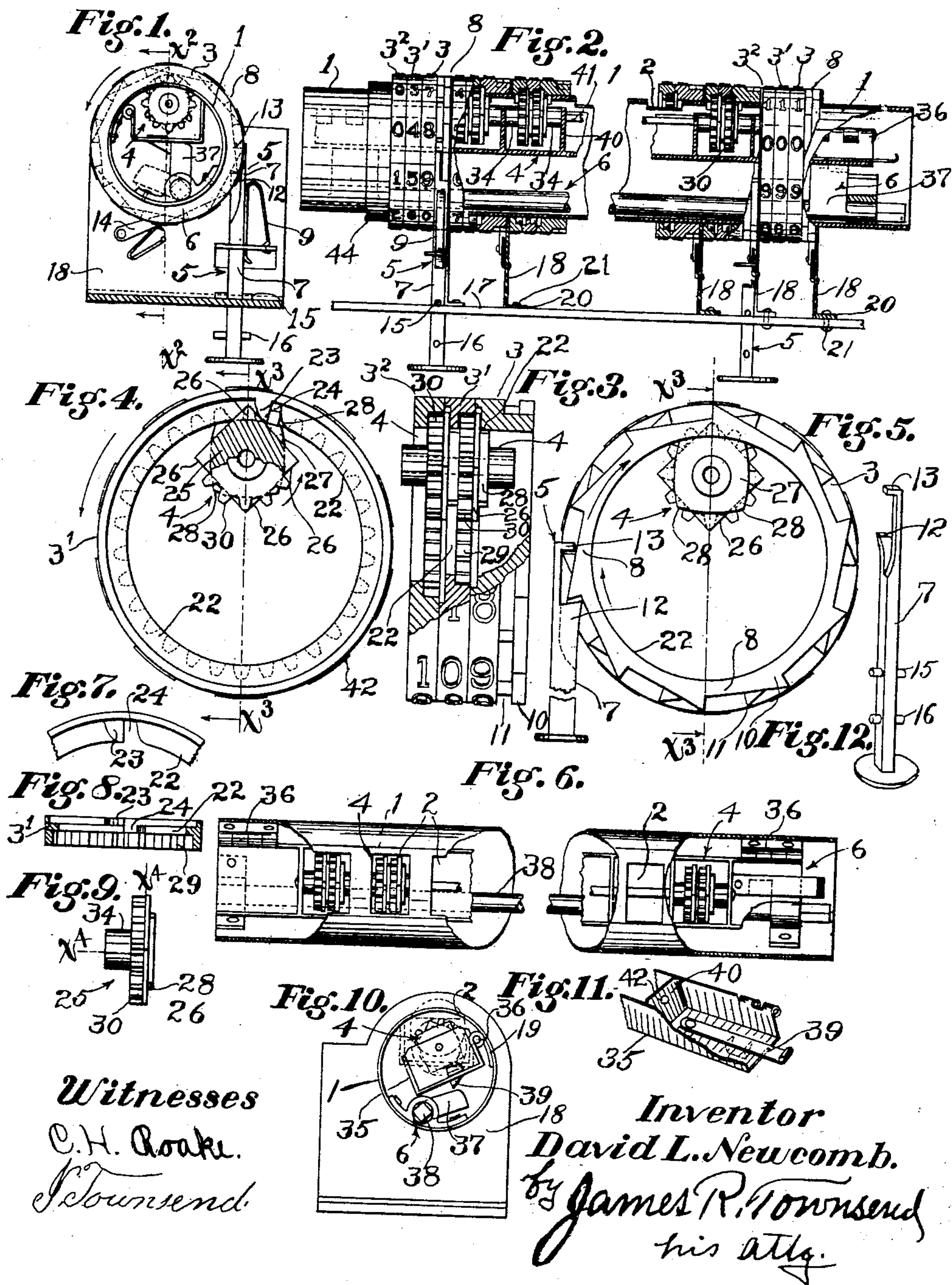


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COUNTING APPARATUS FOR VOTING MACHINES AND FOR OTHER PURPOSES.
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Patented Aug. 16, 1910.



