United States Patent

[11] 3,530,793

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[33] Germany
[31] R 41,683; R 42,188

[54] METHOD AND APPARATUS FOR PRINTING AND RECORDING ON A CARD
29 Claims, 19 Drawing Figs.

[52] U.S. Cl. 101/91
Int. Cl. B41l 47/46
[50] Field of Search 101/93AC, 90, 91, 19; 197/19, 20, 1; 340/179.1, 172.5(Cursory)

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ABSTRACT: On superimposed printing form and record carrier blanks, printable legible symbols and recordings are made, respectively, by the same impression means so that the same information is represented by the same. The printing form and the record carrier are used for imprinting and recording on the same card so that the card has the same information legibly printed and also recorded for being read out by a machine.

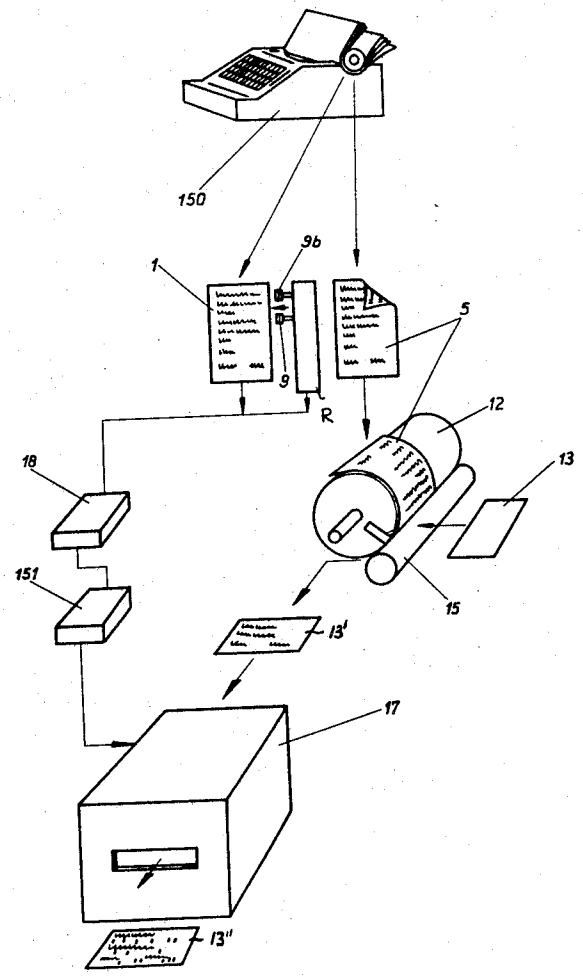

Fig. 2

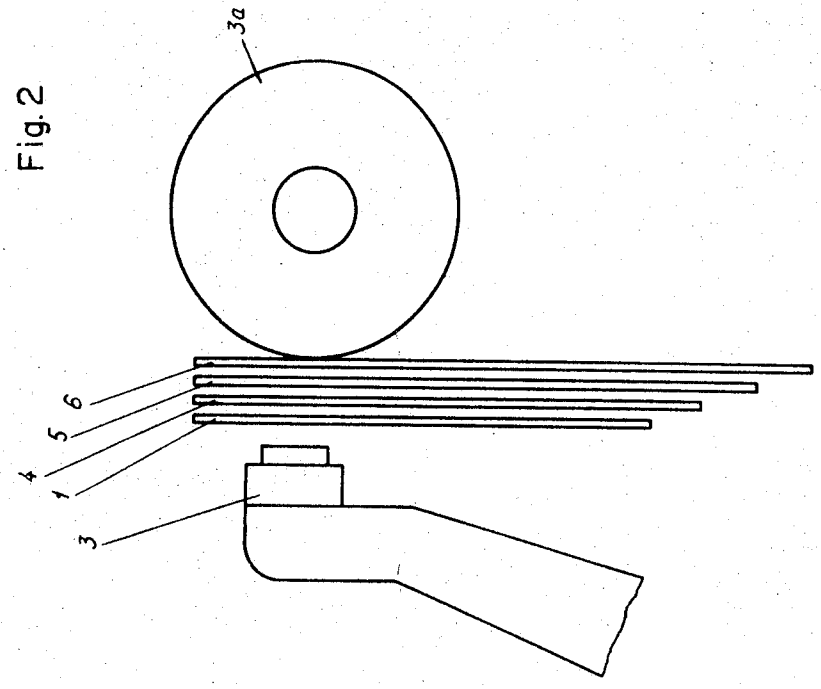

