Feb. 8, 1966 O. A. MINARDI 3,233,542

IMPRINTER DEVICE

Filed March 20, 1962 4 Sheets-Sheet 1

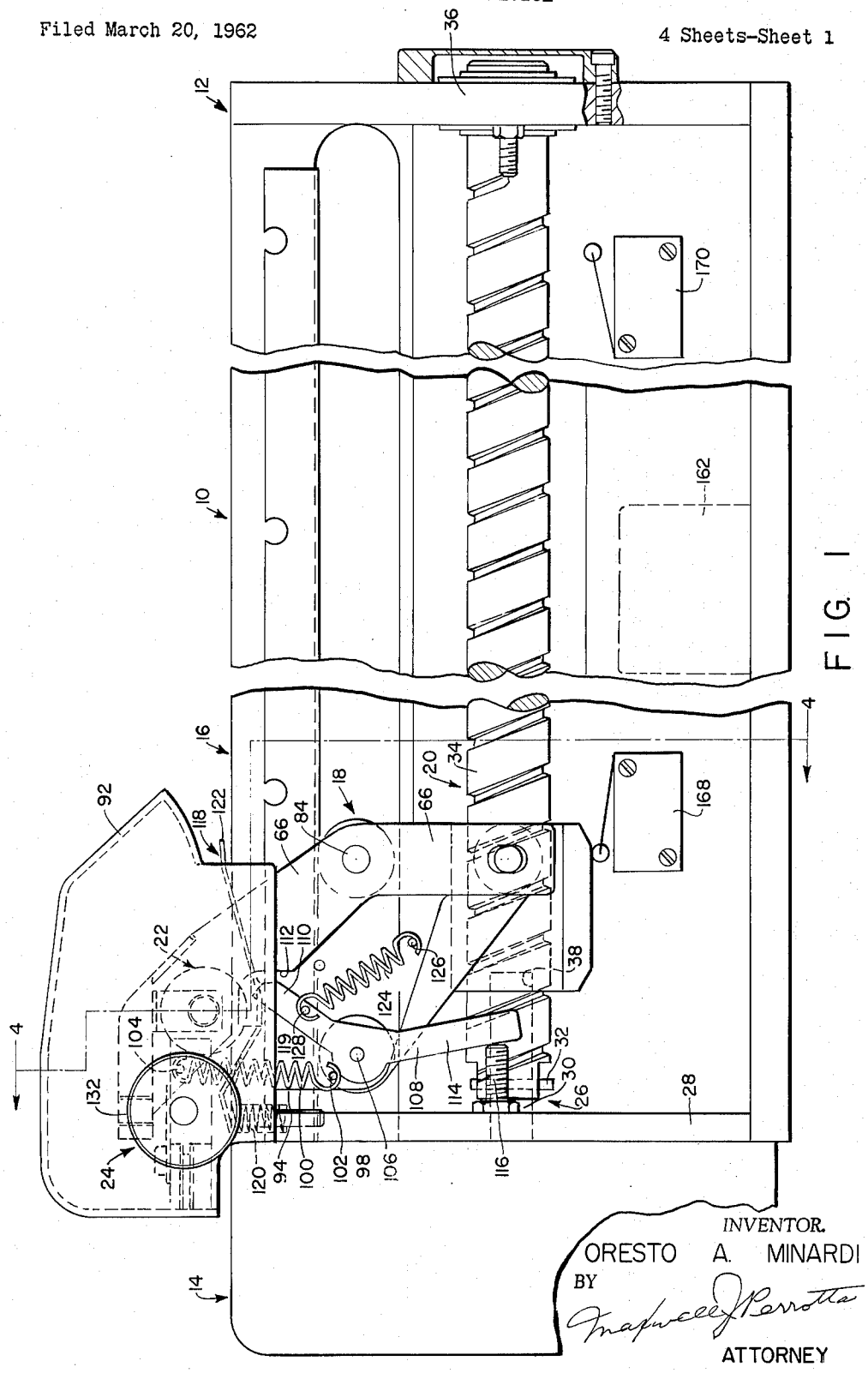


FIG. 1

INVENTOR.
ORESTO A. MINARDI
BY
Maxwell J. Perrotta
ATTORNEY

Feb. 8, 1966 O. A. MINARDI 3,233,542

IMPRINTER DEVICE

Filed March 20, 1962 4 Sheets-Sheet 2

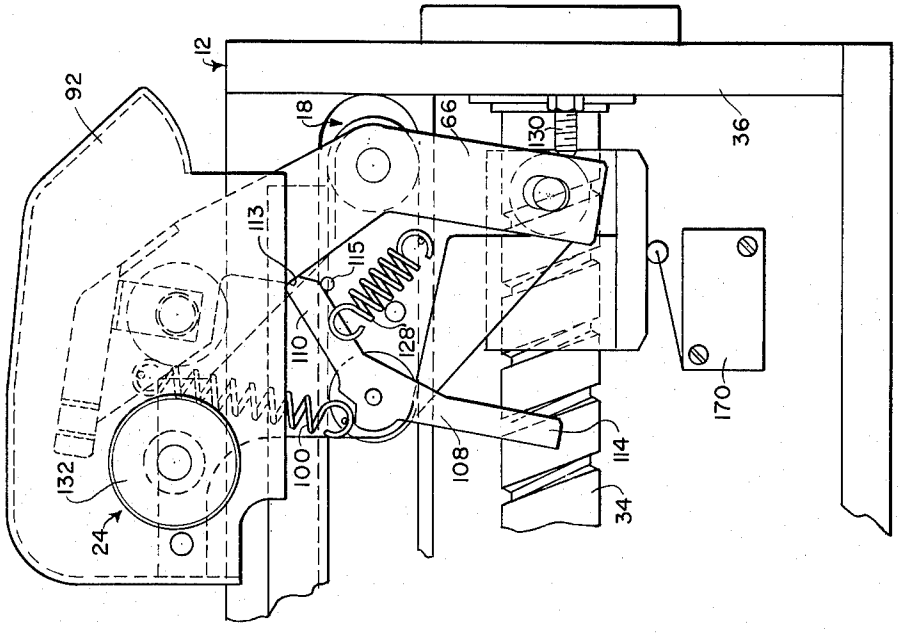


FIG. 3

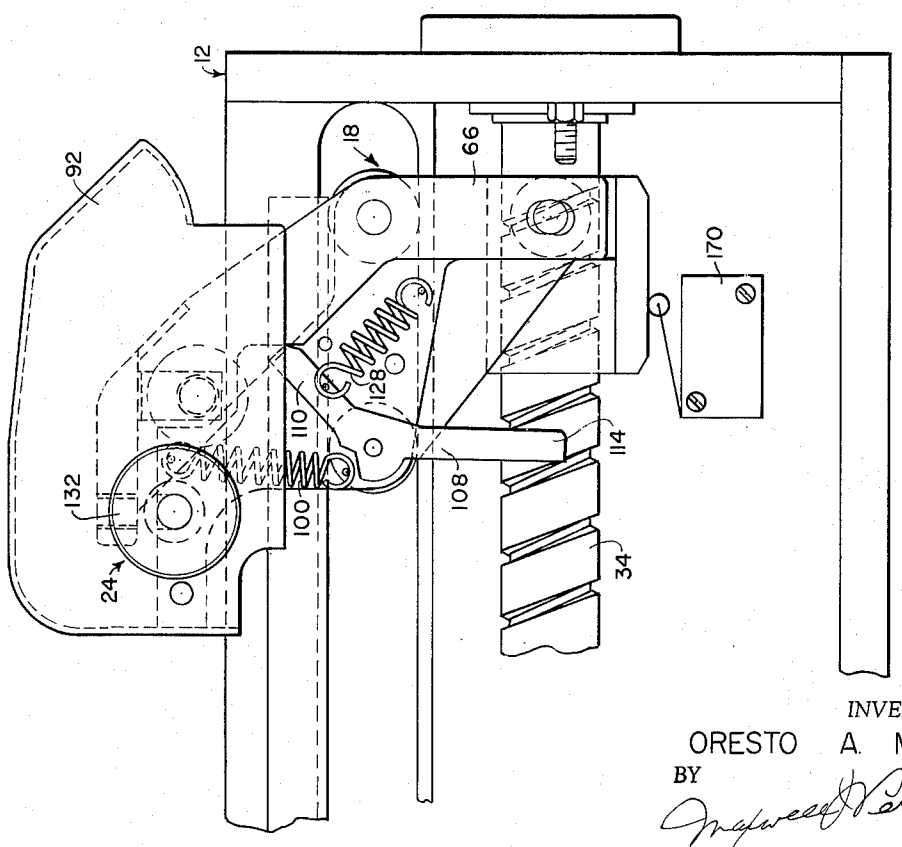


FIG. 2

INVENTOR.
ORESTO A. MINARDI
BY
Ingwersen & Parrotta
ATTORNEY

Feb. 8, 1966 O. A. MINARDI 3,233,542

IMPRINTER DEVICE

Filed March 20, 1962 4 Sheets-Sheet 3

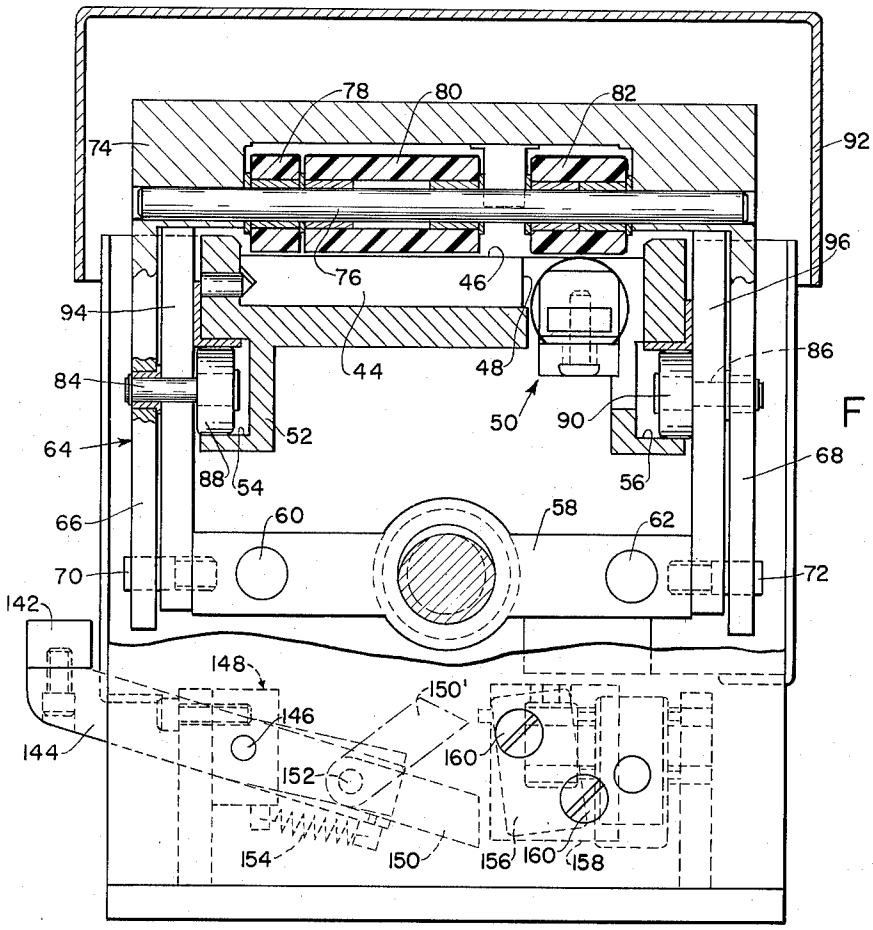


FIG. 4

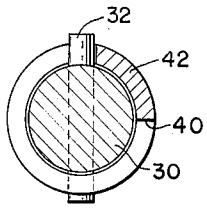


