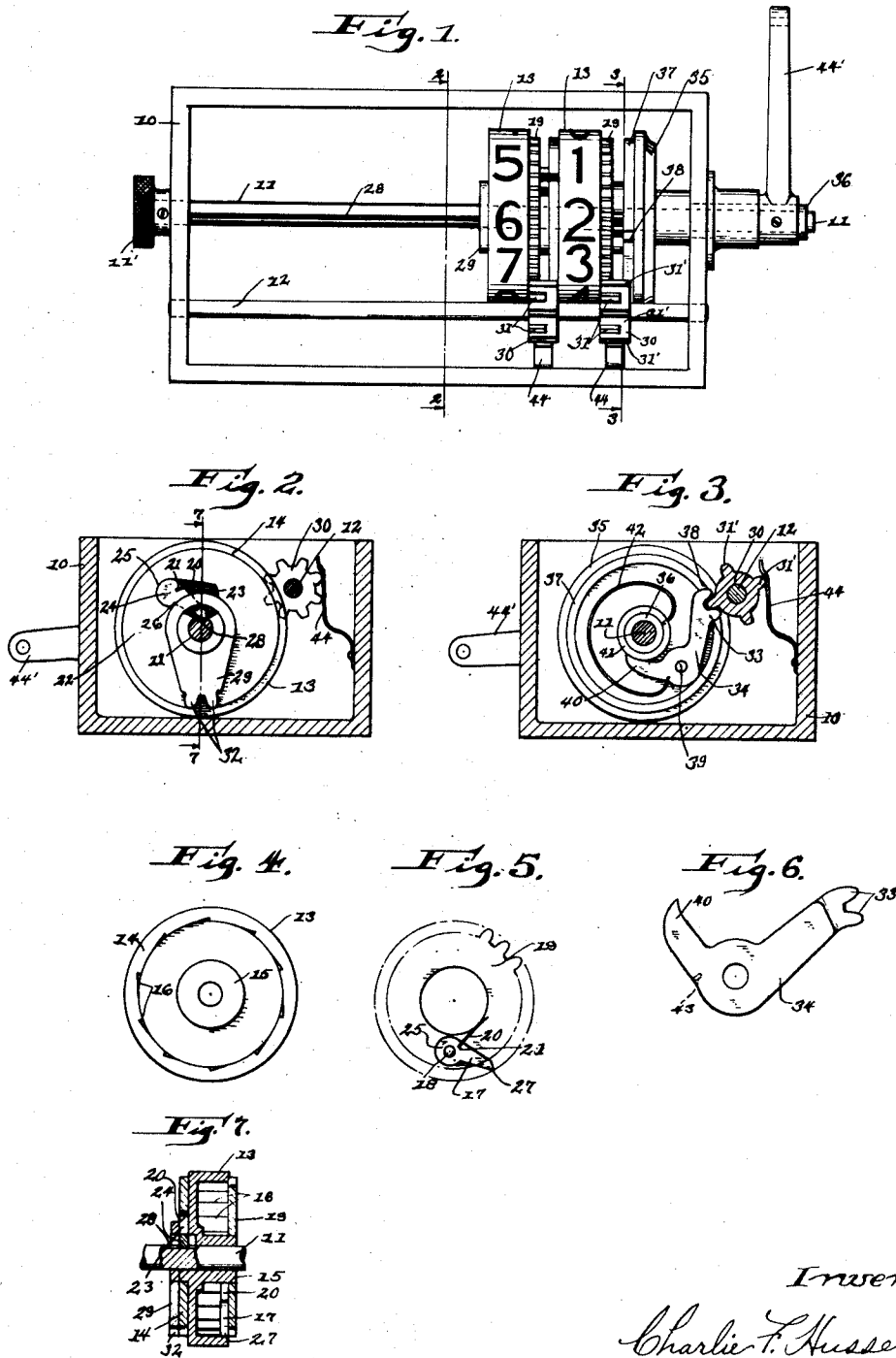


C. F. HUSSEY.
COUNTER.
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UNITED STATES PATENT OFFICE.

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COUNTER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLIE F. HUSSEY, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Counters, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The present invention relates to certain new and useful improvements in counters of that type adapted to register a series of operations or for counting different commodities and their weight and for numerous other purposes where a count is necessary.

One object of the present invention is to provide a counter mechanism which will be positive in its action and which is so constructed as to facilitate its production in quantities at a minimum cost.

Another object of this invention is to provide a counter so constructed that the various parts thereof may be readily interchangeable.

A further object is to provide a concealed pawl for engagement with an elongated groove in a setting shaft, said pawl being interchangeable with a pawl carried by the counter wheel actuating gear and engaging the internal ratchet teeth of the counter wheel.

