United States Patent

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[54] **AUTOMATICALLY LOADED HAND STAMP**
9 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** **101/93,** 101/29, 101/109, 177/13
[51] **Int. Cl.** **B41j 7/32**
[50] **Field of Search** ..... 101/28, 29, 19, 20, 93 RC, 94, 102, 103, 109, 371, 372, 373, 405; 177/13; 276/3, 4; 33/184.5–6

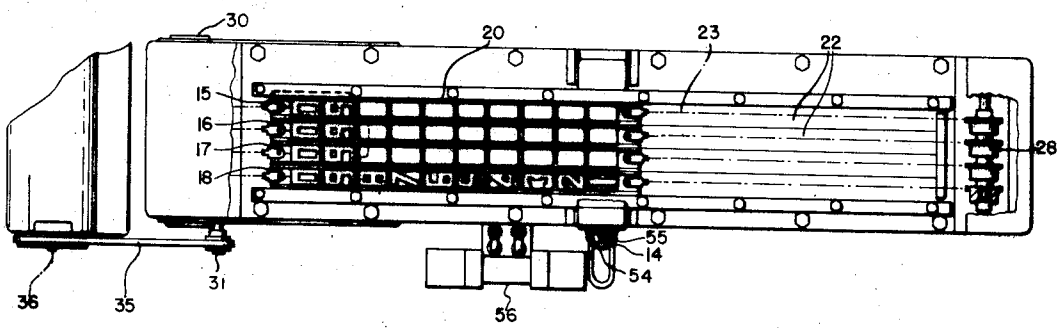
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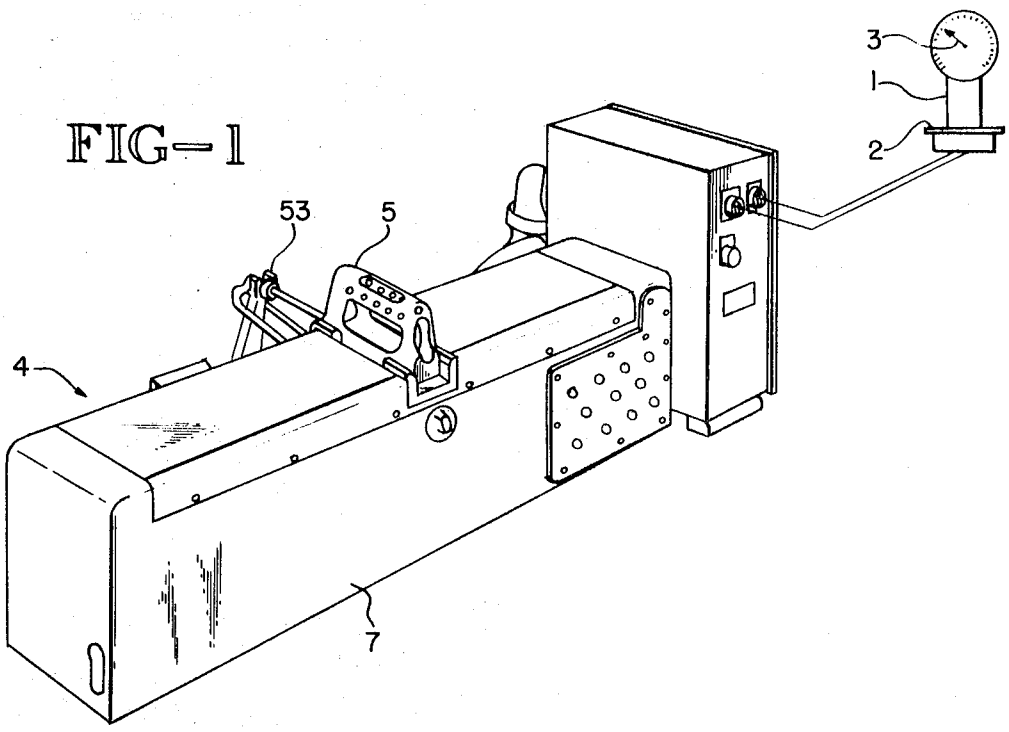
ABSTRACT: A hand-held printing stamp is automatically loaded with printing blocks representative of alpha, numeric or symbolic data, such as, the weight of an object as measured by a weigh scale. The stamp is part of a printing device having a plurality of printing blocks contained in one or more trays. The data output device, such as, a scale is coupled to the printing device and commands a motor to drive the trays past the stamp. The controls cause the trays to stop independent of one another when printing blocks designated by the output device or scale are beneath the stamp. The designated printing blocks are locked to the stamp by a locking pin. The stamp is then removed from the printing device, inked and used to mark a printing surface. The locking pin is removed from the stamp and the trays returned to an initial position when the hand stamp is replaced in the printing device.



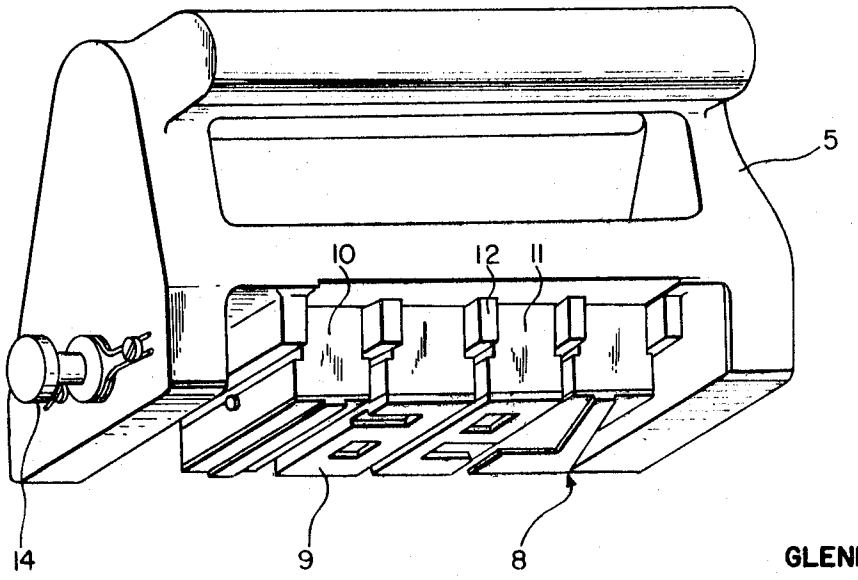
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4 Sheets-Sheet 1

