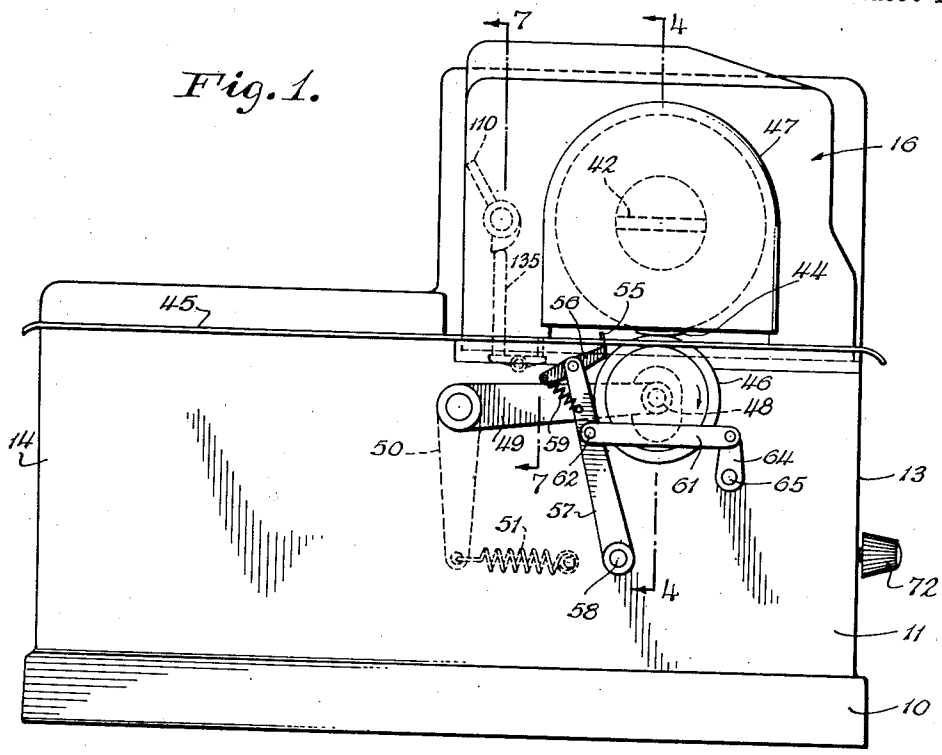
Oct. 13, 1953 E. PERSSON 2,655,315

OPERATIONAL LOCK MEANS FOR POSTAGE METERING DEVICES

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5 Sheets-Sheet 1

Fig. 1.



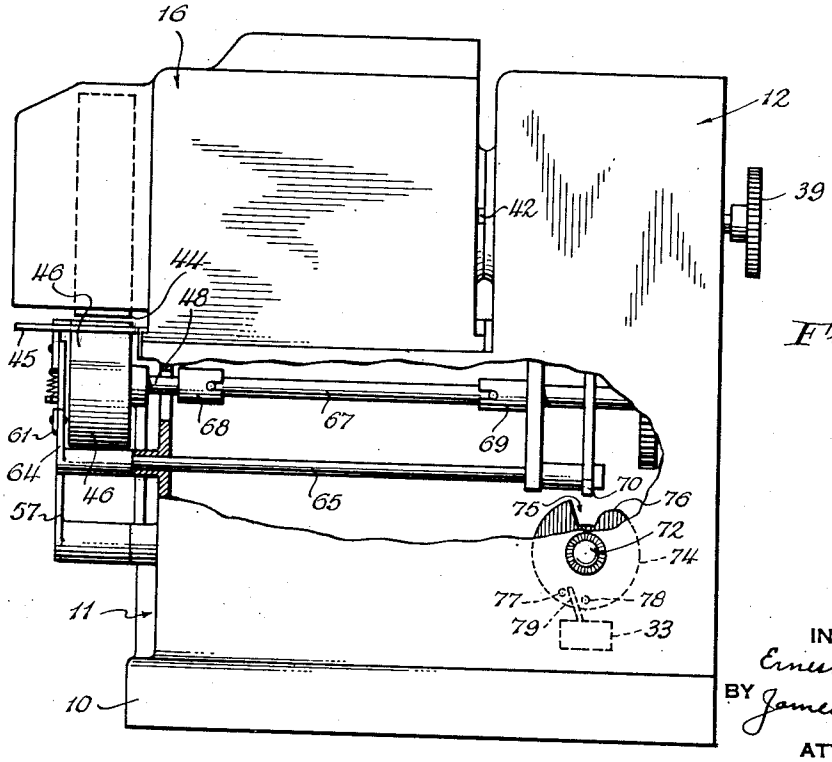


Fig. 2.

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OPERATIONAL LOCK MEANS FOR POSTAGE METERING DEVICES

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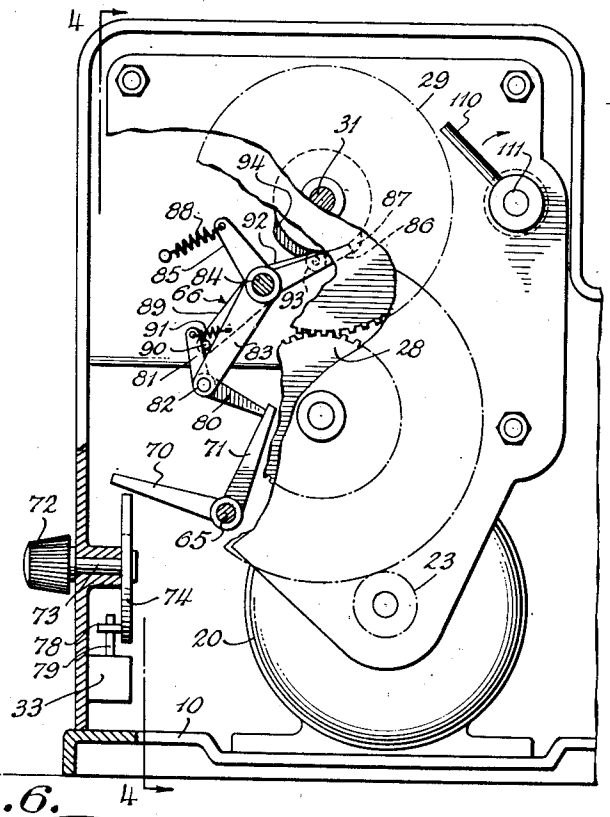


Fig. 3.

