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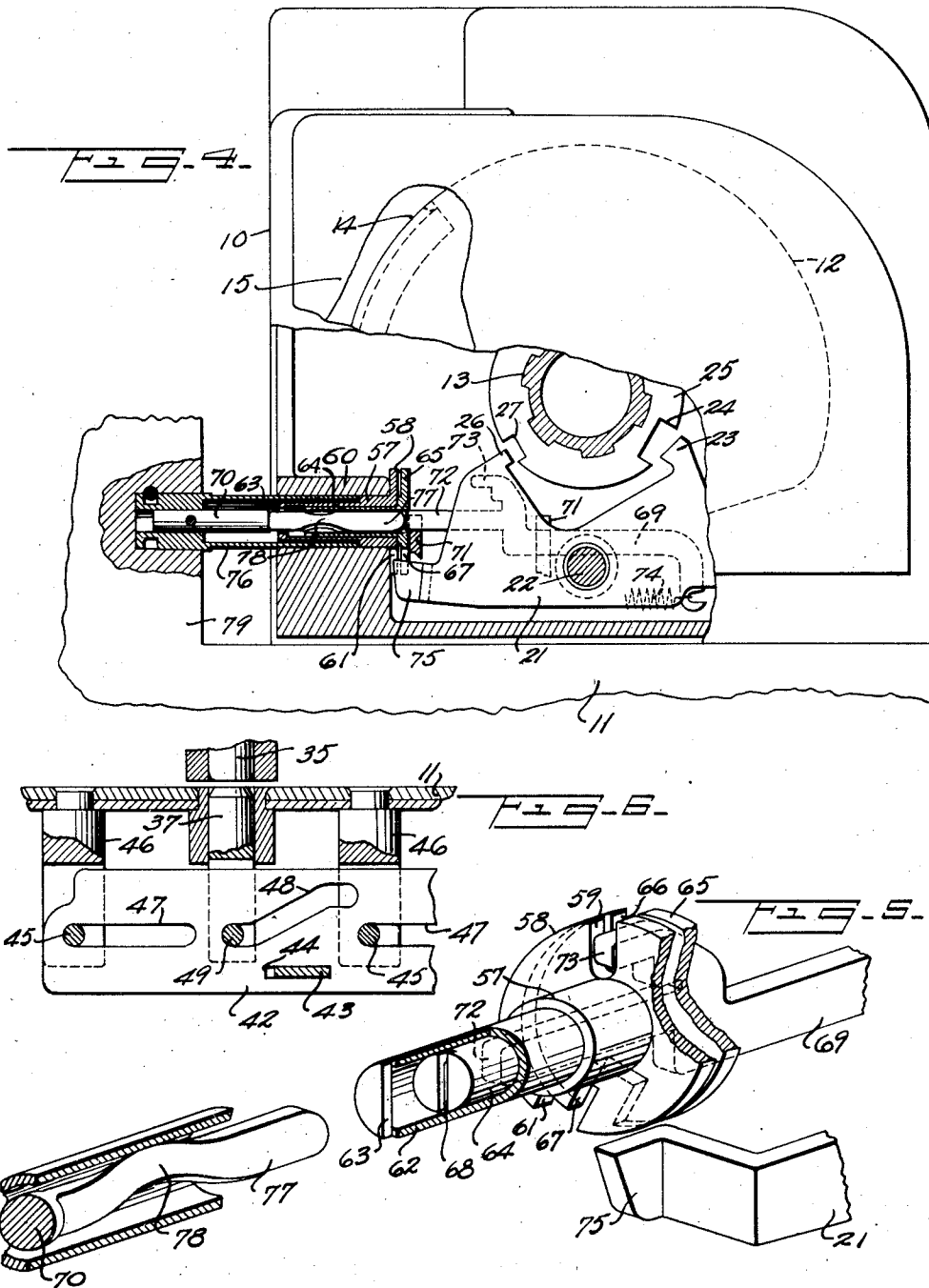
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LOCKING DEVICE

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2 Claims. (Cl. 70—387)

This invention relates to a locking structure wherein a locking device is adapted to be placed in an unlocking position when said locking device is moved to operative relation with a key structure.

