

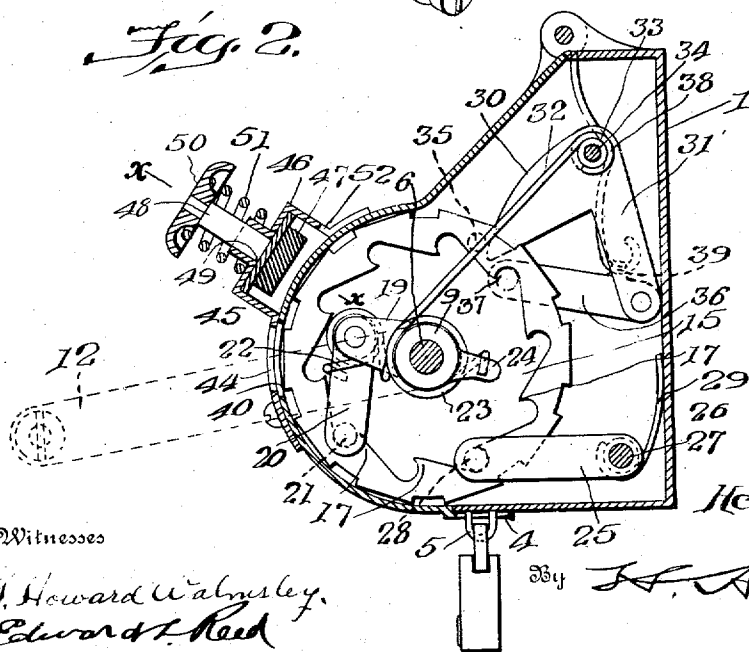
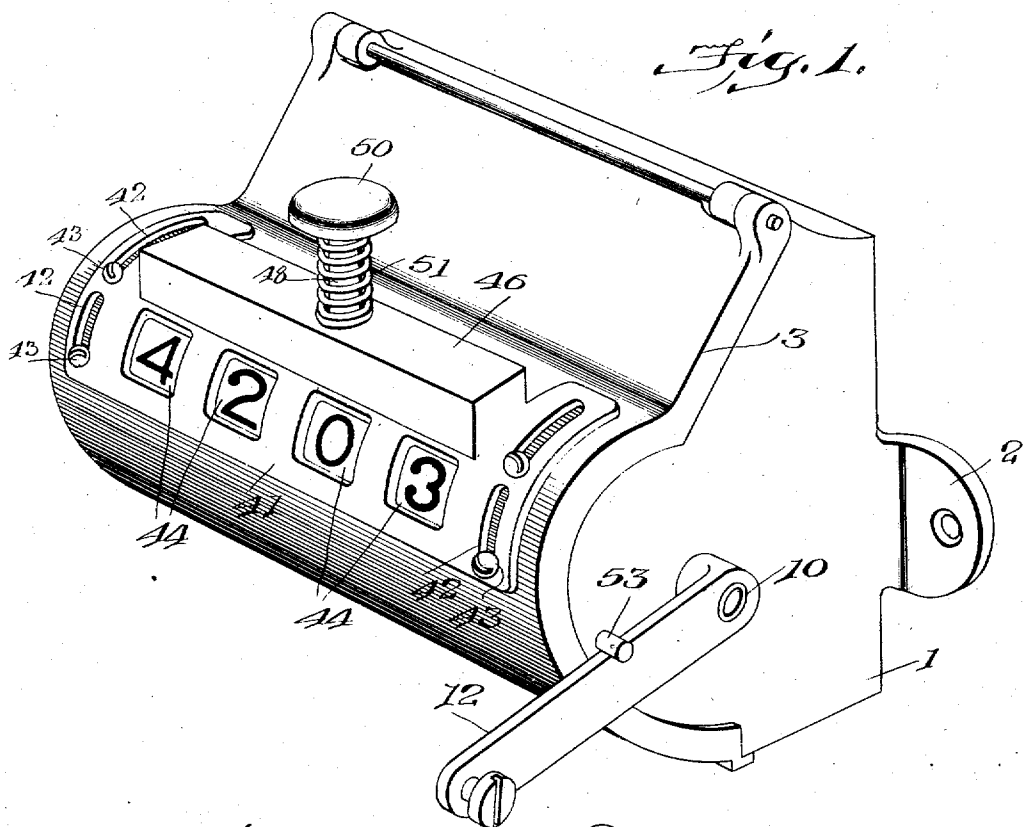
No. 888,781.