Fig. 1

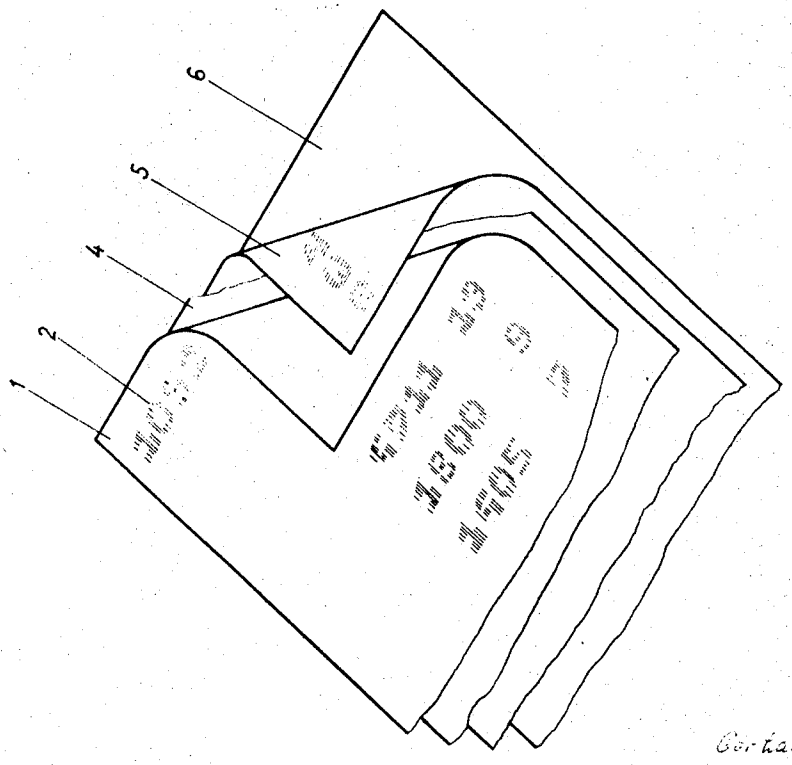

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Fig. 3

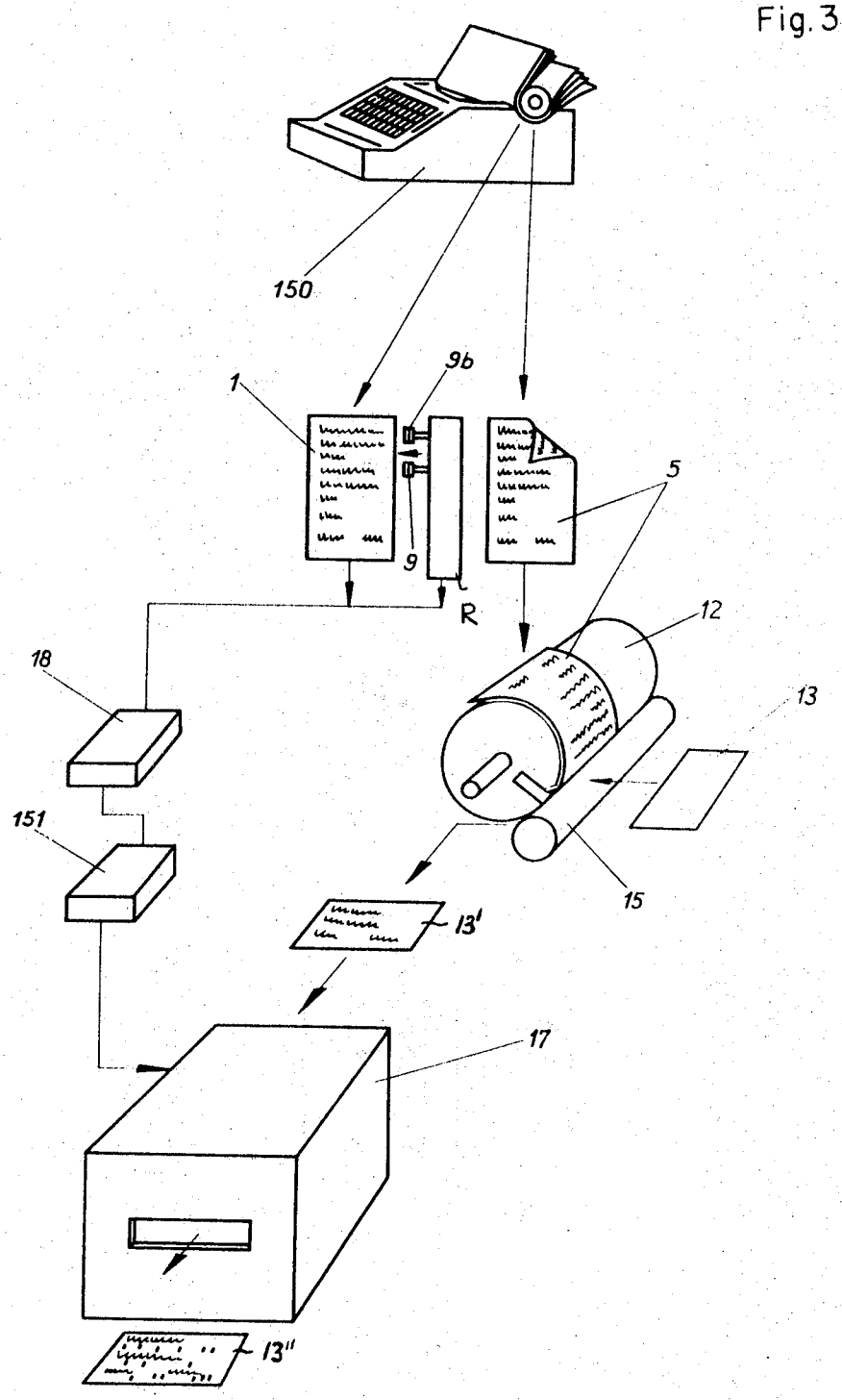

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Fig. 4

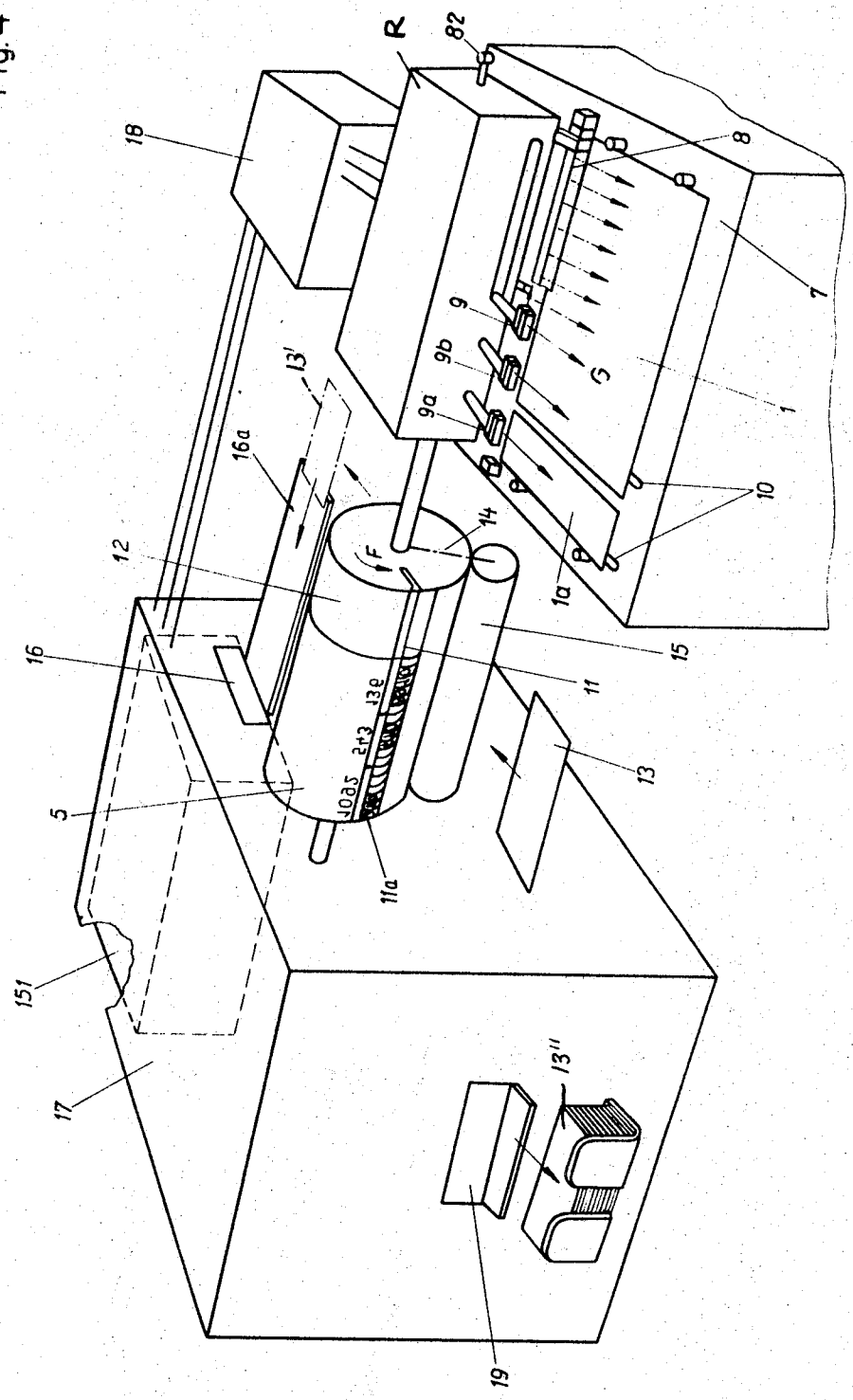

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Fig.5