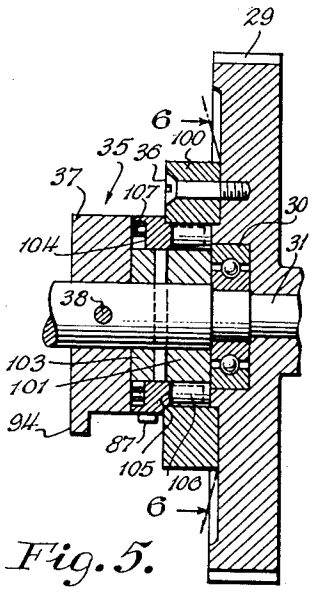


Fig. 5.

Fig. 6.

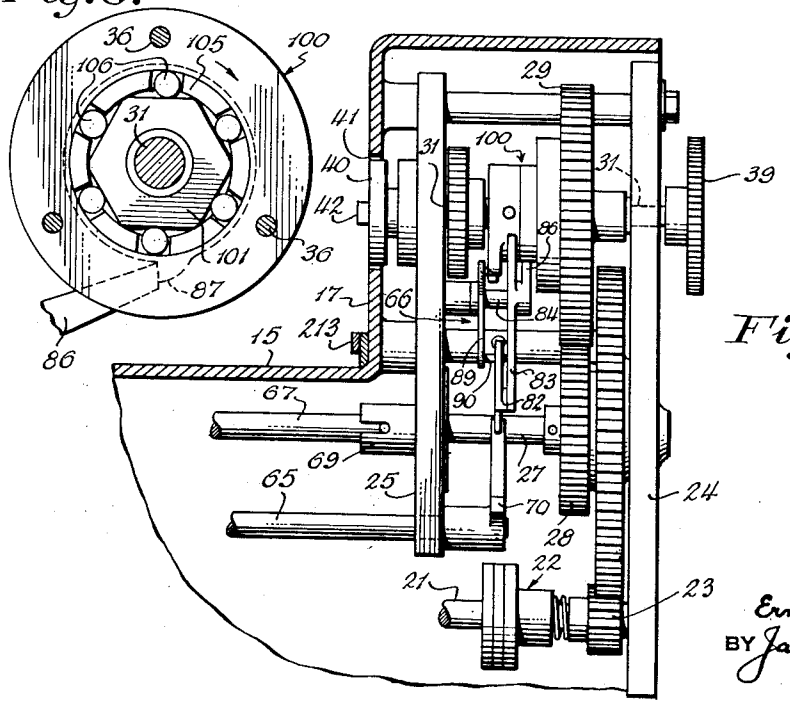


Fig. 4.

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OPERATIONAL LOCK MEANS FOR POSTAGE METERING DEVICES

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Fig. 7.

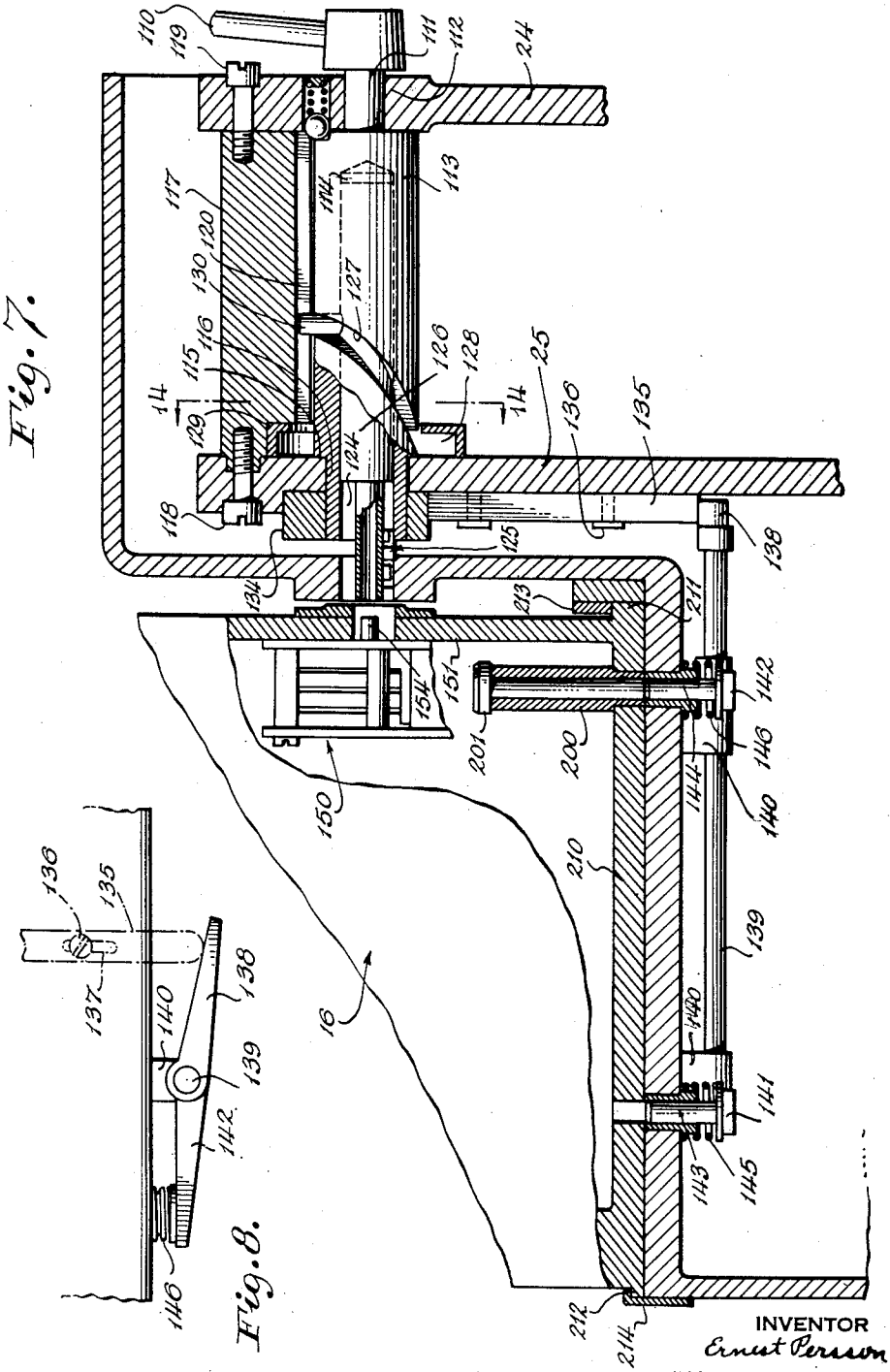


Fig. 8.

