

May 1, 1956

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2,743,668

POSTAGE PRINTING DIE PROTECTION MEANS

Filed Sept. 4, 1952

2 Sheets-Sheet 1

FIG. 1.

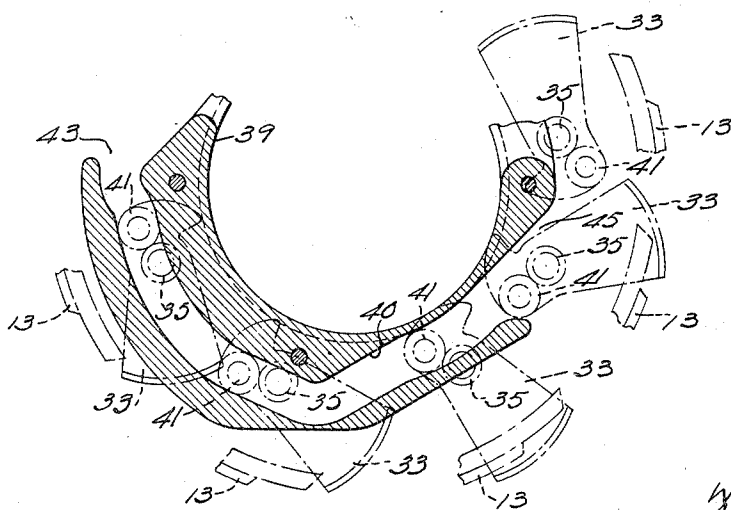
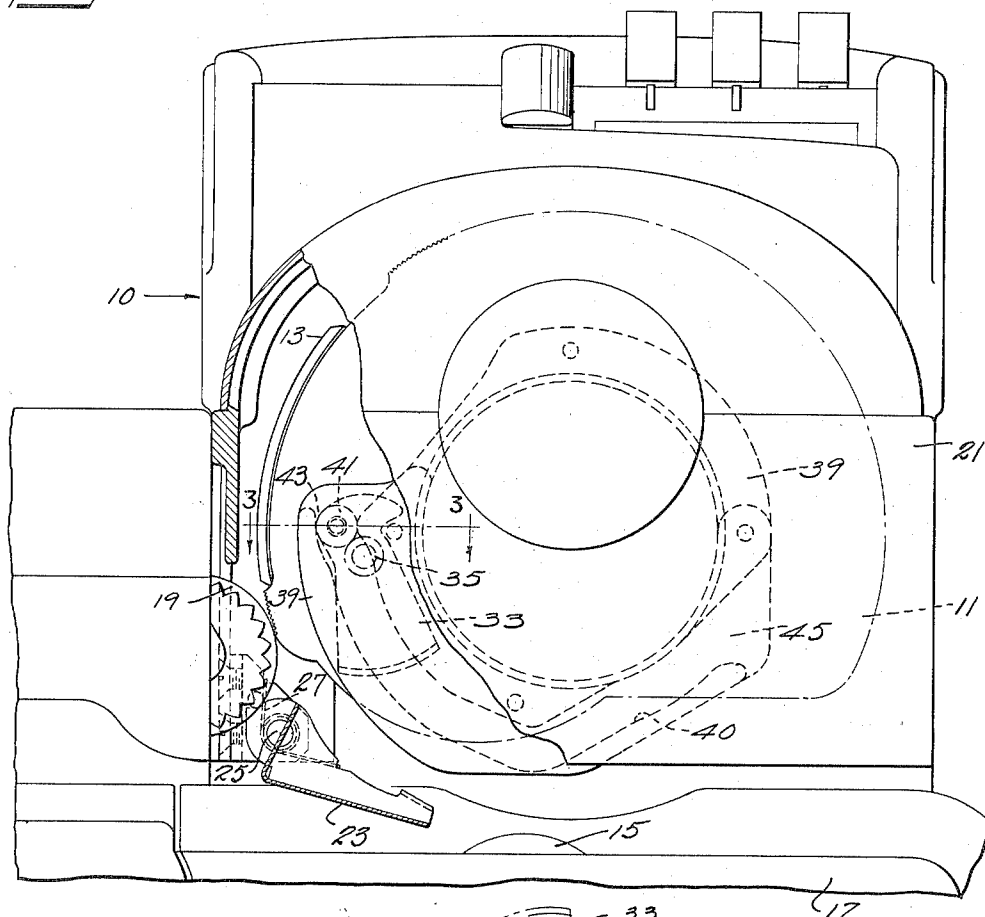


