Aug. 5, 1941. C. S. HAZARD 2,251,792

RESETTING MECHANISM FOR REGISTERS

Filed May 11, 1938 3 Sheets-Sheet 1

Fig. 1

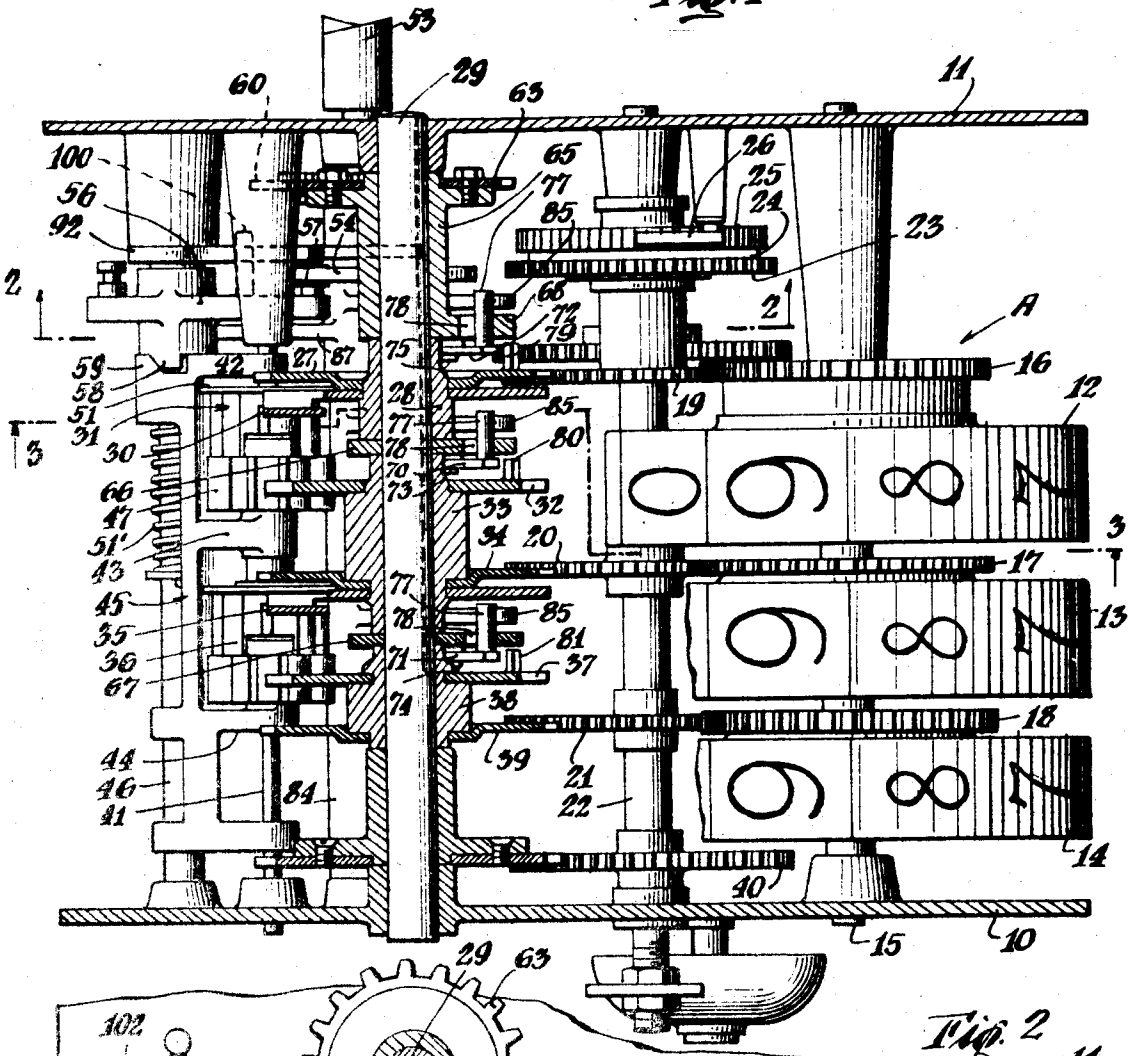
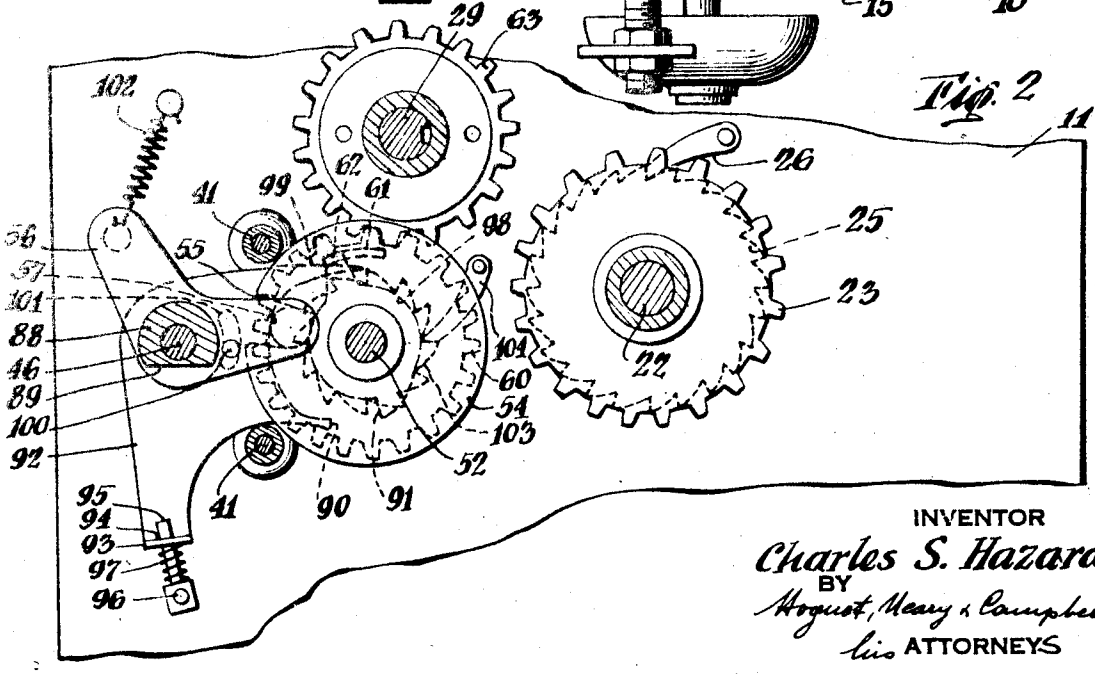