FIG—1



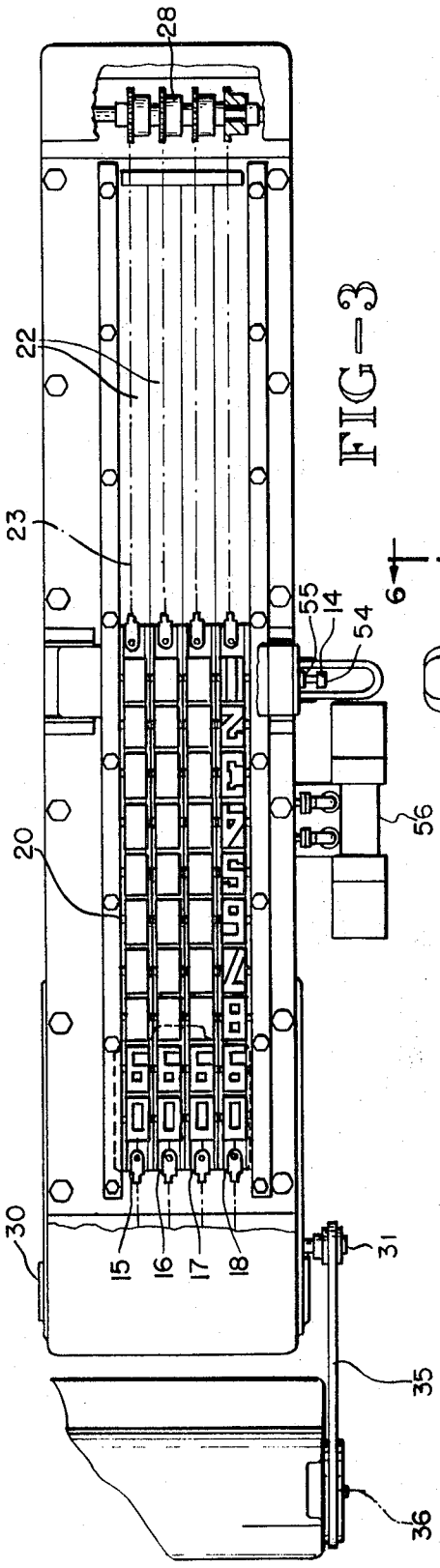
FIG—2



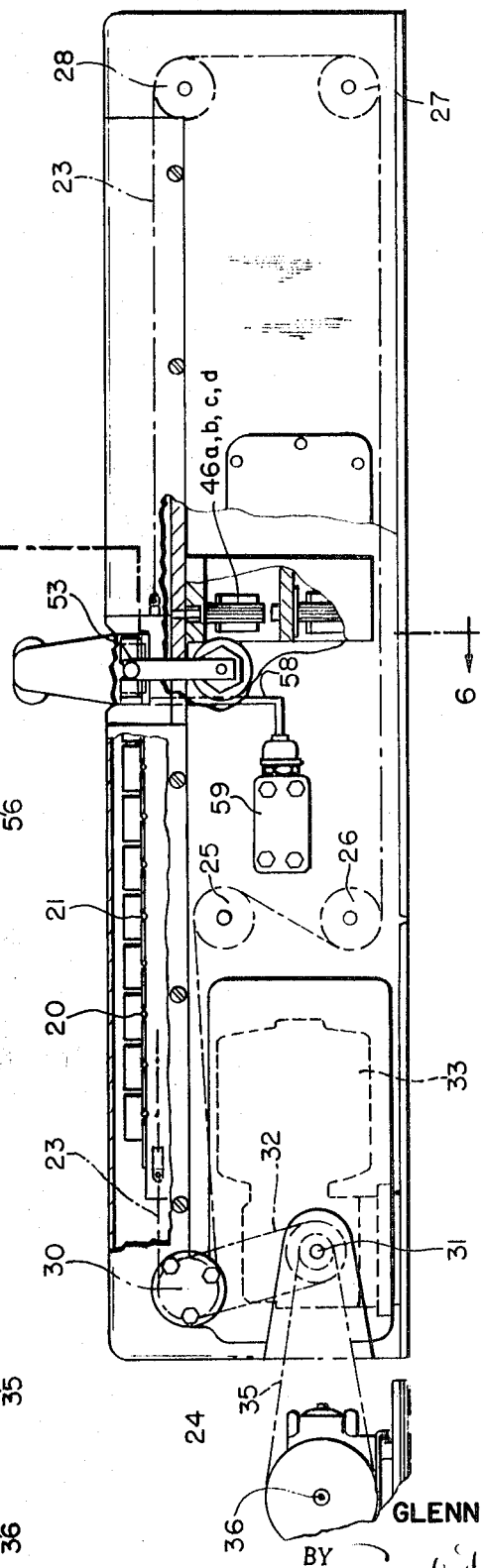
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FIG—3