FIG. 5.

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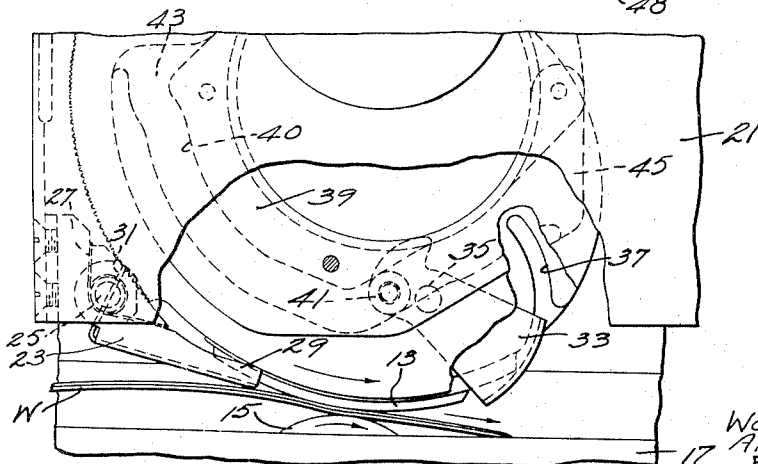
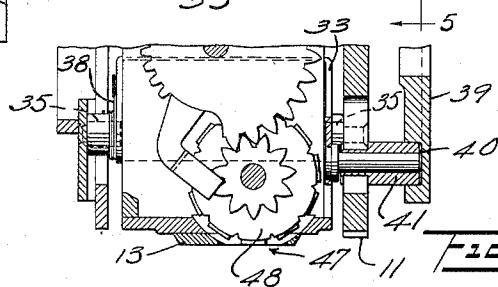
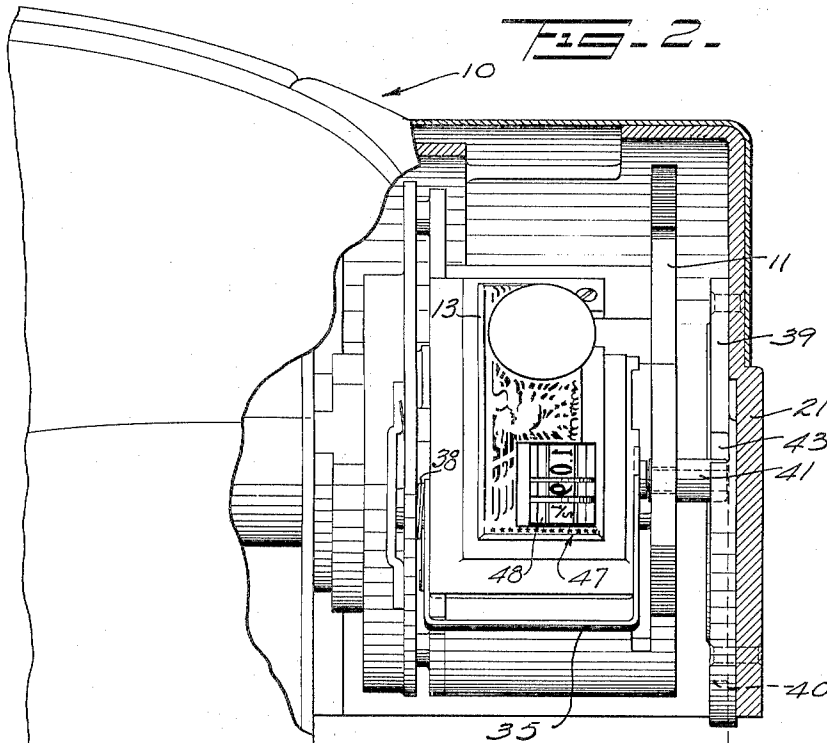
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POSTAGE PRINTING DIE PROTECTION MEANS