PATENTED MAY 26, 1908.

H. C. BOWLUS.
COUNTING REGISTER.

APPLICATION FILED JULY 19, 1907.

2 SHEETS—SHEET 1.



Witnesses

J. Howard Wainwright,
Edward T. Reed

Inventor

Henry C. Bowlus,

By

J. A. Foulness,

Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

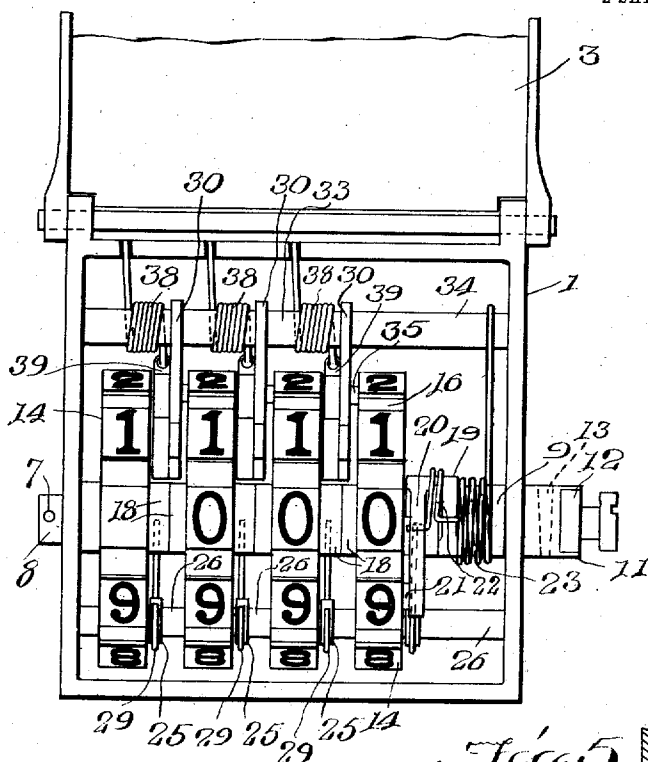


Fig. 4.

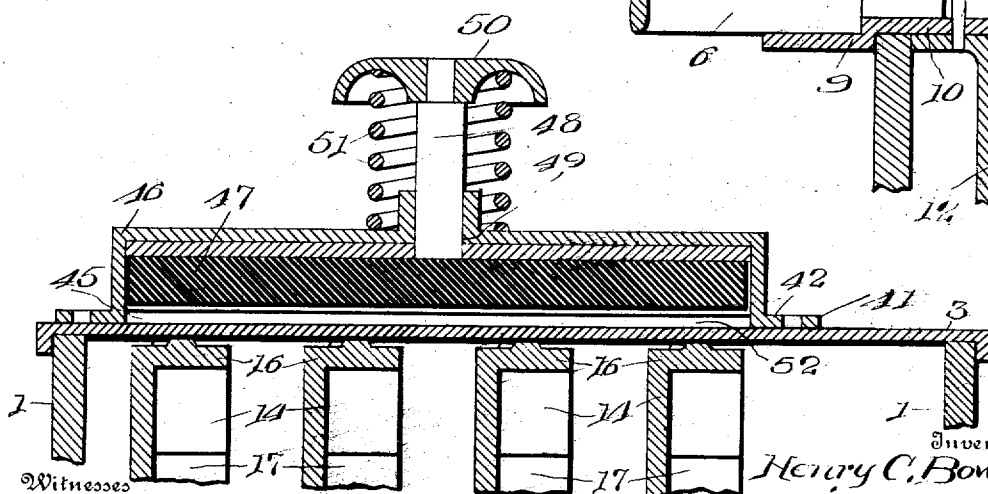
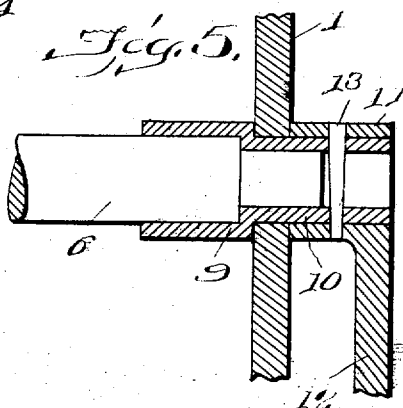