FIG—4

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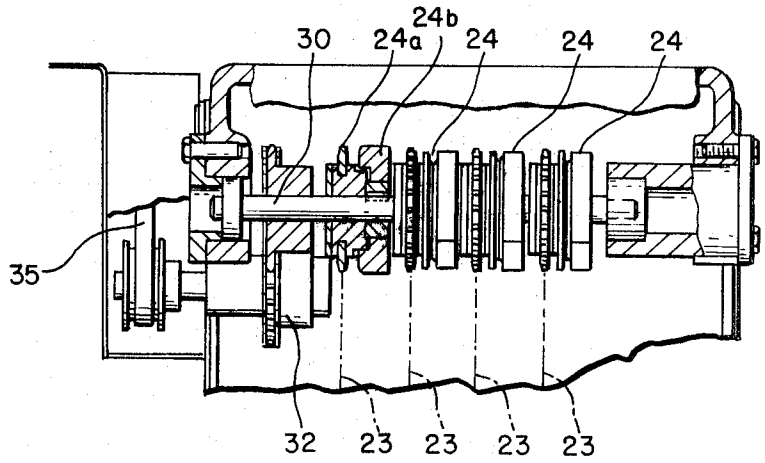


FIG-5

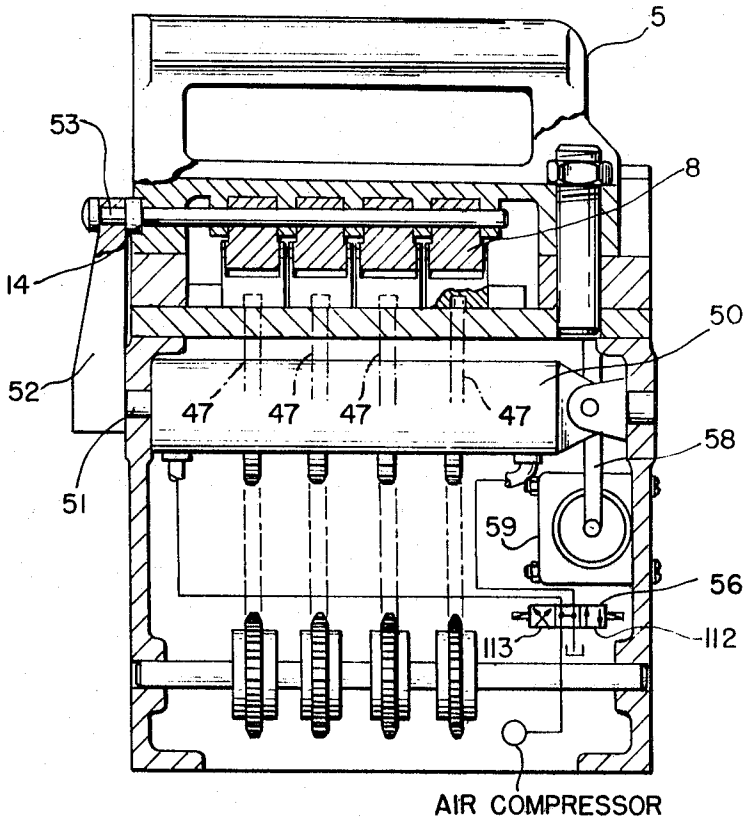


FIG-6

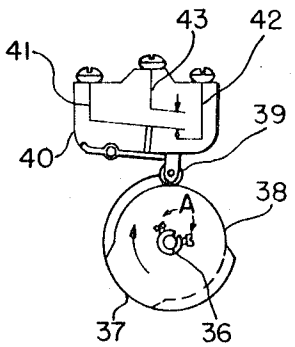


FIG-7

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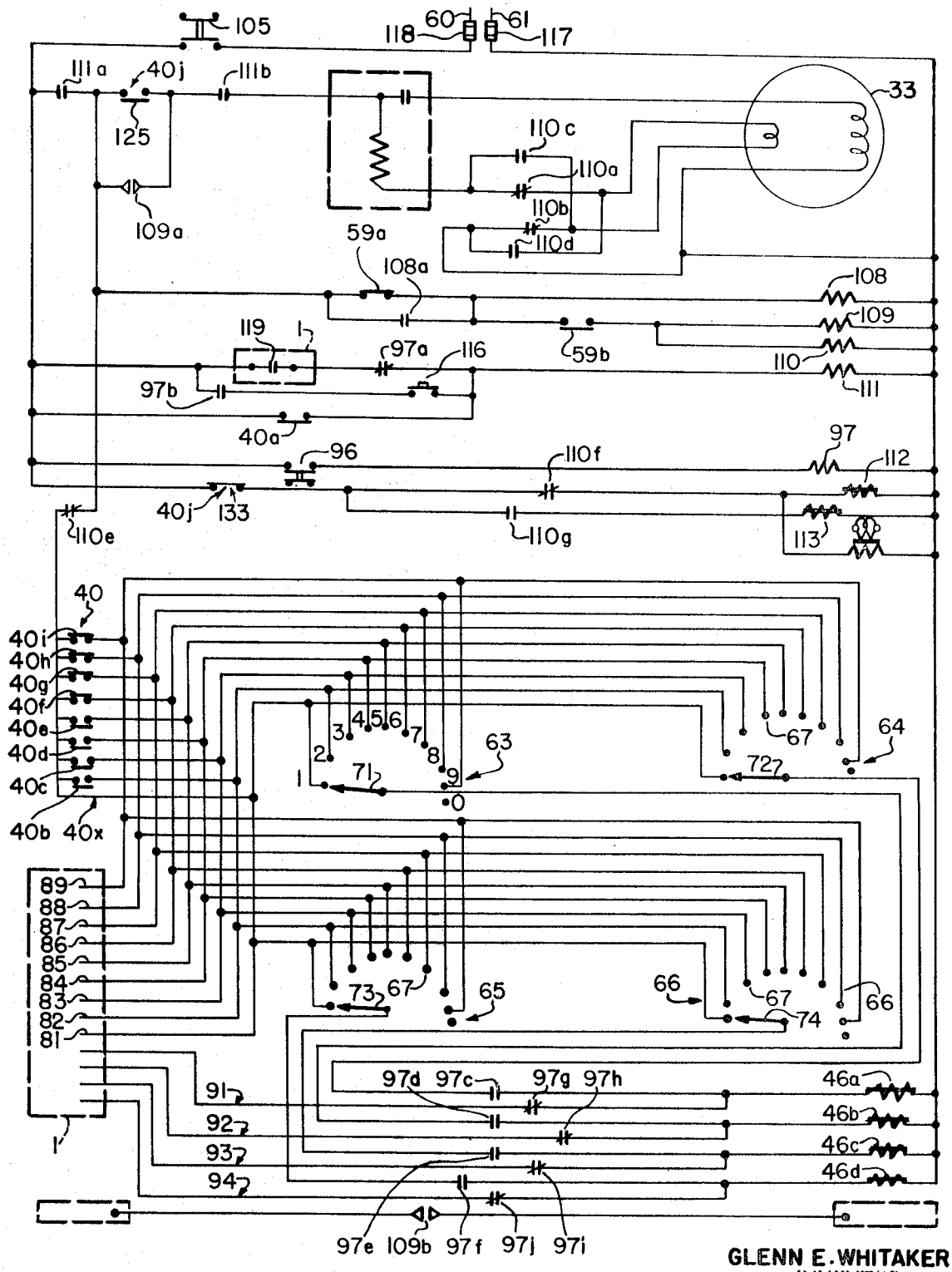