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2 Sheets-Sheet 2



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POSTAGE PRINTING DIE PROTECTION MEANS

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Application September 4, 1952, Serial No. 307,866

4 Claims. (Cl. 101—91)

This invention relates to printing die protection means associated with a movable printing die, and especially to such means for a rotary value printing device such as a postage meter to prevent the taking of value impressions at the printing position other than the legitimate impressions obtained in the normal way by causing a complete drum rotation for each impression.

In a rotary value printing device, value impressions are adapted to be printed on letters or tape passed between a printing element and an impression roller, and inasmuch as each impression is of preset value, the said value is registered automatically within suitable registering mechanism in response to the printing movement. It is important, therefore, to prevent taking more than the one legitimate impression from the printing die surface at the printing position during a printing cycle of operation.

One means for preventing such fraudulent impressions is shown in the patent to Walter J. Hanson and Alva G. Russell, No. 2,568,624. In the patented device, the printing drum is shown as enclosed in an open bottom housing, the bottom thereof being protected by a pair of printing die guards. The space between the guards is sufficient to permit printing action of the die but insufficient to allow exposure of the whole die at any one time. In the form shown in the patent, there is an inlet die guard hinged at that side of the housing from which matter to be printed approaches, and a discharge die guard hinged to that side of the housing from which the printed matter is fed.

It is the principal object of the present invention to provide means of improved structure and operation having a guarding or protective effect at least equivalent to that of said patented device.

It is another object of the invention to dispense with the discharge die guard of the patented device and to provide equivalent protection by means of a guard carried on the printing drum and rotatable therewith.

Another object of the invention is to provide guard means for a movable printing die in the form of a shutter arranged for movement bodily with the die, and for shifting movement relative to the die between positions covering and exposing the printing surface of the die, said relative movement being in response to printing movement of the die.

A feature of the invention consists in providing means for retracting the drum carried die guard to avoid interference with one or more of the inking means, the inlet die guard, and the printing operation, together with means for projecting the drum carried die guard to guarding position when needed.

It is another feature of the invention to so mount the drum carried die guard that it is not subject to ready displacement or removal from guarding position while the printing die is otherwise unprotected, as by being opposite an opening in its housing.

With the above and other objects in view, which will appear as the description proceeds, the invention resides

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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 front elevation of a value postage printing and metering machine according to this invention with the printing drum in home position and with a portion of the casing broken away to illustrate the parts.

Fig. 2 is an end elevation of the postage meter of Fig. 1 showing the same removed from the machine base and with portions of the casing broken away to show the printing drum in elevation.

Fig. 3 is a detailed section taken approximately on line 3—3 of Fig. 1.

Fig. 4 is a fragmentary elevation looking in the direction of Fig. 1 but illustrating the parts in printing position.

Fig. 5 is an operating diagram illustrating the position of the drum-mounted die guard for various positions of the printing drum.

Referring to the drawings in detail, the value printing device of the invention is illustrated in the form of a postage printing and metering machine and includes a postage meter 10 having a rotary printing drum 11 and means of known type (not shown) for registering and accumulating the value of the printings made by the drum. The printing drum 11 carries a printing die 13 which includes value printing indicia and which cooperates with an impression roller 15 on the machine base 17 to print the workpieces and feed the same forward. The home position of the die 13 is shown in Fig. 1, and just after leaving this position at the commencement of a printing cycle the die 13 comes into contact with an inking roller 19 in order to receive the ink necessary for the forthcoming impression.

