Nov. 1, 1938. H. P. ELLIOTT 2,134,815

PRINTING

Filed March 20, 1936 4 Sheets-Sheet 1

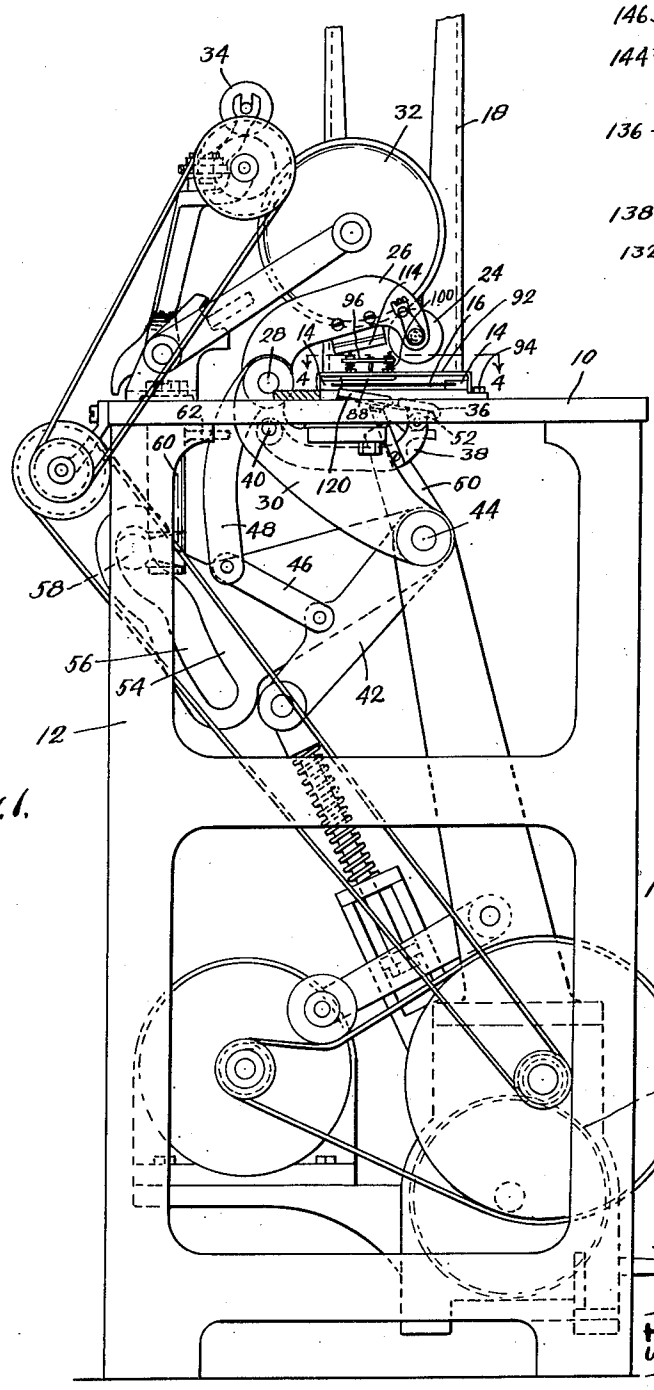


Fig. 1.

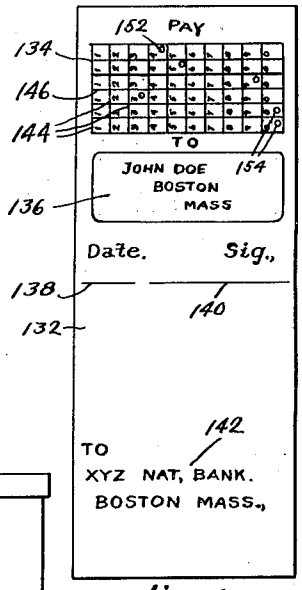


Fig. 10.

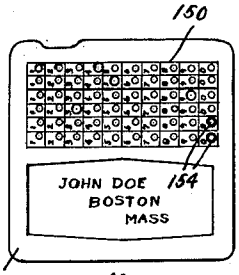


Fig. 11.

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by
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Atty