More particularly, the invention relates to the means provided for the unlocking of normally locked mechanism within a detachable meter unit of a metered mailing machine when said meter unit is placed in operative position on a machine base.

In postage meter machines the meter unit, which is detachable from the machine so that it may be taken to the post office periodically for setting, has a printing drum which is normally locked such that the printing elements are in a concealed position when the meter is detached from the machine. Said meter unit also contains registering mechanism of the delayed transfer type, the transfer pawls of which are also locked to prevent accidental movement thereof when the meter is detached from the machine. When placing the meter unit in an operative position on the machine base, a lock releasing mechanism is first controlled which arranges locking members, associated with the printing drum and register mechanism, in a position for release when the meter unit is finally locked on the machine base by the operator.

It is one object of the invention therefore, to provide a lock releasing mechanism which is automatically controlled during the placing of the meter unit upon the base in operative position.

It is another object to provide a locking mechanism for the locking of certain elements of structure within the meter unit, which mechanism may be actuated under control of the operator when the machine is in an operative position upon the machine base, and further to associate with said locking mechanism a key controlled locking means which normally prevents operation of the locking mechanism within the meter when the meter is detached from the base, but which is automatically released when the meter unit is moved into operative relation with an unlocking key carried by the base.

It is another object to provide a key and lock structure wherein the lock has rotative elements which are adapted to be automatically rotated upon moving the lock in engagement with a fixed key element.

It is another object to provide a lock and key structure wherein the key is a fixed element and includes a screw portion, and wherein the lock is the movable element adapted for movement

over the fixed key structure and contains adjustable locking elements which are movable to an unlocking position when engaged by the key and screw structure.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that various changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A preferred embodiment of the invention is illustrated in the accompanying drawings, wherein;

Fig. 1 is a vertical sectional view through a portion of a meter unit, showing the locking structure for the locking of the printing drum shaft and register transfer pawls, also a lock unit in the meter unit and an associated key in the base;

Fig. 2 is a plan view of the mechanism shown in Fig. 1;

Fig. 3 is a part sectional and part elevational view taken along the line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 1, showing the meter unit in a locking position on the machine base;

Fig. 5 is a perspective view on an enlarged scale of the key controlled lock, and

Fig. 6 is a part sectional and part elevational view taken along the line 6—6 of Fig. 2, showing a manually operated means for locking the meter unit to the base.

Referring to the drawings in detail, a meter unit 10 is removably mounted upon a machine base 11 of a metered mailing machine, wherein the meter unit contains the mechanism necessary for the printing of postage stamp impressions and mechanism for the registering of the values of said impressions, and the base unit contains means for driving said printing and registering mechanism. Inasmuch as the features of this invention are related to the locking elements, only those parts which are associated with said locking elements will be described.

A rotary printing drum 12 is carried by a shaft 13 and has a value printing element 14, which is normally concealed within a suitable guard portion 15. Registering means comprising indicator wheels 16 is mounted within the meter unit, and has delayed transfer mechanism associated

therewith, including transfer pawls 17—17 and associated detent dogs 18—18.

When the meter is removed from the machine the drum shaft 13 and the transfer pawls 17—17 are locked to thus prevent any fraudulent manipulation of the printing drum in an effort to take stamp impressions at the point of printing, or to cause movement of the transfer pawls to a transfer position by the accidental dropping of the meter unit.