Fig. 2



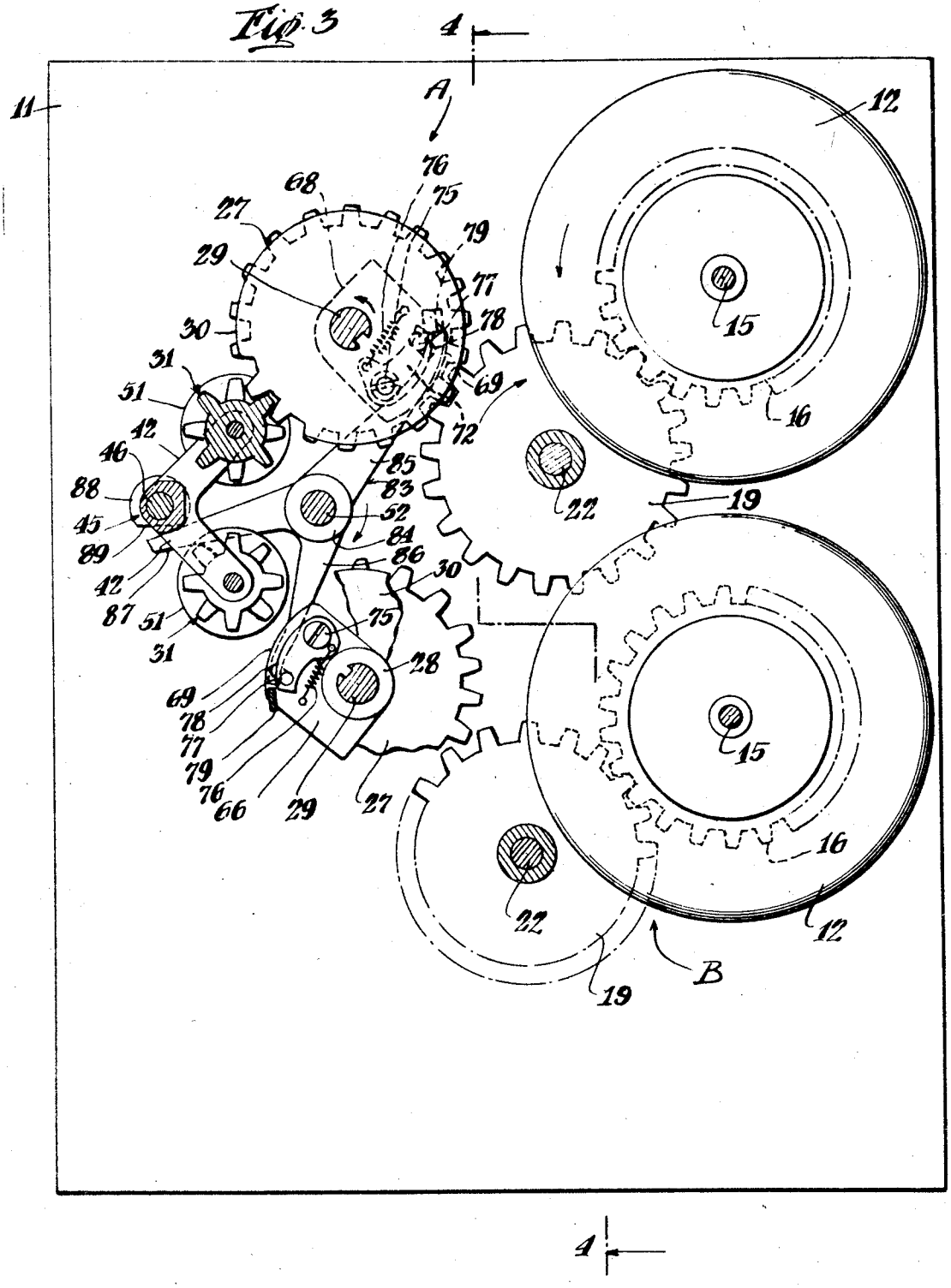
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RESETTING MECHANISM FOR REGISTERS

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Fig. 3



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RESETTING MECHANISM FOR REGISTERS