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PRINTING

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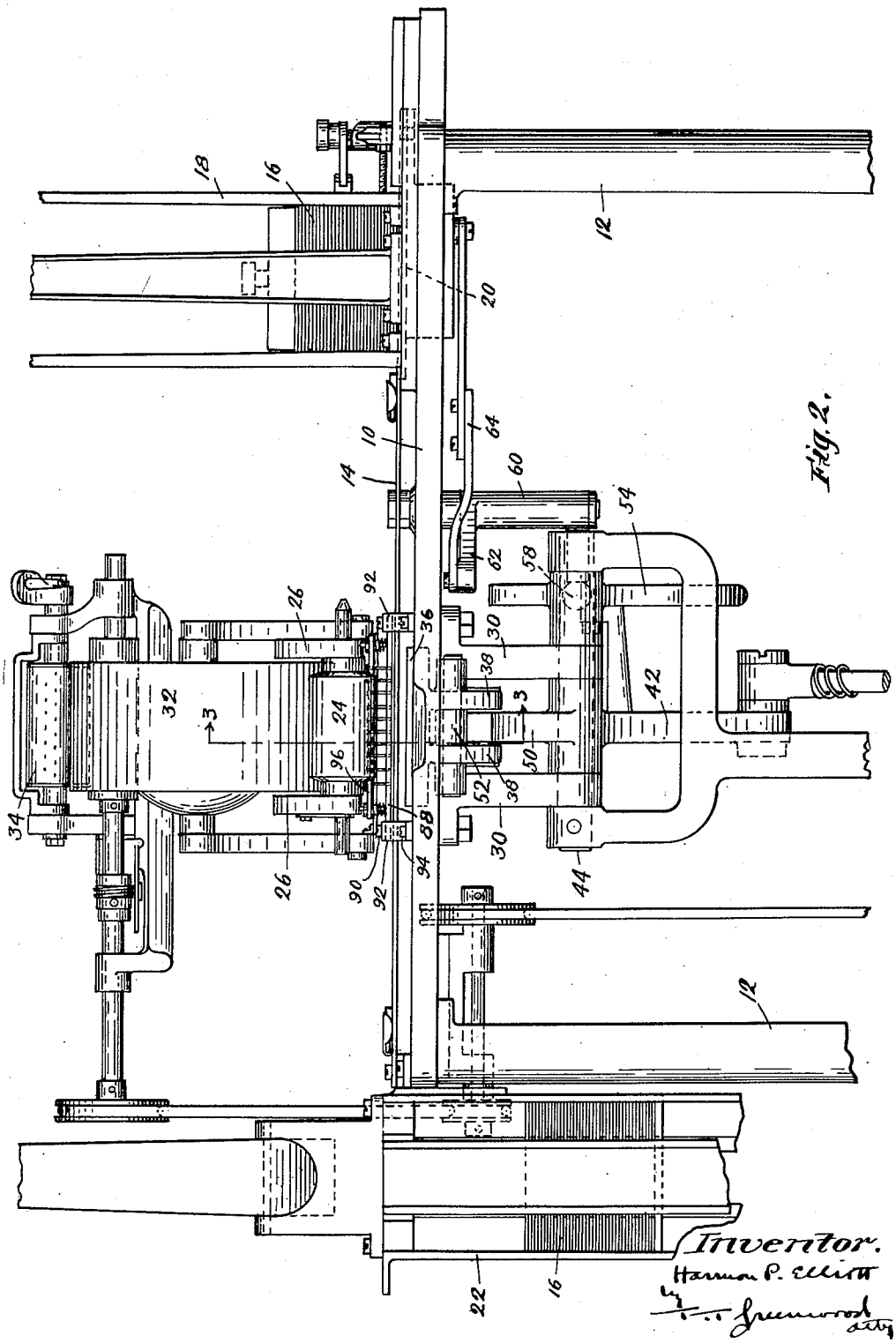


Fig. 2.

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Nov. 1, 1938. H. P. ELLIOTT 2,134,815

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Filed March 20, 1936 4 Sheets-Sheet 3