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Fig. 9.

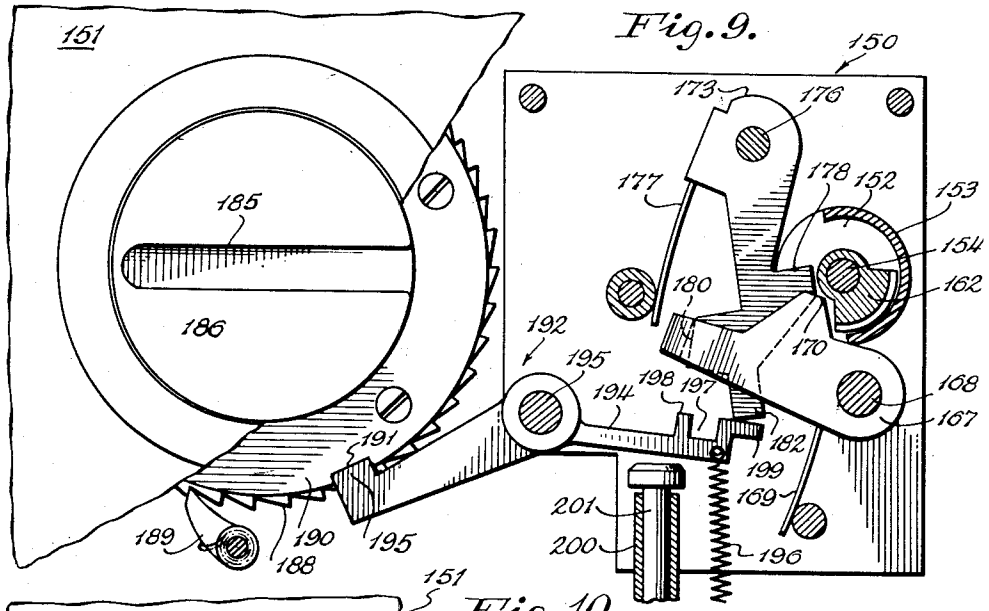
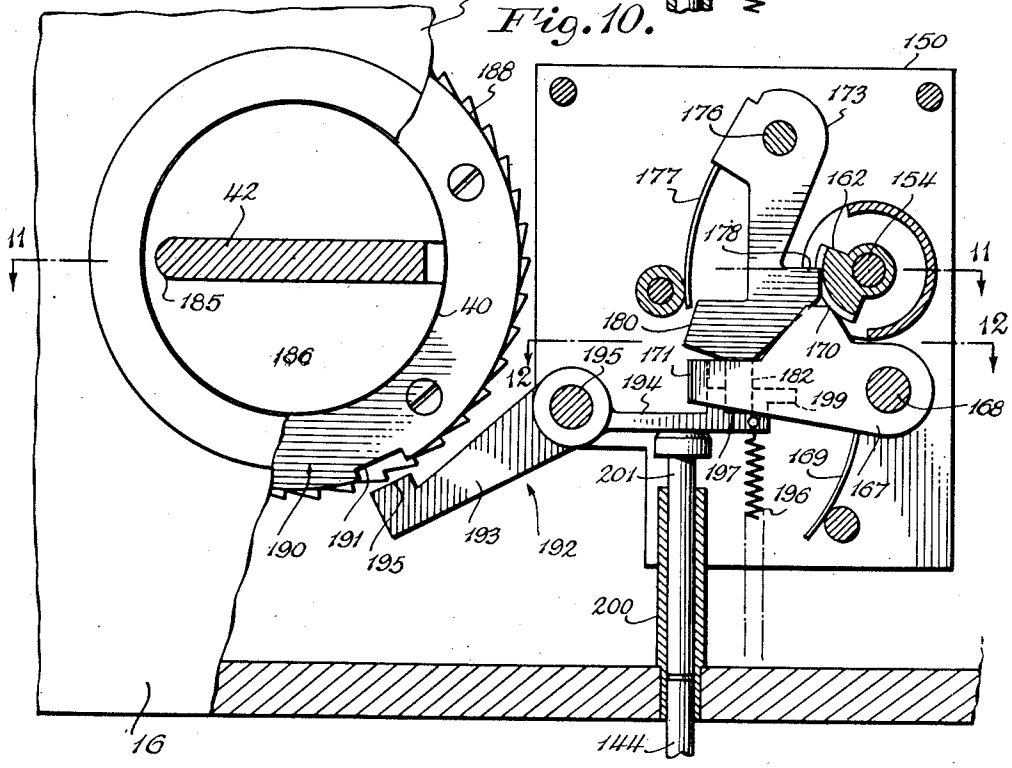


Fig. 10.



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Fig. 11.

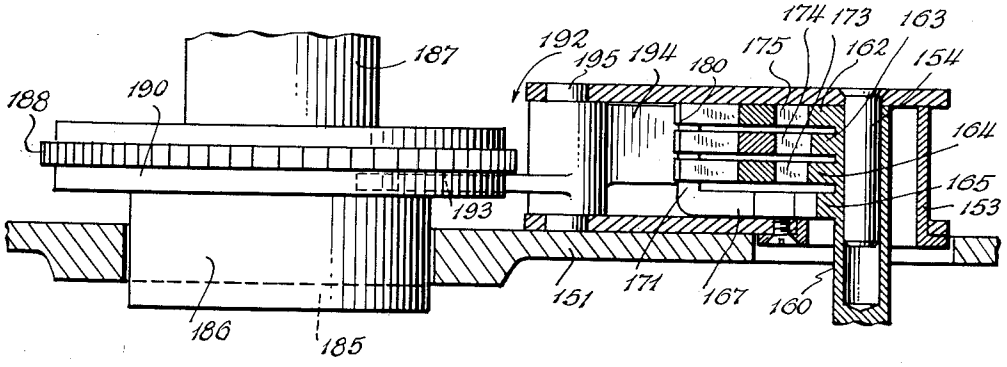


Fig. 12.

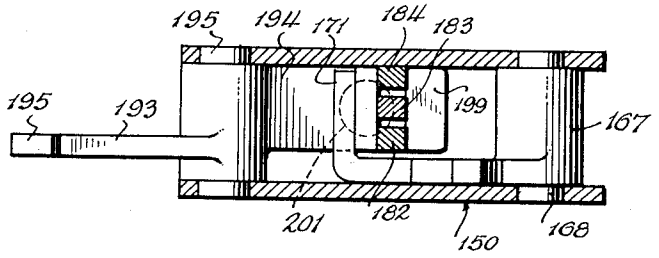


Fig. 14.