FIG. 5

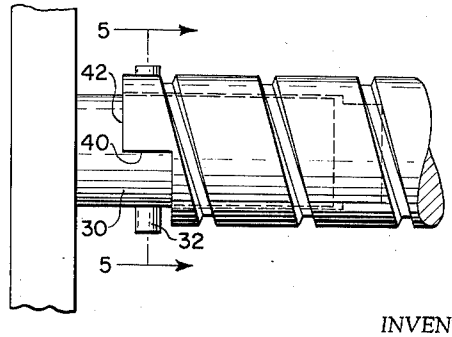


FIG. 6

INVENTOR.
ORESTO A. MINARDI
BY
Maxwell J. Perrotta
ATTORNEY

Feb. 8, 1966 O. A. MINARDI 3,233,542

IMPRINTER DEVICE

Filed March 20, 1962 4 Sheets-Sheet 4

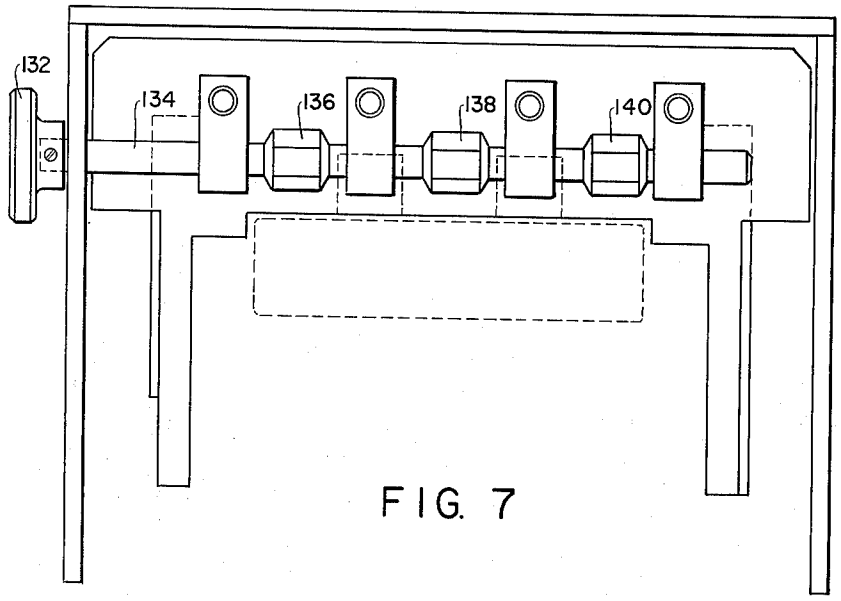


FIG. 7

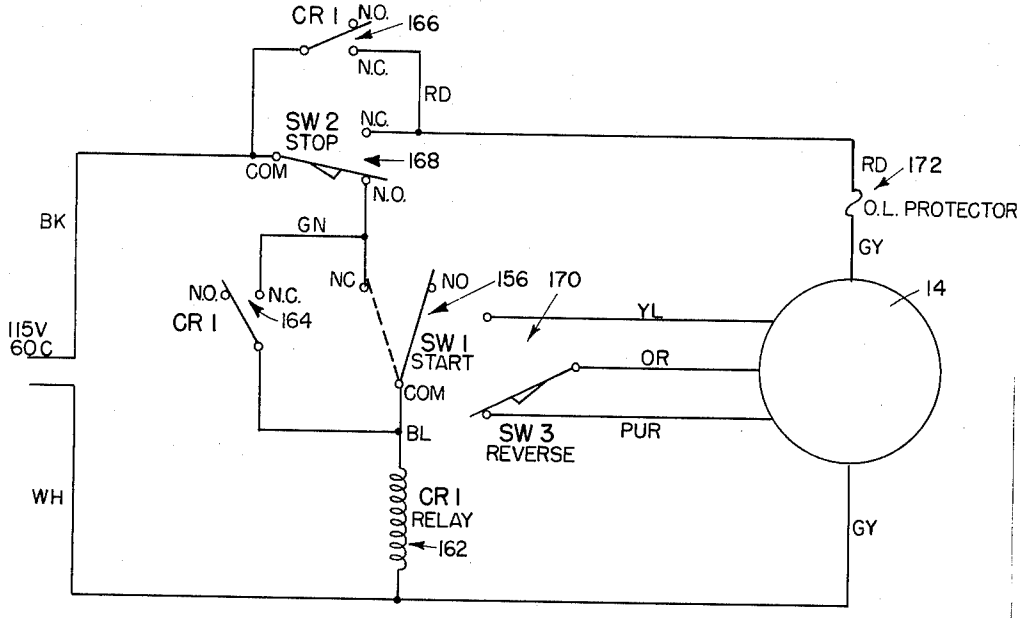


FIG. 8

INVENTOR.
ORESTO A. MINARDI
BY
ATTORNEY

United States Patent Office 3,233,542 Patented Feb. 8, 1966

3,233,542

IMPRINTER DEVICE

Oresto A. Minardi, 83 President Ave.,
East Providence, R.I.

Filed Mar. 20, 1962, Ser. No. 181,031
5 Claims. (Cl. 101—269)

The present invention relates to improvements in imprinter devices and more particularly to an improved motor driven imprinter device wherein information contained on a template is transferred to a data receiving element.

An object of the present invention is to provide an improved imprinter device wherein data can be transferred from an imprinted template to a data receiving element by motor operated means which automatically operate through a complete cycle by actuation of a single starting switch.

Another object of the present invention is to provide an improved imprinter device for transferring imprinted information from a template to a data receiving element wherein the transfer is effected by traverse of a roller over the template and data receiving element, there being means provided for maintaining the roller in a pressure inducing relation when being moved in one direction, the roller being shifted to a pressure relieved relation during return movement thereof.

A further object of the present invention is to provide an improved imprinter device wherein imprinted information on a template is transferred to a data receiving element, the device being motor driven with automatic circuitry controlling operation through an entire cycle whereby roller means is passed over the template and data receiving element and returned after effecting transfer of the imprinted information.