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UNITED STATES PATENT OFFICE.

DAVID L. NEWCOMB, OF LOS ANGELES, CALIFORNIA.

COUNTING APPARATUS FOR VOTING-MACHINES AND FOR OTHER PURPOSES.

967,226.

Specification of Letters Patent.

Patented Aug. 16, 1910.

Application filed October 6, 1905. Serial No. 281,600.

To all whom it may concern:

Be it known that I, DAVID L. NEWCOMB, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Counting Apparatus for Voting-Machines and for other Purposes, of which the following is a specification.

An object of this invention is to provide a counting apparatus for voting machines and the like, comprising a complete and compact series of counters closely arranged in line, and of sufficient strength to stand pressure for manifold printing of the vote.

Other objects are to secure ease and speed of turning back to zero; to provide a counter that can be used satisfactorily in a voting machine for printing a record of the vote as soon as the same has been taken and before the machine is opened; to provide a superior counter simple of construction and readily extensible to any order of numbers or any number of series.

Other objects are durability, accuracy, and cheapness of construction.

Another object is to provide counting apparatus, the counters of which are held together to form a unitary device, a plurality of which devices may be arranged side by side in a voting machine to simultaneously print the result of the election on the ballot sheet or sheets.

Another object is compactness in that one or many counters may be arranged with all the actuating mechanism thereof contained within the counter wheel.

Other objects and advantages may appear from the accompanying detailed description.

The accompanying drawings illustrate the invention.

Figure 1 is an end elevation of a counter embodying this invention as constructed for application in a voting machine. Fig. 2 is a side elevation of the same viewed from the right of Fig. 1; some of the counter wheels and their support being in section on line indicated by x^2-x^2 , Fig. 1, and other parts being left intact. Fig. 3 is a side elevation of one set of counter wheels and their connecting mechanism detached and partially sectioned on line indicated by x^3-x^3 , in Figs. 4 and 5. Fig. 4 is an elevation from the left of Fig. 3 omitting the hundreds wheel and a portion of the pinion therefor. Fig. 5 is an end elevation of the parts shown in Fig. 3, viewed from the right. Fig. 6 is a

fragmental view showing portions of the counter-actuating mechanism and the hollow support therefor. Fig. 7 is a fragmental detail of either the units or tens wheel viewed from the left in Fig. 3, except that no suggestion is given of the cogs of the tens wheel which are indicated by dotted lines in Fig. 4. The tooth and recess for operation of the motion-transmitting means are shown. Fig. 8 is a fragmental view from the inner side of the tens wheel showing said cogs, tooth, and recess, and the track on such wheel for the transmitting mechanism stop. Fig. 9 is a detached edge elevation of the second transmitter for transmitting motion from the tens to the hundreds wheel. Fig. 10 is a view of the right end of the tubular support and its contents, shown in Fig. 2. The counters are omitted and the support for the tube is shown. Fig. 11 is a detached perspective showing the lock that holds the motion-transmitting devices in operative position. Fig. 12 is a perspective view of the means for actuating the units wheel.

1 is a tube provided with openings 2 in the side thereof and forming a hollow support for annular counter-wheels 3 rotatably mounted on the support. 4 in a general way indicates means inside the support for communicating motion from one to another of said wheels. 5 in a general way indicates means outside the support for actuating one of said wheels. 6 in a general way indicates means inside the support for moving said actuating means 4 into and out of operative engagement so that when moved out of said engagement the counter wheels will be free to rotate on said support independently of each other. In the form shown said support is a thin tube, but it is to be understood that the actuating means 4 for transmitting motion from one to another of the wheels and the means for moving the actuating means into and out of operative engagement, may be chambered in any form of chamber in the hollow support without departing from the broad spirit of the invention. The tubular form of said support, however, is deemed preferable for many reasons. The actuating means 4 are adapted to extend through the opening for the actuation of the counter wheels. The counter wheels are arranged in series in the usual way, and in the drawings three counter wheels,—namely, units, tens and hundreds constitute each series.