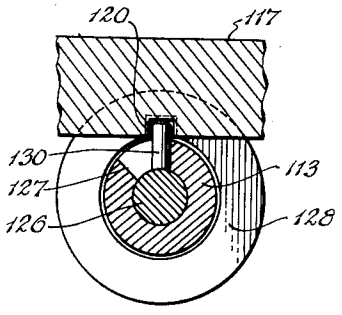
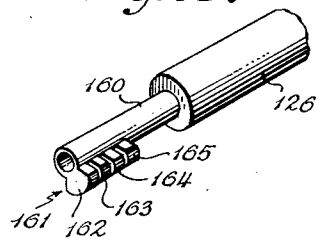


Fig. 13.



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2,655,315

UNITED STATES PATENT OFFICE

2,655,315

OPERATIONAL LOCK MEANS FOR POSTAGE METERING DEVICES

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Application November 22, 1948, Serial No. 61,489

14 Claims. (Cl. 235—101)

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This invention relates to postage registering meters and more particularly to a locking mechanism therefor.

A feature of the invention is the provision of a locking mechanism for a postage meter which effectively prevents tampering therewith.

Another feature of the invention is the provision of a simplified driving mechanism for a postage meter included in a base or supporting structure to which a postage registering meter is detachably secured. Provision is made for preventing the operation of the meter by the driving mechanism except when the meter is properly positioned on the supporting structure. The latter is provided with a novel mechanism cooperating with a lock in the meter which is effective to operate the lock only when the meter is properly positioned in its support.

Still another feature of the invention is the provision of an internal lock for a metering device to prevent tampering with the parts thereof, the lock being adapted to cooperate with a key member which is a part of a device for supporting and driving the meter.

Other objects will appear in the following description given with the aid of the accompanying drawing of which

Fig. 1 is a front view of a postage meter together with the base or supporting structure therefor;

Fig. 2 is a side view of the meter and base;

Fig. 3 is a view partly in section taken from the rear of the machine showing the driving mechanism therefor;

Fig. 4 is a side view of the mechanism shown in Fig. 3;

Fig. 5 is an enlarged showing of a clutch in section;

Fig. 6 is a view showing details of the interior of the clutch of Fig. 5;

Fig. 7 is a view, partly in section showing details of the mechanism mounted on the base for locking and unlocking the meter in accordance with a preferred embodiment of the invention;

Fig. 8 is a detail of the locking mechanism;

Fig. 9 shows the internal locking mechanism for the meter as it appears in locked position, prior to the insertion of the key member;

Fig. 10 is a view similar to Fig. 9 except that the parts of the locking mechanism are shown as they appear when the meter is unlocked;

Fig. 11 is a plan view, partly in section, the section being taken through 11—11 of Fig. 10, showing the key member positioned in the lock together with the levers operated thereby;

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Fig. 12 is a plan view partly in section, the section being taken through 12—12 of Fig. 10, showing the locking dog controlled by the key which releasably secures the main drive shaft within the meter, together with the key levers;

Fig. 13 is a perspective view of one type of a key bitt; and

Fig. 14 is a section taken through 14—14 of Fig. 7.

Referring to Figs. 1 to 5, the meter base or supporting structure comprises a base member 10 generally oblong in shape on which is mounted a closed hollow metal structure, having front and rear walls 11 and 12, side walls 13 and 14, a top plate 15 on which the meter rests, a vertical wall 17 rising from the top plate 15 immediately to the rear of the meter forming an elevated portion of the hollow structure together with upwardly extending portions of side wall 13 and rear wall 12 and a further wall 18.

The driving mechanism for the meter comprises a motor 20 secured to base 10 having a shaft 21, Fig. 4, which drives through a suitable safety clutch 22, a gear 23, which is one of a train of reduction gears supported by shafts which turn in suitable bearings in plates 24 and 25 mounted within the hollow base structure.

Gear 23 drives a gear 26 fixed to a shaft 27 supported by bearings in plates 24 and 25. A gear 28 fixed to shaft 27 drives a gear 29 which turns on a bearing 30, Fig. 5, mounted on a shaft 31 which is free to turn in bearings in plates 24 and 25.

The driving member of a clutch 35, to be described, is secured by screws 36 to one face of gear 29. The driven member 37 of the clutch is secured to shaft 31 by a pin 38. The driving member for the meter which comprises a disc 40, Figs. 4 and 10, is fixed to shaft 31, the disc being arranged to turn in an opening 41 in wall 17 with the outer face thereof substantially flush with the outer surface of the wall while a ridge or key 42 formed across the diameter thereof projects beyond the surface of wall 17. The ridge is adapted to fit into a complementary recess in a corresponding member driven thereby in the meter, to be described.

Clutch 35 is of the cyclically operable or stop-start type which cooperates with a system of levers which when tripped releases the clutch permitting the engagement of the driving member with shaft 31 for one revolution whereupon the clutch is disengaged by the levers, thus stopping shaft 31. When the levers are again

tripped the clutch engages and turns shaft 31 through one more revolution.

In the embodiment of the invention shown, the trip levers are arranged to be rocked each time an envelope is fed into the machine to have a stamp imprinted thereon. Referring to Fig. 1, a platform 45 is mounted on the front of the machine along which the envelopes to be stamped are slid, one after another, toward the right of the drawing. The envelopes pass between a constantly driven pressure roller or platen 46 mounted directly underneath the die or printing drum 44, a portion of which is shown projecting below a housing 47 therefor which is a part of the enclosure for the meter structure. The die 44 is normally stationary, and before the envelope can be stamped, it is necessary to trip the clutch 35 which will cause the die 44 to make a single rotation. The platen 46 which is constantly driven by means to be described is fixed to a short shaft 48 which turns in a bearing 43 in an arm 49 of a pivotally mounted ball crank. A spring 51 fastened to the arm 50 of the bell crank constantly urges the platen 46 into contact with the die and cooperates therewith when the die turns to feed the envelopes toward the right of the machine. When the die is in position of rest, the platen 46 turns clear of the die in a depressed portion of die surface where there is no indicia.