Still another object of the present invention is to provide an improved imprinter device wherein a motor is employed for automatically driving a carriage having roller means in forward and reverse directions over a template and a data-receiving element whereby imprinted information on the template is transferred to the data receiving element.

A further object of the present invention is to provide an improved mechanism for automatically driving a carriage having a roller means in forward and reverse directions over template and a data receiving element whereby imprinted information on the template is transferred to the data receiving element, the motor means being a reversible motor, and there being a lost motion connection between the motor means and the carriage to be driven whereby upon reversal of the motor the drive shaft thereof can reach a higher level of power before receiving the load of the carriage to be returned.

Another object of the present invention is to provide an improved imprinter device wherein information imprinted on a template may be transferred to a data receiving element by roller pressure, the roller being moved over the template and data receiving element by a carriage, and the roller being moved to a pressure relieved relation during return movement of the roller by automatically operated mechanisms.

Still another object of the present invention is to provide means for adjusting the pressure exerted by the adjusting means on the template and data receiving element.

Various other objects and advantages will become apparent from the detailed description to follow.

In the drawings:

FIGURE 1 is a side elevational view of my improved imprinter device with one of the side walls removed to show the interior mechanism;

FIGURE 2 is a side elevational view of the device showing the right hand end thereof as viewed in FIGURE 1 with the carriage at the right hand end just prior to the end of its movement toward the right;

FIGURE 3 is a view similar to FIGURE 2 but wherein the carriage has moved to its extreme right position;

FIGURE 4 is an end elevational view of the device with part of the device in section to show the mounting of the carriage;

FIGURE 5 is an enlarged detail view of the lost motion connection between the motor drive shaft and the worm shaft;

FIGURE 6 is an enlarged detail side elevational view of the lost motion connection shown in FIGURE 5;

FIGURE 7 is a top plan view of the roller adjusting means;

FIGURE 8 is a schematic view of the electrical circuitry.

Having reference now to FIGURE 1, the imprinter device 10 will now be described. The device 10 includes a framework 12 which is preferably of box-like design, the particular details of which can be varied, as desired, as will be obvious to one skilled in the art. The device 10 includes a motor means 14, means 16 for receiving the template and data receiving element, carriage means 18, driving connection means 20 for transmitting motion between the motor means 14 and the carriage means 18, roller means 22, roller adjusting means 24, and lost motion means 26.

The motor means 14 includes a reversible electric motor such as is readily available on the market today. The motor 14 is mounted on the end plate 28 of the frame 12 and has its drive shaft 30 extending through the end plate 28. The drive shaft 30 has a pin 32 carried thereby for rotation therewith.

The means 20 includes a worm shaft 34 for rotation in the end plate 36 of the frame 12 by any suitable bearing means as desired. The worm shaft 34 is formed with a recess 38 receiving the motor drive shaft 30 therein, see also FIGURES 5 and 6. The worm shaft 34 is cut away at 40 so as to leave the segment 42 in the rotary path of the pin 32. It will thus be seen that as the motor shaft 30 is rotated, the pin 32 will engage the side edges of the portion 42 transmitting rotary movement to the worm shaft 34. When the motor shaft 30 is reversed, there will be a lost motion until the pin 32 engages the portion 42 in the reverse direction. Thus, the motor power will build up during this lost motion.

Looking now at FIGURES 1 and 4, it will be seen that the frame has a platen 44 rigidly mounted therein with its top surface 46 adapted to receive a template 45 and a data receiving element 47 therein. The platen 44 has an opening 48 therein in which is supported the date stamp assembly 50. The assembly 50 is of a conventional type wherein the data can be changed from day to day.

The frame 12 also supports the guide rail plate 52 therein. The guide rail plate 52 has a pair of guide rails opening on opposite sides thereof as at 54 and 56.

The carriage means 18 will now be described in detail. The carriage means 18 includes a worm shaft follower or lead nut 58 through which the worm shaft 34 is readied. A pair of guide rods 60 and 62 are secured at their ends in the end walls 23 and 36 of the frame 12 to guidedly non-rotatively support the worm shaft follower block 58. A printing roller means assembly bracket is provided at 64 and includes a pair of side arms 66 and 68 slotted at their lower ends to receive the pins 70 and 72 therein. The latter pins are carried by the block 58. The arms 66 and 68 are joined across their tops by the transverse member 74 which rotatably supports the shaft 76 which carries the rollers 78, 80 and 82. The rollers 78, 80 and 82 are disposed for cooperation with the platen 44 and date stamp means 50 as will be obvious to one skilled in the art.