FIG-8

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AUTOMATICALLY LOADED HAND STAMP

BACKGROUND OF THE INVENTION

The present invention relates generally to printing apparatus and mechanisms for selecting designated printing type from a large collection of type and for positioning the type at a printing location. Specifically, the present invention relates to apparatus for loading a hand-held printing stamp with type corresponding to output data from an output device, such as, a punch card reader, a linear measuring device, an operator-controlled selector, a weight scale, etc. The latter operation is effected automatically.

Frequently, industries require that the weight of a product, component or other item be measured and the numeric value of the weight marked directly on the object. An example is in the paper industry where the weight of a roll of paper is recorded and marked on the roll for inventory and identification purposes. In a mass-production situation the process of reading the weight of an object registered on the scale, loading a stamp with corresponding printing type and then marking the object is a time-consuming and therefore costly process. Also, in an assembly line situation the repetition of the process is tiring and thereby gives rise to human error.

Accordingly, it is an object of the present invention to provide means for setting type or other printing indicia into a mechanism capable of stamping or marking a printing surface. Specifically, it is an object of the present invention to automatically load type representing alpha, numeric or symbolic data into a printing device in response to the information stored or recorded in the output device.

As a typical example, the weight measurement made by a scale is used to describe the scope and application of the present invention, in which, four trays store 10 printing blocks having the decimal characters 0–9 scribed thereon. The trays represent the units, tens, hundredths and thousands decimal positions of a base-ten number. A weight scale is equipped with four rotary switches which represent corresponding decimal position of a base-ten number. Each rotary switch has a wiper arm which is rotated by the scale measuring mechanism to one of the ten contacts on the rotary switch representing the numbers 0–9 The wiper arm positions of the four switches thereby record the number representing the weight of an object as measured by the scale. The rotary switches are electrically coupled to cooperate with timing apparatus to select corresponding numbered blocks from the four trays.

The four trays are moved in unison past a hand stamp straddling the trays. A cam mechanism sequentially closes a plurality of timing switches indicating which numbered blocks are currently adjacent the hand stamp or handle. The timing switches are electrically coupled to the contacts on the rotary switches and activate braking mechanisms to stop a tray when the block adjacent the stamp is that designated by the position of a wiper arm of the rotary switch.

After the four blocks designated by the rotary switches are stopped adjacent the hand stamp, a locking mechanism is activated loading the designated blocks into the hand stamp. The hand stamp is removed from the position astride the trays, the blocks are inked and the number displayed by the stamp is marked onto a printing surface.

The printing device is also capable of being operated independently from the scale or other remote input device. For this purpose the printing device includes its own set of rotary switches wired in parallel to those in a remote device and has means for switching between the two sets of rotary switches. The printing device operates in the same manner regardless which set of rotary switches is selected. Of course, when the switches in the printing device are used, an operator selects the positions to which the wiper arms are moved to establish which printing blocks are to be loaded into the hand stamp. Therefore, it is another object of the present invention to device a printing device capable of being selectively operated independently of a remote input device or in concert therewith.

In keeping with the foregoing, it is an object of the present invention to devise means for separating designated numbered blocks or other printing indicia devices from a plurality of such indicia. Furthermore, it is another object of the invention to arrange said designated indicia at a print out position or load zone of a portable marking device. It is also an object to separate and arrange indicia in response to electrical representations of the indicia.

Still another object of the present invention is to store printing blocks in apparatus other than the housing of the hand stamp, to align selected blocks to the hand stamp and to engage the selected block to the stamp in a manner that permits printing. Yet another object is to device means to return blocks from the stamp to the storage apparatus when the printing is completed.

DESCRIPTION OF THE DRAWINGS

Other objects and features of the invention are apparent from a further reading of the description of the invention and the drawings which are:

FIG. 1 is a perspective view of a printing device in combination with a weigh scale showing a hand stamp in a position enabling it to be loaded with selected printing type;

FIG. 2 is an enlarged perspective view of the hand stamp and printing type;

FIG. 3 is a top plan view of the printing device having the top cover and hand stamp partially deleted to expose the type stored therein;

FIG. 4 is a side elevation view of the printing device;

FIG. 5 is a top plan view of the tray drive mechanism located at the left in the plan view of FIG. 2;

FIG. 6 is a cross section view taken along lines 6—6 in FIG. 4;

FIG. 7 is a side elevation view of a cam, cam follower and switch employed as a timing mechanism for the printing device; and

FIG. 8 is a schematic of the electrical circuit of the printing device.