Before an envelope can be fed underneath the die, its forward edge engages a bar 55 overlying platform 45 and continued movement of the envelope displaces the bar toward the platen. Bar 55 is attached to one arm of a lever 56 pivoted to an arm 57 mounted on a pivot 58 secured to the front wall 11. Bar 55 and the mechanism associated therewith, when actuated, trip the clutch. A spring 59 tends to turn lever 56 to maintain bar 55 elevated into the path of successive envelopes as they are fed into the machine. However, as the respective envelopes come into engagement with the bar and are pushed toward the die, arm 57 is caused to turn a limited distance on its pivot 58, and with this movement of the arm, the leading edges of the respective envelopes come into engagement with the rotating platen roller 46 and at the same time the clutch is released, as will be explained, thereby driving the printing die of the meter. The envelopes on passing between the die and platen depress bar 55 out of their path, turning the supporting lever 56 therefor about its pivot.

The displacement of bar 55 with the resulting oscillation of its supporting arm 57 by the successive envelopes is utilized to operate the lever arrangement which controls the cyclic operation of the clutch, as will now be described. A link 61, connected by pivot 62 to arm 57, is attached by a pivot 63 to an arm 64 fastened to a rocking shaft 65. Therefore, the movement of arm 57, just described, causes shaft 65 to rock in a corresponding manner. Referring to Figs. 2, 3 and 4, it will be seen that shaft 65 extends back to the rear of the machine where a rear portion thereof is supported in a bearing in plate 25. A bell crank having arms 70 and 71 is secured to shaft 65.

Bell-crank arm 70 and shaft 65 may be rocked only when a power switch knob 72 mounted on a shaft 73 extending through a bearing in wall 13 is positioned to supply power to the motor. A disc 74 formed with a notch 75 in the edge thereof is fastened to the inner end portion of shaft 73, the disc serving to block movement of bell crank arm 70 when the knob is in "off" position. As shown in Fig. 2, two spaced pins 77 and 78 are mounted on the surface of disc 74. Between these pins the operating arm 79 of a conventional electric toggle switch 33 is disposed. This switch controls the operating power for motor 20. It will be understood that if the knob 72 is turned in the appropriate direction the motor may be turned off or on. When the knob is in "off" position, as shown in Fig. 3, the edge of the disc is in engagement with the under edge of bell-crank arm 70 preventing the rocking thereof together with shaft 65 and the parts on the front of the machine associated therewith. When the switch is in its "on" position as shown in Fig. 2, notch 75 is positioned immediately under bell-crank arm 70 permitting the rocking of the bell crank together with shaft 65. One edge 76 of the notch is curved to serve as a cam for displacing arm 70 of the bell crank out of the notch should the arm be positioned in the notch at the instant the knob is turned off.

A lever having arms 80 and 81, Figs. 3 and 4, is mounted on a pivot 82 attached to arm 83 of a lever pivoted on a short shaft 84 fixed to plate 25. The latter lever has two additional arms 85 and 86. Arm 86 is positioned in the path of a stop arm 87 of clutch 35 by a spring 88 attached to arm 85 of the lever which tends to turn the lever in a counter-clockwise direction. Shaft 84 has a second lever 66 pivoted thereon having an arm 89 carrying a pin 90 against which one edge of the lever arm 81 rests. A spring 91 connected between the lever arms 83 and 81 holds the latter lever arm in engagement with the pin. Lever 66 is provided with a second arm 92 at the end of which is mounted a roller 93 which rides on the surface of the driven member of cam 35 and is rocked by a cam 94 formed thereon immediately before the stop arm 87 of the cam engages the end of lever arm 86 and is provided for the purpose of invariably tripping the lever arrangement to ensure that arm 86 will always be positioned in the path of the clutch stop arm 87 before the end of each cycle to stop the clutch irrespective of the angular position of the lever arm 71 as will now be explained.

Assuming that the knob 72 is positioned as shown in Fig. 2 to turn the motor on, then the notch 75 in disc 74 attached to the knob will be positioned under the bell-crank arm 70 and shaft 65 is free to oscillate with the feeding of each envelope through the machine. Referring now to Fig. 3 and still assuming that the notch 75 is positioned under the bell-crank arm 70, which is contrary to the position in which disc 74 is shown therein, then each oscillation of shaft 65 displaces bell-crank arms 70 and 71 in a counter-clockwise direction from the position shown causing bell-crank arm 71 to engage the lever arm 80 tending to turn this lever 82. Since the arm 81 of this lever is held from rotation by pin 90 in lever arm 89, lever 83—85—86 is turned against the tension of spring 88 in a clockwise direction by bell-crank arm 71 moving the end of lever arm 86 out of the path of the stop arm 87 of clutch 35, whereupon the clutch engages and the driven member turns through one cycle. Normally, before the end of the cycle, shaft 65 and the bell-crank arms 71 and 72 have been restored to their normal position of rest shown in Fig. 3 and spring 88 has restored lever arm 86 into the path of the clutch stop arm 87 whereupon the stop arm disengages the clutch until the lever mechanism is subsequently actuated.

Should shaft 65 be held in its actuated position for a period longer than the operating cycle of the machine such as might occur when an unusually long envelope or other article is being stamped, cam 94 engages roller 93 on the lever arm 92 and rocks the lever on shaft 84 in a clockwise direction against the tension of spring 91. Pin 90 mounted in the opposite arm 89 of this lever then turns lever 80—81 about its pivot 82 in a clockwise direction disengaging the arm 80 thereof from the bell-crank arm 71 whereupon spring 88 rotates lever 83—85—86 on shaft 84 in a counter-clockwise direction positioning the arm 86 thereof in the path of the clutch stop arm 87 before the end of the cycle. The clutch will not release again until shaft 65 is restored to its normal position and subsequently tripped.