The side arms 66 and 68 have the studs 84 and 86 journalled therein and these studs in turn rotatably support the guide rollers 88 and 90 which cooperate with the tracks 54 and 56, above described. A cover 92 encases the roller means 22 and adjustment means 24 and is secured to the side plates 94 and 96, which in turn are secured to the opposite sides of the block 58 so as to move as a unit therewith longitudinally of the worm shaft 34. The side plates 94 and 96 have guide rollers 98, respectively, which cooperate with the tracks 54 and 56 for guided longitudinal movement. The spring 100 is anchored by the pin 102 to the side plate 94 and has its other end anchored to the pin 104 which is carried by the upper end of the side arm 66 whereby the roller means 22 is held downwardly and the assembly is in the relationship shown in FIGURE 1 and also shown in FIGURE 2. The roller shaft 106 for the roller 98 also has a detent 108 pivotally carried thereby with one finger 110 initially located in the cutout portion 112 of the arm 66. Another finger 114 of the detent extends downwardly and is located in the path of the detent engaging stop 116 which may be a bolt carried by the end wall 28.

The carriage means also includes a clamp 118 which has one end resiliently urged upwardly by the spring 120 while its other end 122 is normally positioned to grip a data receiving element 47 and a template 45 positioned on the platen 44 above described. Initially, of course, the clamping end 122 is in the position shown in FIGURE 1 preparatory to receiving the template and data receiving element.

After the customer's template, which identifies him by name, address and code numbers, has been positioned on the platen 44, a data receiving element is positioned in the proper location and the machine is operated. As soon as the carriage means leaves the initial position shown in FIGURE 1 and moves to the right, the clamp 118 is released from its relationship shown in FIGURE 1 so that the spring 120 expands upwardly as shown in dotted lines at 120' urges the end 122 down to fixedly hold the data receiving element 47 over the template 45 on the platen 44, as shown in dotted lines in FIGURE 1. The carriage then continues its movement toward the right hand end of the device with the roller means 22 passing over the data receiving element in pressure engaging relation therewith so as to transfer the information imprinted on the template to the data receiving element. The spring 124 is anchored to the side arm 94 by the pin 126 and has its other end anchored to the finger 110 of the detent 108 by the pin 128. During traverse of the carriage from left to right, the spring 124 will tend to pull the finger 110 downwardly but it will be restrained by the cutaway portion 112 as shown in FIGURE 2. When the carriage reaches the right hand end of its traverse, the carriage-engaging stop 130 anchored to the end wall 36, engages the pivotal arm 66 causing it to pivot in a clockwise direction so that the detent finger 110 clears the cutaway portion 112 and engages beneath the edge 113 of the arm 66. The spring 124 assists and holds the finger 110 against the stop pin 115. In this fashion, the arm 66 and the entire roller supporting means will be maintained in the tilted relationship shown in FIGURE 3 until the detent 108 has been released.

It will be understood that the carriage means carrying the roller means 22 will be moved from left to right by operation of the motor 14 which drives the worm shaft 34. When the carriage means reaches the right hand end of its traverse, as shown in FIGURE 3, the motor means is automatically reversed as will be described hereinafter to reverse rotation of the shaft 34. After the lost motion period as above described with respect to FIGURES 5 and 6, the worm shaft 34 will begin to rotate in the reverse direction forcing the carriage means to return to the left. At the end of its traverse to the left, the detent 108 engages the detent-engaging stop 116 which operates against the spring 124 to again position the finger 110 in the cutaway portion 112 of the arm 66 in readiness for a complete new operation. Simultaneously, upon return of the carriage means, the left hand end of the clamp 118 is depressed against the spring 120 to release the clamping end 122 whereby the data receiving element and template can be removed from the platen.

As viewed in FIGURES 1 and 7, adjustment means 24 includes a control knob 132 which has a shaft 134 joined thereto and carried within the cover 92 of the carriage means. The shaft 134 has the cams 136, 138 and 140 secured thereto. The faces of the cams are of varying distances from the axis of the shaft 134 so that upon rotation, different adjustments can be made for maintaining the roller means 22 for predetermined relation to the platen 44. The cam faces 136, 138, 140 are engageable with the transverse member 74 to pivot member 64 on its axis, which serves to move roller means 22 relative to platen 44.