Filed May 11, 1938 3 Sheets-Sheet 3

Fig. 4

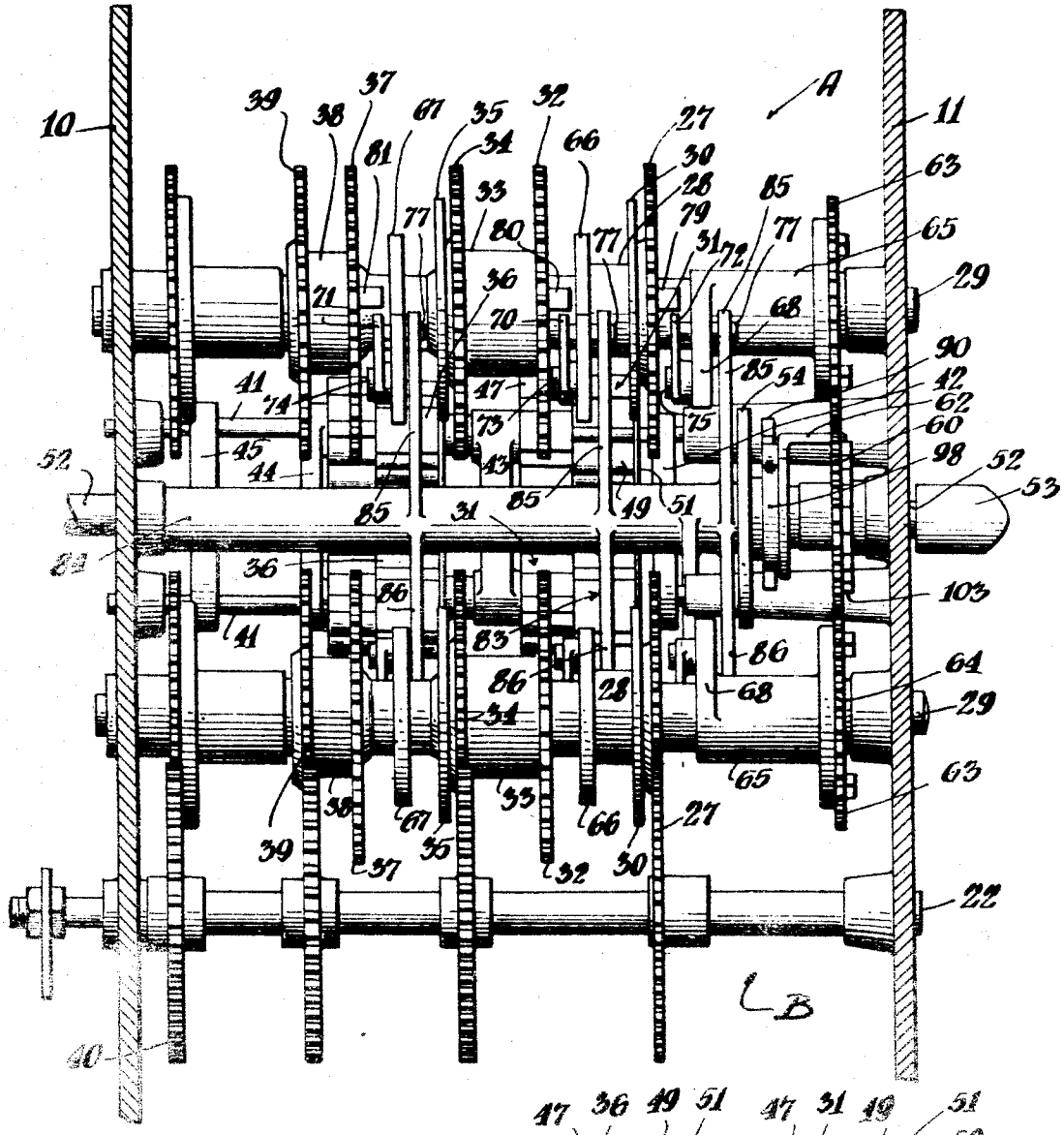
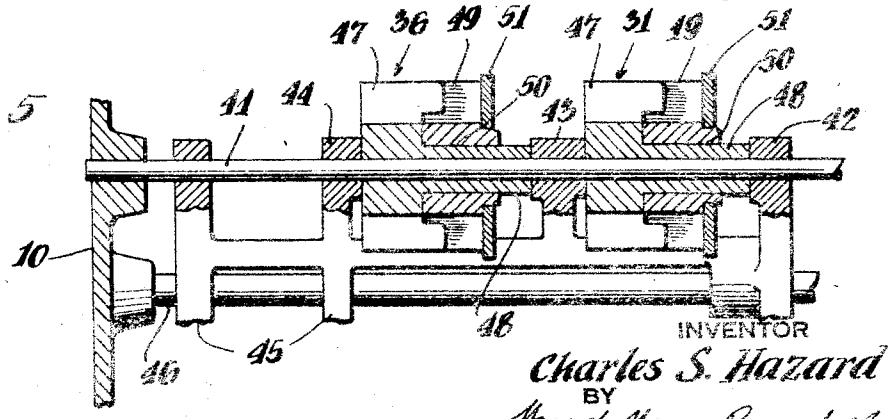


Fig. 5



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2,251,792

RESETTING MECHANISM FOR REGISTERS

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Application May 11, 1938, Serial No. 207,216

11 Claims. (Cl. 235—144)

This invention relates to registers and relates particularly to resetting mechanisms associated with and operative to reset one or more associated registers.

Many types of registers are commonly in use at the present time, such as, for example, the pointer and dial and the counting wheel types. The latter type of register is characterized generally by the inclusion of a plurality of drums or wheels which are successively actuated by means of transfer mechanisms for producing a visual indication of the operation of an associated apparatus. Transfer mechanisms for interconnecting successive counting wheels usually consist of a mutilated gear connected to one of the counting wheels, a full-toothed gear connected to the next higher value wheel and a transfer pinion which acts together with the full-toothed and mutilated gear as a Geneva transmission, whereby ten revolutions of a lower value wheel will cause the next higher value wheel to rotate step by step through one complete revolution.