A still further object of the present invention is to provide an actuating member for the counter wheels including a pivoted pawl having a double tooth end for engaging a counter wheel gear operating pinion whereby the positive operation of the same is obtained.

A still further object of this invention is to provide a spring finger or pawl engageable with the counter wheel gear operating pinions to prevent retrograde movement thereof.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangement of parts, substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawing I have illustrated one complete example of the physical

embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a top plan view of a counter mechanism embodying my invention, the cover of the casing inclosing the same being removed and but two of the counter wheels being illustrated.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a side plan view of one of the counter wheels with its operating gear wheel detached.

Fig. 5 is a plan view of the inner side of one counter wheel operating gear wheels.

Fig. 6 is an enlarged detail view of the novel form of double tooth counter gear wheel operating pinion pawl which I employ, and

Fig. 7 is a sectional view of one of the counter wheels taken on the line 7—7 of Fig. 2.

Referring now more particularly to the accompanying drawing, my counter comprises generally a closure or casing in which is journaled a counter wheel supporting shaft 11 and a counter shaft 12. A plurality of counter wheels 13 are journaled on the shaft 11 and capable of free movement in one direction with respect thereto and are adapted to be selectively rotated by means to be described to indicate the count.

Each counter wheel includes a casing 14 having a hub 15 said casing being provided with a plurality of internal ratchet teeth 16 adapted to be engaged by a pawl 17 pivoted as at 18 to a gear wheel 19 loosely journaled on the hub 15. The pawl 17 is urged to engagement with the ratchet teeth 16 by means of a spring 20 having one end secured within a recess 21 in said pawl and its other end impinging or bearing against the hub 15, see Fig. 5.

The outer face 22 of each counter wheel has a recess 23 formed therein communicating with the bore or hub 15 through which the shaft 11 passes and said recess has one end 24 thereof curved to conform with the curvature of the inner end 25 of a pawl 26 having its other end 27 normally urged to the bore of said hub to engage with an elongated key way slot or groove 28 in the shaft

11. The pawl 26 is identical with the pawl 17 and has its end 27 urged into the bore of the hub by the spring 20. In the present instance the pawl 26 employs the curvature 5 24 of the recess 23 and its correspondingly curved end 25 to provide the pivot, whereas the pawl when used on the gear wheel 19 employs a pivot 18.

The pawl 26 is retained within the recess 10 23 by means of a segmental gear member 29 having its inner end enlarged and apertured to engage over the hub 15 and thus partly cover the recess 23. The segmental gear 29 is riveted or otherwise secured 15 in position and thus when the pawl 26 is once in position, its dislodgment therefrom is prevented.

The counterwheels 13 are actuated by means of a gear pinion 30 loosely journaled 20 on the shaft 12 and having a section thereof in mesh with the adjacent counter wheel gear 19. As best shown in Fig. 1 every other tooth 31 of each gear pinion is cut away so that the section of the pinion not meshing 25 with the gear wheel 19 will be of substantially one-half the number of teeth of the section engaging the gear wheel and this section is adapted to be either engaged by the teeth 32 of the adjacent segmental gear 30 19 upon each complete rotation of the counter wheel which carries the same or by the double tooth end 33 of a bore member 34 carried by an actuating member 35 as is the case with the gear pinion 30 in mesh 35 with the gear wheel of the first of a series of counter wheels.

The actuating member 35 is in the form of a disk and is carried by a sleeve or bushing 36 loosely journaled upon the shaft 11 where- 40 by the same may be oscillated or rotated independent of the counter wheels and said actuating member has an annular rib or flange 37 formed on its inner face and having its circumference substantially the same 45 as the circumference of the gear wheels 19. The rim 37 has a recess 38 therein through which the end 33 of the pawl 34 projects so that said tooth end of the pawl when it passes one of the extended teeth 31' of the 50 first or adjacent gear pinions the same will cause the pinion gear to rotate one step or a distance equal to two of the teeth of the gear wheel 19 and thus advance the next figure of the first counter wheel.

55 The pawl 34 is pivotally secured to the member 35 as at 39 and said pawl is in the shape of a bell crank lever whereby its other end 40 serves as a limit of movement thereof in one direction by abutting the hub 41 of said actuating member. A spring 42, somewhat U-shaped and having its ends turned inwardly, serves to resiliently urge the end 33 of said pawl outwardly of the aperture 38 and said spring has one of its inwardly 65 curved ends engaged in a recess 43 of the

pawl 34 and its other end engaged in a recess of the hub 41.

