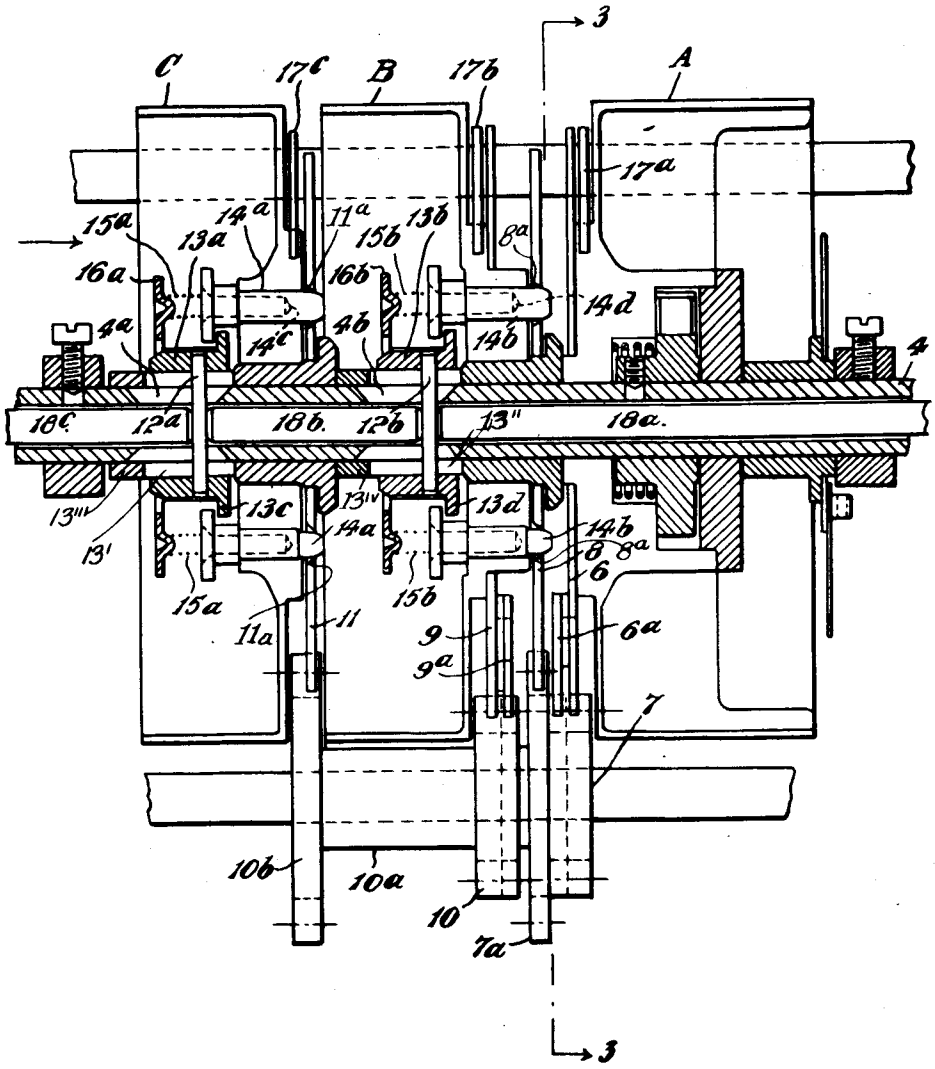
June 13, 1939. J. FRASER 2,161,919

IMPROVEMENTS RELATING TO REGISTERING MECHANISMS

Filed June 26, 1937 3 Sheets-Sheet 1

Fig. 1.



Inventor:
John Fraser.
Per: Geo. S. Folkes.
Attorney.

June 13, 1939. J. FRASER 2,161,919

IMPROVEMENTS RELATING TO REGISTERING MECHANISMS

Filed June 26, 1937 3 Sheets-Sheet 2

Fig. 1a.