In order to allow these devices to be reset it is usually necessary to provide a plurality of friction clutches or other releasable connections between the counting wheels in order that they may be returned simultaneously to zero position by means of a series of interconnected pick-up pawls. The friction clutches, while satisfactory for coupling the various elements of the device under ordinary service conditions, are sometimes undesirable for the reason that repeated resetting of the mechanism wears out these clutches and ultimately results in inaccurate operation of the registering mechanism.

The pick-up pawls are adapted to reset the counting wheels in the direction they normally turn during a registering operation. This construction has several disadvantages. The first of these is that it is possible by manipulating the resetting mechanism to advance the counting wheels after termination of a registering operation and thus obtain a higher and inaccurate indication on the register for the reason that all of the drums are advanced through "9" to "0" position. When such registers are used, for example, in dispensing pumps, of the cost registering type, it is possible for the operator of the pump to partially reset the registers, thereby advancing the counting wheels and obtaining a higher cost and volume registration than those corresponding to the actual amount of liquid that has been dispensed. In addition to this improper operation during resetting it has been found that it is necessary oftentimes to rotate the resetting mechanism two or more revolutions, in order to bring all of the indicators back to zero. Also, to assure proper return to zero, it has been necessary to provide as many stop mechanisms as there are counting wheels in the register.

These difficulties could be overcome by providing a register which is devoid of friction clutches and which at the same time is returned to zero indication by rotating the counting wheels in a direction counter to the normal direction of movement of the wheels during a registering operation. Likewise it would be highly desirable to provide a registering mechanism having a resetting means associated therewith for returning the counting wheels to zero position in not substantially more than one complete rotation of the resetting mechanism.

An object of the invention, therefore, is to provide a register which is devoid of friction clutches and which may be reset by such rotation of the indicating means in a direction counter to the normal direction of operation of the indicating means.

Another object of this invention is to provide a register which is capable of being reset in about one revolution of the indicating means in a direction counter to the normal direction of operation of the indicating means.

Another object of the invention is to provide a plurality of registers which may be reset by about one complete revolution of a resetting means which is common to all of the registers.

A further object of the invention is to provide a mechanism including a plurality of registers which are readily reset to zero indication by a resetting mechanism common to the registers and which releases the indicating members for independent and simultaneous rotation to zero position.

Other objects will become apparent from the disclosure of a typical form of the invention hereinafter.

Registers made in accordance with the present invention are characterized by the provision of a main shaft which is adapted to be rotated only during a resetting operation and upon which are rotatably mounted the mechanisms for producing an indication of the operation of the meter or other device with which the register is associated. The main shaft may be provided with suitable resetting elements which are held in an inoperative position during normal operation of the register but which are adapted to be

brought into position to engage elements associated with the indicating or counting wheels of the register and return them to zero position upon actuation of a resetting crank or other resetting mechanism.

Preferably the transfer mechanism by means of which the operation of one counting wheel is transferred to the next higher wheel is such as to render unnecessary the inclusion of friction clutches for allowing simultaneous movement of the indicating numbers of the register. For example, the transfer gears may be of the split type, whereby one portion of the gear may be shifted relatively to another portion to unclutch them and allow the mutilated and full-toothed gears to rotate independently.

The resetting mechanism may consist of a shaft which is operated only during a resetting operation and which is connected by suitable gearing to the main shaft on which the register gears and pinions are supported. The resetting shaft may have associated therewith a suitable mechanism for shifting and releasing the transfer pinions to allow independent rotation of the counting wheels of the register and may also be provided with a mechanism for bringing into operation a plurality of pick-up pawls which engage elements of the register to return the counting wheels to zero position and thereafter are rendered inoperative to effect further rotation of the counting wheels.

Accurate return of the counting wheels to zero is controlled by a single zero stop mechanism which is associated with the resetting shaft. Suitable lost motion connections may be provided to allow release of the counting wheels for return to zero and subsequent rotation of the counting wheels to zero position.

Registers of the type generally described above and which are described in detail hereinafter may be used individually or in groups and may be reset by a mechanism common to all, thereby assuring simultaneous and accurate return of all of the registers to zero position.

For a better understanding of the present invention, reference may be had to the accompanying drawings, in which:

Figure 1 is a view in horizontal section, partly broken away, of a typical form of registering mechanism embodying the present invention;

Figure 2 is a view in section taken on line 2—2 of Figure 1;

Figure 3 is a view in section taken on line 3—3 of Figure 1, and partly broken away;

Figure 4 is a view in section taken on line 4—4 of Figure 3; and

Figure 5 is a view in section of the transfer mechanism of the register partly broken away.

The form of the invention disclosed in the drawings may consist of a pair of frame members 10 and 11 between which the various parts of two substantially identical registering mechanisms A and B are mounted. Inasmuch as the registers A and B are identical, only register A will be described in detail, reference being had where necessary, to the elements of register B by the same reference characters used in describing register A. The counting wheels 12, 13 and 14 of the register A are mounted rotatably on a shaft 15 extending between and supported in the frame members 10 and 11. The counting wheels 12, 13 and 14 may be adapted to indicate units, tens and hundreds in the usual way. These counting wheels respectively are provided with the drive gears 16, 17 and 18 which mesh with the gears 19, 20 and 21 respectively, which are mounted on a shaft 22 rotatably journaled in the frame members 10 and 11. The gear 19 is fixedly mounted on the shaft 22 and the gears 20 and 21 are rotatably mounted thereon. The shaft 22 may be driven from any external source of power, such as, for example, a meter (not shown) by means of the gear 23, which is connected by a suitable friction clutch 24 to the shaft 22. The gear 23 and the clutch 24 are provided with a ratchet member 25 which cooperates with a pawl 26 (Figures 1 and 2), pivotally mounted on the frame member 11 to prevent reverse rotation of the gear 23 during a resetting operation.