FIGURE 4 shows the starting bar 142 is secured to the arm 144 which in turn is pivoted on the stub shaft 146 mounted on the assembly 148 within the frame. The arm 144 has a switch actuator element 150 pivotally carried at its end at 152 and movable between the positions shown at 150 and 150'. A spring 154 cooperates with the actuator 150 to snap the actuator from one position to the other. The switch operated by the actuator 150 is shown at 156 and it is carried by the spacer 158 mounted within the frame of the device by the screws 160.

Having reference now to FIGURES 1, 4 and 8, I will describe the operation of the circuit of the present invention. Of course, the first thing that the operator does is to place the customer's template with the various imprinted information thereon on the platen 44 which may be specially recessed to receive same. The operator then places a suitable data receiving element such as a multiple leafed paper assembly having suitable carbon paper therein over the template with one end of the data receiving element being positioned beneath the clamping end 122 of the clamp 118. The operator then presses the starting bar 142 and releases the same. This closes the starting switch 156 which energizes the relay 162. Energization of the relay 162 closes the contacts 164 which is a hold circuit. Also, the relay contacts 166 are closed thereby starting the motor 14. The relay contacts 166 bypass the stop microswitch 168. Operation of the motor 14 effects rotation of the worm shaft 34 as above described and this through the follower block 58 causes movement of the carriage means from the left hand position of FIGURE 1 toward the right. Initially, the clamp plate 118 grips the data receiving element by pivoting about the pivot pins 119. The roller means 22 which are adjusted by the control knob 132 then move over the data receiving element transferring the information from the template thereto. As soon as the carriage moves to the right, the microswitch 168, which is a stop switch, closes to complete the motor circuit through it. FIGURE 1 shows how the carriage will leave the microswitch 168 to permit such operation at the initial end of the traverse. Also, at this point, operation of the switch 168 opens the circuit to drop out the relay 162.

When the carriage reaches the position shown in FIGURE 2, it will engage the microswitch 170 which is a motor reversing switch. At the same time, the carriage will move into engagement with the stop 130 whereby the arm 66 is pivoted from the position shown in FIGURE 2 to the position shown in FIGURE 3 and held thereby by the detent finger 110 as above described. The reverse operation of the motor will, through the lost motion, then take over to drive the carriage in a reverse direction. During this reverse travel, the roller means 22 will be supported out of engagement with the data receiving element to prevent double carriage printing. When the carriage reaches its left hand position, it again strikes the

microswitch 168 which is the stop switch closing the circuit and ending operation of the device. Simultaneously, the detent engaging stop 116 will pivot the detent 108 to the position shown in FIGURE 1 in readiness for a complete new cycle.

Suitable overload protection can be provided as shown at 172.

From the foregoing, it is believed that the construction and operation of my improved imprinter device will be obvious to one skilled in the art. The various applications to which this device can be put will also be obvious to one skilled in the art. It is believed that I have provided a device which fulfills the objects hereinbefore enumerated.

As this invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, the present embodiment is therefore illustrative and not restrictive, since the scope of the invention is defined by the appended claims rather than by the description preceding them, and all changes that fall within the metes and bounds of the claims or that form their functional as well as conjointly cooperative equavalents, are therefore intended to be embraced by these claims.

What is claimed is:

1. A machine for transferring imprinted information from a template to a data-receiving element, comprising a frame having a platform adapted to receive thereon at least one template and at least one data receiving element in superposed relationship, a carriage movably mounted on said frame, roller means carried by said carriage movable over said platform and any template and any data receiving element thereon so as to exert pressure thereon to transfer imprinted information to the data receiving element, reversible motor means carried by said frame, drive means operatively coupling said motor means and said carriage for driving said carriage over said platform alternately in forward and reverse directions, said drive means including a worm shaft rotatably mounted in said frame, said motor means including a drive shaft, said drive means including lost motion means whereby the motor can build its power output upon reversing without load over a short time span, said lost motion means including a pin fixed to said motor drive shaft for rotation therewith, said worm shaft having one end cooperative with said motor drive shaft, said one end being cut away so as to provide a lost motion drive between said pin and said worm shaft, and carriage shifting means normally holding said carriage in a pressure inducing relation to said platform during movement in one direction and holding said carriage in a pressure relieved relation to said platform during movement in an opposite direction.