DESCRIPTION OF THE INVENTION

Weigh scale 1 (FIG. 1) is a conventional weight measuring device employing a mechanical arrangement of the balance weights and lever arms to counterbalance the weight of an object placed on the weighing platform 2. The counterbalance mechanism of the scale rotates pointer 3 a specified distance corresponding to the weight of the object placed on platform 2. A calibrated scale adjacent the pointer indicates the weight of the object. The rotation of the pointer and/or the movement of the counter balance mechanism also gives rise to electrical signals representative of the measurement made by the scale. Printing device 4 responds to the electrical signals produced by scale 1 to load printing blocks bearing numbers corresponding to the measured weight into hand stamp or handle 5. Stamp 5 is then removed from the housing 7, inked and pressed against a printing surface to record the weight. The printing surface is often an area on the object that is weighed.

The printing blocks 8 are fabricated from any suitable material (preferably metal) and are substantially identical in dimension to permit each of them to be interchangeably locked to hand stamp 5. Appropriate raised indicia or characters 9 are formed on the blocks as illustrated in FIG. 2. The blocks carry mirror images of the numbers 0–9 to permit right-reading of the numbers when marked on a printing surface. The body 10 of each block has shoulders 11 which abut the separator bars 12 on the stamp. Each block 8 and each separator bar 12 have mating holes (not shown) to accommodate locking pin 14. Pin 14 extends through all the blocks to lock the blocks to the stamp.

The printing blocks 8 are carried by the four trays 15–18 (FIGS. 3 and 4). In the presently typical embodiment, the blocks are arranged in the tray such that the characters or numbers are ordered sequentially, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 as

illustrated by FIG. 3. The blocks are hereinafter identified by the number they bear, e.g., one block, two block etc. The blocks rest in the trays with the characters or indicia (i.e. numbers) down. Alignment pins 20 on the sides of the blocks mate with the grooves or notches 21 in the side of the trays. Pins 20 maintain the blocks at fixed positions within the trays yet allow the blocks to be removed by lifting them upward. The trays in FIGS. 3 and 4 are positioned relative to the hand stamp such that locking pin 14 is aligned for insertion through the holes in the one blocks. This position of a block relative to locking pin 14 is hereinafter referred to as the load zone.

The trays 15–18 are carried by slides 22 which are slightly longer than two times the length of the trays. The trays are initially positioned to the leftmost end of the slides. Each tray is coupled at both ends to cables 23. The cables are carried by slip clutches 24, lower idle pulleys 25–27, and upper idle pulleys 28. The slip clutches are coupled to common drive shaft 30. The drive shaft is coupled to power shaft 31 by belt 32 carried by appropriate pulleys on the drive and power shafts. Power shaft 31 is driven by a suitable electric or other type motor 33. Belt 35 carried by appropriate pulleys couples power shaft 31 to cam shaft 36 whose operation is explained below.

When drive shaft 30 is rotated clockwise (as viewed in FIG. 4), trays 15–18 are pulled to the right by cables 23. Drive shaft 30 rotates through an angular displacement capable of moving the trays to the right a distance to position the zero blocks at the hand stamp load zone (the position of the one blocks in FIG. 3). REversing motor 33 causes drive shaft 30 to rotate counterclockwise thereby pulling the trays back to their initial position as shown in FIGS. 3 and 4. The slip clutches 24 allow drive shaft 30 to rotate in either direction whether an individual tray or all the trays are free to move or not. The member 24*b* of a slip clutch 24 is keyed to the shaft 30 and rotates with it. The member 24*a* of a slip clutch 24 is free to rotate relative to the shaft 30 but is frictionally coupled to member 24*b* at their abutting side surfaces. The friction between the two members is sufficient to normally cause the member 24*a* to rotate with member 24*b* but is overcome when a tray to which the member 24*a* is coupled by virtue of cable 23 is stopped. If all four trays are stopped before the zero blocks arrive at the hand stamp load zone, the drive shaft 30 and cam shaft 36 continue to rotate through the predetermined angular displacement required to move the zero blocks from the initial position shown in FIGS. 3 and 4 to the load zone. The same is true during reverse rotation of motor 33. That is, drive and cam shafts 30 and 36 rotate an angular distance required to move a zero block from the load zone back to the initial position regardless where the trays are positioned.

Cam shaft 36 has 10 cams 37 mounted on it similar to the one illustrated in FIG. 7. Cams 37 have notches 38 cut out of their normally circular periphery. Cam followers 39 ride on the periphery of the cams closing the normally open contacts 41 and 42 on the switches when it reaches a notch 38. The ten switches, cams and cam followers are mounted in parallel along cam shaft 36. The cams, however, are locked by setscrews 43 to shaft 36 at different angular positions to cause contacts 41 and 42 on the various switches to close sequentially. The cam positions on shaft 36 are adjusted so the closing (or opening) of switch contacts coincides with the positioning of a particular numbered block at the load zone. The cams and switches are timing means for identifying which numbered block is currently at the hand stamp load zone. Switches 40 are incorporated in an electrical circuit and energize a braking mechanism to stop the trays when a desired block is aligned to locking pin 14.

The braking mechanism includes solenoids 46*a–d* (FIG. 4) positioned beneath the trays. Each solenoid has a rod 47 which engages a braking slot (not shown) in the bottom of a tray when the solenoid is energized. There are ten equally spaced braking slots on each tray. The braking slots are located relative to the notches 21 so that a block is aligned to locking pin 14 when rod 47 engages a braking slot.

Locking pin 14 is inserted into and withdrawn from hand-stamp 5 by double acting air cylinder 50. Cylinder 50 includes a piston and a piston rod 51 which moves (starting from the position shown in FIG. 6) to the left a distance sufficient to withdraw pin 14 from the block in the leftmost tray 15 and moves to the right back to the starting position when air is fed to first one then the other side of the piston. Yoke member 52 is coupled to piston rod 51 and drags pin 14 with it whenever the piston rod moves. Fork 53 of yoke member 52 engages pin 14 between shoulders 54 and 55 (FIG. 3) for inserting and withdrawing pin 14 yet allows the pin to be removed from housing 7 along with hand stamp 5.