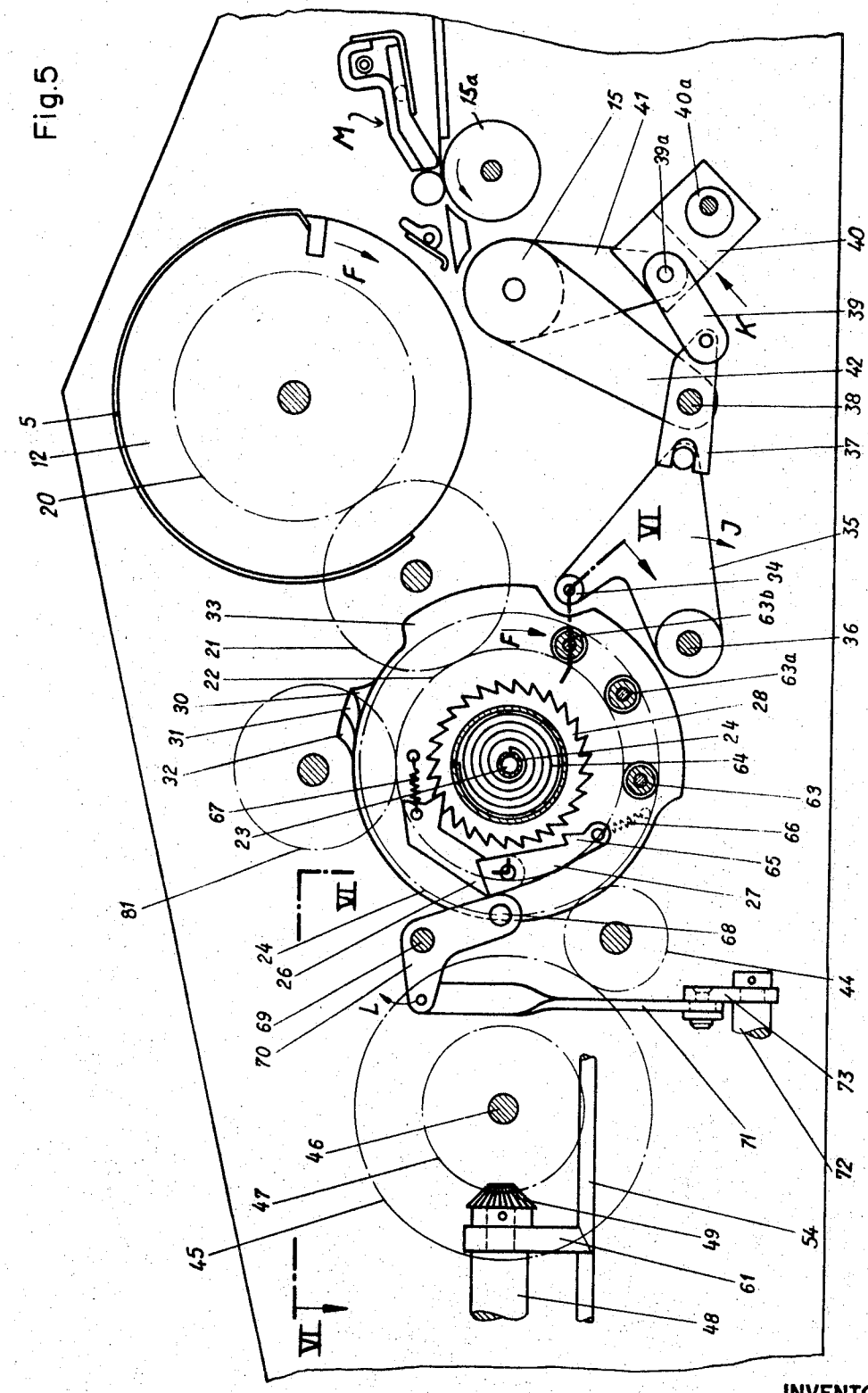

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Fig. 6

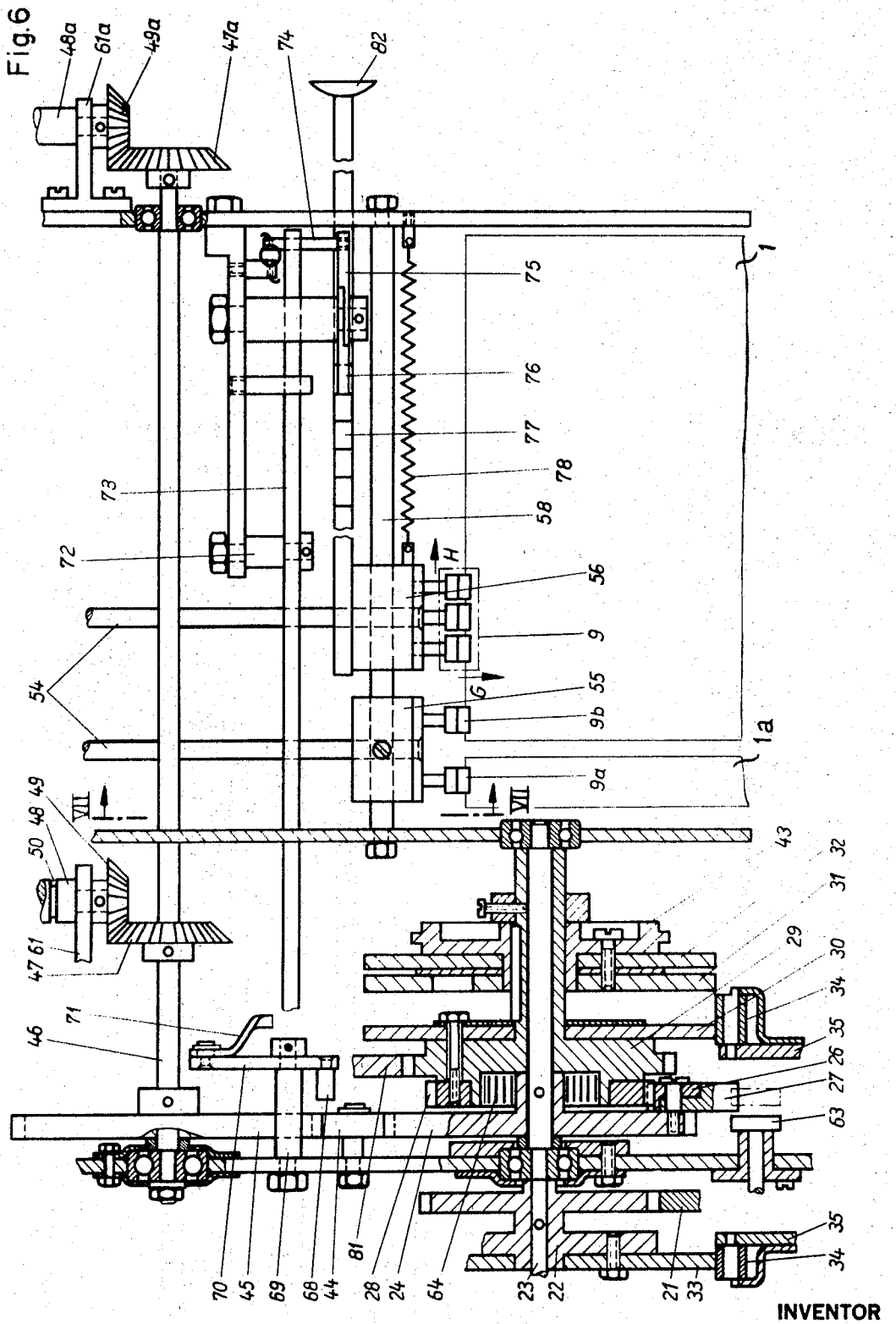

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Fig.7

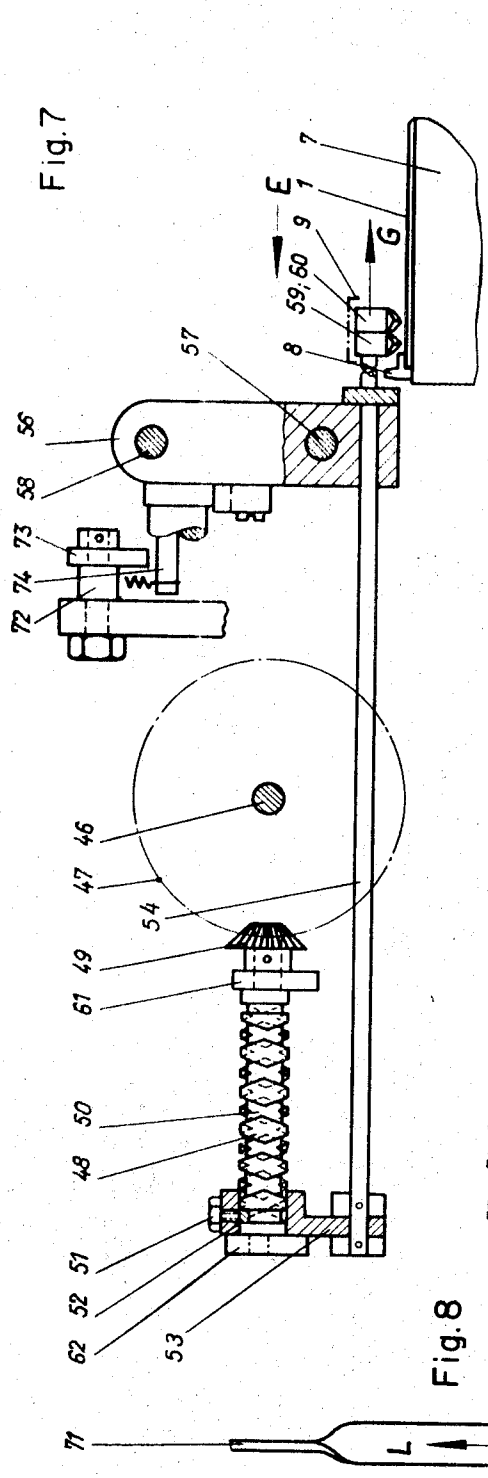

Fig.8

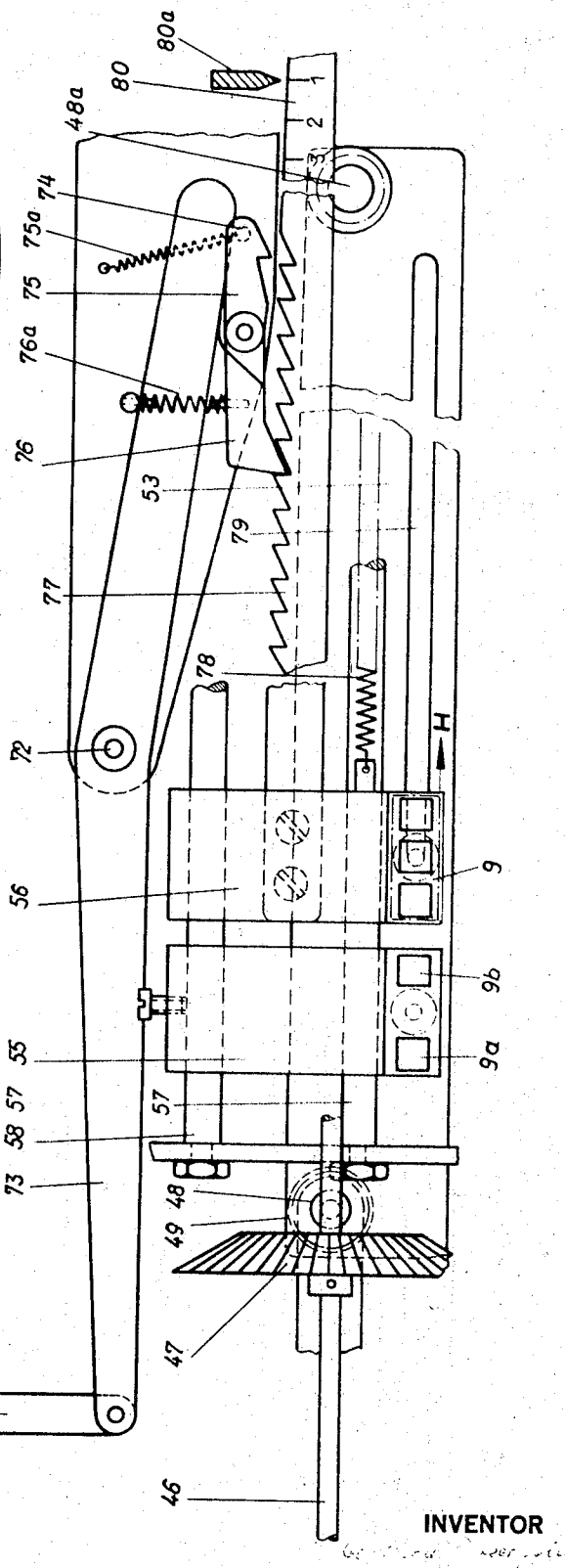