The tens and hundreds wheels are marked with exponents, as 3^1 , 3^2 , respectively; the character 3 alone indicates the units wheel.

The external means 5 are applied for actuating the units wheels, respectively, and each of such means comprises a pawl 7 which engages a ratchet 8 on the units wheel. 9 designates a spring for said pawl, yieldingly holding the same in engagement with the external teeth to actuate the units wheel as the pawl is reciprocated longitudinally. The pawl is constructed for locking the units wheel in determined position relative to the pawl when the pawl is stationary, constituting a combined actuating and locking means adapted to operate and lock the units wheel. The ratchet 8 of the units wheel has reversely-arranged teeth 10 and 11 extending in parallel planes, as clearly illustrated in Figs. 3 and 5, and the reciprocatory pawl has an actuating and a locking detent 12 and 13, respectively, arranged in parallel planes to engage said reversely-arranged teeth, respectively, said detents 12 and 13 being spaced apart so that after the actuating detent has, by engagement with its ratchet tooth 10, advanced the ratchet, and has been returned to initial position, the locking detent will stand in the path of its ratchet tooth 11 to prevent the ratchet from being again advanced until the pawl is again reciprocated. A spring-actuated pawl 14 constitutes yielding means to prevent back movement of the ratchet. Stops 15 and 16 on the pawl 7 engage the frame 17 for limiting the reciprocatory movement of the pawl.

18 designates spacing plates fastened to the frame 17, and each provided with a hole 19 to fit the tube 1, and a foot 20 which may be fastened by rivets or other means 21 to the frame-plate 17.

By the arrangement shown, the counters, including the series of wheels 3, 3^1 , 3^2 , may be readily operated by reciprocating the pawl 7 and it is apparent that the counter wheels may be applied in a very compact form. It is to be understood that any number of intermediate wheels corresponding to 3^1 may be interposed between the initial or units wheel 3 which has the ratchet, and the final wheel 3^2 which has no ratchet and has no means for further transmitting motion.

The means for transmitting motion from one counter wheel as the units or an intermediate wheel, may consist in the novel means illustrated in Figs. 3, 4, 5, 7, 8 and 9, in which the annular wheels 3 and 3^1 are each provided with an annular internal track 22, and with a detent 23 at one side of the track, and with a recess 24 in the track.

25 is a transmitting wheel having teeth 26 to engage the detent, and a polygonal stop 27 to ride on the track 22, and having angles 28 alternating with the teeth 26 of the transmitting wheel, and arranged to enter the

recess 24 when the detent and the tooth engage each other.

3^1 is an internal gear wheel provided with internal cogs 29, track 22, detent 23, and recess 24, the same being arranged coaxial with the first or units wheel 3.

The transmitting wheel 25 has a pinion 30 meshing with the internal gear 29, and the teeth 26 engage the detent 23, while the angles 28 of the polygonal stop are arranged to enter the recess 24 when the transmitting wheel shifts at each revolution of the first wheel. The cogs 30 of the transmitting wheel engage the wheel which is driven thereby, either the tens, hundreds or any successive wheel of the counter after the first wheel, which first wheel is driven by some suitable means, as the pawl and ratchet shown. The transmitting wheels are preferably each provided with an extended hub 34.

35 designates a frame hinged by a hinge 36 inside the chambered support or tube 1, and the same carries the means just described, for communicating motion between the counter wheels. 37 designates means for adjusting said frame and locking the same in position to hold the motion-communicating means in operative position. The same may be provided with a key stem 38 by which the adjusting means 37 may be brought into and out of its locking position.

39 is a spring catch, the tooth of which engages the adjusting device 37 to hold it in place until the catch is manually released.