Rotation of the shaft 22 and gear 19 is transmitted to the units wheel 12 and likewise to the full-toothed gear 27, which is fixed to a collar or sleeve 28 rotatably mounted on the main supporting shaft 29. The shaft 29 is rotatably mounted in the frame members 10 and 11 and normally remains stationary during a registering operation while the gear 27 and sleeve 28 rotate relatively thereto. The sleeve 28 is also provided with a mutilated or two-toothed gear 30 (Figures 1 and 3), which meshes with and drives a split gear 31, which will be described in detail hereinafter. The gear 31, in turn, meshes with and drives a full-toothed gear 32, which is fixed to a sleeve 33, the latter being journaled on the shaft 29. At the left-hand end of the sleeve 33 is a full-toothed gear 34, which meshes with the gear 20 and drives the drum 13 one-tenth of a revolution for every full revolution of the drum 12. The sleeve 33 is also provided with a mutilated or two-toothed gear 35, which meshes with a split transfer pinion 36, the latter also driving a full-toothed gear 37 fixed to a sleeve 38, which is journaled on the shaft 29. The sleeve 38 is provided with a fixed full-toothed gear 39, which drives the gear 21 and the hundreds drum 14 of the register one-tenth of a revolution for every complete revolution of the tens drum 13. The operation described above is similar to the operation of registers of known type.

If desired and as illustrated particularly in Figures 3 and 4 of the drawings, the other register B may be provided for indicating values in different units than the register just described, for example, the register A may be used for indicating the volume and register B the cost of liquid dispensed in a gasoline dispensing pump.

In order that the indications or registrations of the register may be related in accordance with the prevailing price of the liquid dispensed, the register B may be driven through a variable speed drive (not shown) from the register A. This mechanism may be driven by a gear 40 which is fixed to the shaft 22. Likewise, if desired, two or more sets of counting wheels may be provided for each register and one set (not shown) may be disposed on the opposite sides of the shaft 29 between the left-hand edges of the frame members 10 and 11.

The registers used in this device are identical in all respects and the parts described above may be present in the register B.

As is well understood in the art, the transfer mechanisms, such as those described above, prevent simultaneous rotation of the sleeves 28, 33 and 38, except during a transfer operation. In order to allow the sleeves 28, 33, 38 and their respective associated driving gears 27, 34 and 39 to move simultaneously, the gears 31 and 36 are

split, as shown in Fig. 5. The gears 31 and 36 are rotatably mounted on a shaft 41 fixed in frame members 10 and 11 and are disposed between the arms 42, 43 and 44 of V-shaped yoke member 45, as shown in Figures 3 and 5. The yoke member 45 is shiftably mounted on a shaft 46, extending between and fixed to the frame members 10 and 11 whereby the yoke is capable of endwise shifting movement to cause separation of the portions of the split gears 31 and 36. As illustrated, particularly in Figure 5, the gear 31 consists of a gear portion 47 having a laterally extending sleeve 48 thereon which is of sufficient length to engage the arms 42 and 43 and prevent axial shifting movement of the gear portion 47 between the arms 42 and 43. A second gear portion 49 is provided with a bore 50 which closely receives the sleeve 48 and is axially slidable thereon. The gear portion 49 may be provided with a disc-like end 51, which engages between the mutilated gear 30 and the full-toothed gear 27 (Figure 1), thereby preventing axial movement of the gear portion 49. Therefore, if the V-shaped yoke member 45 is shifted endwise, shown in Figure 5, compressing the spring 51', the gear portion 49 remains stationary while the gear portion 47 moves to the left, thereby uncoupling the gear portions 47 and 49 and allowing them to rotate independently. The gear 36 is identical with the split gear 31. When the yoke 45 is shifted to the left the counting wheels 12, 13 and 14 may be rotated in either direction.