Cylinder 50 is a conventional double-acting cylinder. It receives air for extending and retracting piston rod 51 from an air compressor driven by motor 33. The air is directed to either the right or left ends of cylinder 50 by solenoid controlled valve 56. Piston rod 51 extends to the left when air is shuttled to the right end of the cylinder and retracts to the right when air is shuttled to the left end of the cylinder. Valve 56 is represented schematically in FIG. 6. Piston rod 51 remains stationary when neither pin-in solenoid 112 nor pin-out solenoid 113 is energized and air from the compressor is vented to atmosphere at this time. Air is routed to the left end of the cylinder when pin-in solenoid 112 is energized and is routed to the right end when pin-out solenoid 113 is energized. Only one solenoid 112–113 can be energized at one time. The schematic representation of valve 56 illustrates the paths through the valve required to obtain the foregoing airflow.

Locking pin 14 is initially removed from the hand stamp at a position to the left of that shown in FIG. 6 to permit movement of the trays past the load zone and is inserted into the hand stamp when the cam switches indicate the motor has rotated through an angular distance sufficient to position a zero block in the load zone. This means that pin-in solenoid 112 is energized. The hand stamp is then removed from housing 7 and upon return of the hand stamp to its cradle astride the trays, pin-out solenoid 113 is energized to remove locking pin 14 from the stamp. The trays are not moved along slides 22 while the stamp is removed from the housing 7. Therefore, the blocks are returned to their prescribed positions in the trays when the stamp is replaced in the housing. The motor is once again energized but rotates in the opposite direction to return the trays to their initial position as seen in FIGS. 3 and 4. The feeler arm 58 on switch 59 senses the removal and return of the hand stamp from housing 7.

The operation of the printing device 4 is controlled by the electrical control circuit in FIG. 8. A direct current (DC) voltage is coupled to power input terminals 60 and 61. An AC system may also be used as an alternative. The DC voltage is applied to the windings of the shunt wound DC motor 33 which is used to advance the four trays 15–18 past the hand stamp. Each tray is stopped independently when a particular block within a tray reaches the load zone. Specifically, the trays stop when the solenoids 46*a–d* are energized. The DC input voltage energizes these solenoids when coupled to the solenoids through the timing switches 40 and the units, tens, hundreds and thousands, rotary switches of scale or printing device 4.

Rotary switches 63–66 (FIG. 8) contained in the printing device 4 and corresponding rotary switches in the weight scale 1 provide the means for generating electrical signals representative of the weight of an object. The weigh scale rotary switches are tied into the circuit of FIG. 8 in parallel with switches 63–66 and one or the other are used to select which printing blocks are to be loaded into the hand stamp. This arrangement enables the printing device to be used with or independent of the weight scale. The difference between the dependent and independent modes of operation for the printing device is that in the dependent mode the weighing mechanism of the scale establishes the position of the wiper arms on the rotary switches whereas in the independent mode an operator establishes the position of the wiper arms. In the printing device 4, the wiper arms 71–74 on switches 63–66 are

manually rotated to one of 10 contact positions representative of the zero through nine blocks in the trays. The contacts **67** on switch **63** are labeled **0–9** to indicate the ten different contact positions to which the wiper arms can be set. The rotary switches act in concert with the cam activated timing switches **40***b–i* to energize the braking solenoids **46***a–d* and thereby stop the trays. The contact positions of the wiper arms designate the specific blocks within the four trays while the timing switches enable the designated blocks to be stopped when they arrive at the load zone.

As mentioned, the braking solenoids are energized when the voltage at the power input terminals are applied across them. The braking solenoids are coupled in parallel directly to power terminal **61**. The other side of the braking solenoids are coupled to terminal **60** through the parallel paths provided by the four rotary switches **63–66** and the commonly shared path through the timing switches **40***b–i*. Switches **40***b–i* represent the two through nine blocks in the trays and are sequentially activated by the cams **37** as the trays move past the hand stamp. The timing switches **40***a* and **40***j* represent the one and zero blocks respectively but are not wired to the rotary switches because these blocks occupy the end positions in the trays. Consequently, a solenoid must be energized before the trays start moving if a one block is desired at the load zone and a timing switch is not needed for this purpose. Conductive line **40X** coupled directly to power terminal **60** and the rotary switches provides an electrical path for a braking solenoid to be energized before a tray had a chance to move. Likewise, a timing switch is not needed for the purpose of energizing a braking solenoid when the zero blocks reach the load zone because the power is removed form motor **33** at that time to halt the trays.

As mentioned earlier, there are four rotary switches located in the weigh scale **1** which correspond to switches **63–66**. The rotary switches in the scale are wired in parallel to the switches **63–66**. The conductive lines **81–89** tied to the timing switches **40***b–i* and line **40***x* and to the contacts of switches **63–66** are likewise coupled to the contacts on the rotary switches in the scale. The conductive lines **91–94** are coupled to the wiper arms on the four rotary switches in the scale and to the solenoids **46***a–d* through the contacts of relay **97** placing these wiper arms in an electrically parallel path with the wiper arms **71–74**. One or the other of the parallel paths is selected to place the printing device in an independent or dependent mode of operation.

The two position switch button **96** is used to select the dependent or independent mode of operation for the printing device. The first position of switch **96** places the printing device into the independent mode while the second position places it into the dependent or automatic mode. Relay **97** is energized when switch button **96** is put to its first position thereby opening its normally closed contacts **96***g*, *h*, *i* and *j* and closing its normally open contacts **97***c*, *d*, *e* and *f*. With the contacts of relay **97** in the aforementioned states, the wiper arms **71–74** are coupled to the braking solenoids **46***a–d* and the lines **91–94** coupled to the wiper arms in the scale are open circuited.