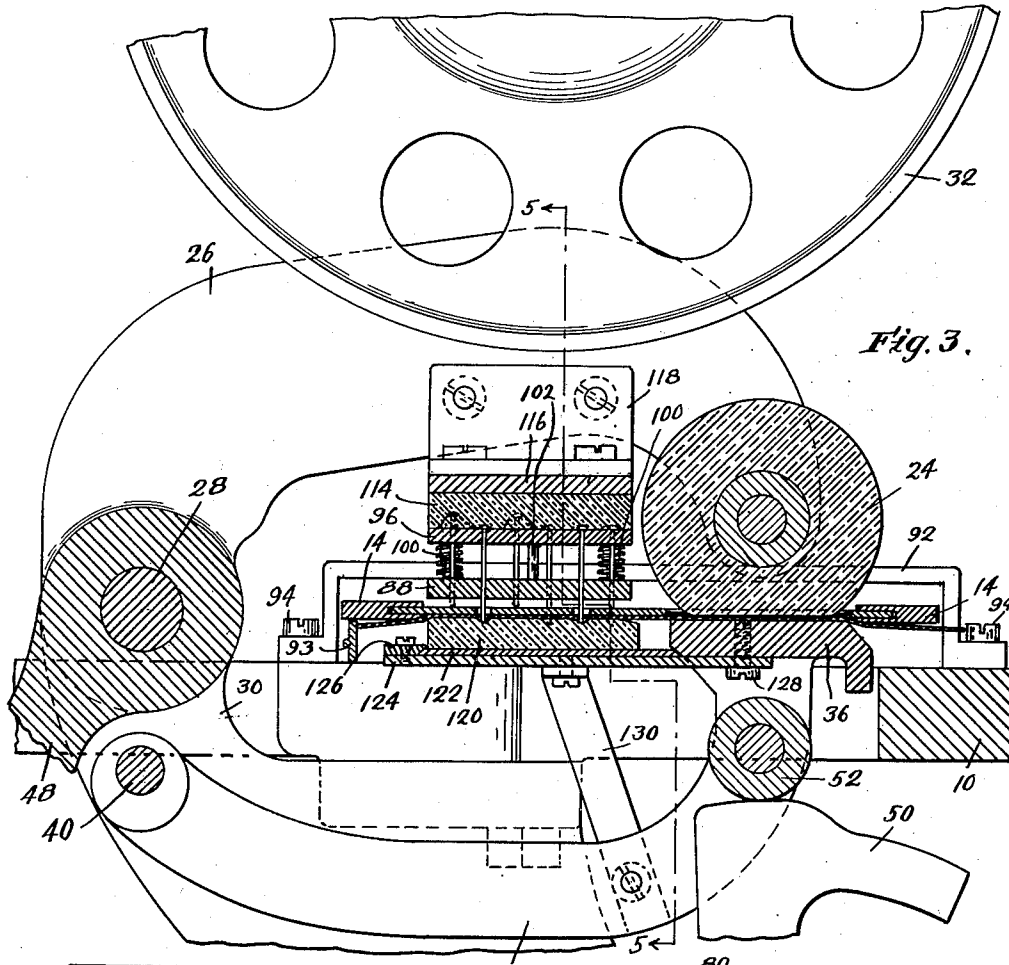


Fig. 3.

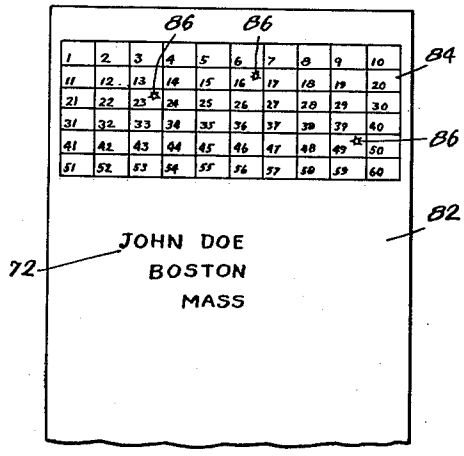


Fig. 9.

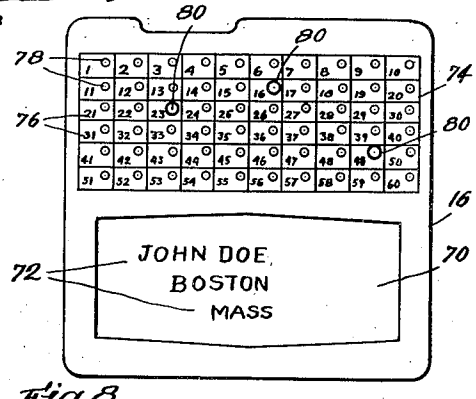


Fig. 8.

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PRINTING

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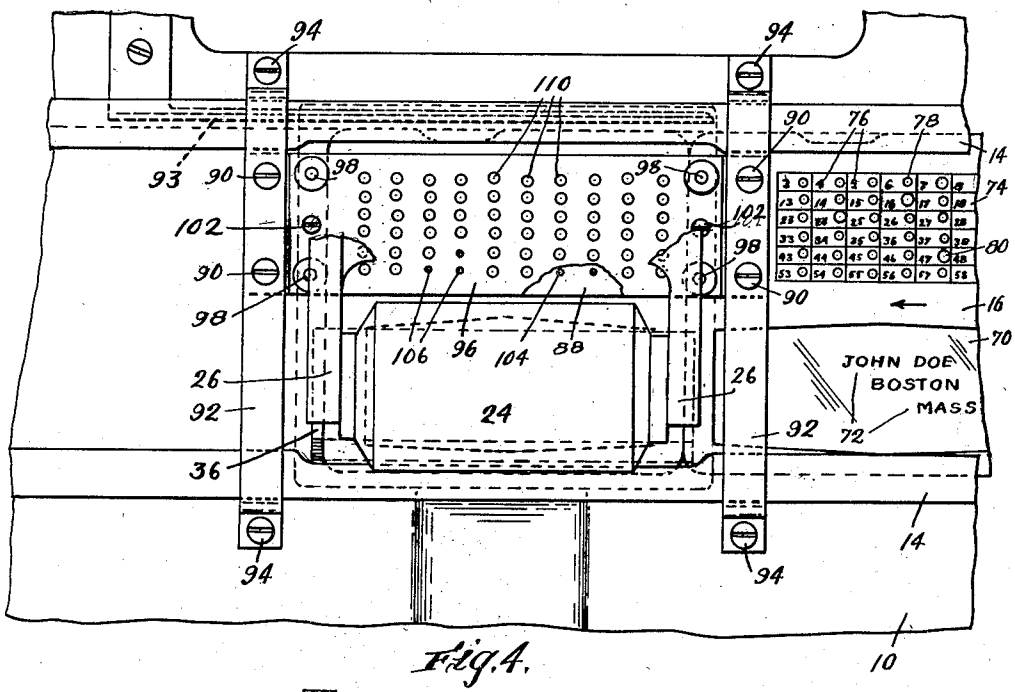


Fig. 4.