The frame 35 is in the form of a rectangular trough provided with cross partitions 40 between which the motion-transmitting means 4 may be mounted, the hubs 34 of the transmitting wheels engaging the partitions 40, thereby holding the transmitting wheels in place, 41 being a shaft mounted in perforations 42 of the partitions 40 for supporting the transmitting wheels 30.

It will be noted from Figs. 3, 4, 5 and 9, that the teeth 26 and the angles 28 alternate with each other, and lie side by side in parallel planes so that the angles 28 may move freely into the recess, and the teeth 26 may freely engage the detent 23 at the same time the wheels 30 lying in another plane, engage the internal cogs 29.

In practical use, to adjust the wheels to zero, or to any other indication, the operator with a suitable key, not shown, will turn the shaft 38, thus withdrawing the lock 37 from the frame 35, thereby allowing said frame to be swung on its hinges, thus to release all of the counters in the chambered support 1; thereupon, the counter wheels may readily be adjusted to zero, or to the desired position. Then the shaft 38 will be turned to again project the mechanism into position to engage the several annular wheels 3, 3^1 , 3^2 , of the counter. Then when

it is desired to operate the counter, the push
 pawls 7, or any of them, will be recipro-
 cated, thus advancing the first counter wheel
 one step at each reciprocation. When the
 5 first wheel 3 of the train has made one com-
 plete round, the detent 23 will act on a
 tooth 26, and the angle 28 will enter the re-
 cess, thus advancing the second wheel of the
 train one step. The proportions are re-
 10 quired to be such that when the first wheel 3
 has made ten revolutions, the second wheel
 3¹ will have made one revolution, and so on
 in the usual manner of counters. The stop
 27 engaging the track prevents any rotation
 15 of the transmitting wheels except when a
 tooth 26 thereof has been engaged by detent
 23 and brought the recess into position to re-
 ceive the angle of the stop as the wheel
 makes a step in its rotation.

20 The counter wheels 3, 3¹, 3², are prefer-
 ably provided with raised type 43 for the
 purpose of printing the result of the election
 or any other item of enumeration.

44 designates a collar on the tubular sup-
 25 port 1 to hold the counter wheels in position.

Preferably, the edges of the polygonal
 stop are curved to fit the arc of the annular
 track 22 which the stop rides upon, thus in-
 suring smooth and true action.

30 What I claim is:—

1. A tube, a series of counter wheels rota-
 tably mounted thereon, external means for
 actuating the unit wheels of each series,
 means for communicating motion from one
 35 to another of the wheels of each series, and
 plates interposed between the series of wheels
 and serving as supports for the tube and ex-
 ternal counter-actuating means.

2. A tube, annular counter wheels rotatably
 mounted thereon, a frame hinged inside the 40
 tube, means carried by said frame for com-
 municating motion between said counter
 wheels, and means for adjusting said frame
 and locking the same in position to hold the
 motion - communicating means in operative 45
 position.

3. A counter composed of a series of
 wheels and provided with external means
 for locking the units counter wheel thereof,
 and internal means for locking other counter 50
 wheels.

4. A tube, annular counter wheels rotatably
 mounted thereon, a frame hinged inside the
 tube, means carried by said frame for com-
 municating motion between said counter 55
 wheels, and means for moving said frame
 into position to hold the motion-communi-
 cating means in operative position.

5. A counter provided with a units wheel
 having two series of teeth extending there- 60
 through in different planes, and a combined
 actuating and locking pawl having two de-
 tents provided from one side of the pawl in
 different planes, one detent being adapted to
 engage one of said series of teeth to actuate 65
 the wheel, and the other detent being adapt-
 ed to engage the other series of teeth to lock
 the wheel.

In testimony whereof, I have hereunto set
 my hand at Los Angeles, California this 70
 25th day of September 1905.

DAVID L. NEWCOMB.

In presence of—

JAMES R. TOWNSEND,
 JULIA TOWNSEND.