The operation of printing device **4** is the same for the independent and dependent modes therefore only the independent mode will be described in detail. The operation of the printing device is easily understood by following the sequence in which relays **46***a–d*, **97** and **108–113** are energized. ON-OFF switch **105** is pressed to make the voltage at power terminals **60–61** available to the entire circuit. First, switch button **96** is pressed to energize relay **97** to place the printing device into the independent mode as explained above. Prior to this action, of course, an operator rotates the four wiper arms **71–74** to particular contact positions representative of the numbers he wishes loaded into the hand stamp. The power at terminals **60–61** must be coupled to motor **33** to start the trays moving. The voltage is made available to motor **33** through contacts **111***a* and **111***b* of start relay **111** (when relay **111** is energized) and the normally closed contacts **125** of timing switch **40***j* which is activated opening contacts **125** when a zero block is at the load zone. Start relay **111** is energized when start button **116** is pressed thereby completing a circuit to relay **111**. The normally open contacts **97***b* are closed and the normally closed contacts **97***a* are opened when relay **97** is energized which occurs when mode switch **96** is pressed. Start button **116** is spring loaded to an open circuit position and when it is released by the operator power continues to be applied to relay **111** through timing switch **40***a*. Switch **40***a* is a cam-operated switch which has its contacts open whenever the trays are at the position putting the one blocks in the load zone, i.e., the position of the trays illustrated in FIGS. **3** and **4**. This means that button **116** must be maintained depressed sufficiently long for the trays to move a distance sufficient to close the contacts of switch **40***a*. As will be more clear later, switch **40***a* will cause the motor **33** to stop when the trays return to their initial position.

Motor **33** is a shunt wound DC motor having stator windings **128** and field windings **129**. THe field windings are initially coupled to power terminals **60** and **61** through the normally closed contacts **110***a* and **110***b* of relay **110** causing the motor to rotate in a direction that moves trays **15–18** from left to right. When relay **110** is energized contacts **110***c* and **110***d* open and contacts **110***a* and **110***b* close reversing the polarity of the voltage on the field windings. The motor then rotates in the reverse direction moving the trays from right to left.

While the trays are moving past the hand stamp (left to right) cam switches **40***a–j* are sequentially activated. The wiper arms **71–74** were initially set to contact positions corresponding to the particular number blocks selected by the operator to be loaded into the hand stamp. Consequently, the braking solenoids **46***a–d* are energized when the timing switches **40** corresponding to the designated blocks are activated by cams **37**. The energized braking solenoids cause their associated rods **47** to engage the slots in the trays thereby stopping them with the designated blocks at the load zone.

As indicated earlier, the braking solenoids are energized directly through conductive line **40***x* without passing through a timing switch when the wiper arms are at the first rotary switch positions as shown in FIG. **8**. The reason is that the one block is initially located at the load zone so the solenoids must be energized before the trays move. Similarily, there is no need to energize a braking solenoid if a zero block is selected by a wiper arm because the motor **33** is stopped when drive shaft **30** rotates to an angular position sufficient to place a zero block at the load zone. The braking solenoids are energized through the timing switches **40***b–i* when a wiper arm selects a two through nine block.

The timing switches **40** serve all four trays **15–18** because the printing blocks are similarly arranged within the trays. However, one rotary switch serves one tray. The rotary switch **63** serves the units tray **15**, switch **64** the tens tray **16**, switch **65** the hundreds tray **17** and switch **66** the thousands tray **18**. Four separate rotary switches in scale **1** correspond to the switches **63–66** and likewise serve the four trays. Obviously, the number of trays and rotary switches can be varied to satisfy the dictates of the environment in which the present invention is used.

The normally closed contacts **125** of timing switch **40***j* are opened when drive shaft **30** is rotated through an angular position sufficient to place a zero block at the load zone thereby stopping motor **33**. All the trays may be stopped by solenoids **46***a–d* before shaft **30** rotates through the aforementioned angle. A tray not stopped earlier by a braking solenoid **46** stops at this time with the zero block in the load zone. The normally open contacts **133** of timing switch **40***j* are closed at the same time contacts **125** are opened. Switch **40***j* is wired such that the normally closed contacts **41** and **43** of the switch shown in FIG. **7** serve as contacts **125** and normally open contacts **41** and **42** serve as contacts **133**.

Pin-in solenoid **112** is energized when contacts **133** of switch **40***j* close. Solenoid **112**, when energized, routes air to the left side of cylinder **50** thereby causing the locking pins **14**

to be inserted into the blocks at the load zone. No further action occurs until hand stamp 5 is removed from the cradle position astride housing 7. The removal of the handstamp is sensed by switch 59 via feeler arm 58 causing the normally open contacts 59*a* and 59*b* to be closed. The closed contact 59*a* enables solenoid 108 to be energized. Energizing solenoid 108 closes its normally open contacts 108*a* thereby establishing an energization path to relay 108 independent of contacts 59*a*. Closed contacts 59*a* and 108*a* also couple the voltage at power terminal 60 to normally closed contacts 59*b* of switch 59. Contacts 59*b* are closed when hand stamp 5 is astride housing 7 and open when the stamp is removed. Relays 109 and 110 are therefore energized when hand stamp 5 is replaced astride housing 7 via the path provided by contacts 108*a* and contacts 59*b*.

When relay 110 is energized its contacts reverse the polarity of the voltage applied to the field windings of motor 33. The motor doesn't run immediately at this point because power is interrupted by the open contacts 125 of timing switch 40*j*. Relay 109 is energized simultaneously with relay 110 but is a time delay relay and a time period of approximately 2 seconds elapses before its normally open contacts 109*a* close. Contacts 109*a* bypass contacts 125 of timing switch 40*j*, thereby energizing the motor to rotate in the reverse direction moving all the trays back to their initial position as shown in FIGS. 3 and 4. Normally closed contacts 110*e* of relay 110 are opened during the reverse of motor 33 to keep the braking solenoids deenergized to prevent them from interfering with the return of the trays to their initial position.

