No. 706,048. Patented Aug. 5, 1902.

T. W. GRAHAM.

COUNTING MACHINE.

(Application filed Mar. 5, 1902.)

(No Model.)

Fig. 2.

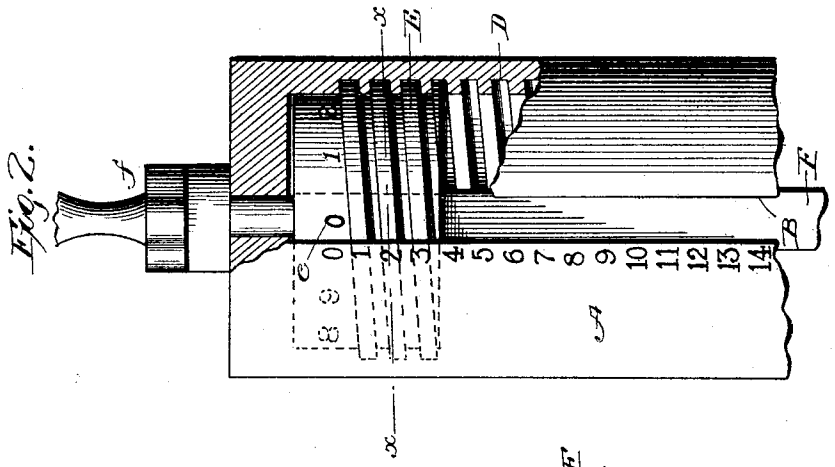


Fig. 3.

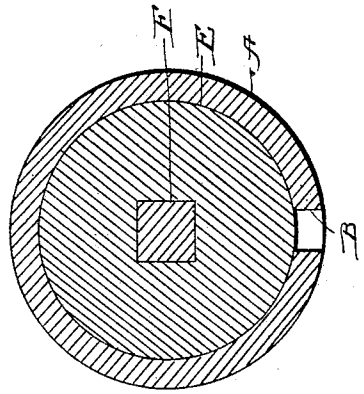
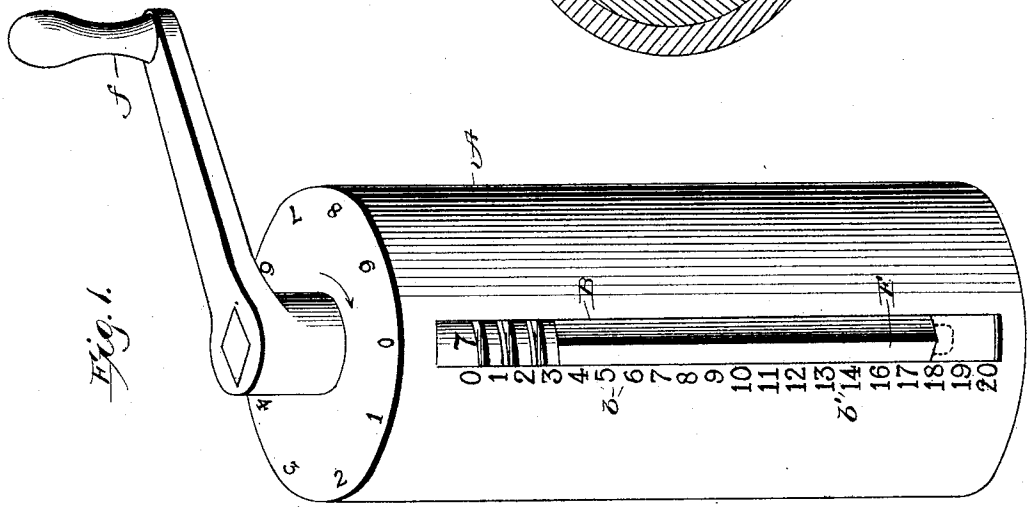


Fig. 1.



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UNITED STATES PATENT OFFICE.

THOMAS W. GRAHAM, OF DUBUQUE, IOWA.

COUNTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 706,048, dated August 5, 1902.

Application filed March 5, 1902. Serial No. 96,820. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. GRAHAM, a citizen of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Counting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a counting-machine adapted to a variety of uses, which will be apparent to those familiar with its operation, but primarily susceptible of employment in counting votes or the like, where it is desirable to utilize progressively-operated instrumentalities to count the individual votes and indicate the total of such count.