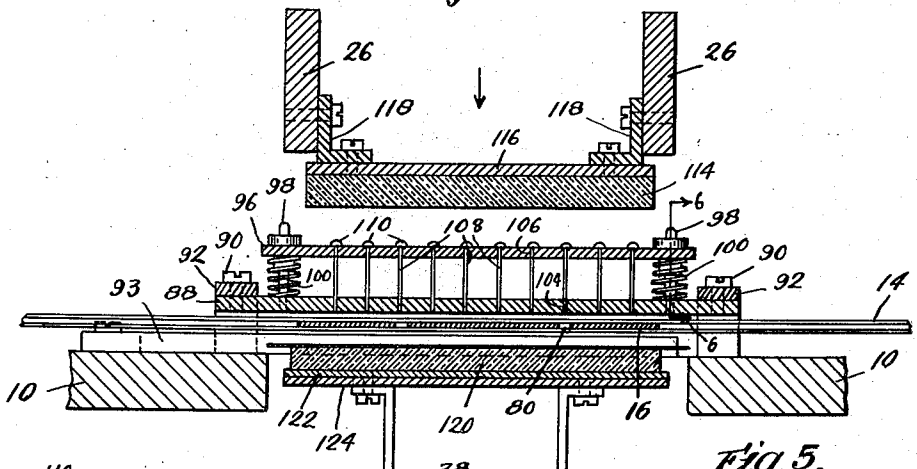


Fig. 5.

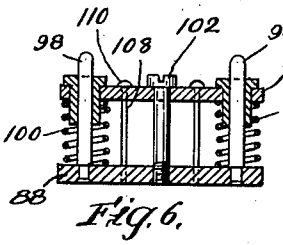


Fig. 6.

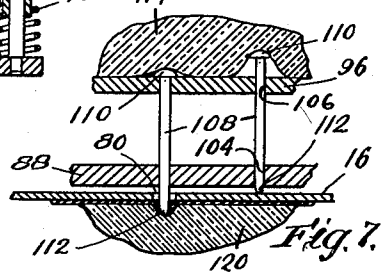


Fig. 7.

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UNITED STATES PATENT OFFICE

2,134,815

PRINTING

Harmon P. Elliott, Watertown, Mass.

Application March 20, 1936, Serial No. 69,803

18 Claims. (Cl. 101—58)

This invention relates to an addressing machine and has particular reference to a machine which is capable of printing an address and at the same time registering selected statistical information on the address bearing sheet.

It is desirable for many purposes to make a printed record of a list of addresses and certain information or statistics relating to the addresses. For instance, an electric utility which retails electrical appliances may desire to increase its load by increasing the use of electrical appliances on its system by inducing its customers to purchase appliances which they lack. The utility obviously desires its salesmen to devote their time in interesting the customer in appliances which the customer does not have. From information previously obtained the utility knows what appliances each customer has.

In accordance with this invention the salesmen can be furnished with the addresses of the customers and a list of the appliances that the customer has, or a list of the appliances the customer does not have, the list and the address being furnished automatically by the machine of the present invention.

An object of the present invention is the provision of a collection of printing devices, as stencils, each bearing an address and statistical data, and an addressing machine capable of recording on a sheet the address borne by the stencil and the statistical data, or desired parts of such data, borne by the stencil.

A further object of the invention is the provision of a collection of address bearing printing devices, as stencils, the stencils also bearing a collection of statistical items and perforations corresponding to selected items, and a printing or addressing machine operative upon the successive stencils and having a plurality of pins or the equivalent, one for each item on the stencil, and adapted to pass through the perforations of the stencils and make a record of the perforation on the sheet receiving the address of the stencil, thereby to transfer to the address bearing sheet the data that is selected on the stencil by the perforation. From the perforation record of the address bearing sheet the corresponding items can readily be identified.

A yet further object of the invention is the provision of an addressing machine arranged to record the address of a plurality of address bearing devices and also to indicate, upon the same sheet as that receiving the address, statistical information carried by the printing device, and in the same relative position on the address receiving sheet as the information is located on the printing device.

Another object is to provide a machine which will print a complete address on a sheet and at the same time record on the sheet selected statistics.