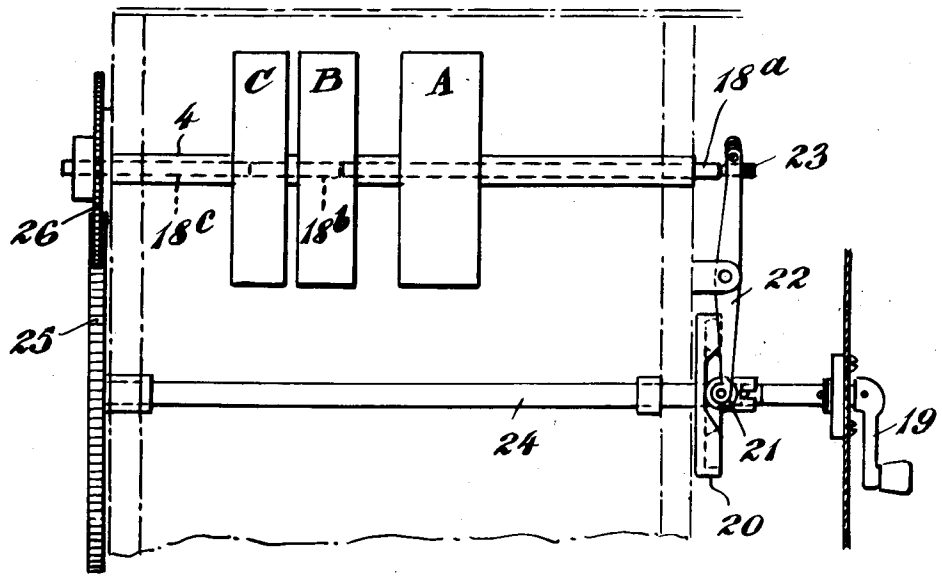
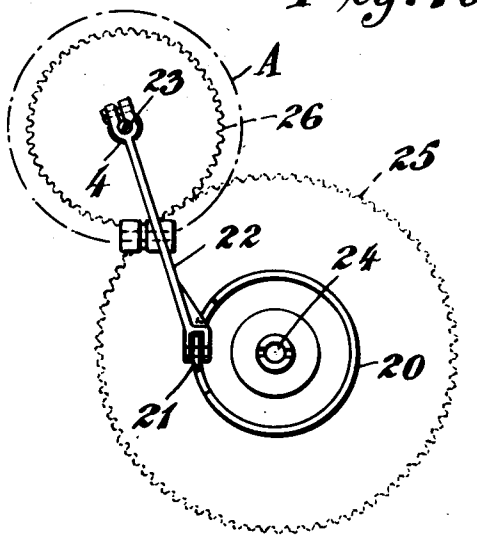


Fig. 1b.



Inventor:- John Fraser.
Per:- George E. Folkes Attorney.

June 13, 1939. J. FRASER 2,161,919

IMPROVEMENTS RELATING TO REGISTERING MECHANISMS

Filed June 26, 1937 3 Sheets-Sheet 3

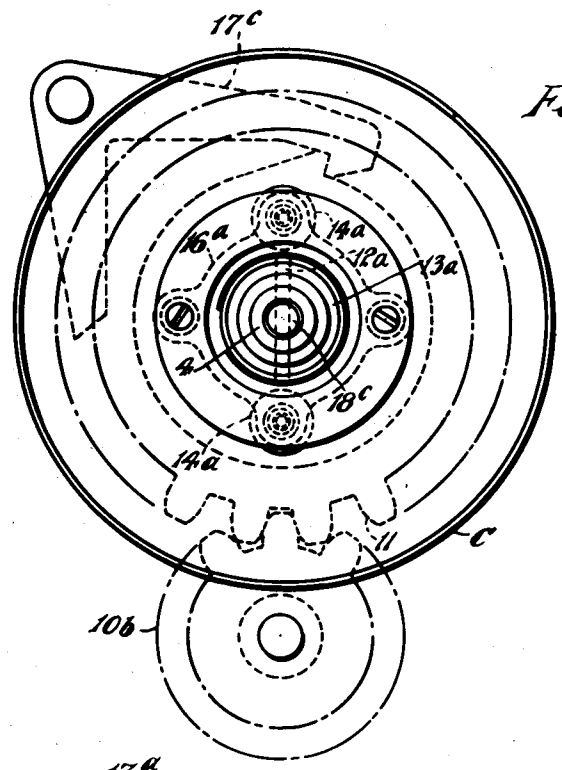


Fig. 2.

