks E and held thereon or engaged in the notches d.

5 The axis M<sup>2</sup>, extending through the base-board, has an arm M<sup>3</sup> fixed thereto, to which is secured an indicating-card M<sup>4</sup>.

O is an actuating-lever mounted rigidly on an axis o, which latter extends through to the  
10 opposite side of the frame and is there fixed to a longitudinally-adjustable arm P, Fig. 2, having at its outer end the weight R. The shorter arm of the lever O is bifurcated to receive the lower end of a push-bar O<sup>2</sup>, pivoted  
15 within said bifurcation, the upper end of the push-bar O<sup>2</sup> being formed with a tripping-lug o<sup>2</sup>, adapted to engage the tang S on the striking-hammer M, and a pallet S<sup>2</sup>, which engages the cogs of the digit-wheels, the lower end of  
20 the arm O<sup>2</sup> having a rearwardly-extending lug T, which impinges against a stop T<sup>2</sup>.

The operation of my device is as follows: The digit-wheels Nos. 1, 2, 3, and 4 being, respectively, capable of indicating units, tens,  
25 hundreds, thousands, when it is desired to adjust so as to signal to the operator that a given number of sheets are upon the press-table—say, for instance, twenty-eight—all of the digit-wheels are first moved by the operator, so that the cogs bearing the ciphers will  
30 be in line, as shown in Fig. 1. The operator then draws the disk D, resting on the digit-wheel No. 1, laterally, so that the end of the loop E is disengaged from one of the perforations, and then turns or partially rotates said  
35 disk to the point at which the long end of the loop E registers with and engages in the perforations d<sup>2</sup>, opposite the cog of wheel No. 1, bearing the figure "8," so that the notch d of the disk is in line with and opposite to said  
40 cog. The same movement is made with the disk of digit-wheel No. 2, so that its notch d is opposite to and in line with the cog bearing the figure "2." It will now be seen that the  
45 free ends of the teeth K and K<sup>2</sup> will impinge against the outer face of the disks D D of the digit-wheels Nos. 1 and 2, and that the teeth K<sup>3</sup> K<sup>4</sup> are held out of engagement with, although directly over, the notches d d of the  
50 digit-wheels 3 and 4, since all of the teeth are rigidly connected to the rock-shaft. The tang m of the striking-hammer M is then engaged under the hook L. Power being applied in any well-known way to the end of lever O, the  
55 latter is pulled downwardly, its short arm describing an arc, vertically carrying the pivoted push-bar O<sup>2</sup>, causing the pallet S<sup>2</sup> of the latter to engage between the cogs of digit-wheel No. 1, rotating the latter about one-  
60 tenth of the circle of its circumference, being checked and regulated in movement by the detent H<sup>2</sup>, after which the lever is returned to its normal position by the gravity-weight R, at the same time throwing the push-bar  
65 into engagement with wheel No. 1, being assisted in accomplishing this result by the lug T on its lower end and the stop T<sup>2</sup>, after which

the lever O is in readiness to be again pulled downward, the operation being then success-  
70 ively repeated. The tripping-lugs c c on the digit-wheels Nos. 1, 2, and 3 are arranged so that their free ends engage, respectively, between the cogs bearing the figures "0" and "9"  
75 of the digit-wheels 2, 3, and 4, said lugs on the wheels Nos. 1 and 3 being below the cog bearing the figure "0," the lug c on the wheel No. 2,  
80 whose movement of rotation is differentiated, being above said cog bearing the figure "0," so that when the wheel No. 1 has completed a single revolution wheel No. 2 is rotated one-  
85 tenth of its circumference by the tripping-lug c of digit-wheel No. 1, which bears against the upper portion of the cog of wheel 2, bearing the figure "0," bringing the cog bearing the figure "1" of wheel "2" into the position for-  
90 merly occupied by the cog bearing the figure "0," the wheel No. 1 being caused to continue its rotation, the teeth K K<sup>2</sup> K<sup>3</sup> K<sup>4</sup> on the rock-shaft J being held from falling into the notches  
95 d d by the tooth K<sup>2</sup>, resting on the face of the adjusting-disk of wheel No. 2 at a point between the cogs bearing the figures "1" and "2." Another revolution of wheel No. 1 causes a movement of rotation of one-tenth of the  
100 wheel No. 2, bringing the cog bearing the figure "2" of said wheel and the notch d of its disk D, which has been adjusted opposite said cog, directly under the tooth K, the teeth K<sup>2</sup>, K<sup>3</sup>, and K<sup>4</sup> being held from falling into the  
105 notches by tooth K, resting on the face of the disk of wheel No. 1, which latter is caused to continue its rotation until the cog bearing the figure "8," with the notch opposite thereto, is brought directly under the tooth K. The  
110 wheels 3 and 4 not having been rotated, all of the notches will register with the teeth. The tang m of striking-hammer M and the engaging end of hook L are so beveled, the latter also being bent outwardly from base A, as to  
115 normally press, as heretofore described, the teeth on the rock-shaft J downwardly upon the disks D, and since all of the notches now register with the teeth the latter fall into the notches, which in turn releases the striking-  
120 hammer, which latter strikes the bell and signals the operator that the required number has left the press. In the further action of the lever O the push-bar O<sup>2</sup> is caused to successively and intermittently engage the tang  
125 S on the striking-hammer M, thus continuously sounding the alarm until the operator either readjusts the tang m in engagement with hook L, withdraws push-bar O<sup>2</sup> from en-  
130 gagement with tang S, or stops the press.