Fig. 5.



Witnesses

F. W. Schaefer.
Edward T. Reed

Inventor
Henry C. Bowlus,

By *H. A. Toulmin,*

Attorney

UNITED STATES PATENT OFFICE.

HENRY C. BOWLUS, OF SPRINGFIELD, OHIO.

COUNTING-REGISTER.

No. 888,781.

Specification of Letters Patent.

Patented May 26, 1908.

Application filed July 19, 1907. Serial No. 384,509.

To all whom it may concern:

Be it known that I, HENRY C. BOWLUS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Counting-Registers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The present invention relates to counting registers such as are usually employed for counting and registering the output of machines of various kinds.

15 The object of the invention is to provide a counting machine of this character which will be simple of construction, positive and accurate in operation, from which a record may be readily taken, and which can be easily reset to zero.

20 With these objects in view my invention consists in certain novel features of construction and in certain parts and combinations hereinafter to be described, and then more particularly pointed out in the claims.

25 In the accompanying drawings, Figure 1 is a perspective view, showing the exterior of the casing; Fig. 2 is a transverse sectional view taken centrally through Fig. 1; Fig. 3 is a front elevation of the machine with the hinged cover raised; Fig. 4 is a sectional view, taken on the line *x x* of Fig. 2 and showing the record printing device; and Fig. 5 is a detail sectional view of the bearing sleeve.

35 In these drawings, I have illustrated the preferred form of my invention and have shown the same as comprising a casing 1 provided with suitable means, such as the apertured lugs 2 for securing the same to the frame of a machine or to any other suitable support. One of the walls of the casing, preferably the front wall 3, is hinged thereto and forms a cover for the counters which can be swung back out of the way to permit access 45 to the interior of the casing and which is provided with a hasp 4 adapted to engage a staple or projection 5 for securing the cover in its closed position. Mounted within the casing 1 and extending longitudinally thereof is a shaft 6 which is preferably held against rotation. This shaft may be mounted within the casing in any suitable manner, but I prefer that herein shown in which one end of the shaft is mounted directly in the adjacent 55 end of the casing and is held against rotation by means of a pin 7 extending through a

boss 8 surrounding the aperture in the end of the casing and through the shaft. The opposite end of the shaft is journaled in a bearing sleeve 9 which, in turn, is journaled 60 in the adjacent end of the casing 1. This sleeve 9 has its inner end enlarged to receive the end of the shaft, as shown, and its outer end reduced, as shown at 10, and adapted to extend through the bearing aperture in the 65 end wall of the casing and to receive the reduced end of the shaft 6, which preferably extends beyond the end wall of the casing 1. The outer end of the reduced portion 10 of the bearing sleeve extends for a considerable 70 distance beyond the end wall of the casing and is adapted to receive the hub 11 of an operating member, such as a crank arm 12, which is secured thereto by any suitable means, such as the pin 13 extending through 75 the hub 11 and the end 10 of the sleeve.

A plurality of counters 14 are rotatably mounted upon the shaft 6 and are provided on their peripheries with the numerals 0 to 9 80 inclusive. These counters may be of any suitable character, but are preferably what are known as printing counters, that is, are provided on their peripheries with type figures, from which a record can be taken, and are here shown as consisting of disks 15, each 85 of which is provided with a flange 16 extending about the periphery thereof and preferably located on the side thereof adjacent to that end of the shaft 6 upon which the operating mechanism is mounted and provided 90 on its inner surface with suitable ratchet teeth 17. Each disk 15 is provided with a central bearing hub or elongated sleeve 18 which is journaled upon the shaft 6 and extends for some distance on each side of the 95 disk 15 where it engages with the sleeve or hub of the adjacent disk and serves to space the disks a proper distance apart.