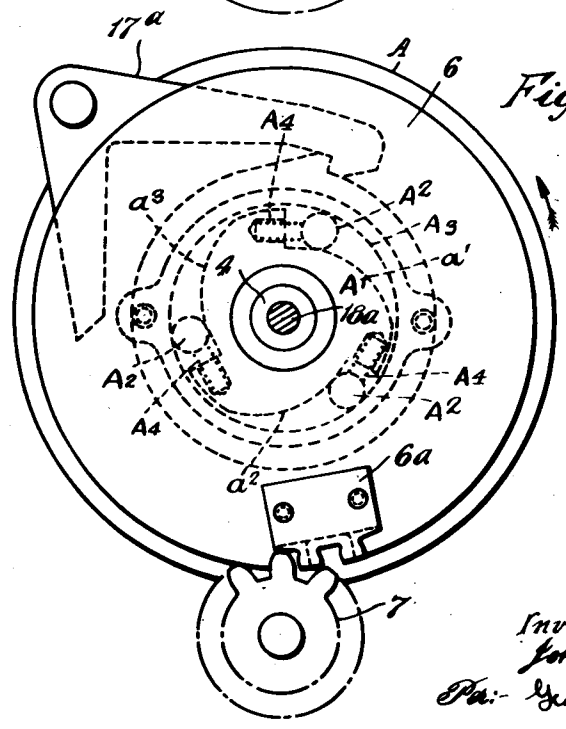


Fig. 3.

Inventor:-
John Fraser.
Pa:- Geo. L. Lobb.
Attorney.

Patented June 13, 1939 2,161,919

UNITED STATES PATENT OFFICE

2,161,919

IMPROVEMENTS RELATING TO REGISTERING MECHANISMS

John Fraser, London, England, assignor to Avery-Hardoll Limited, London, England

Application June 26, 1937, Serial No. 150,635
In Great Britain July 10, 1936

5 Claims. (Cl. 235—144)

This invention has reference to improvements relating to registering mechanism and is concerned more particularly with registering mechanism of the kind in which a plurality of indicating drums are employed which are driven from one another by interrupted toothed gearing.

The present invention has for its object the provision of an improved means which enables the several drums of a mechanism as aforesaid to be readily zeroised as and when required by a backward movement of the drums.

A convenient embodiment of the invention will now be described with particular reference to the accompanying drawings which illustrate the invention in its application to a price registering mechanism especially intended for use with liquid measuring and dispensing apparatus for liquid fuels for internal combustion engines, the said apparatus being of the flow meter type.

In the drawings:

Figure 1 is a longitudinal vertical section of sufficient of the improved price indicating mechanism as is necessary to an understanding of the invention.

Figure 1[a] is a diagrammatic representation of the indicating and zeroising mechanism, and

Figure 1[b] is a fragmentary view of part of the zeroising mechanism illustrated in Figure 1[a].

Figure 2 is an end view of the mechanism illustrated in Figure 1 looking in the direction of the arrow, and

Figure 3 is a transverse section taken on the plane indicated by the line 3—3 Figure 1 looking in the direction of the arrows to said line.