Salient features of the invention embrace the idea of providing one member bearing "tens" and "hundreds" figures and a second member carrying "units" figures and so disposed relative to said first-mentioned member that it may be progressively operated to bring the respective units figures into registration with the tens and hundreds figures of the first-mentioned member to facilitate a continuous count; also, the idea of providing a slotted cylindrical member having adjacent one edge of the slot tens and hundreds figures and a second member so associated with said cylindrical member that the former in operation will have a progressive spiral movement in the latter to bring units figures arranged around the periphery of the second member into registration with the tens and hundreds on the cylindrical member to facilitate a continuous count, the total of which will be indicated at all times, and also the idea of providing a cylindrical member spirally grooved on its interior with a vertical slot on one side adjacent to which are arranged tens and hundreds figures and a unit-bearing member having a spiral groove in its periphery engaging the groove in the cylindrical member, so as to rotate and travel longitudinally relative thereto to cause the units figures to register with the tens and hundreds figures.

In the accompanying drawings, forming part hereof, a simple embodiment of the invention is delineated for the purpose of assisting in imparting a clear understanding of the invention; but it is to be understood that changes in the general arrangement and the construction of the details of the several parts disclosed may be made without in the least departing from the nature and spirit of the invention. For instance, to avoid complication tens and hundreds only are referred to herein and shown in the drawings; but it will be appreciated and it is expressly intended to be understood that the identical principle involved may be carried out in counting tens, hundreds, thousands, tens of thousands, hundreds of thousands, and so on *ad infinitum*.

In said drawings, Figure 1 is a perspective view of a machine illustrating the embodiment above referred to, the same having provision for the counting of from naught to two hundred. Fig. 2 is an elevation, parts being broken away; and Fig. 3 is a sectional view on the line X X of Fig. 2.

Referring more specifically to the drawings, wherein like reference characters will indicate corresponding parts in the several views, the letter A designates a hollow, preferably cylindrical, member provided at one side, approximately throughout its extent, with a longitudinally-disposed slot B. On the cylinder at the left of the slot and ordinarily arranged from top to bottom of the machine and adjacent to the edge of said slot are figures from "0" to "9," (represented at b,) which I will designate the "tens" figures, and directly beneath these tens figures, following in proper order, are numerals from "10" to "20," (represented at b',) which I will designate the "hundreds" figures. The interior surface of the member A is spirally grooved or threaded, as at D, and adapted to engage this groove or thread and traverse longitudinally and rotatably relative to the cylinder is a correspondingly grooved or threaded disk or member E, the same bearing units figures e, arranged around the upper portion of its periphery at a pitch the same as the pitch of the threads on the disk and in the cylinder. The tens and hundreds figures on the cylinder are arranged at a distance apart equal to the distance between the threads on the interior thereof, so that one complete revolution of the member E will advance the same

from one figure on the cylinder to the one immediately following, while the units figures on said member are so spaced apart that they are each successively brought opposite to or in registration with one of the figures on the cylinder in the course of one complete revolution of the member D, a different units figure being presented with each one-tenth revolution of said member.

Passing longitudinally through the center of the cylinder A and mounted in suitable bearings at the ends thereof is a rotatable shaft F, provided at one end with any suitable or desirable operating means, that shown comprising a hand crank or lever *f*. The shaft is preferably angular in cross-section, so that it may be turned as the hand-lever is turned, and the units-carrying member is provided with a corresponding angular bore to permit the same to slide upon the shaft, but be rotated therewith.

Operation: The hand-lever is turned in the direction of the arrow, Fig. 1, and by the corresponding movement of the central shaft the units-carrying member is caused to descend and simultaneously rotate through the medium of its spiral connection with the cylinder, whereby the units figures from "0" to "9" are brought first into registration with "0" on the cylinder and exposed through the slot in said cylinder, and thereafter when the unit "9" has disappeared by the continued rotation of the handle the figure "0" on the units-bearing member will register with "1" on the cylinder, counting ten. By a further complete revolution of the hand-lever and units-carrying member the machine will count twenty, thirty, and so on until the end of the machine is reached by said member, when "200" will appear, each and every revolution of the units-carrying member advancing the same a distance of one thread, whereby ten is counted and the units figures brought into registration with the next succeeding tens or hundreds figures, as the case may be, according to the location of the units-carrying member in the cylinder.