The bearing sleeve 9 is provided with suitable means for actuating the counter 14 100 which is located adjacent thereto, step by step. This means preferably consists of an arm 19, carried by the sleeve 9 and extending at an angle thereto, and a pawl or lever 20 pivotally connected at one end to the outer 105 end of the arm 19 and provided at its opposite end with a suitable projection or pin 21 adapted to engage the ratchet teeth 17 of the counter. A spring 22, carried by the outer end of the arm 19 and engaging said arm and 110 the pawl 20, serves to hold the latter firmly in engagement with the ratchet teeth of the

counter and permit the same to ride over the teeth as the pawl is retracted, while a suitable spring is provided for returning the arm 19 to its normal position after each forward movement. This spring is preferably of the construction shown which consists of a spring 23 coiled about the sleeve 9 and having one end in engagement with the casing or other fixed surface and the other end in engagement with a lug or projection 24 carried by the sleeve 9.

A suitable locking mechanism is provided for preventing the backward movement of the counter as the actuating mechanism or pawl 20 is returned after its forward movement. This mechanism preferably consists of a pawl or lever 25 pivotally mounted in the casing, preferably by providing the same at one end with a sleeve 26 which is journaled upon a suitable shaft 27 extending substantially parallel with the shaft 6. The lever 25 is provided at its opposite end with a projection or pin 28 adapted to engage the ratchet teeth 17 of the counters and thus retain the same against rearward movement. A suitable spring is provided for retaining the pawl or lever 25 normally in engagement with the ratchet teeth and permitting the same to ride over said teeth on the forward movement of the counters. This spring is here shown as consisting of a piece of spring metal 29 secured at one end to the sleeve 26 of the pawl 25 and having its other end in engagement with the wall of the casing 1.

Suitable means are provided for causing each successive counter to be moved through a single space for each complete revolution of the preceding counter. This means is here shown as consisting of a series of arms 30 pivotally mounted in the casing and each having one end adapted to be engaged by a part carried by the preceding counter and connected with suitable actuating mechanism, such as the second arm 31, which is provided with a pawl for engaging the ratchet teeth on the succeeding counter and advancing the same the space of one tooth when the first arm is engaged by the part carried by the first counter. As herein shown, the arms 30 and 31 are so connected as to move in unison and preferably comprise a bifurcated or V-shaped plate 32, which is pivotally mounted at its apex and is preferably provided with a bearing aperture in an elongated hub or sleeve 33 journaled upon a shaft 34 which is mounted in the casing 1 and extends substantially parallel with the shaft 6. Each arm 30 extends between the adjacent counters 14 and is adapted to be engaged by a projection or pin 35 on the rear side of the preceding counter, while the arm 31, which is preferably of a greater length than the arm 30, extends to a point between the wall of the casing and the counters and is provided with a suitable pawl or lever 36 adapted to

extend between the disks and engage the ratchet teeth 17 of the succeeding counter. This pawl is here shown as consisting of an arm or lever pivotally connected near its outer end to the arm 31 and provided at its inner end with a suitable pin or projection 37 for engaging the ratchet teeth. A spring 38 is coiled about the sleeve 33 of the plate 32 and has one end in engagement with the wall of the casing and the other end secured to the pawl 36 at a point near its pivotal connection to the arm 31, as shown at 39. The spring thus performs two functions; first, by its connection to the arm 36 between its pivotal center and its point of engagement with the ratchet teeth of the counter it serves to hold the pawl in engagement with said ratchet teeth and permit the same to ride over said teeth as the arm is moved rearwardly; and further, it exerts pressure upon the arm 31 through the medium of the arm 36, which is connected to the arm 31, and serves to return that arm and the arm 30, which moves in unison therewith, to their normal positions after each forward movement thereof. Each counter is operatively connected to the succeeding counter by transfer mechanism comprising the arms 30 and 31 and each counter is provided with a locking pawl 25. Thus, it will be seen that as each counter completes a revolution the next succeeding counter will be advanced one step. I have here shown the machine as provided with four counters, thus enabling a count of 9,999 to be made, but obviously the number of counters may be varied.