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Fig. 9

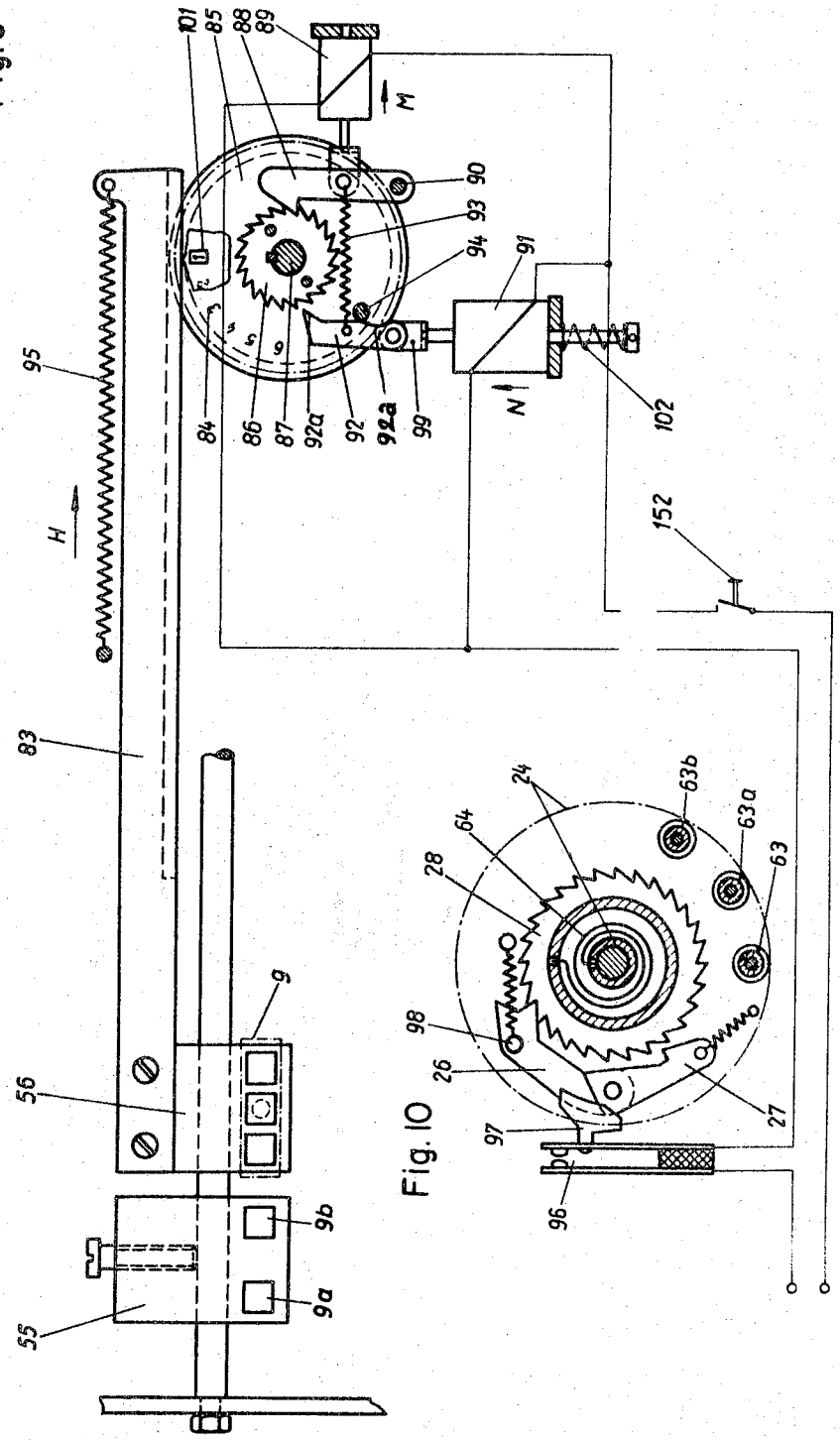

Fig. 10

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Fig. 11

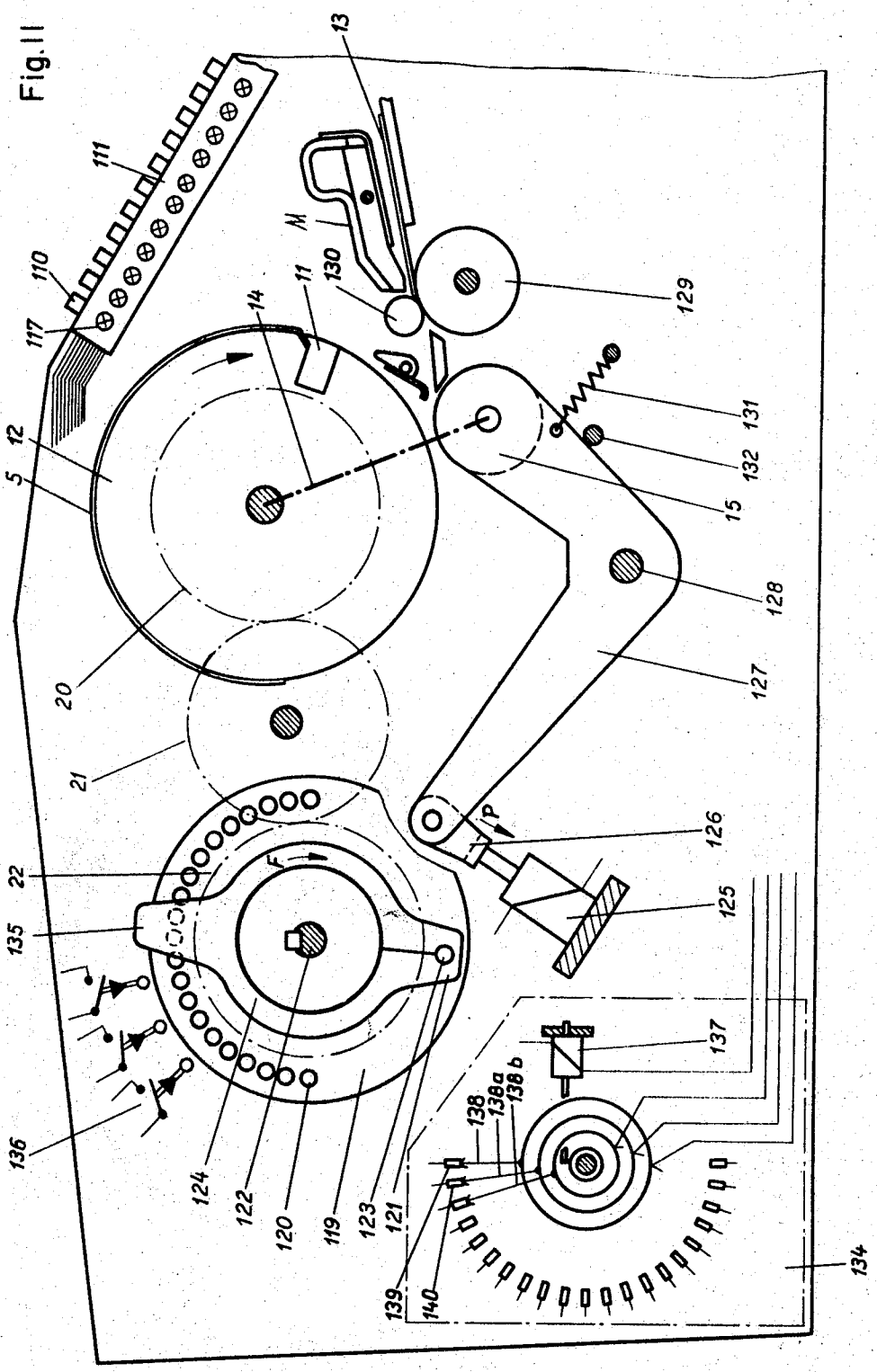

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Fig. 12