Time-delay relay 109 in addition to providing a time period for reversing the electrical connections to the motor field windings and for deenergizing the braking solenoids also provides time for removing locking pin 14 from the hand stamp. Normally closed contacts 110*f* are opened and normally open contacts 110*g* are closed upon replacement of hand stamp 5 in housing 7. As a result, pin-in solenoid 112 is deenergized and pin-out solenoid 113 is energized. Valve 56 therefore routes air to the right end of cylinder 50 causing pin 14 to be removed from the hand stamp. With pin 14 removed from the stamp and braking solenoids 46 deenergized the trays are free to return to their initial positions.

The trays stop when they return to their initial position because timing switch 40*a* opens thereby deenergizing relay 111. This in turn causes motor 33 to stop because contacts 111*a* and *b* are returned to their normally open condition. The opening of contacts 111*a* also deenergizes relays 108, 109 and 110 returning these relays to their initial conditions thereby permitting the operation cycle to be repeated.

The operation of the printing device 4 in the dependent or automatic mode is substantially the same as described above. An exception is the manner in which start relay 111 is energized. The scale 1 has a mechanism for closing contacts 119 physically located in the scale when the scale ascertains that a readout can proceed. The contacts 119 supply power to relay 111 through contacts 97*a* which are in this case closed because relay 97 is energized only for the independent mode of operation. Contacts 119 are opened at the point in the operating cycle when the trays begin to return to their initial position. This is accomplished by contacts 109*b* of time delay relay 109 which close simultaneously with contacts 109*a* discussed earlier. Power is again applied to relay 111 during the return trip of the trays by virtue of the electrical path through timing switch 40*a*. Switch 40*a* opens when the trays arrive at their initial position and at this time the motor stops and the various relays are returned to their initial deenergized condition.

The other difference between the independent and dependent modes of operation is of course that the circuit in FIG. 8 operates through the rotary switches on the scale rather than switches 63–66.

It is believed that the invention will have been clearly understood from the foregoing detailed description of my now-preferred illustrated embodiment. Changes in the details of construction may be resorted to without departing from the spirit of the invention and it is accordingly my intention that no limitations be implied and that the invention be given the broadest interpretation to which the employed language fairly admits.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Apparatus for loading removable hand stamp handle with designated printing indicia block selected from multiple columns of trays containing a plurality of indicia blocks in response to electrical select signals, comprising a housing for supporting said trays and said removable hand stamp handle, a data output device for producing electrical select signals corresponding to the indicia blocks designated to be loaded from each tray, drive means for advancing said trays past said removable hand stamp handle, timing means coupled to said drive means for movement therewith in increments corresponding to movement of the indicia blocks for providing a reference datum indicative of the particular indicia blocks passing said hand stamp handle, braking means cooperating with said trays for stopping designated indicia blocks in alignment with said hand stamp handle in response to said select signals and said timing means, said hand stamp handle having indicia block receiving means for receiving said designated indicia blocks, and means operatively coupled to said hand stamp handle for locking said designated indicia blocks in said hand stamp handle responsive to alignment of all said trays with the designated indicia blocks in juxtaposition to said indicia block receiving means to enable said designated indicia blocks to be removed from said trays by said hand stamp handle.

2. The apparatus of claim 1 further including release means operatively coupled to said hand stamp handle for unlocking said designated indicia blocks from said hand stamp handle to permit return of said indicia blocks to said trays.

3. The apparatus of claim 1 wherein said data output device includes a movable contact for each of the column of trays electrically coupled through a solenoid a power output for energizing and braking means, a plurality of fixed contacts for each of said columns of trays corresponding to the indicia blocks in each column of trays and operable to be electrically coupled to one of said movable contacts, said timing means including timing switches electrically coupled to a power input and to said fixed contacts whereby an electrical connection to energize a solenoid is made from the power input to the power output through a timing switch that is connected to a fixed contact engaged by a movable contact.

4. The apparatus of claim 1 wherein said trays are mounted parallel to one another for slidable movement and wherein said indicia blocks are aligned in a single row within each of said trays, and wherein said drive means includes a common drive shaft coupled for rotation to a power source, slip clutches coupled to said shaft positioned adjacent each tray, and linking means coupled between said trays and said clutches for slidably moving said trays past said hand stamp handle upon rotation of said common drive shaft.

5. The apparatus of claim 4 wherein said timing means includes a plurality of timing switches coupled to receive said select signals and a plurality of cams operatively coupled to said common drive shaft to sequentially activate said timing switches as said trays move past said hand stamp handle.

6. The apparatus of claim 5 wherein said braking means includes solenoid means engageable with said trays for stopping a tray when a designated indicia block is in alignment with said hand stamp handle, said solenoid means stopping a tray in response to select signals received by said activated timing switches.

7. The apparatus of claim 6 wherein said indicia blocks and hand stamp handle include pin receiving means and wherein said locking means includes a locking pin engageable with said hand stamp handle and indicia blocks and locking drive means for automatically moving said locking pin into engagement with said hand stamp handle.

8. The apparatus of claim 7 further including a release switch activated upon return of said indicia blocks to said tray for energizing said locking drive means for removing said locking pin from engagement with said hand stamp handle and indicia blocks.

9. The combination comprising data output means for producing data output signals representative of information to be printed, a housing, removable stamp handle means removably mounted on said housing for holding indicia to stamp an object, and printing indicia storage means in said housing having a plurality of removable printing indicia and including indicia setting means for setting the indicia in said stamp handle means in response to said data output signals, said setting means being operative to move said printing indicia relative to said handle means to an alignment corresponding to the information represented by said data output signals, and means operative only upon movement of said indicia into said alignment to lock said aligned printing indicia into said removable stamp handle means whereby the aligned printing indicia are adapted to be removed from and returned to said storage means in the set alignment.

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