On the top of the cylinder member in circular arrangement around the same or on a disk or plate properly secured to said top are the figures from "0" to "9," disposed directly above the corresponding figures on the units-carrying member when said member occupies its normal position previous to counting. By observing these figures an operator may know just how far to move the operating-lever.

I am aware that counting-machines have been constructed wherein an inclosing member having an elongated slot and an internal spiral groove is employed in connection with an internal cylinder engaging said groove to rotate and shift the cylinder longitudinally relative to the inclosing member and said cylinder having a plurality of numerals consecutively arranged around the periphery thereof in a spiral fashion, so that as the cylinder is turned the numbers are progressively shown through the slot in the inclosing member. I, however, believe myself to be the first to employ a stationary member provided with the tens, hundreds, &c., figures and a movable member carrying units figures and so associated with said first-mentioned member and its figures as to coöperate in counting after the manner herein disclosed.

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

1. In a counting-machine the combination of one member bearing tens and hundreds figures, a second member carrying units figures and so disposed relative to said first-mentioned member that it may be progressively operated to successively bring the respective units figures into registration with the tens and hundreds figures of the first-mentioned member whereby said figures are collocated to form consecutive numbers, and means for progressively operating the units-carrying member; substantially as described.

2. In a counting-machine the combination with one member bearing tens and hundreds figures, a second member carrying units figures and so disposed relative to said first-mentioned member that it may be rotatively operated to successively bring the respective units figures into registration with the tens and hundreds figures of the first-mentioned member whereby said figures are collocated to form consecutive numbers, and means operating the units-carrying member, substantially as described.

3. In a counting-machine the combination of one member having tens figures arranged in approximate alinement, a second member carrying units figures arranged around the periphery thereof and adapted to be successively brought into registration with the tens figures whereby said figures are collocated to form consecutive numbers, and means for rotating said units-carrying member and shifting the same during such rotation along the tens figures.

4. In a counting-machine the combination of a slotted cylindrical member having tens figures arranged in approximate alinement alongside said slot, said member having a spiral thread on its interior, and a second member carrying units figures arranged around the periphery thereof and grooved spirally to engage the interior thread of the cylinder, and means for rotating the units-carrying member and shifting the same longitudinally of the cylinder to cause the units figures to register with the tens figures; whereby said figures are collocated to form a single resultant number; substantially as described.

5. In a counting-machine the combination of one member provided with tens figures arranged in approximate alinement and provided with grooves on its surface, and a sec-

ond member carrying units figures arranged around the periphery thereof and provided with spiral threads adapted to engage the grooves on the surface of the tens-carrying member, and means for operating the units-carrying member to rotate and cause the same to travel along the tens figures, whereby said figures are collocated to form a single resultant number; substantially as described.

6. In a counting-machine the combination of a slotted cylinder having tens figures arranged in approximate alinement alongside said slot, a second member adapted to be rotated within and shifted longitudinally of said cylinder and carrying units figures arranged around its periphery, means for operating the units-carrying member to cause the units figures to register with the tens figures whereby said figures are collocated to form a single resultant number, and an indicator disposed in circular arrangement upon the end of the cylinder adapted to designate the extent of movement of the operating means; substantially as described.

7. In a counting-machine the combination of one member having tens figures arranged in approximate alinement, a second member carrying units figures arranged around its periphery, and an operating-shaft in loose engagement with the units-carrying member and adapted to rotate the same, and means for shifting the units-carrying member along the shaft during its rotation to cause the units figures to successively register with the successive tens figures whereby said figures are collocated to form a single resultant number; substantially as and for the purpose described.

8. In a counting-machine the combination of a fixed member bearing tens and hundreds figures, and a movable member carrying units figures and adapted to be operated to cause the units figures to successively register with the tens and hundreds figures whereby said figures are collocated to form a single resultant number; substantially as described.

9. In a counting-machine the combination of a slotted cylinder having tens figures arranged alongside said slot, a member adapted to be rotated within and shifted longitudinally of said cylinder and carrying units figures arranged around its periphery, and means for operating the units-carrying member to cause the units figures to successively register with the tens figures whereby said figures are collocated to form consecutive numbers, substantially as described.

10. In a counting-machine the combination of one member bearing units figures, and a second member bearing tens figures, one of said members being fixed relative to the other whereby said other member may be operated to cause its figures to successively register with the figures of the fixed member whereby said figures are collocated to form consecutive numbers, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS W. GRAHAM.

Witnesses:
R. F. JESS,
JAMES J. DUNN.