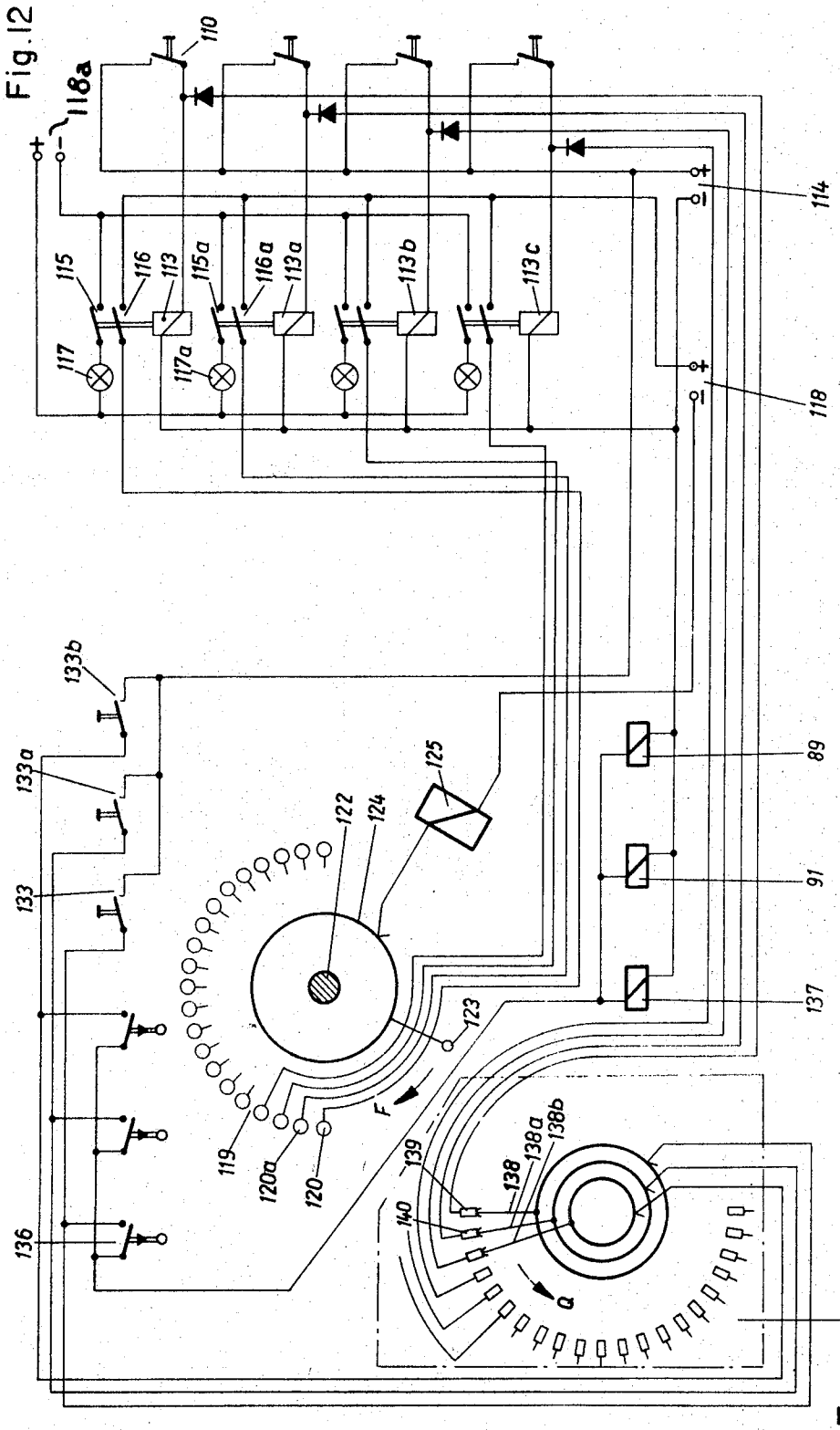

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Fig. 13

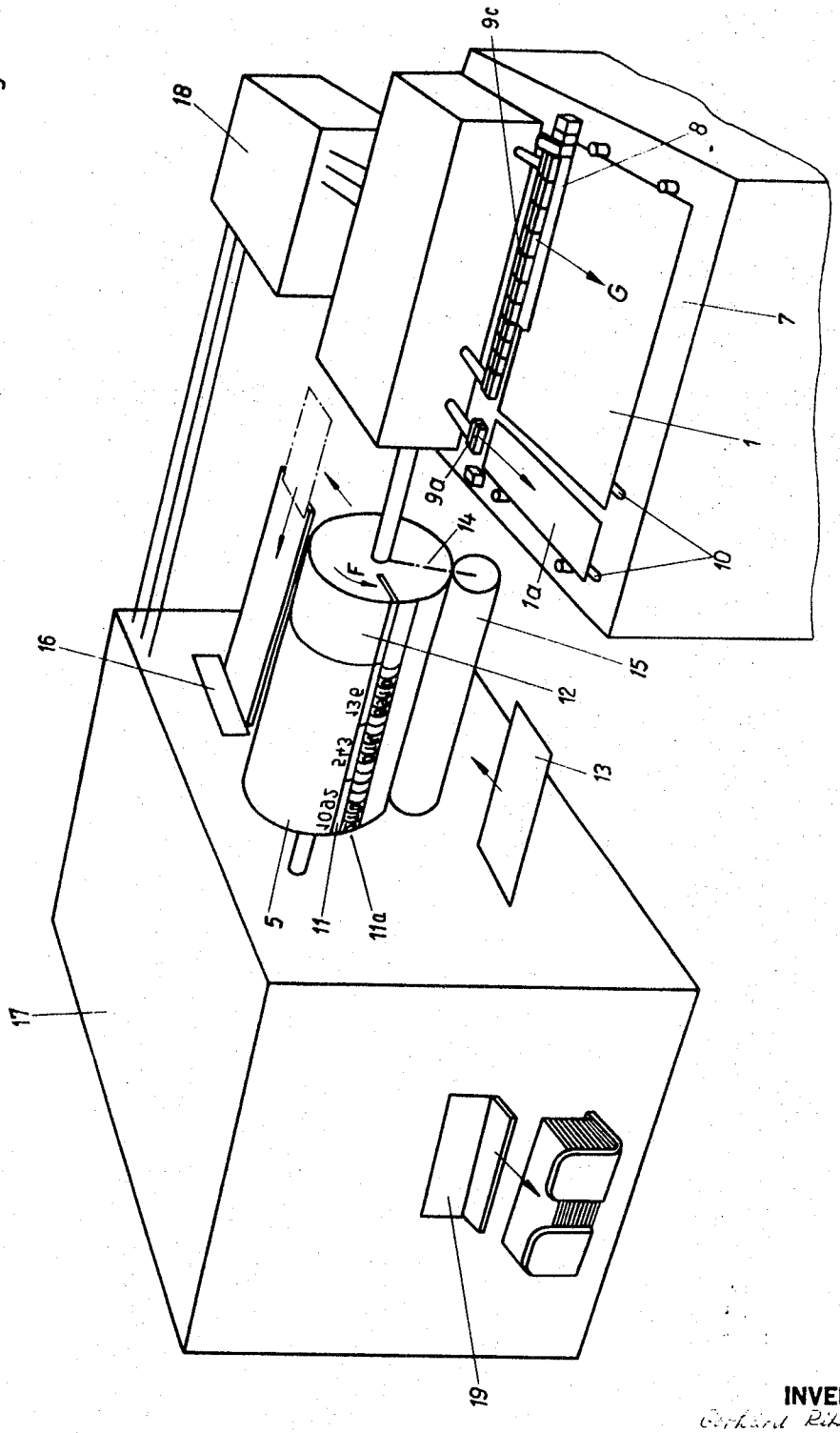

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Fig. 14

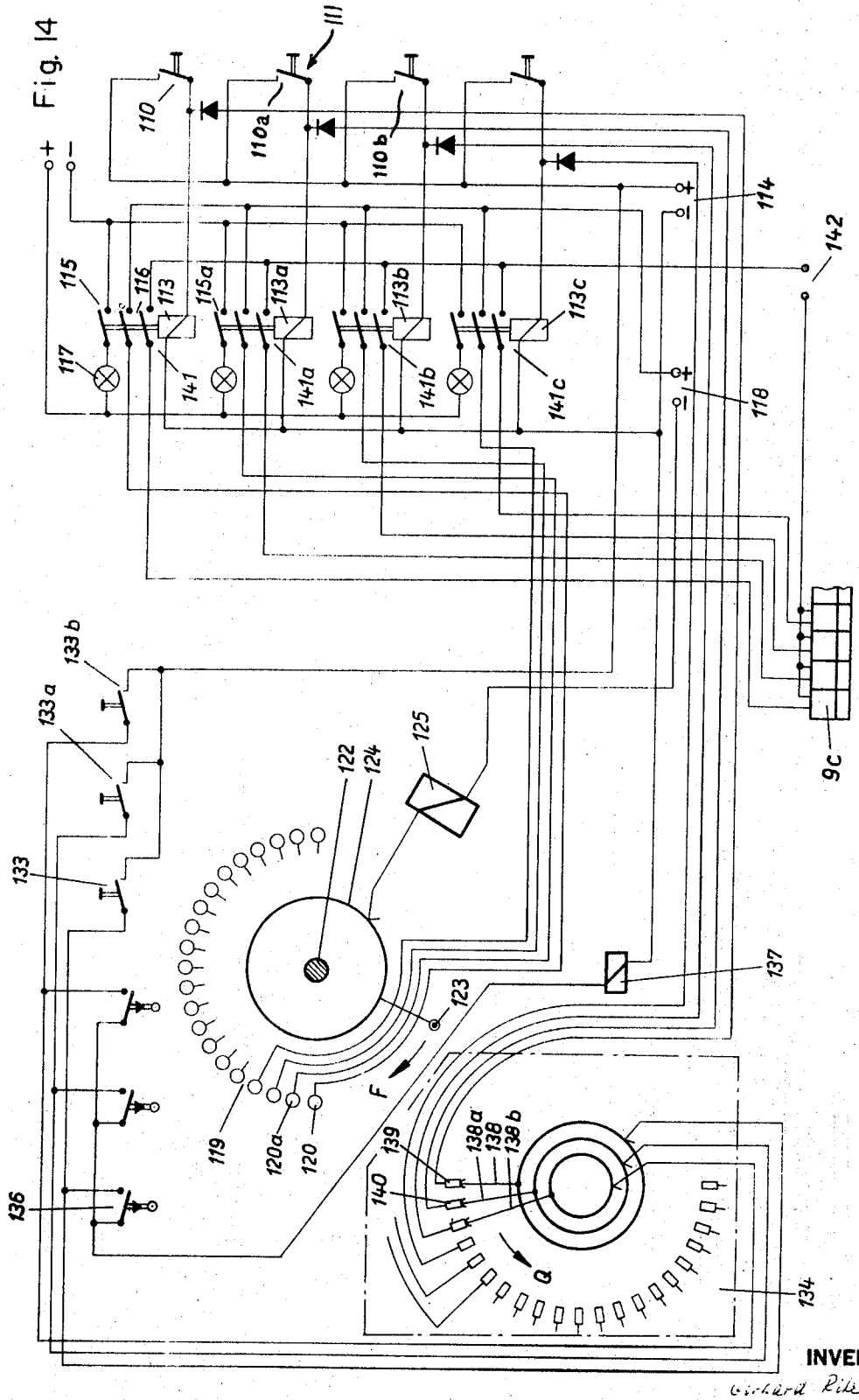

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Fig. 15