The present invention is also useful in addressing a check or the like and in providing the check with the amount to be paid in such manner that the amount cannot readily be altered. The method of forming the check and the check thus formed constitute a further object of the present invention.

Another object is generally to improve upon printing and addressing machines.

Fig. 1 is an end elevation of an addressing machine embodying the present invention, the stencil receiver being removed.

Fig. 2 is a front elevation of the addressing machine of Fig. 1.

Fig. 3 is an enlarged sectional detail taken along line 3—3 of Fig. 2.

Fig. 4 is a plan view partly in section taken along line 4—4 of Fig. 1.

Fig. 5 is a detail sectional elevation taken along line 5—5 of Fig. 3.

Fig. 6 is a sectional view taken along line 6—6 of Fig. 5.

Fig. 7 is a sectional detail illustrating the action of the sheet perforating pins.

Fig. 8 is a plan view of a stencil embodying the present invention.

Fig. 9 is a plan view of an address receiving sheet embodying a part of the present invention.

Fig. 10 is a plan view of a check prepared in accordance with the present invention.

Fig. 11 is a plan view of a stencil for preparing the check of Fig. 10.

The addressing machine embodying the present invention, see particularly Figs. 1, 2 and 3, comprises a horizontal table 10 supported on legs 12. A pair of parallel rails 14 are disposed in spaced relation above the top of the table and extend lengthwise thereof and from a track along which successive printing devices, as stencils, are adapted to be moved into and out of an addressing position. A vertical stack of printing devices as stencils 16 is contained in a vertical stencil holder 18 located above the track at one end thereof. The successive lowermost stencils of the holder are advanced out of the holder and into and along the track by a reciprocating stencil pusher 20. Stencils are discharged from the track at the other end thereof into a stencil receiver 22.

Printing mechanism is located intermediate the

length of the stencil track. The printing mechanism includes a printing roll 24 which is located above the address-portion of the stencil and above the stencil track. Said roll is freely rotatably supported between the arms 26 of a printing frame, which frame is journalled by a horizontal shaft 28 in a bracket 30 secured to the table 10. The printing roll receives ink on its periphery by engagement with a rotatable ink distributing drum 32 supplied with ink from an ink roll 34. The inking mechanism forms no part of the present invention and hence need not be described in greater detail.

The printing mechanism also includes an anvil 36 which is located beneath the printing roll and is integral with the front ends of arms 38 which are pivoted at their rear ends at 40 to the bracket 30. The printing roll and anvil are located on opposite sides of the stencil track and are movable toward and away from opposite sides of the stencil by mechanism that includes a reciprocating arm 42.

Said arm 42 is pivoted at 44 to the bracket 30 and is connected to the arms 26 that support the printing roller through a link 46 that is pivoted at one end to an intermediate part of said arm 42 and at the other end to a depending arm 48 connected with the arms 26. The arm 42 is also rigid with an upstanding cam arm 50 that is engageable with a cam roller 52 journalled on the platen arms 38 and serves to raise and lower the platens. The arm 42 is also rigid with a stencil advancing arm 54 that has a cam slot 56 therein in which the free end of an arm 58 is located. Said arm is fixed to the lower end of a vertical hub 60, which hub has an upper forwardly extended arm 62 that is connected through a link 64 with the stencil pusher 20. The arrangement is such that the reciprocation of said arm 42 causes the printing roll and anvil to be moved toward and away from the stencil to effect a printing operation of the address borne by the stencil and also to advance the successive lower stencils in the holder 18 out of the holder and into and along the track and into and out of printing position.

The arm 42 is reciprocated by a power mechanism 66 common in the art and controlled by a foot pedal 68, the depression and subsequent release of the pedal effecting one complete reciprocatory movement of the arm 42. The machine as thus described is more or less common in the art.

The printing device or stencil 16 forming a part of the present invention is illustrated particularly in Fig. 8. The stencil comprises a stiff rectangular sheet or plate having a window in one portion thereof traversed by a stencil 70 that bears the address 72. At one side of the window is a printed form 74 formed of a plurality of vertical and horizontal columns, thus dividing the form into rectangular portions, each rectangular portion of which can be separately identified by reference to its vertical and horizontal co-ordinance or each portion bears a separate identifying number 76. Each portion also preferably although not necessarily is provided with a printed circle 78 indicating where the portion can receive a perforation. This indication 78 is desirable when the stencil is to be perforated by hand but is not necessary when the stencil is to be perforated by machine.