The mechanism for resetting the counting wheels 12, 13 and 14 to zero position may include a resetting shaft 52, which may be driven by any suitable means, such as a hand crank or motor and by means of a clutch element 53, Figures 1 and 4. The shaft 52 is rotatably mounted in the frame members 10 and 11, as best shown in Fig. 4, and is provided with a cam disc 54 having a notch 55 in its periphery, as shown in Fig. 2. The disc 54 rotates with the shaft 52 and acts to displace a bellcrank lever 56 which is rotatably mounted on the shaft 46. The bellcrank 56 is provided with a pin 57 which is received in the notch 55 when the shaft 52 is in the position corresponding to its zero position. As shown in Fig. 1 the bellcrank 56 is provided with a cam lug 58 which engages in a complementary cam recess 59 in the end of the yoke 45 adjacent to the frame member 11. Therefore, upon rotation of the shaft 52 the disc 54 rocks the bellcrank 56 in a counterclockwise direction, as viewed in Fig. 2, and causes displacement of the yoke 45 in a direction to cause separation of the elements 47 and 49 of the split gears 31 and 36, thereby freeing the counting wheels 12, 13 and 14 for rotation to zero position. Rotation of the shaft 52 likewise causes rotation of a gear 60, Fig. 2, which is mounted for limited rotation relatively to the shaft 52. The gear 60 is provided with an arcuate slot 61 in which is received a finger having a laterally directed portion 62, which is keyed to the shaft 52. The length of the slot 61 is sufficient to permit rotation of the shaft 52 through the distance necessary to cause the pin 57 on the bellcrank to be moved out of the notch 55 into engagement with the periphery of the disc 54 before the gear 60 starts to rotate. The gear 60, as shown in Fig. 4, meshes with gears 63 and 64, which are fixed to the main shafts 29 of registers A and B, respectively, whereby rotation of the shaft 52 will cause the shafts 29 to rotate counterclockwise at the same speed. The gears 63 and 64 are fixedly connected to collars 65, which are keyed to the shafts 29. The shaft 29 is likewise provided with two plates 66 and 67, which are keyed to the shaft in a manner indicated in Figures 1 and 3. The collar 65 is provided with an extension 68 at its lower end, as viewed in Fig. 1, which is substantially identical in shape with the shape of the plates 66 and 67, that is, of generally rectangular cross-section and having an arcuate outer edge 69 concentric with the shaft 29 (Figure 3). Mounted on the plates 66, 67 and 68 are pawl members 70, 71 and 72, which are urged in a clockwise direction about their pivots 73, 74 and 75, respectively, by means of coil springs 76 (Figures 1 and 3). Each of the pawls 70, 71 and 72 is provided with a pin 77, which extends through an arcuate slot 78 in the respective plate members 66, 67 and 68. The arcuate slots 78 limit the movement of the pawl inwardly and outwardly from the shaft 29 between positions in which they can engage elements for causing the counting wheels to return to zero position and positions in which they are free of engagement with the elements. As best shown in Figures 1, 3 and 4, the full-toothed gears 27, 32 and 37 have lugs 79, 80 and 81 projecting laterally from adjacent the bases of their teeth a sufficient distance to overlie the ends of the pawls 72, 70 and 71, respectively. Thus, when the pawls are swung outwardly to their greatest radial distance as determined by the outer ends of the slots 78, the pawls are in a position to abut the edges of the lugs 79, 80 and 81 and, upon rotation of shaft 29, to cause the gears 27, 32 and 37 and the counting wheels 12, 13 and 14 to rotate counterclockwise towards zero position.

During operation of the register, the pawls 70, 71 and 72 are retained in an inwardly disposed position by means of a three-fingered control member 83, best shown in Figures 3 and 4. The three-fingered control member 83 consists of a tubular sleeve 84, journaled on the shaft 52 having three sets of laterally projecting fingers 85, 86 and 87. The fingers 85 and 86 are disposed in such a position that they engage the pins 77 on the pawls 70, 71 and 72 of registers A and B, respectively, when the shaft 29 is in the position corresponding to zero position of the counting wheels 12, 13 and 14. Likewise the fingers 85 and 86 are normally rotated in a counterclockwise direction to depress the pawls 70, 71 and 72, respectively inwardly out of the circular path followed by the lugs 79, 80 and 81 during operation of the register, whereby the gears 27, 32 and 37 can rotate without interference. The fingers 85 and 86 are retained in this position by engagement of the finger 87 with the outer periphery of a cam member 88 on the bellcrank lever 56, the cam 88 being provided with a flattened surface 89 which upon rotation of the bellcrank 56 allows the fingers 85, 86 and 87 to rotate clockwise, thus releasing the pawls 68, 70 and 71, for movement outwardly into the path of the lugs 79, 80 and 81 whereby upon rotation of the shafts 29 the pawls 70, 71 and 72 will engage the lugs 79, 80, 81 and rotate the counting wheels 12, 13 and 14 towards zero position in a direction counter to their normal direction of rotation during an indicating operation.

The counting wheels 12, 13 and 14 are stopped at zero position by means of a zero stop pawl 90 which is adapted to engage a zero stop lug 91 mounted on the shaft 52. The zero stop pawl 90 projects laterally from a plate 92, which is mounted for rotary movement on the shaft 46, as shown in Figure 2. The plate 92 is provided

with a right angle flange 93 having an aperture 94 therein, through which passes a rod 95, which is connected to the frame member 11 by means of a pivot member 96. A compression spring 97 is mounted on the rod 95 and bears against the flange 93, thereby providing a toggle connection for retaining the zero stop pawl 90 in engagement with the disc 98 on which the zero stop lug 91 is mounted or the finger 99 on the member 92 in engagement with the disc 98. The zero stop pawl 90 is moved out of position to engage the zero stop lug 91 by means of a pin 100 projecting from the bellcrank lever 56 through an arcuate slot 101 of greater length than the arcuate movement of the pin 100 in the member 92, whereby clockwise rotation of the bellcrank 56 will snap zero stop pawl 90 out of position to engage the zero stop lug 91. Thus, when the shaft 52 is in its initial position as shown in Fig. 2, rotation of the resetting shaft 52 will cause the disc 54 to eject the pin 57 from the notch 55 and movement of the bellcrank 56 releases the zero stop pawl 90 for movement into alignment with the zero stop lug 91. The zero stop lug 91 rotates with the shaft in a clockwise direction through slightly more than a complete revolution. During rotation of the zero stop lug 91, it will engage the finger 99 on the member 92 and snap the zero stop pawl 90 into position to engage the lug 91 when the indicating wheels 12, 13 and 14 reach zero position. When the disc 54 reaches its initial position the pin 57 is still in engagement with the periphery of the disc 54 because of the rotated position of the bellcrank lever 56. An additional partial rotation of the disc 54 allows spring 102 to snap the pin 57 into the notch 55 and brings the zero stop lug 91 into engagement with the zero stop pawl 90. When the shaft 52 is released the spring 102 rotates the bellcrank 56 clockwise and in turn rotates the disc 54 counterclockwise, thereby moving the zero stop lug 91 into the position shown in Figure 2 and the finger 62 to the left-hand end of the slot 61. At the same time the pin 100 on the bellcrank lever 56 strikes the lower end of the slot 101 and moves the zero stop pawl 90 outwardly from engagement with the disc 98 into the initial position shown in Figure 2. The relative angular displacement of the pawl 90 and stop lug 91 corresponds to the displacement of the disc 54 that is required to eject the pin 57 from the notch 55 in the disc 54.