The sides and top of the printing drum 11 are guarded by a tamper-proof housing 21. The bottom of the housing 21 is left open to permit the printing operation to take place.

When the printing die 13 is in its home position as seen in Fig. 1 or in the upper part of the housing 21, it is sufficiently protected against the taking of a fraudulent impression. However, in the printing position shown in Fig. 4 additional safeguards are desirable.

A portion of the guarding action is provided by the inlet guard 23 which is pivoted by pins 25 to the inlet side of the housing, i. e. the side from which workpieces W approach. The inlet guard 23 is urged by a spring 27 towards the printing drum, and means thereon, for example ears 29, are in contact with suitable guiding portions of the printing drum to space the guard from the printing die 13 by a slight amount just sufficient to prevent actual contact therewith. A stop member 31 formed on the guard 23 is arranged to lie adjacent the peripheral portions of the printing drum 11 and thus prevent withdrawal of the guard member 23 outwardly away from its die guarding position. The structure, mounting and operation of the inlet guard 23 are similar in most respects to the inlet guard disclosed in said patent and further description is deemed unnecessary.

Since the guard 23 protects the printing die 13 only until about the time it reaches the position of Fig. 4, it is desirable to have further means for protecting the die 13 immediately after it leaves printing position and until it is again safely disposed within the housing 21, which means was formerly provided by the discharge die guard according to said patent.

In the device of the present invention, the guarding of

the printing die after printing is provided for by means of a guard or shutter 33 carried by the printing drum 11 for rotation therewith. The shutter 33 is a U-shaped element or bail whose ends are pivotally carried on studs 35 extending parallel to the axis of the drum 11. The shutter 33 can be swung from a guarding position overlying a portion of the printing die 13 to a retracted position in which it is disposed within the periphery of the drum 11 and accommodated by suitable slots 37. A torsion spring 38 is provided for urging the shutter 33 towards retracted position. According to the invention the shutter 33 is retracted during the first 90° of drum rotation to clear the inking roller 19, the inlet die guard 23 and the workpiece W during printing, and then is moved to guarding position.

Means is provided for moving the shutter 33 in accordance with the angular position of the rotary drum 11 and in the form shown consists of a cam groove member 39 mounted on the interior of the front surface of the housing 21 and having a groove 40 cooperating with a follower roller 41 which projects from one of the legs of the shutter 33. Since the control of the shutter 33 is needed only over the first half of each drum rotation, the cam groove is shown as discontinuous, and having an entrance mouth 43 and an exit 45, the shutter 33 lying in the fully retracted position under the influence of a torsion spring 38 during the remainder of each revolution of the drum 11.

In Fig. 5, five positions of the shutter 33 are illustrated. Reading from left to right, the first shows the shutter 33 shortly after the roller 41 has entered the cam groove 40 and while the die 13 is being inked by the roller 19. The second position shows the parts just as the die 13 approaches the printing location. The third position illustrated shows the die just as it leaves printing location and after the shutter 33 is moved into full die-guarding position. In the fourth position, the roller 41 has begun to leave the exit 45 and the shutter 33 has begun to retract from its guarding position due to the influence of spring 39. The fifth showing indicates the position of the shutter 33 in its fully retracted position where it remains until the roller 41 again enters the mouth 43 as the drum 11 comes to home position.

The speed at which the shutter 33 is moved, as determined by the slope of the cam groove 40 is preferably such that the shutter 33 will envelope one end of the die 13 as rapidly as the other end escapes from the protection of inlet guard 23, so that no more than a prescribed amount of the die surface is exposed at one time. It will be noted that the shutter arrangement of this invention thus provides full protection for the printing die. However, since the shutter is mounted on the printing drum, it is progressively removed from the printing theater in the general direction of workpiece movement and hence is free from the danger of possible conflict with the workpieces being printed.