A preferred form of clutch is shown in Figs. 5 and 6 in which a ring 100 secured concentrically to the face of gear 29 by screws 36 forms the driving member of the clutch. The driven member 37 is secured, as already mentioned, by pin 38 to shaft 31. A hexagonal member 101 formed integrally with the driven member projects into ring 100, the corners of the hexagonal member being spaced from the inner surface of the ring. Adjacent ring 100, the driven member is turned down to form a section 103 of smaller diameter than the interior of ring 100, and on this reduced section, a ring 104 to which stop arm 87 is fixed, is free to turn through a small relative angular distance. A sleeve 105 formed integrally with ring 104 projects into the central bore of driving ring 100, the sleeve being free to move between the apices of the hexagonal member and the inner surface of the driving ring 100. Sleeve 105 is formed with six regularly spaced slots in the edge thereof, the slots being shown in the drawing as overlying, approximately, the central portions of the respective flat surfaces of the hexagonal member 101. A roller 106 is disposed in each of the slots in sleeve 105, the diameter of the rollers being a trifle less than the maximum distance from any of the flat surfaces of the hexagonal member to the inner wall of driving ring 100 which permits limited movement of ring 104—105 with respect to the reduced portion 103 of the driven member on which the ring turns. A spring 107 attached to ring 104 and the driven member tends to turn the ring on its support in the same direction as gear 29 on which the driving ring 100 is mounted, as indicated by the arrow in Fig. 6. This relative movement of ring 104 is prevented when the lever arm 86 is engaged by stop arm 87, when the rollers 106 are held positioned approximately over the mid sections of the flat portions of the hexagonal member 101, leaving the driving ring 100 free to turn while the hexagonal member remains stationary. However, when the stop lever arrangement is tripped, lever arm 86 becomes disengaged from stop arm 87 and spring 107 snaps ring 104 and sleeve 105 in a clockwise direction, and due to the motion of driving ring 100, the rollers 106 jam between the surfaces of the hexagonal member and the inner surface of the ring thereby causing the driven member 37 of the clutch and shaft 31 to turn therewith. The clutch disclosed readily engages and disengages, and due to its design can handle considerable loads over long periods without apparent wear.

The invention contemplates a novel and effective mechanism for locking a meter to prevent tampering therewith, which can be released only when the meter is placed in normal position for use, on a suitable base provided with a device for operating the particular locking mechanism.

The locking mechanism in the meter will perhaps be best understood if a novel key arrangement mounted in the base or support for the meter is first described.

The key mechanism shown in Fig. 7 includes a manually rotatable handle 110 secured to a shaft 111 supported for rotation in a bearing 112 in plate 24 disposed at the rear of the base. Shaft 111 is fixed to a sleeve or tubular member 113 having a central bore 114. A shoulder 115 formed on the sleeve abuts plates 25 while a part 116 of smaller outside diameter extends through a bearing in plate 25 and projects a short distance beyond the left hand surface of plate 25. With this arrangement the tubular member 113 may be rotated by the handle but is restrained from any axial movement by the plates 24 and 25.

A block 117 is secured between plates 24 and 25 by screws 118 and 119 directly above sleeve 113. This block has a longitudinal slot 120 formed in its under surface parallel with the axis of the sleeve 113.

A key member 125, Fig. 13, having a cylindrical stem portion 126 which fits into the bore of sleeve 113, is axially and rotatably movable therein. Sleeve 113 has a curved cam slot 127 cut therein which communicates with a circular guideway 128 formed by a casing 129 which is fixed to plate 25 coaxially with respect to sleeve 113.

A pin 130 fixed to the cylindrical stem 126 of the key projects through the cam slot 127 into the slot 120 in block 117. When the handle 110 is turned in the direction indicated by the arrow, the rotary movement of the cam slot 127 will force the pin 130 to travel along slot 120 toward the left of the drawing thereby causing the key to move in an axial direction until the pin reaches the circular guide 128 and comes into engagement with the surface of plate 25 which prevents further axial movement of the key but permits the key to rotate about its axis with continued movement of handle 110. The axial movement causes the key to be inserted a predetermined distance into the meter lock, to be described, to be suitably aligned with the lock mechanism therein while the subsequent rotation of the key is used to operate a portion of the locking mechanism.

A cam 134 fixed to the left-hand portion of sleeve 113 engages a follower 135 which comprises a bar, Figs. 7 and 8, guided by shoulder screws 136 extending through slots 137 formed in the bar, the screws being attached to plate 25.

Cam 134 depresses bar 135 a predetermined distance after the handle 110 is turned through a predetermined angular distance and this movement of the bar is communicated to an arm 138, Fig. 8, fixed to a shaft 139 which is supported by brackets 140 fixed to the underside of plate 15 on which the meter rests.

The ends of a pair of spaced arms 141 and 142 secured to shaft 139 are elevated by the rotation of shaft 139 when the handle 110 is turned in a direction to unlock the meter and these arms elevate pins 143 and 144 against the pressure of respective compression springs 145 and 146 a predetermined distance. In the present embodiment of the invention, pin 143 serves as a lead pin to make certain the meter is properly positioned on the base and to secure it if thus positioned. Pin

144 cooperates with the key per se in releasing the locking mechanism of the meter by elevating a plunger 201. The pins 143 and 144 are shown in Fig. 7 as they are positioned before the key is turned to unlock the meter.

The locking mechanism for the meter is enclosed in a casing 150 fastened to the inner surface of the rear wall 151 of the meter casing which arrangement prevents tampering with the locking mechanism.

Fig. 9 shows parts of the lock as they appear when the meter is locked. An opening 152 to receive key member 125 is formed in the rear wall 151 of the meter casing and communicates with the interior of the lock casing 150. A curved shield 153 mounted in the lock casing in register with the opening 152 serves to partially close off the lock mechanism from the opening. A lead pin 154 attached to the outer wall of casing 150 projects coaxially along the opening toward the rear wall 151 of the meter casing and provides a guide and support for the key member 125 when inserted into the lock, and also serves to obstruct the opening to interfere with the insertion of lock-picking instruments.

Referring to Fig. 13, the key comprises a shank 160 which is secured to the cylindrical stem 126. Shank 160 has a central bore adapted to fit over guide pin 154 when the key is inserted into the lock. Near the end of shank 160 a key bitt 161 is formed which is shown to comprise four spaced lever operating members 162, 163, 164 and 165 which may vary in height and shape as desired. Assuming that the meter is properly positioned on the base plate 15, then when the handle 110 is turned for the purpose of unlocking the meter, the initial part of the angular movement of the handles inserts the key in an axial direction into the lock to bring the members 162, 163, 164 and 165 into alignment with corresponding ones of a series of levers, and the subsequent rotary motion imparted to the key by handle 110 causes the operation of these levers.

Referring to Figs. 9 and 10, the member 165 of the key bitt cooperates with a lever 167 pivoted on a pin 168 and provided with a flat spring 169 which tends to turn the lever in a clockwise direction so as to maintain a projecting nose 170 formed on the lever into the path of the key bitt member 165. Referring to Fig. 12, lever 167 has an arm 171 extending at right angles therefrom which arm is positioned alongside a series of levers 173, 174 and 175 to prevent the movement thereof until lever 167 is first rotated in a counter-clockwise direction by the engagement of the member 165 of the key bitt with the nose 170 of the lever 167.