In a press-room where a number of presses  
125 are running the operator may not be attracted by the sounding of the bell of his press. Hence I provide the indicating-card P, which being mounted on the shaft L is brought into  
130 view from behind the base-board A when the striking hammer is actuated on its shaft.

It will be seen that my improvement is adapted to count and signal to the operator that any required number have been printed,



as shown in the accompanying drawings, from one to nine thousand nine hundred and ninety-nine; but any number of digit-wheels may be geared in train, increasing the recording capacity of the machine.

In practical use the machine is usually set for the larger numbers, the number twenty-eight having been selected for the purpose of limiting the illustration.

I have described my invention with reference to a printing-press; but it will be readily suggested that there are many other machines to which it may be attached and perform its functions with advantage.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, in an automatic counter and alarm, of a series or train of wheels bearing numbers, disks normally resting upon said wheels, adapted for adjustment in varying positions relative to the said wheels, a series of teeth fixed to a common shaft engaging with said disks, a striking-hammer engaged with and adapted to be automatically disengaged from the shaft, a bell or gong, and means by which the train of digit-wheels may be actuated to operate, as and for the purposes stated.

2. The combination of a plurality of digit-wheels mounted on journal-pins fixed to a base, disks normally held upon the digit-wheels by yielding pressure, said disks being adapted for adjustment in varying positions relative to the said wheels, tripping-lugs secured to the digit-wheels, engaging with each succeeding wheel, and means by which said wheels may be rotated, as and for the purpose described.

3. The combination of a series of numbering-wheels having perforations on their faces, disks mounted on the journal-pins of the digit-wheels, being normally held upon the

faces of the digit-wheels by yielding pressure and rotated with said wheels by pins on the disks engaged in the said perforations, as and for the purposes described.

4. The combination, with the bell of a counting and alarming apparatus, of a pivoted striking lever or hammer the axial-shaft of which carries an indicating-card, as and for the purposes described.

5. The combination, with a series of digit-wheels, of a pivoted actuating-lever the shaft of which is provided with a weight, and a push-bar the pallet of which is adapted to engage with one of the wheels of the series, its upper end being adapted to engage with the striking-hammer and its lower end impinging against a stop, as and for the purposes stated.

6. The combination, in an automatic counting and alarming apparatus, of a series of digit-wheels having perforations on their faces, disks each provided with a notch on its edge, said disks being held on the faces of the wheels by springs, a rock-shaft having a series of teeth fixed thereto, the latter adapted to engage the notches of the disks, a pivoted striking-lever, the shaft of which carries an indicating-card, detachably connected to the rock-shaft, a bell or gong, a pivoted actuating-lever provided with a weight, and a push-bar the pallet of which is adapted to engage one of the digit-wheels and the striking-hammer, as and for the purposes set forth.

7. The combination, with an alarm bell or gong, of a striking-hammer adapted to be engaged by the rock-shaft when not in use, and a push-bar pivoted to the actuating-lever, the upper end of said bar intermittently and successively engaging the striking-hammer, as and for the purposes set forth.

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Witnesses:

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