Each sub-division of the form 74 can be utilized to represent separate items of statistical information. For instance, sub-division I may indicate that the addressee owns a radio, sub-division II may mean that he does not have a radio, sub-division III may mean that he owns a battery operated radio, sub-division IV, an all electric radio, and so on. Thus a concern selling electrical appliances and desirous of furnishing its salesmen with statistical information concerning their customers will punch a perforation in sub-division II indicating that the addressee has no radio and hence should be a possible customer for one. A perforation in sub-division III indicates that the customer has a battery operated radio and hence should be a possible purchaser of a more improved radio. Thus by perforating the selected sub-divisions the stencil becomes a record of statistical information appertaining to the address and the machine of the present invention is arranged to transfer this information to a record sheet preferably at the same time it prints the address on the sheet, thus rendering the information immediately available for use.

In Fig. 8, the sub-divisions 16, 23 and 49 are illustrated as having perforations 80 and these perforations are transferred to an address bearing sheet by the present machine. The address bearing sheet may be such a relatively thin sheet 82 as is illustrated in Fig. 9. The sheet has a space for receiving the address 72. At one side of the space can be a printed form 84 corresponding to the printed form 74 of the stencil and containing the same number of sub-divisions numbered in the same order. As illustrated, the sheet 82 has been used in connection with the stencil 16 and has the address 72 and has received perforations 86 in the sub-divisions 16, 23 and 49, which correspond with the perforations 80 of the stencil 16.

The meaning of the perforations can be printed as a code list on a separate sheet so that by looking at the sheet the meaning of a perforation in any sub-division can be ascertained. There is no objection to printing the code on the sheet 82, if desired, however.

The mechanism for perforating the address receiving sheet 82 in accordance with the perforations of the stencils includes a punch pin guide plate 88 which is disposed horizontally above the stencil space of the track in the rear of the printing roll 24 and above the portion of the stencil that bears the forms 74 when the stencil is in addressing position. Said plate is disposed beneath and is secured by screws 90 to a pair of supporting straps 92 which straddle the stencil track on opposite sides of the addressing position and are secured to the table 10 by screws 94. A punch pin carrying plate 96 is disposed in spaced relation above said plate 88 and is guided for vertical movement thereabove on vertical pins 98 which are fixed to and upstand above the plate 88. Helical compression springs 100 encircle said pins and bear at the opposite ends against said plates 88 and 96 and serve to maintain said upper plate 96 yieldingly against the heads of limit screws 102, see Figs. 4 and 6, which pass loosely through the upper plate at the opposite ends thereof and are screw-threaded into the lower plate 88.

The plates 88 and 96 are provided with a plurality of vertically aligned openings 104 and 106, respectively, which are adapted to register with the perforation receiving spaces 78 of the stencils and also with such perforations 80 as there may be in the stencils. Punch pins 108 are received loosely in said sets of openings 104, 106 of the two plates. Said pins have enlarged heads 110 which lie upon the top face of the uppermost

plate 96, thereby to hold the pins in normal position with the rounded ends 112 of the pins about flush with the lower face of the plate 88 and hence out of engagement with the stencil. The pins in the upper plate 96 are moved downwardly at each addressing operation so as to move any pin that may be in register with a perforation 80 of the stencil through the opening and into engagement with and into or through the paper sheet 82 disposed beneath the stencil.

The means for moving the plate 96 and punch pins downwardly includes a soft rubber pad 114 which is secured to a metal backing plate 116 that in turn is attached by angle members 118 to the printing arms 26 that carry the printing roll. The rubber pad 114 is disposed above the heads of the pins and the plate 96 and during the downward movement of the printing arms 26 is moved into engagement with the heads of all the pins and moves the plate 96 downwardly and the pins downwardly into engagement with the stencil. The downward movement of the rubber plate 114 is adapted to be sufficient to move through the stencil such pins as are in register with perforations 80 of the stencil. The rubber plate, however, is adapted to yield at the head of a pin which impinges against a stencil in a portion that is not perforated, thereby to prevent damage to the stencil and to permit further movement of the plate to carry other pins through the perforations that are aligned therewith. This action is illustrated particularly in Fig. 7 where the left hand pin has been moved through the perforations 80 of the stencil and the right hand pin has impinged against the top face of the stencil and the head thereof has become imbedded into the rubber pad 114.

A second rubber pad 120, which constitutes a yielding anvil for the pins, is located beneath the stencil track and under the collection of pins. Said pad, see especially Fig. 3, is secured to the upper face of a metal backing plate 122 that rests upon a supporting plate 124 and is secured removably to said plate by a gib 126. Said supporting plate is secured rigidly to the under face of the anvil 36 by screws 128 and is also braced from the anvil arms 38 by brace members 130. The upper face of the anvil pad 120 is about in the plane of the upper face of the anvil 36 and is adapted to hold the paper sheet 82 in engagement with or close under the upper face of the stencil during the addressing operation thereby to hold the paper sheet 82 directly under any perforations 80 of the stencil. The downward movement of the pins 108 is sufficient to force the pins into or through the paper sheet by indenting the anvil plate 120 thereunder, as is illustrated in Fig. 7, thereby causing the paper sheet to be punctured or ruptured to provide the perforations 86. The adjustment of the pins and anvil 120 also can be such that the pins merely indent but do not actually perforate the record sheet. Thus the paper sheet 82 is caused not only to receive the address of the stencil but to receive a record of the statistical items carried by the stencil and indicated by the perforations thereof. The nature of the items indicated by the perforations 86 can be determined by comparison with a numbered table of the items. Thus the sheet 82 may indicate, for instance, that the addressee has an out-of-date electric iron, as represented, for instance, by the perforation in the sub-division 16, lacks an ironing machine, as indicated by the perforation in the sub-division 23, and lacks an electric hot water heater, as indicated by the perforation of the sub-division 49. Any kind of statistical information can be recorded against the address and the particular type of information herein used is merely for illustrative purpose.