It can be seen from Figs. 4 and 5 that between the inlet guard 23 and the shutter 33, the die 13 is never fully exposed while near the printing position at the bottom of the housing 21, but is only progressively exposed to print postage on a workpiece passing between itself and the impression roller 15. The amount of the die length which it is permissible to expose at any one time depends somewhat on the subject matter being printed and the location of critical portions thereof on the die. The guarding arrangement is such, however, that the die portion exposed between guards 23 and 33 is never a substantial one insofar as the chance for taking a forged or fraudulent impression is concerned. In the form of the invention illustrated in the drawing no more than about three quarters of the surface of die 13 is ever exposed at any one time and as the die leaves the printing position, the shutter 33 is arranged to prevent printing of the value indicating portion of the die. This portion, indicated by reference character 47, is normally the leading portion of a postage

printing die, and is made up of settable wheels 48 (Fig. 3) in a known manner.

From the foregoing description it can be seen that the present invention provides a novel die protecting structure for a movable value printing die arranged in such manner that danger of interference with the workpieces passing rapidly through the machine in the normal way is largely removed.

Having described the invention, what is claimed is:

1. In a value printing device having a rotary printing drum carrying a printing die thereon, said die having a value indicating part and a casing surrounding said drum and having an opening adjacent the drum periphery to permit printing contact of a workpiece with said drum; means defining a printing location opposite a portion of said opening; means for protecting said printing die against the taking of fraudulent impressions while in the vicinity of said opening comprising a shutter mounted on said drum and shiftable relative to the die between a protecting position closely overlying and covering at least a substantial portion of the value indicating part of the printing surface of the die to prevent the taking of an impression of the covered portion, and a retracted position clear of the die surface to permit the taking of an impression; and means to shift the shutter to protecting position when said die portion is near said opening but not at printing position.

2. In a value printing device having a rotary printing drum carrying a printing die thereon and a casing surrounding said drum and having an opening adjacent the drum periphery to permit printing contact of a workpiece with said drum; means defining a printing location opposite a portion of said opening; means for protecting said printing die against the taking of fraudulent impressions while in the vicinity of said opening comprising a shutter mounted on said drum and shiftable relative to the die between a protecting position closely overlying and covering at least a substantial portion of the printing surface of the die to prevent the taking of an impression of the covered portion, and a retracted position clear of the die surface and ahead of the die to permit the taking of an impression; and means to shift the shutter to protecting position when said die portion is near said opening but beyond printing position.

3. In a value printing device having a rotary printing and feeding drum carrying a printing die thereon and a casing surrounding said drum and having an opening adjacent the drum periphery to permit printing contact of a workpiece with said drum; means defining a printing and feeding location opposite a portion of said opening; devices for protecting said printing die against the taking of fraudulent impressions while in the vicinity of said opening comprising a guard carried by the casing and maintaining a covering position with relation to one portion of the printing surface of the die while the die is within the vicinity of the opening and further comprising a shutter mounted on said drum and shiftable relative to the die between a protecting position closely overlying and covering a portion of the printing surface of the die before the trailing end of the die passes beyond the guard, the die surface being otherwise partially exposed to permit the taking of an impression therefrom at the said opening; and means to shift the shutter from the covering position to a retracted position.

4. In a value printing device having a rotary printing drum carrying a printing die thereon, said die having a value indicating part and a casing surrounding said drum and having an opening adjacent the drum periphery to permit printing contact of a workpiece with said drum; means defining a printing location opposite a portion of said opening; means for protecting said printing die against the taking of fraudulent impressions while in the vicinity of said opening comprising a shutter mounted on said drum and having a U-shaped transverse section with the lower bridging portion thereof extended in one

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direction and shiftable relative to the die to place the extended bridging portion in a protecting position closely overlying and covering a substantial portion of the printing surface of the die to prevent the taking of a fraudulent impression while the covered portion is in the vicinity of the opening in the casing.

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