As shown in Fig. 2, the ratchet 103 is fixed to the gear 60 and cooperates with a pawl 104 pivotally mounted on the frame member 11 to prevent rotation of the gear 60 in a counterclockwise direction and shafts 29 in a clockwise direction. The pawl 104 and ratchet 103 therefore allow the counting wheels 12, 13 and 14 to be reset backwards, only.

Assume that the registers A and B are used in conjunction with a meter and have been operated and that they bear indications corresponding to the volume of liquid dispensed and the cost of the liquid dispensed, that is, the number of units of volume times the rate per unit. It will be understood that under these conditions the gears 27, 32 and 37 and the counting wheels 12, 13 and 14 may be displaced through different angular distances from their initial zero position and the lugs 79, 80 and 81 may be spaced apart angularly.

To reset the registers the shaft 52 is rotated causing rotation of the disc 54 in a clockwise direction, as viewed in Figure 2. Clockwise rotation of the disc forces the pin 57 out of the notch 55 in the disc and rotates the bellcrank 56 in a counterclockwise direction. Rotation of the bellcrank 56 shifts the transfer pinion yoke 45 downwardly, as viewed in Fig. 1, thus separating the pinion elements 47 and 49 and freeing the gears 27, 32 and 37 and their associated indicating wheels 12, 13 and 14 for free independent movement. Immediately following release of the transfer pinions the gear 60 is coupled to the shaft 52 by engagement of the finger 62 with the right-hand end of the slot 61, as viewed in Fig. 2, and the shafts 29 are rotated in a direction counter to the normal direction of rotation of the gears 27, 32 and 37. The zero stop pawl 90 is at the beginning of a resetting operation out of alignment with the zero stop lug 91 and the zero stop lug 91 is free to rotate. The three-fingered member 83 is allowed to rotate clockwise by the cam 88 to allow the pawls 70, 71 and 72 to swing outwardly into position to engage the lugs 80, 81 and 79, respectively. Upon continued rotation of the reset shaft 52 and rotation of the shafts 29 the pawls will move into engagement with the lugs successively in the order of their greatest angular displacement from zero position and will cause them to move backwardly towards zero position. During rotation of the shaft 52, the zero stop lug 90 strikes the finger 99 and moves the zero stop pawl into position to engage the zero stop lug 91. After slightly more than a revolution of the reset shaft 52 the zero stop pawl 90 and stop lug 91 engage and the pin 57 on the bellcrank 56 snaps into notch 55 on the disc 54, thus allowing the bellcrank 56 to rotate clockwise and the cam disc 54 to rotate counterclockwise. Clockwise rotation of the bellcrank 56 allows the spring 51' to urge the yoke 45 carrying the pinions 31 and 36 toward the frame member 11, engaging the elements of the pinions and causing the three-fingered member 83 to rotate in a counterclockwise direction to force the pawls 72, 70 and 71 inwardly and free them from engagement with the lugs 79, 80 and 81. Clockwise rotation of the bellcrank 56 causes engagement of the pin 100 on the bellcrank 56 with the lower end of the slot 101 in the member 92 and moves zero stop pawl 90 out of alignment with the zero stop lug 91. Counterclockwise rotation of shaft 52 moves the finger 62 to the left-hand end of the arcuate slot 61 in gear 60 preparatory to another resetting operation.

It will be understood from the foregoing description that the registers embodying the invention are capable of being reset to zero by substantially a single rotation of a reset shaft and that they are capable of long and efficient life because of the absence of any friction type clutches which wear and must be repaired or replaced. Likewise, such registers can be reset to zero position with little effort because each part is allowed to move freely and independently of any of the other cooperating parts.

It will be understood, of course, that many variations may be made in the details of the device and that one or more of the registering mechanisms can be used and that the number, arrangement and type of indicating members may be varied without departing from the invention.

Therefore, the above described construction should be considered as illustrative only and not as limiting the scope of the following claims.

I claim:

1. In a registering mechanism, the combina-

tion of a first normally stationary rotatable shaft, a plurality of counting wheels associated with said first shaft, gears associated with each of said counting wheels and rotatably mounted on said first shaft, means interconnecting said gears for transmitting movement from one to the other of said gears during a counting operation, said interconnecting means being releasable to allow independent movement of said gears during a resetting operation, movable pick-up means rotatable with said first shaft, said pick-up means being movable into a position to couple said gears to said first shaft, a rotatable second shaft, movable means on said second shaft for retaining the pick-up means out of coupling position and movable in response to rotation of said second shaft to allow said pick-up means to move into said coupling position, means associated with said second shaft and actuated in response to rotation thereof for releasing said interconnecting means, and means responsive to rotation of said second shaft for rotating said first shaft.

2. The registering mechanism set forth in claim 1 in which the means for retaining the pick-up means out of coupling position comprises a cam movable in response to rotation of said second shaft, and a plurality of movable fingers engaging the pick-up means and said cam and movable into positions in response to movement of the cam for retaining the pick-up means out of coupling position or allow the pick-up means to couple said gears to said first rotatable shaft.