Suitable mechanism is provided for taking a record from the counters, which mechanism consists in providing a suitable opening in the casing in alinement with the proper row of numerals on the counters and in mounting over said opening a movable platen which is adapted to be actuated to take a record upon a card which may be inserted between the same and the counters. In the form of the device herein shown, the movable cover 3 is provided with a suitable sight opening 40, through which the number registered by the several counters may be read. A plate 41 extends longitudinally of the casing 1 and is slidably mounted thereon by means of the transverse slots 42 and the projections or screws 43, whereby it may be moved transversely of the length of the casing. This plate 41 is provided with a row of apertures 44 adapted to register with the numerals on the several counters, and, when the plate is moved to its uppermost position, to register with the sight opening 40 in the cover 3. The plate is provided immediately above the row of apertures 44 with an elongated opening or slot 45 which is adapted to register with the sight opening 40 when the plate is in its lowermost position and which is provided with a housing 46 extending about the same.

Mounted within this housing is a suitable platen 47 which is preferably provided with a face of yielding material, such as rubber, and is provided with a stem 48 extending outwardly through an aperture 49 in the wall of the housing where it is provided with a knob or handle 50 for operating the same. A suitable spring 51 is coiled about the stem 48 between the knob 50 and the housing and serves to hold the platen normally out of engagement with the counters. The counters may be provided with type of any suitable character, from which a record may be taken upon a card inserted through the slot 52 in the housing, but I prefer to form the type of hard metal and to provide the platen with a yielding face, whereby, when the card is inserted between the platen and the counters and the platen brought forcibly into engagement therewith, the record as shown by the counters will be impressed on the card. This construction gives a permanent record and does away with the necessity of providing inking mechanism.

The operation of the device will be readily understood from the foregoing description, and, in brief, is as follows: The crank arm 12, which is mounted on the outer end of the bearing sleeve 9, is connected to the machine, the output of which is to be counted in such a manner that it will be moved through a fixed distance upon the delivery of each article. The forward movement of the crank arm 12 rotates the bearing sleeve 9 in its bearing in the wall of the casing 1 and about the end of the shaft 6, thus moving the arm 19 carried by the inner end of the sleeve 9 and bringing the pawl 20, carried by said arm, into engagement with the ratchet teeth of the first counter 14 and moving that counter forward the space of one tooth which is equivalent to one unit on the periphery thereof. The sleeve 9 and crank arm 19 are returned to their normal position after each forward movement thereof by means of the spring 23, this rearward movement being limited by a projection or pin 53 which is mounted in the end of the casing 1 and engages the crank arm 12. When the first or any successive counter has been revolved through a complete revolution, the pin 35 mounted on the rear wall thereof comes into engagement with the end of the next succeeding arm 30 and rocks that arm about its pivotal center, thereby causing the arm 31, which moves in unison therewith, to move toward the counters and bring the pawl 36, which is carried thereby, into engagement with the ratchet teeth of the next succeeding counter, thereby advancing that counter the space of one tooth, or one numeral, for each complete revolution of the first counter. When the pin 35 has moved past the end of the arm 30, the arms 30 and 31 are returned to their normal position by means of the