The locking element, which is directly associated with the printing drum shaft, comprises a rocker member 21, which is pivotally mounted upon a shaft 22, and has a prong 23 which normally engages a notch 24 in a flange 25 on the drum shaft 13. A second prong 26 on the rocker member 21 is adapted to cooperate with a slot 27 for the purpose of locking the drum shaft if an attempt were made to fraudulently manipulate the locking devices of the machine. Said rocker member 21 is further provided with a head 28, having a slot 29 therein to provide jaws which normally engage a pin 31 fixed in one end of a rocker lever 32. Said rocker lever 32 is fixed to a shaft 33, which shaft is rotatable in the bearings provided at 34—34.

When the meter unit is locked on the base by the operator, the shaft 33 is adapted to be rotated during the locking operation in a clockwise direction, as viewed from Fig. 1, thereby rotating the rocker lever 32. Through the pin and slot connection 29—31, the rocker member 21 is also rotated to remove the prong 23 from locking engagement with the notch 24 of the drum shaft flange 25. The rocking of said shaft 33 is provided by means of mechanism best shown in Fig. 3, which comprises a vertically movable plunger 35 mounted within a housing 36, which plunger is adapted to be moved by a manually controlled meter locating or locking pin 37. A pin 38 projecting from the plunger 35, through a slot 39 in the housing 36, engages a slotted lever 41 fixed on the shaft 33.

The meter locating pin 37 is adapted to be manually adjusted vertically upward into engagement with the plunger 35, when the meter is properly set on the base in an operative position. Said adjustment is provided by means of a cam plate 42, best shown in Fig. 6, which plate is adapted for horizontal longitudinal movement by means of a manually operable lever 43, a portion of which passes through a slot 44 in said plate. When the lever is moved to the left as viewed from Fig. 2, the plate 42 will be moved sideward to the left, as viewed from Fig. 6, along supporting pins 45—45 on legs 46—46, the said pins engaging horizontal slots 47—47. A cam slot 48, between the slots 47—47 in said plate 42, is engaged by a pin 49 in the meter locating pin 37. Upon movement of said cam plate 42 to the left therefore, the cam slot 48 will move the pin 49 and the meter locating pin 37 upwardly, to drive the meter locating pin against the plunger 35 and to a locking position within the meter unit. The upward movement of the plunger 35 will effect the rocking of the lever 41 and shaft 33, which in turn will rock the lever 32 and rocker member 21 to remove the prong 23 from the notch 24 of the drum flange 25.

Also fixed to the opposite end of the rocker lever 32, is a link 51 which is connected with a lever 52 on a shaft 53, as best shown in Fig. 1. Fixed to said shaft 53, directly behind the detents 18—18 of the transfer pawls 17—17, are cam blocks 54. When the shaft 33 is rocked during

the locking of the meter to the base, as previously described, the rocker lever 32 will effect the rocking of lever 52 through link 51, and release the cam blocks 54 from their locking engagement with the detents 18—18, to therefore permit movement of the detents during the operation of the machine. When the meter unit is removed from the base however, the said cam blocks 55 are rigidly fixed against the detents 18—18, to prevent movement thereof and consequently movement of the transfer pawls 17—17.

The foregoing description relates to mechanism which is locked within the meter, and to the manual control means for the manipulation of said locking mechanism after the meter unit is in an operable position upon the machine base.

The following description will be related to key controlled locks which are normally effective in preventing the operation of any of the aforesaid locking mechanisms until the said meter unit is in an operative position upon the machine base.

Said key controlled locks comprise a rigid key structure 56, which projects from the machine base, and a locking structure having movable elements therein, which structure is contained within the meter unit, and is adapted to be moved into engagement with the key when the meter is mounted upon the base.

Referring first to the lock structure within the meter, the same comprises a sleeve 57 rotatively mounted within a bearing block 60 in the meter unit. Said sleeve 57 has a flange 58 thereon, with a slot 59 and a slot 61 in the flange, and further has a reduced portion 62, the end of which is covered except for a key slot 63. A second sleeve 64 is rotatably positioned within the sleeve 57 and also has a flanged end 65 with slots 66 and 67 therein, and a key slotted end 68. A bolt 69 suitably guided at 71, has a long prong 72 which is adapted to enter the hollow interior of the sleeve 64, and a short prong 73, which is adapted to engage the slots 59 and 66 of the flanges 58 and 65, when the meter unit is detached from the base. By means of a spring 74, said bolt is normally urged to a locking position.