The paper sheet 82 is properly positioned under the stencil by being located between the brackets 92. If desired a third positioning plate 93 can also be employed against which the front edge of the sheet 82 can be abutted.

While the record sheet has been illustrated herewith as indented or perforated to record the statistical item, a record can be otherwise made with the pins 108 as by ink or the like in any suitable or obvious manner not necessary to illustrate.

The record sheet is relatively thin as compared with the stencil so that the pressure required to indent or perforate the sheet is not sufficient to indent or harm the thicker stencil.

The printing device need not necessarily be the stencil herein illustrated. It can be any device having means which intercepts the recording action of the record pins 108 or allows them to pass to effect the recording of the statistical item which they represent.

A special form of statistical data that can be recorded by the present invention at the same time that the address is recorded is the amount of checks; and the present invention is adapted for the purpose of recording on a check blank the address and the amount of the check, the amount of the check being represented by perforations which cannot be tampered with readily to alter the amount of the check. Fig. 10 illustrates such a check and Fig. 11 illustrates the stencil for making the check. Such checks, as is illustrated in Fig. 10, are especially suitable for dividend checks and the like where the same amount is sent repeatedly to the same address.

The check 132 contains a printed amount form 134, an address space 136, space 138 for the data, another space 140 for the signature and printed data 142 denoting the bank or other repository on which the check is drawn. The printed form 134 consists of ten vertical columns 144 and as many horizontal columns 146 as will be needed for indicating the highest amount to be written. If, for instance, the highest amount, in dollars, would be represented by four figures then the check will have six horizontal columns, the two top columns being the cents columns and the four bottom columns being the dollar columns. The vertical columns bear consecutive numbers running from one at the left to zero at the right hand column. Thus each vertical column will have repetitions of the same numeral where it is crossed by the horizontal column. The stencil 148 has a printed form 150 corresponding to the form 134. If a check is to be made out for $39.54, for instance, the stencil will have perforations in the top four horizontal columns, the perforations lying respectively in the third, the ninth, the fifth and the fourth vertical columns. Thus when the stencil and the check are brought into registration the address borne by the stencil will be recorded in the space 136 and the corresponding columns in the printed form 134 of the check will receive corresponding perforations 152 which are easily read. To guard against the possibility of raising the check by perforating other columns the stencil has perforations 154 in the zero localities of the bottom two columns so that the corresponding columns of the check will receive corresponding perforations. The check will thus read

$0039.54. A check that has more than one perforation in any vertical column indicates that it has been tampered with.

I claim:

1. The method of rendering available statistical items which consists in coding such items, applying the code to a printing device bearing an address associated with the statistics, printing the address borne by the printing device from the address onto a sheet and also directly recording on the sheet selected code items carried by the printing device.

2. The method of recording an address and statistical items relating to the address, which method comprises forming a printing device with the address and means representing the items, and utilizing the printing device directly to make a record of the address and selected statistical items on the same record sheet.

3. The method of recording an address and statistical items associated with the address, which method comprises forming the address on a printing device and forming the printing device with means indicative of statistical items and utilizing said printing device directly to make a record of the address thereon and the positions of the statistical item indicating means thereof.

4. The method of rendering readily available for use statistical information relating to an address and contained on a printing device having address forming characters, and means indicative of the statistical items, which method comprises making a direct record of the printing characters of the printing device on an impression sheet, and utilizing said statistical item means to make a direct record on the sheet corresponding to said items.

5. The method of recording an address and statistical items associated with said address, which consists in forming a printing device with address characters corresponding to the address, and means selectively located on said printing device in positions denoting predetermined statistical items and utilizing said printing device to record on a record sheet and by the address characters of the address borne by said device and to record directly by said means the locations of said statistical item means.

6. The method of recording statistical items associated with an address formed of address-printing characters contained on a printing device and wherein the statistical items are represented by means selectively positioned on the printing device, which method consists in recording by the address characters of said printing device the address on the printing device and by said statistical item means the positions thereof.

7. In an addressing machine adapted to operate upon printing devices having address forming characters and statistical item indicating means selectively positioned on the printing device, means for directly recording the address borne by a printing device and also the position of said indicating means.