According to the said embodiment of the invention the price registering mechanism comprises three drums A, B and C, one A for pence, one B for shillings and the other C for tens of shillings. Each of these drums A, B and C, is freely mounted on a rotatable tubular shaft 4 which is driven from he flow meter in the manner disclosed in our British complete specification No. 465,347. The pence drum A has incorporated therewith a one-way driving device for driving the said drum A from the tubular shaft 4, said one way driving device incorporating a three armed cam disc A^1 fixed on the tubular shaft 4 and rollers A^2 which are inserted between the wall of a rim A^3 on the drum A and the cam surfaces a^1, a^2, a^3 spring A^4 being provided which tend to wedge the rollers A^2 between the cam surfaces a^1, a^2, a^3 and the adjacent wall of the rim A^3. Thus the drum A is driven positively by the shaft 4 when the said shaft 4 is rotated in a counterclockwise direction as seen in Figure 3 and which is the direction of rotation during a registering operation, said drum A being free of the shaft 4 when this is rotated in a clockwise direction, see Figure 3, except for the drag which is referred to hereinafter and which is made use of for returning the drum A to zero. The shillings and tens of shillings drums B and C are driven by interrupted toothed gearing consisting of the gear train 6, 6[a], 7, 7[a], 8, 9, 9[a], 10, 10[a], 10[b], 11, the interrupted gears of the train being in the form of toothed plates 6[a] and 9[a] which are secured to their respective complementary discs 6 and 9 which in turn are secured to their respective drums A and B. The portions of the tubular shaft 4 which are enveloped by the drums B and C are provided with elongated slots 4[a] 4[b] which extend diametrically through the shaft 4 and through the slots 4[a], 4[b] and corresponding slots 13^{I} 13^{II} in sleeves 13^{III}, 13^{IV} mounted on the shaft 4 are passed pins 12[a], 12[b] of greater length than the external diameter of the tubular shaft 4 the projecting ends of the pins 12[a], 12[b] being disposed within recesses in collars 13[a], 13[b] which are slidably mounted on the sleeves 13^{III} and 13^{IV}. The drums B and C have also associated therewith hubs each of which is provided with a pair of oppositely disposed holes within which are slidably mounted the stems of headed pins 14[a], 14[b] respectively. These pins 14[a], 14[b] co-operate with springs 15[a], 15[b] which are interposed between annular abutments 16[a], 16[b] screwed to the drums B and C (see Figure 2) and the closed ends of holes 14[c], 14[d] bored in the heads of the pins 14[a], 14[b] and which normally tend to cause the ends of the shanks of the pins 14[a], 14[b] to engage within holes 8[a] and 11[a] respectively formed in the driving pinions 8 and 11 for the respective drums B and C. The walls of the holes 8[a], 11[a] are chamfered so as to facilitate engagement by the pins 14[a], 14[b]. The heads of the pins 14[a], 14[b] co-operate with flanges 13[c], 13[d] on the slidable collars 13[a], 13[b].

The drums A, B and C co-operate in known manner with pivotal stops 17[a], 17[b], 17[c] which position the drums A, B and C in the zero position when zeroising has been performed.

Disposed within the tubular shaft 4 is a plurality of lengths of rod 18[a], 18[b], 18[c] the ends whereof which are disposed within the tubular shaft 4 abutting the pins 12[a], 12[b] associated to the aforesaid collars 13[a], 13[b], said rods being free to be moved longitudinally within the bore

of the tubular shaft 4 when it is required to put the drums in a condition for zeroising.

As illustrated in Figures 1^a and 1^b the longitudinal movement of the rods 18^a, 18^b, 18^c is effected by the rotation of a handle 19 which in turn effects the rotation of a cam track 20 which co-operates with a roller 21 carried at the lower end of a lever 22 of the first order of levers, the upper end of which is provided with a pin 23 which abuts the outermost end of the length of rod 18^a. This handle 19 for every zeroising operation is turned through one complete revolution irrespective of the quantity measured at the preceding delivery. The rotation of the cam track 20 involves the rotation of the zeroising shaft 24 which through the pinions 25 and 26 imparts the requisite zeroising movement to the shaft 4.

Normally the one way driving device hereinbefore described effects the driving of the drum A which ultimately transmits movement to the other drums through the interrupted toothed gearing.