Levers 173, 174, 175 are pivoted on a shaft 176 attached to the wall of the lock casing and each lever is provided with a flat spring 177 which tends to turn the lever in a counter-clockwise direction to bring the noses 178 of the respective levers into the rotary path of the corresponding members 162, 163 and 164 of the key bitt 161. Each lever 173, 174, 175 has a projecting stop portion 180 formed on its rear edge which abuts the turned over arm 171 of lever 167 when the meter is locked. The lower ends of levers 173, 174, 175 indicated respectively by reference characters 182, 183, and 184, Fig. 12, are identical and formed with a generally oblong contour.

The noses 178 of the levers vary in shape and in height according to the complementary portions of the key bitt which are designed to turn the levers respectively to bring the end portions 182, 183 and 184 thereof into alignment with each other at which position the end portions of the levers cooperate with another mechanism controlled by the cam actuated pin 144 which is movable in a vertical direction through the base plate 15 which supports the meter as will now be described.

Referring to Figs. 3 and 4 the key or ridge member 42 formed across the face of disc 40 driven by shaft 31 fits into a complementary slot 185, Fig. 11, in a disc 186 positioned in an opening in the meter casing and secured to the main driving shaft 187 within the meter, whereby the meter mechanism is driven by the shaft 31. A ratchet wheel 188 is fixed to shaft 187 and provided with a pawl 189 for preventing the turning of the meter shaft 187 in the wrong direction.

A lockable member which conveniently may be a hub or disc 190 fixed to shaft 187 has a single slot 191 cut in its periphery. A locking dog cooperating therewith, shown as a lever 192 having arms 193 and 194 is supported on a shaft 195 mounted within the lock casing 150. The arm 193 of the lever projects beyond the lock casing and a nose 195 formed on the arm is adapted to enter the notch 191 and thus prevent rotation of the hub 190 and the meter shaft 187, as well as any of the meter mechanism connected therewith. A spring 196 attached to the arm 194 of the lever tends to hold the nose 195 thereof in contact with the wheel 190. The arm 194 of the lever is sufficiently wide to extend under each of the key lever ends 182, 183 and 184. Adjacent the key lever ends, the lever arm has a transverse channel 197 formed on the upper surface thereof between upwardly projecting ribs 198 and 199. Channel 197 is wide enough to receive the ends 182, 183 and 184 of the key levers.

When the meter is locked as shown in Fig. 9, the lever ends 182, 183 and 184 are positioned directly over the rib 199 formed at the end of the lever arm 194 and block the lever against any movement which would tend to disengage the opposite end of the lever from the notch 191 in hub 190 which locks the main shaft of the meter against rotation.

When the key is turned in the lock, the lever ends are brought into alignment over the channel 197 in arm 194. The lever 195, however, remains immovable, until continued rotation of the key brings cam 134 into engagement with bar 135 depressing the same which turns shaft 139 and moves pin 144 upward beyond the upper surface of base plate 15 on which the meter rests into a tube 200 mounted in the meter casing. A plunger 201 is supported in tube 200 directly below arm 194. As plunger 144 is elevated it comes into engagement with the plunger 201 which is moved thereby into engagement with the underside of arm 194 of the dog and turns the same in a counterclockwise direction against the tension of spring 195 until the lever ends 182, 183, 184 enter the channel 197, at which time, the lever 192 will be rotated sufficiently for the nose 195 thereon to clear slot 191 in hub 190 and thus unlock the meter. The projections or wards 162, 163, 164 and 165 of the key have enlarged, concentric arc-shaped lever engaging surfaces which hold the various levers in unlocked position while the key is turned a further angular distance to elevate the unlocking pin 201 sufficiently to disengage the nose 195 of the locking dog from the notch 191 in the hub. As will be seen from the drawings, the

arc-shaped lever engaging surfaces of the key are effective on the levers while the key is being turned through approximately 90 degrees.

Referring to Figs. 2 and 4, platen 46 is driven whenever the motor is turned on by a universal joint 69 coupled with shaft 27 driven by the reduction gearing, which universal joint is coupled by shaft 67 and a second universal joint 68 to the platen shaft 48. The two universal joints are provided to permit limited shifting of shaft 48 since the bearing therefor is supported by the arm 49 of a pivoted bell crank.

Referring to Fig. 7, the base 210 of the meter casing is provided with flanges 211 and 212 which extend outwardly from opposite sides thereof. These flanges slip under guide strips 213 and 214 secured to the base at the front and rear respectively of the top plate 15 thereof when the casing is positioned thereon. When the casing is removed, the disc 186 is locked with the slot 185 therein disposed horizontally. Prior to placing the meter casing in the guideway, the handle 39, Fig. 4, is turned to rotate disc 40 so that the key 42 is turned in a horizontal direction to slip into the slot 185. The slot which does not extend entirely across 186 is slightly offset from one edge of the disc and key 42 is formed in a complementary manner so that there is only one position of disc 40 in which the axes of the disc 40 and the meter shaft 187 may coincide. If disc 40 is 180 degrees out of position, the meter casing will not slide all of the way into the guideway.

When the meter is positioned in the guideways on the base, the key handle 110 is turned and the key moves in an axial direction into the lock. When the cam pin 130 which is fixed to the key abuts side plate 25, the axial movement of the key is interrupted and continued rotation of the key handle carries the pin around in the circular guideway 129 causing the key to turn in the lock where it first turns lever 167 in a counter-clockwise direction to free the remaining levers which are subsequently displaced by the rotation of the key to bring the depending ends thereof in register over the channel 197 in the locking dog 192. With the continued rotation of the key handle, cam 134 which is fixed thereto, depresses bar 35 elevating plungers 143 and 144. Plunger 143 enters an opening in the base of the casing and locks the casing to the base, while plunger 144 elevates plunger 201 which engages and raises arm 194 and disengages the locking dog 192 from the slot 191 in the hub 199 thus releasing the main shaft 187 for rotation.

Assuming the motor has been turned on by switch knob 72, the cyclic operation of the device is thereafter controlled by the envelope-operated bar 55 movably positioned over feeding platform 45. As the bar is displaced with each of the envelopes or other matter to be stamped, shaft 65 is rocked thereby actuating the lever mechanism to release the clutch and drive the register mechanism. After the clutch has been released, and before the end of the cycle, cam 94 which is fixed to the driven portion of the clutch, displaces the follower roller 93 and turns the lever arm 80 to disengage the same from lever arm 71 which causes lever arm 86 to snap into the path of the clutch stop arm 87 thereby disengaging the clutch and arresting the operation of the register mechanism.