8. A printing machine adapted to operate upon a succession of cards adapted to have selectively positioned perforations therethrough, means for advancing said cards in successive order, means arranged to enter said perforations and record the position thereof, said means comprising a bank of record-sheet marking pins positioned to register with the perforation receiving zones of said cards, means to move said pins through perforations aligned therewith, and means for supporting a record sheet in position to be engaged and marked by such pins as pass through the perforations.

9. In an addressing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving locations, means for recording the address of the stencil, and means for recording the position of a perforation of the stencil comprising a plurality of perforation indicating members positioned to register each with a separate perforation receiving location of the stencil, and means to move said members into and out of engagement with the stencil and into and out of a perforation thereof and also into and out of engagement with a record sheet positioned under the perforation.

10. In an addressing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving locations thereon, means for supporting a record sheet beneath the address forming means and the perforation locations of the stencil, means for recording on the record sheet an impression of the address on the stencil, and means for also recording directly on said sheet the position of a perforation of the stencil.

11. In an addressing machine adapted to operate upon a stencil having address forming means and a plurality of selectively positioned perforation receiving zones, means for supporting a record sheet beneath the address forming means and the perforation receiving zone of the stencil, printing means for recording the address of the stencil on the record sheet, means for recording on the record sheet the position of a perforation of the stencil including a plurality of perforation recording members positioned in register with the aforesaid zones of the stencil when the stencil is in recording position, and means to move said members into and out of engagement with the stencil and into and out of a perforation thereof and into and out of engagement with the record sheet in register with the perforation.

12. A printing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving zones, means for supporting a record sheet in confronting relation with the stencil, means for recording the address of the stencil on the record sheet, a plurality of perforation recording pins movable through a perforation in register therewith into and out of engagement with the record sheet, resilient supporting means for said pins, and yielding means for moving said pins towards said stencil, said yielding means being constructed and arranged to yield when a pin is stopped from further movement by engagement with the stencil and to permit continued movement of said yielding means to move a pin that is in register with the perforation through the perforation or into engagement with the record sheet.

13. In an addressing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving zones, means to record on a record sheet an impression of the address forming means of the stencil, and means directly controlled by the stencil to perforate the record sheet in a locality corresponding to a perforation of the stencil.

14. In an addressing machine adapted to operate on a stencil having address forming means and a plurality of perforation receiving zones, means to support a record sheet in oper-

ative position with respect to the stencil, means to record on the record sheet the address of the stencil, a plurality of sheet perforating pins disposed in register with the perforation receiving zones of the stencil when it is in printing position, and means to move a pin that is in register with a perforation of the stencil through the perforation and into the record sheet.

15. An addressing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving zones, means to support a record sheet in operative position with respect to the stencil, printing means for recording the address of the stencil on the record sheet, a plurality of sheet perforating pins, means for supporting said pins in register with the perforation receiving zones of the stencil when the stencil is in printing position, means for supporting said pins normally in elevated position out of engagement with the stencil, and yielding means engageable with all of said pins for moving it toward the stencil, and a pin that is in register with a stencil perforation through the perforation and into engagement with the record sheet, and means for operating said pin moving means and said printing means conjointly.

16. In an addressing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving zones, means to support a record sheet in operative position with respect to the stencil including an anvil of yieldable material disposed under the perforation receiving zone of the stencil when the stencil is in printing position, printing means for recording the address of the stencil on the record sheet, a plurality of sheet perforating pins, yieldable means for supporting said pins normally in elevated position above the stencil in register with the perforation receiving zone thereof, and means including a pad of yieldable material movable into engagement with said pins and operative to move said pins downwardly into engagement with the stencil and to move further in the same direction to move a pin that is in register with a stencil perforation through the perforation and through the record sheet.

17. In an addressing machine adapted to operate upon a stencil having address forming means and a plurality of perforation receiving zones, means to support a record sheet in operative relation with respect to the stencil, a plurality of perforation recording pins, a stationary guide plate which supports said pins in register with the perforation receiving zones of the stencil when the latter is in printing position, a yieldingly supported guide plate which carries said pins, a yielding pressure pad engageable with said pins and said yielding plate and operative to move said pins and said yielding plate toward the stencil and to yield at the region of its engagement with a pin the movement of which is stopped by engagement with an imperforate zone of the stencil to permit continued movement of the pad to move a pin that is in register with a perforation through the perforation or into engagement with the record sheet, and means for reciprocating said pad toward and away from said pins.

18. In a statistical recording machine operative upon a succession of devices having control means positioned to indicate selected statistical items, of a plurality of operating members corresponding to statistical items and positioned to register with the possible position of said control means of said devices and movable to effect the direct recording of the positions of the items represented thereby under control of said control means.

HARMON P. ELLIOTT.