When a zeroising operation is to be performed the rods 18^a, 18^b, 18^c are displaced longitudinally within the bore of the shaft 4 and thereby caused to move the sliding collars 13^a, 13^b along the shaft 4 in the direction away from the drum A. This movement of the sliding collars 13^a, 13^b causes the flanges 13^c, 13^d thereof to abut the heads of the pins 14^a, 14^b and to withdraw the ends of the pins 14^a, 14^b from the holes 8^a, 11^a in their respective associated driving pinions 8 and 11 against the resistance of the springs 15^a, 15^b. Upon the movement of the tubular shaft 4 in the direction of zeroising, i. e., clockwise as viewed in Figure 2, there is sufficient frictional drag between the cam surfaces a^1, a^2, a^3, the rollers A^2 and the wall of the rim A^3, to carry the drum A to the zero position where it is retained by the stop 17^a, meanwhile the friction between the flanges 13^c, 13^d on the collars 13^a, 13^b and the heads of the pins 14^a, 14^b carries the drums B and C with the tubular shaft 4 to the zero position.

When the zero position is attained the drums A, B and C are held by the pivotal stops 17^a, 17^b, 17^c in the usual manner.

Upon the release of the rods 18^a, 18^b, 18^c the collars 13^a, 13^b are freed and allow the pins 14^a, 14^b to re-engage within the registering holes 8^a, 11^a in the driving members 8 and 11 thus leaving the mechanism in readiness for a succeeding registering operation.

Where registering drums are employed both at the front and rear a common means can be employed for operating the push rods 18^a, 18^b, 18^c simultaneously.

What I claim is:

1. A registering mechanism incorporating a plurality of drums, interrupted toothed gearing and complementary driving gears for connecting the drums in driving relationship whereby the drum of a higher denomination is driven from the preceding drum of lower denomination, a displaceable means for connecting the drums to the respective driving gears, and means for introducing frictional resistance when the aforesaid displaceable means has been actuated to disconnect the drums from the respective driving gears thereby placing the drums in a condition for being returned to the zero position.

2. A registering mechanism incorporating a rotatable driving shaft, indicating drums rotatably mounted on said shaft, an interrupted toothed gearing for driving a drum of higher denomination from the preceding drum of lower denomination, a one way driving connection between the drum of lowest denomination and the aforesaid shaft, complementary holes and pins for connecting a drum of one of the drums of higher denomination to its associated driving gear, spring means tending to maintain the engagement between the said pins and holes, and means for effecting a disengagement between the pins and holes when it is desired to put the drums in a condition for zeroizing whereby a frictional engagement between the drums and the driving shaft is created which permits the drums to be zeroised when the requisite motion is imparted to the said shaft.

3. A registering mechanism incorporating a rotatable tubular driving shaft, drums rotatably mounted on said tubular driving shaft, an interrupted toothed gearing for driving a drum of higher denomination from the preceding drum of lower denomination, a one way driving connection between the drum of lowest denomination and the aforesaid shaft, complementary holes and pins for connecting a drum of one of the drums of higher denomination to its associated driving gear, spring means tending to maintain the engagement between the said pins and holes, collars mounted on the tubular shaft and capable of a longitudinal displacement thereon whereby the said collars can be moved to disengage the pins from the holes, and means disposed within the tubular shaft for effecting the longitudinal displacement of the collars when it is desired to put the drums in a condition for zeroizing, the disengagement of the pins by the collars being resisted by the spring means whereby a frictional engagement between the drums and the tubular driving shaft is created which permits the drums to be zeroised when the zeroising movement is imparted to the said shaft.

4. A registering mechanism, according to claim 2, wherein each drum is provided with a relatively fixed abutment for the outer ends of the spring means and wherein the other ends of the spring means abut the pins and tend to move the pins into engagement with the complementary holes.

5. A registering mechanism, according to claim 2, wherein the one way driving means for the drum of lowest denomination introduces frictional resistance when an attempt is made to drive it counter to its driving direction thereby providing for the transmission of a zeroising movement to the said drum when the zeroising motion is imparted to the shaft.

JOHN FRASER.