From the foregoing description it will be at once apparent that when the member 35 is oscillated or rotated by an operating lever 70 44' which is connected to suitable mechanism (not shown) that every time the aperture 38 passes the adjacent gear pinion 30 in a counter clock-wise direction with reference to Fig. 3 the gear pinion will be ad- 75 vanced the distance between adjacent extended teeth and that when the same passes the gear pinion in a clock-wise direction with reference to Fig. 3 the pawl will be moved against the action of its spring 42 80 and the position of the gear pinion will not be changed.

As the end 33 of the pawl 34 is on the opposite side of an imaginary line drawn through the pivot 39 from the end 40, an 85 engagement of said end 33 with the adjacent gear 30, when the member 35 is moved in a counter clockwise direction, Fig. 3, will tend to move it outwardly, which movement is checked by the end 40 abutting the hub 90 41. When the member 35 is rotated in a clockwise direction, Fig. 3, the force exerted on the end 30 is inwardly causing a movement of the end 40 away from the hub 41, permitting the end 33 to ratchet over the 95 teeth of the adjacent gear 30.

The other gear pinions 30 are operated in a similar manner upon each complete rotation of the adjacent counter wheel by means of the double tooth segmental gear 29. In 100 order to prevent retrograde movement of the gear pinions 30 I provide a spring pawl or check 44 which engages between adjacent teeth of the pinions as depicted in Figs. 1 and 3 and thus makes the movements thereof 105 positive.

When it is desired to set the counters the shaft 11 is rotated by means of its knurled setting head 11' in a counter clock-wise direction with reference to Fig. 2 which action 110 will engage the various pawls 26 with the groove 28 and move the counter wheels to the position desired; in such a movement the pawls 17 ratchet over the ratchet teeth 16 and the gear wheels 19 and gear pinions 115 30 remain stationary.

What I claim for my invention is:

1. A device of the class described comprising a rotatably mounted counter-wheel, a gear wheel pinion for rotating the coun- 120 ter-wheel step by step, an actuating member having an aperture in its periphery, the peripheral portions of the gear wheel between the teeth thereof being engageable with the outer circumferential face of said 125 member, whereby rotation of said gear wheel is prevented except when said aperture is in register with the adjacent gear wheel tooth, a pawl having a toothed end in register with said aperture and adapted 130

to successively mesh with the teeth of the gear pinion, and means for operating said actuating member.

2. A device of the class described comprising a rotatably mounted counter-wheel, a gear wheel fixed to the counter-wheel, a gear wheel pinion in mesh with the gear wheel and having a portion of every other tooth not engaged with the gear wheel cut away whereby to provide a section thereof having less teeth than the section thereof in mesh with said gear wheel, an actuating member having an annular rib and in axial alinement with and of substantially the same diameter as the gear wheel and having an aperture in its periphery, the portions of the section of the pinion having the lesser number of teeth between said teeth being engageable with the outer circumference of said annular rib whereby the normal rotation of the gear pinion is prevented, a pawl pivotally secured to said actuating member and concealed by said rib, a toothed gear wheel pinion engaging portion formed on the outer end of the pawl and normally projecting through the aperture to mesh with said gear wheel pinion, means normally urging said outer toothed end to engagement with the said gear wheel pinion, and means for operating said actuating member whereby a step by step rotation is imparted to the counter-wheel.

3. A device of the class described comprising a rotatably mounted counter-wheel, a gear wheel carried thereby, a gear wheel pinion for rotating the counter-wheel step by step and in mesh with said gear wheel, an actuating member in axial alinement with said counter-wheel, a bell crank pawl pivotally secured to said actuating member, a gear wheel pinion engaging portion

formed on one end of said pawl and adapted to engage with said gear wheel pinion, the other end of said pawl limiting the movement of the gear wheel pinion engaging portion outwardly from the center of said actuating member, spring means normally urging the gear wheel pinion engaging portion of said pawl to engagement with the gear wheel pinion, and means for operating said actuating member whereby a step by step rotation is imparted to the counter-wheel.

4. A device of the class described comprising a rotatably mounted counter-wheel, a gear wheel pinion for rotating the counter-wheel step by step, an actuating member having an annular rib formed thereon and provided with an aperture therein, said gear wheel pinion having its portions between its teeth successively engageable with the outer periphery of the rib of said member, whereby rotation of said pinion is prevented unless the next tooth thereof is in alinement with said aperture, a bell crank pawl pivotally secured to said actuating member and concealed by said annular rib, a gear wheel pinion engaging portion formed on one end of the pawl and normally projecting through the aperture to engage with said gear wheel pinion, the other end of said pawl limiting the movement of the gear wheel pinion engaging member outwardly of the aperture, spring means normally urging said gear wheel pinion engaging portion into engagement with the gear wheel pinion, and means for operating said actuating member whereby a step by step rotation is imparted to the counter-wheel.

In testimony whereof I affix my signature.

CHARLIE F. HUSSEY.