3. In a register comprising a first and second indicating means having interconnecting transfer mechanism including disconnectable means, and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said first and second indicating means to zero position comprising a reset shaft, pick-up devices carried by said shaft, said pick-up devices being movable during a resetting operation to engage said associated means and return said first and second indicating means toward zero position, means for retaining said pick-up devices out of engaging position during counting operations and means operable during a resetting operation to disconnect said transfer mechanism and effect movement of said pick-up devices into said engaging position to return said first and second indicating means to zero position.

4. In a register comprising a first and second indicating means having interconnecting transfer mechanism including disconnectable means, and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said first and second indicating means to zero position comprising a reset shaft, pick-up devices carried by said shaft, means for biasing said devices for movement into positions to engage said associated means, means for holding said pick-up devices out of said engageable position during a counting operation, and means operable during a resetting operation to disconnect said transfer mechanism and cause said holding means to permit said pick-up devices to move into said engageable position whereby said first and second indicating means may be returned to zero position.

5. In a register comprising a first and second indicating means having interconnecting transfer mechanism including disconnectable means, and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said first and second indicating means to zero position comprising pick-up means movable into a position where said pick-up means is adapted to engage said associated means and return said first and second indicating means to zero position, means for retaining said pick-up means out of said engageable position during a counting operation, and means including a lost motion connection to first disconnect said transfer mechanism and then cause said pick-up means to move into said engaging position to return said first and second indicating means to zero position.

6. In a register comprising a first and second indicating means having interconnecting transfer mechanism including disconnectable means, and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said first and second indicating means to zero position in a direction opposite to the direction of movement during a counting operation, comprising a reset shaft, pick-up devices carried by said shaft, means urging said devices radially of said shaft into positions to operatively connect with said associated means and return said first and second indicating means backward toward zero position, means for controlling the radial movement of said pick-up devices, and means operable during a resetting operation to disconnect said transfer mechanism and actuate said control means to effect radial movement of said pick-up devices whereby said first and second indicating means may be returned backward to zero position.

7. In a register comprising a plurality of indicating means having interconnecting transfer mechanism including disconnectable means, and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said indicating means to zero position comprising a reset shaft, pick-up devices carried by said shaft, each of said devices being radially movable into a position where the device is adapted to coact with one of said associated means and return one of said indicating means toward zero position, and means operable upon initial movement of said reset shaft to disconnect said transfer mechanism and effect radial movement of said pick-up devices whereby rotation of said shaft operates to pick up and return said indicating means to zero position.

8. In a register comprising a first and second indicating means having interconnecting transfer mechanism including disconnectable means, and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said first and second indicating means to zero position comprising pick-up means movable into an orbit where said pick-up means are adapted to operatively connect with said associated means and return said first and second indicating means toward zero position, means movable into a position to stop said first and second indicating means in zero position, a resetting shaft, means operable upon initial movement of said resetting shaft to disconnect said transfer mechanism and effect movement of said pick-up means into said orbit, and means associated with said resetting shaft for moving said pick-up means in said orbit and said stop means into stopping position after said transfer mechanism has been disconnected.

9. In a register comprising a first and second indicating means having interconnecting transfer mechanism including disconnectable me

and means associated with each indicating means to facilitate the resetting thereof; the combination of means for resetting said first and second indicating means to zero position comprising pick-up means movable into an orbit where said pick-up means are adapted to operatively connect with said associated means and return said first and second indicating means toward zero position, a resetting shaft, means operable upon initial movement of said resetting shaft to disconnect said transfer mechanism and effect movement of said pick-up means into said orbit, means associated with said resetting shaft for moving said pick-up means in said orbit after said transfer mechanism has been disconnected, and means for effecting a pull-back movement on said resetting shaft after said indicating means have reached zero to reconnect said transfer mechanism and move said pick-up means out of said orbit.

10. In a register, a shaft, first and second counting wheels mounted for rotation on said shaft, a second shaft, a transfer unit including a mutilated gear rotatably mounted on said second shaft and operatively connected to said first wheel, another transfer unit including a full-tooth gear rotatably mounted on said second shaft and operatively connected to said second wheel, means including disconnectable pinion elements interconnecting said mutilated and full-tooth gears for transmitting movement from said first wheel to said second wheel during a counting operation, means carried by said second shaft for engaging each of the transfer units during a resetting operation to return said wheels to zero position, and means operable during a resetting operation to disconnect said pinion elements and effect the engagement of said engaging means with said transfer units.

11. In a register, a shaft, first and second counting wheels mounted for rotation on said shaft, a second shaft, a mutilated gear rotatably mounted on said second shaft and operatively connected to said first wheel, a full-tooth gear rotatably mounted on said second shaft and operatively connected to said second wheel, means including disconnectable pinion elements interconnecting said mutilated and full-tooth gears for transmitting movement from said first wheel to said second wheel during a counting operation, pick-up pawls mounted for rotation with said second shaft and movable into and out of a position for coupling said mutilated and full-toothed gears for rotation with said second shaft, control means for preventing said pick-up pawls from moving into coupling position during a counting operation, and means operable to disconnect said pinion elements, actuate said control means to effect the movement of said pick-up pawls into said coupling position and rotate said second shaft.

CHARLES S. HAZARD.

CERTIFICATE OF CORRECTION.

Patent No. 2,251,792. August 5, 1941.

CHARLES S. HAZARD.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, second column, lines 61 and 62, strike out "68, 70 and 71" and insert instead --70, 71 and 72, respectively--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 23rd day of September, A. D. 1941.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

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