2. A machine for transferring imprinted information from a template to a data-receiving element, comprising a frame having a platform adapted to receive thereon at least one template and at least one data-receiving element in superposed relationship, a carriage movably and tiltably mounted on said frame, roller means carried by said carriage movable over said platform and any template and any data-receiving element thereon so as to exert pressure thereon to transfer imprinted information to the data receiving element, reversible motor means driving said carriage over said platform in forward and reverse directions, and carriage shifting means normally holding said carriage and roller means in a pressure inducing relation to said platform during movement in one direction and holding said carriage and roller means in a pressure relieved relation to said platform during movement in an opposite direction, said carriage shifting means including a detent and carriage-engaging stop at one end of the frame whereby when said carriage reaches the end of its imprinting travel the carriage and roller means is tilted and held by the detent to maintain the same in said pressure relieved relation.

3. A machine for transferring imprinted information from a template to a data-receiving element, comprising a frame having a platform adapted to receive thereon at least one template and at least one data-receiving element in superposed relationship, a carriage movably and tiltably mounted on said frame, roller means carried by said carriage movable over said platform and any template and any data receiving element thereon so as to exert pressure thereon to transfer imprinted information to the data receiving element, reversible motor means driving said carriage over said platform in forward and reverse directions, and carriage shifting means normally holding said carriage and roller means in a pressure inducing relation to said platform during movement in one direction and holding said carriage and roller means in a pressure relieved relation to said platform during movement in an opposite direction, said carriage shifting means including a detent and a detent-engaging stop at the other end of the frame whereby upon return of said carriage and roller means to an initial position said detent engages said detent-engaging stop to release and return said carriage and roller means to the pressure inducing relation.

4. A machine for transferring imprinted information from a template to a data receiving element, comprising a frame having a platform adapted to receive thereon at least one template and at least one data deceiving element in superposed relationship, a carriage movably mounted on said frame, roller means carried by said carriage movable over said platform and any template and any data receiving element thereon so as to exert pressure thereon to transfer imprinted information to the data receiving element, reversible motor means carried by said frame, drive means operatively coupling said motor means and said carriage for driving said carriage over said platform alternately in forward and reverse directions, said drive means including a worm shaft rotatably mounted in said frame, said motor means including a drive shaft, said drive means including lost motion means whereby the motor can build its power output upon reversing without load over a short time span, said lost motion means including a pin fixed to said motor drive shaft for rotation therewith, said worm shaft having one end cooperative with said motor drive shaft, said one end being cut away so as to provide a lost motion drive between said pin and said worm shaft, and carriage shifting means normally holding said carriage in a pressure inducing relation to said platform during movement in one direction and holding said carriage in a pressure relieved relation to said platform during movement in an opposite direction, said carriage shifting means including a detent and a detent-engaging stop at the other end of the frame whereby upon return of said carriage and roller means to an initial position said detent engages said detent-engaging stop to release and return said carriage and roller means to the pressure inducing relation.

5. A machine for transferring imprinted information from a template to a data receiving element, comprising a frame having a platform adapted to receive thereon at least one template and at least one data receiving element in superposed relationship, a carriage movably mounted on said frame, roller means carried by said carriage movable over said platform and any template and any data receiving element thereon so as to exert pressure thereon to transfer imprinted information to the data receiving element, reversible motor means carried by said frame, drive means operatively coupling said motor means and said carriage for driving said carriage over said platform alternately in forward and reverse directions, said drive means including a worm shaft rotatably mounted in said frame, said motor means including a drive shaft, said drive means including lost motion means whereby the motor can build its power output upon reversing without load over a short time span, said lost motion means including a pin fixed to said motor drive shaft for rotation therewith, said worm shaft having one end cooperative with said motor drive shaft, said one end being cut away so as to

provide a lost motion drive between said pin and said worm shaft, and carriage shifting means normally holding said carrage in a pressure inducing relation to said platform during movement in one direction and holding said carriage in a pressure relieved relation to said platform during movement in an opposite direction, said carriage shifting means including a detent and a detent-engaging stop at the other end of the frame whereby upon return of said carriage and roller means to an initial position said detent engages said detent-engaging stop to release and return said carriage and roller means to the pressure inducing relation, said carriage shifting means including a detent-engaging stop at the other end of the frame whereby upon return of said carriage and roller means to an initial position said detent engages said detent-engaging stop to release and return said carriage and roller means to the pressure inducing relation.

References Cited by the Examiner

UNITED STATES PATENTS

1,919,954	7/1933	Kranz	101—269 X
2,043,056	6/1936	Mueller	101—269
2,556,251	6/1951	Bell	101—250
2,694,361	11/1954	Jacobson	101—92
2,916,989	12/1959	Boyden et al.	101—269
3,058,416	10/1962	Grant et al.	101—269

WILLIAM B. PENN. *Primary Examiner.*