When the bolt 69 is in a locking position, the slots 61 and 67 in the flanges 58 and 65, are offset with relation to each other as indicated in Fig. 5. Also, when the bolt is in said locking position, the lower edges of the flanges 59 and 65 provide an obstruction for a tail 75, projecting from the left end of the rocker locking member 21, as viewed from Fig. 1. By means of said obstruction, said rocker member 21 will be caused to remain in a locked relation with the flange 25 on drum shaft 13. Further, the unlocking of said rocker member 21 from its locking position will be prevented until the slots 61 and 67 of the flange portions 58 and 65 are moved into alignment with the tail portion 75 of the rocker member 21.

By means of the key structure 56, the bolt 69 is removed from its locking relation with the flanges 58 and 65, and the sleeve members are rotated to move the slots 61 and 67 into alignment directly above the tail portion 75 of the rocker member 21. Said key structure 56 comprises a bar 70 fixed within a sleeve 76, and has a flat shank 77 extending forwardly therefrom. Said shank 77 is twisted to provide a screw-like curvature 78, and the forward end thereof is normally positioned in the same general relation as the position of the slots 63 and 68 of the sleeve members 57 and 64. The sleeve 76 is fixed within

a supporting block 79 in the machine base and the sleeve portion thereof extends outwardly over the screw portion of the shank to conceal same.

When the meter unit is mounted upon the base 11, the shank 77 will enter the slots 63 and 68 of the meter locking sleeves 57 and 64, then will engage the end 72 of the bolt 69, to move same rearwardly and disengage the prong 73 from the slots 59 and 66. Also during the entrance of the key within the meter lock, the screw portion 78 will automatically effect the rocking of the sleeves 57 and 64 and thereby rock the flanges 58 and 65 until the slots 61 and 67 therein become aligned with the tail portion 75 of the rocker member 21. Having effected the latter operation the manually controlled lever 43 is manipulated to lock the meter to the base in the manner previously described, to thus effect the rocking of the rocker member 21 and remove the prong 23 from the slot 24 of the flange 25 on drum shaft 13.

When the meter is locked on the base, the parts are in the position shown in Fig. 4. In said position it will be noted that the flange 25 is free to be rotated without interference from either the locking prong 23 or prong 26. It is desirable to maintain each of said prongs 23 and 26 in close clearance relation to the periphery of the flange 25 when in an unlocked position, the principal purpose of this being to make it practically impossible for any person, with fraudulent intent, to maintain the delicate balance which is necessary in the setting of the rocking member 21, so that neither prong 23 nor 26 will be in locking position within either slot 24 or 27 respectively.

Having described the invention what is claimed is:

1. In combination, a lock and key, the said key comprising a screw-shaped shank and being fixedly positioned, said lock having an opening therein which is movable over said key, and further having a rotatable locking member forming a part thereof, a movable member engaging the rotatable member to normally prevent rotation of said member, said movable member having one extension thereof extending within the lock in the path of the key and being displaceable from engagement with the rotatable member when the movable member engages the key shank during movement of the lock into operative relation with the key, said rotatable member also being rotated by the screw of said shank after the displacement of the movable member, thereby placing the lock in an unlocked position.

2. In combination, a normally locked element, a lock and key, the said key comprising a screw-shaped shank and being fixedly positioned, said lock having an opening therein which is movable over said key, and comprising a rotatable member having a notched flange thereon, a bolt engaging the notch in said flange to normally prevent rotation of said member, said bolt having one end extending within the lock and being displaceable from engagement with the notch when the bolt engages the key shank during movement of the lock into operative relation with the key, said rotatable member also being rotated by the screw of said shank after the displacement of the bolt.

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