I claim:

1. In a metering apparatus including a metering mechanism, an enclosing casing therefor, a lock for the metering mechanism of the kind which locks on removal of the key secured inside of the casing, a keyhole for the lock, a base for the casing, a key supporting and actuating device built into the base comprising a manually rotatable sleeve having a helical cam slot cut therein, a key member having a shank portion disposed within the cam sleeve, means including a stationary guideway, a pin fixed to the key shank and extending through the cam slot into the guideway cooperating with the cam sleeve and controlled by the rotation thereof for inserting the key member into the key hole and thereafter rotating the same to operate the lock.

2. In a metering apparatus including a metering mechanism, an enclosing casing for said mechanism, a locking mechanism for the metering mechanism having a key hole disposed in the casing, a base for supporting the casing, a rotatable sleeve formed with a helical cam slot built into the base, a key having a cylindrical stem portion supported within the sleeve in register with the key hole when the casing is properly positioned on the base, a pin fixed to the stem portion extending through the cam slot, a manually operable member fixed to the sleeve for rotating the same, linear guiding means for the pin disposed adjacent and parallel to the axis of the sleeve, curved guiding means communicating with the linear guiding means whereby rotation of the sleeve in a predetermined direction from an initial position of rest imparts an axial movement to the key until the pin therein reaches the end of the linear guiding means to insert the key into the locking mechanism, and thereafter continued rotation of the sleeve causes the pin to follow the curved guiding means which causes the key to turn about its axis to operate the locking mechanism.

3. In a device of the character described, a meter having a drive shaft, a disc having a slot formed therein fixed to the drive shaft, a movable locking dog cooperating with the slot, a spring biasing the dog in the direction of the disc tending to bring the dog into engagement with the slot thereby holding the shaft from rotation, a movable plunger for disengaging the dog from the slot, a key operated lock effective to lock on removal of the key therefrom, a plurality of key operated levers in the lock effective when locked to retain the dog positioned in the slot, a key for actuating the lock effective when turned therein to displace the levers clear of the dog and thereafter to actuate the plunger to disengage the dog from the slot in the disc thereby releasing the shaft for rotation and a bitt for the key having a plurality of lever operating members formed with relatively large arcuate, concentric lever engaging surfaces effective to hold the levers in a predetermined unlock position while the key is being turned a further angular distance to operate the dog disengaging plunger.

4. A locking device according to claim 3 in which the meter, the locking dog and the lock are enclosed in a casing provided with a key hole for the lock, and a base is provided for detachably supporting the meter, a manually rotatable key actuating member built into the base for supporting the key means in alignment with the key hole when the casing is in normal position on the base, and means responsive to the operation of the key actuating member for operating the lock and plunger in sequence.

5. A locking device according to claim 4 in which the meter, the locking dog and the lock

are enclosed in a casing formed with a plurality of walls, and in which the key hole is formed in one of the walls and an opening through which the plunger is operable is formed in another of the walls.

6. A locking device according to claim 5 in which the key actuating member comprises a plurality of cams, one cam being effective on the rotation of the actuating member first to insert and then rotate the key in the lock, and a mechanism comprising lever means controlled by a second cam for displacing the plunger to disengage the dog from the slot in the disc.

7. A locking device according to claim 6 in which the key actuating member comprises a rotatable handle, a sleeve having a spiral cam slot formed therein fixed to the handle, a cam fixed to the sleeve for operating the movable plunger; and in which the key comprises a cylindrical shank member supported within the sleeve for relative displacement in translation and rotation, a pin fixed to the cylindrical shank member extending outwardly through the cam slot beyond the surface of the sleeve, and relatively stationary guiding means for the pin external to the cam slot.

8. In a postage metering apparatus, a meter mechanism, an enclosing casing therefor, a base for supporting the casing, a locking mechanism for the meter enclosed in the casing having a keyhole therefor formed in the wall of the casing, a manually operable tubular key supporting and actuating member having a helical cam slot formed therein supported for rotation by the base in register with the keyhole when the meter casing is properly positioned on the base, a key having a stem extending into the bore of the actuating member, a pin fastened to the stem projecting outwardly through the helical cam slot, fixed linear guiding means for the outer end portion of the pin whereby the key is caused to move outward in an axial direction during an initial portion of a revolution of the actuating member to insert the key into the lock, and curved guiding means for the pin communicating with the linear guiding means for the pin for turning the key in the lock during a further portion of the revolution of the actuating member.

9. An apparatus according to claim 8, in which the locking mechanism comprises a plurality of key operated levers, a bitt for the key comprising a plurality of concentric arcuate lever operating surfaces effective to move the levers to unlocking position initially as the key is turned and to hold the levers thus positioned while the key is turned to effect subsequent unlocking operations.

10. An apparatus according to claim 9 in which the base includes a plurality of side walls, bearing means in the side walls supporting the key actuating member for rotary movement, a cam secured to the actuating member and a locking dog release member in the meter mechanism operated by the cam.

11. An apparatus according to claim 10 in which the locking dog comprises a lever, one arm of which is formed with a locking nose and the other with a transverse channel, the locking levers when in locking position having their ends disposed over the lever alongside the channel to block displacement of the locking dog.

12. An apparatus according to claim 11 in which initial rotation of the proper key in the lock positions the lever ends over the transverse channel.

13. An apparatus according to claim 12 in which the base of the meter is formed with a pair of bearing holes, and the upper side of the base whereby the meter rests is provided with corresponding bearing holes adapted to register therewith when the meter casing is in operative position on the base, a rock shaft mounted underneath the base, a pair of arms secured to the shaft having end portions positioned under the holes and a movable pin in one of the bearing holes of the base adapted to be elevated by the actuation of the arm, and means operated by the pin when elevated for actuating the locking dog to release position.

14. An apparatus according to claim 13 in which another of the arms elevates another pin into the corresponding hole in the meter casing slightly in advance of that pin which actuates the locking dog to insure that the meter is in proper position and to secure it in such position.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
618,158	Wolf	Jan. 24, 1899
1,657,279	Pitney	Jan. 24, 1928
2,102,046	Tyler	Dec. 14, 1937
2,104,668	Persson	Jan. 4, 1938
2,168,457	Strother	Aug. 8, 1939
2,339,852	Hanson et al.	Jan. 25, 1944
2,482,935	Rast	Sept. 27, 1949
2,521,749	Ryan et al.	Sept. 12, 1950
2,522,237	Ryan et al.	Sept. 12, 1950