spring 38. The total count which is registered by the machine is visible at all times through the sight openings 44 in the plate 41 which register with the opening 40 in the cover of the casing and a record of this count may be taken from the counters at any time by sliding the plate 41 forward so as to bring the housing 46 and platen 47 into alinement with the opening 40 and inserting a card or slip of paper through the slot 52 in the housing so that it will lie between the platen and the type on the counters. The handle 50 on the stem 48 of the platen is then struck a sharp blow and the card pressed against the hard metal type on the counters, thus impressing a record of the count registered by those type on the card. When desired, the counters may be reset to zero by raising the cover 3 and completing the rotation of each counter by hand. While the counters may be provided with any suitable mechanism for resetting the same, I prefer to employ the form of counter herein shown, in which the resetting is done by hand.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A device of the character described comprising a shaft, a plurality of counters rotatably mounted thereon and provided with ratchet teeth, means for advancing one of said counters step by step, a projection carried by said counter, an arm pivotally mounted near said counters and adapted to be engaged by said projection, a second arm connected to said first-mentioned arm, extending at an angle thereto and adapted to move in unison therewith, a pawl pivotally connected to said second arm and adapted to engage the teeth of the next successive counter, and a spring secured thereto, said pawl between its pivotal center and its point of engagement with said ratchet teeth, thereby serving to retain said pawl in engagement with said teeth and to return the arm carrying said pawl to its normal position.

2. A device of the character described comprising a shaft, a plurality of counters rotatably mounted thereon and provided with ratchet teeth, means for advancing one of said counters step by step, a projection carried by said counter, a second shaft extending substantially parallel with said first-mentioned shaft, a bifurcated member journaled in said shaft and having an elongated hub portion, one arm of said bifurcated member being adapted to be engaged by said projection, a pawl carried by the second arm of said bifurcated member for engaging the ratchet teeth of the next successive coun-

ter, and a spring coiled about the hub of said bifurcated member and having one end engaging a fixed surface and its other end engaging said pawl between the ends thereof.

5 3. A device of the character described comprising a casing, a shaft rigidly mounted in one end thereof, a bearing sleeve journaled in the opposite end of said casing having its inner end enlarged and adapted to receive
10 the adjacent end of said shaft, means for rotating said sleeve, a counter rotatably mounted on said shaft and provided with ratchet teeth, an arm carried by said sleeve, a lug mounted on said sleeve, a spring coiled
15 about said sleeve and engaging said lug, a pawl pivotally mounted on said arm and adapted to engage said ratchet teeth, and a spring carried by said arm having one end in engagement with the same and the other end
20 in engagement with said pawl.

4. A device of the character described comprising a plurality of alined printing counters, a platen extending transversely of the peripheries of said counters and adapted
25 to be moved about the same to bring said platen into alinement with the record numerals on said counters, means for supporting a record-receiving member between said platen and said counters, and means for moving
30 said platen radially of said counters to take a record therefrom.

5. A device of the character described comprising a casing having an opening therein, a printing counter mounted in said casing
35 adjacent to said opening, a platen supported on the exterior of said casing near the opening therein and adapted to be moved through the same to take an impression from said printing counter.

40 6. A device of the character described comprising a casing having a slot therein, a plurality of alined printing counters mounted in said casing and having their peripheries arranged transversely of said slot, and a
45 platen mounted on the exterior of said casing

and adapted to be moved through said slot to take an impression from said printing counters.

7. A device of the character described comprising a casing having an opening therein, a plurality of printing counters rotatably mounted within said casing, means for rotating said counters, a platen movably mounted on said casing and adapted to be
50 moved into alinement with said opening and means for moving said platen through said opening to take a record from said printing counters.

8. A device of the character described comprising a casing having an opening therein, a plurality of alined counters rotatably mounted within said casing, means for rotating said counters, a plate slidably mounted on said casing and provided with a housing, a platen mounted in said housing, said
60 housing and said platen being adapted to be moved into alinement with said opening and means for actuating said platen to take a record from said printing counters.

9. A device of the character described
70 comprising a casing having an opening therein, a plurality of alined printing counters mounted within said casing, means for actuating said counters, a plate slidably mounted on said casing and provided with a plurality
75 of sight openings, and an elongated opening extending substantially parallel with said sight openings, a housing inclosing said last-mentioned opening, and a platen mounted in said housing and having a stem extending
80 through the wall thereof and provided with a handle, said plate being adapted to be moved to bring said housing and said platen into alinement with the opening in said casing.

In testimony whereof, I affix my signature
85 in presence of two witnesses.

HENRY C. BOWLUS.

Witnesses:

FRANCIS M. HAGAN, Jr.,
EDWARD L. REED.