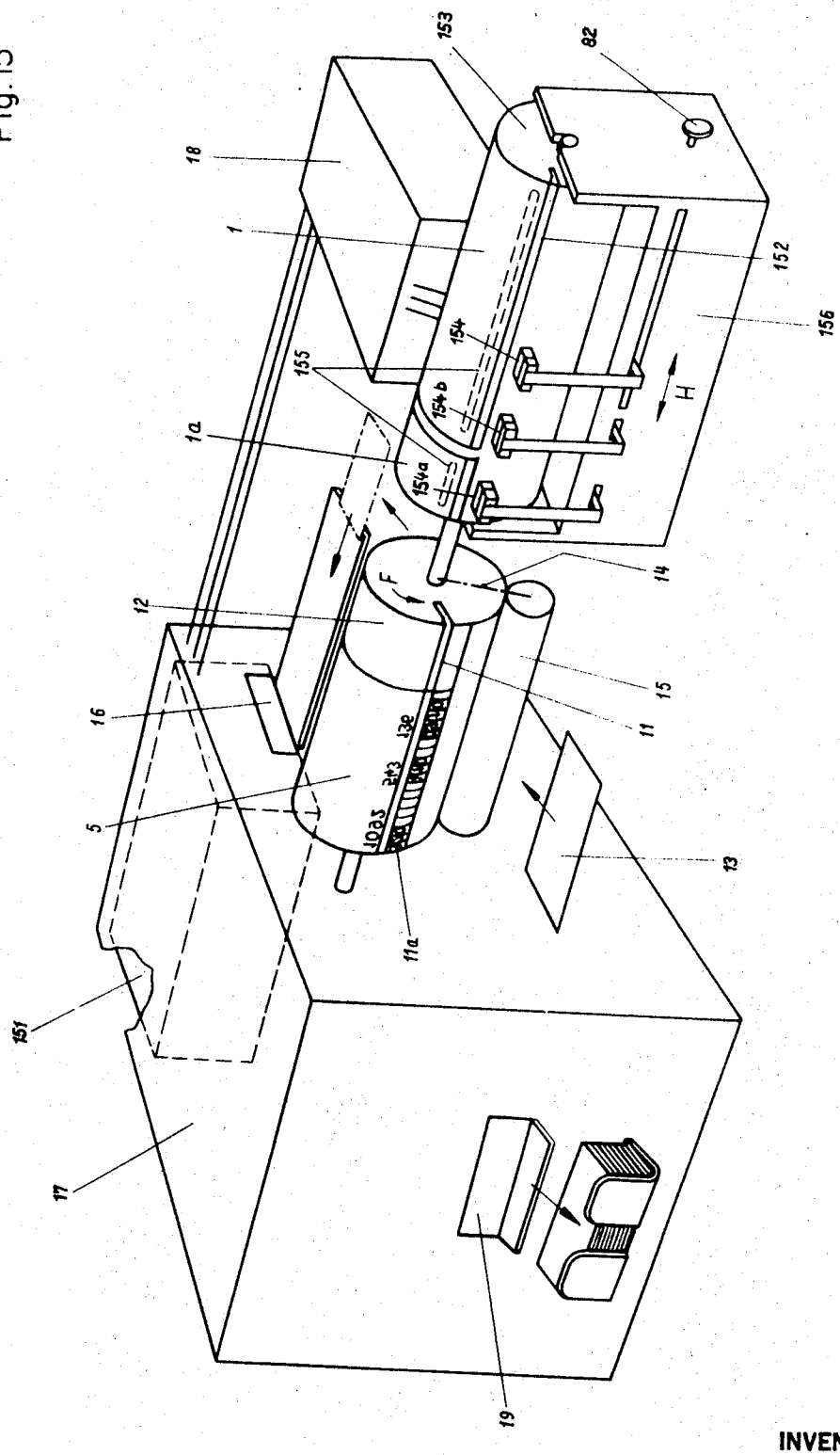

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Fig. 16

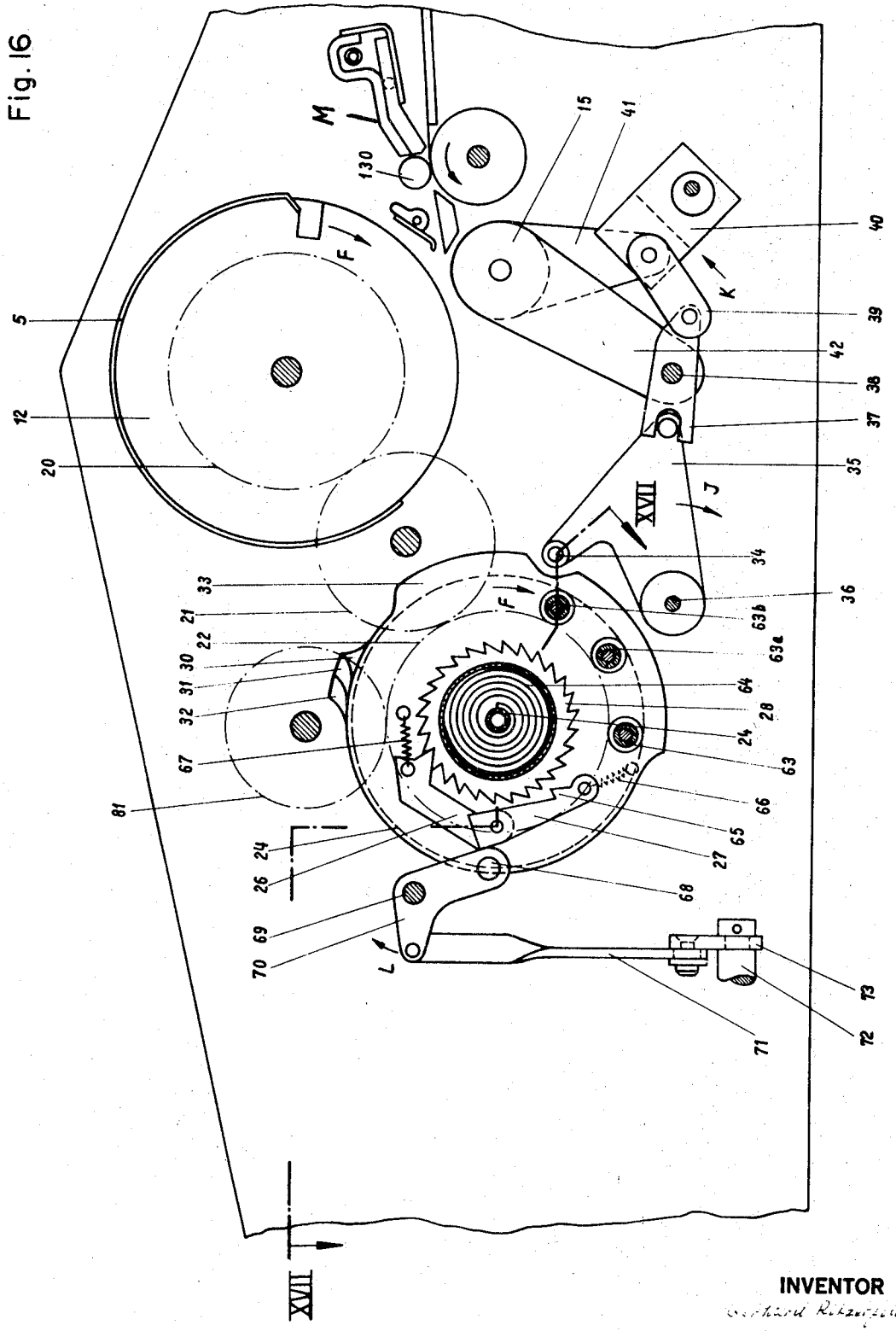

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Fig. 17

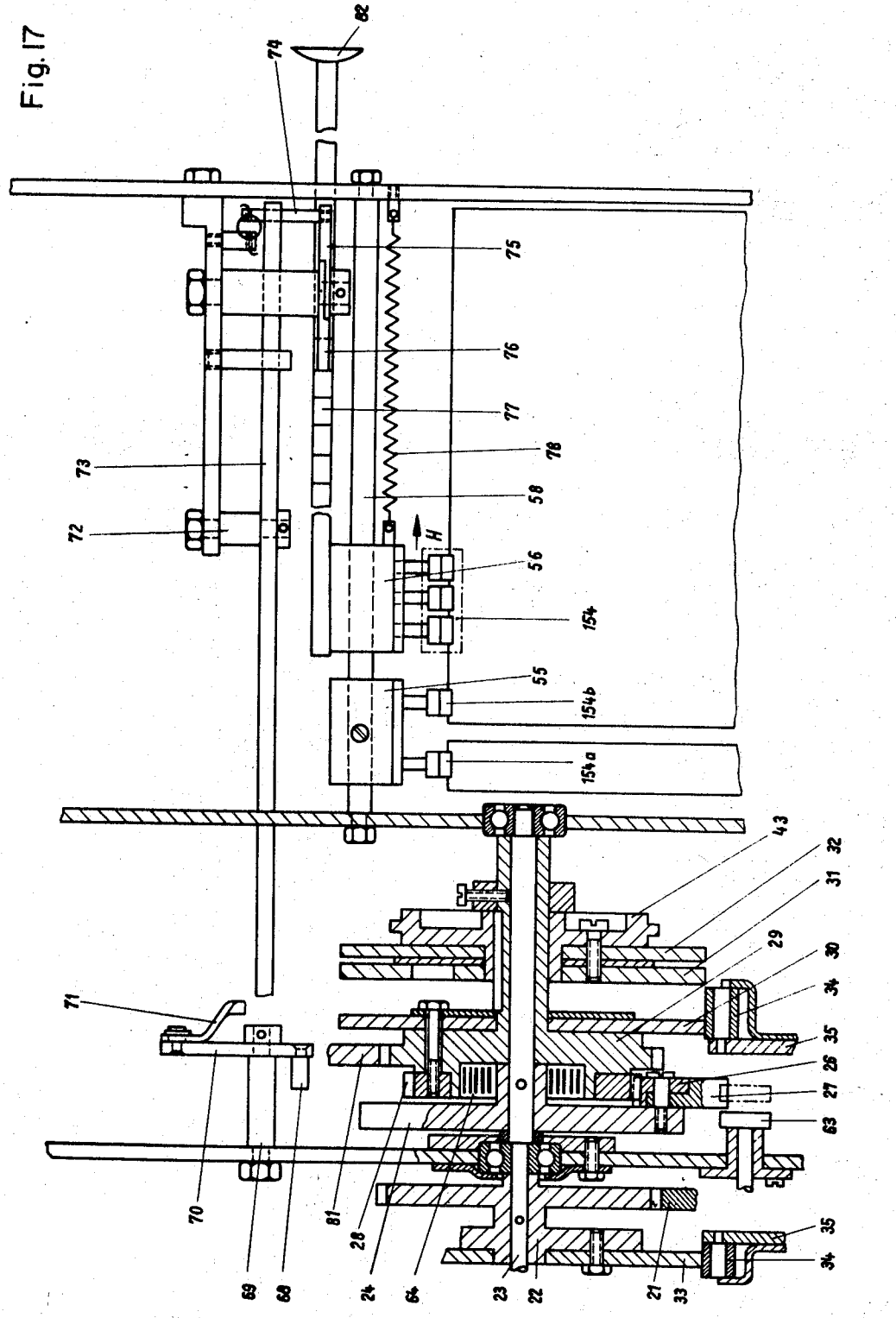

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Fig. 18

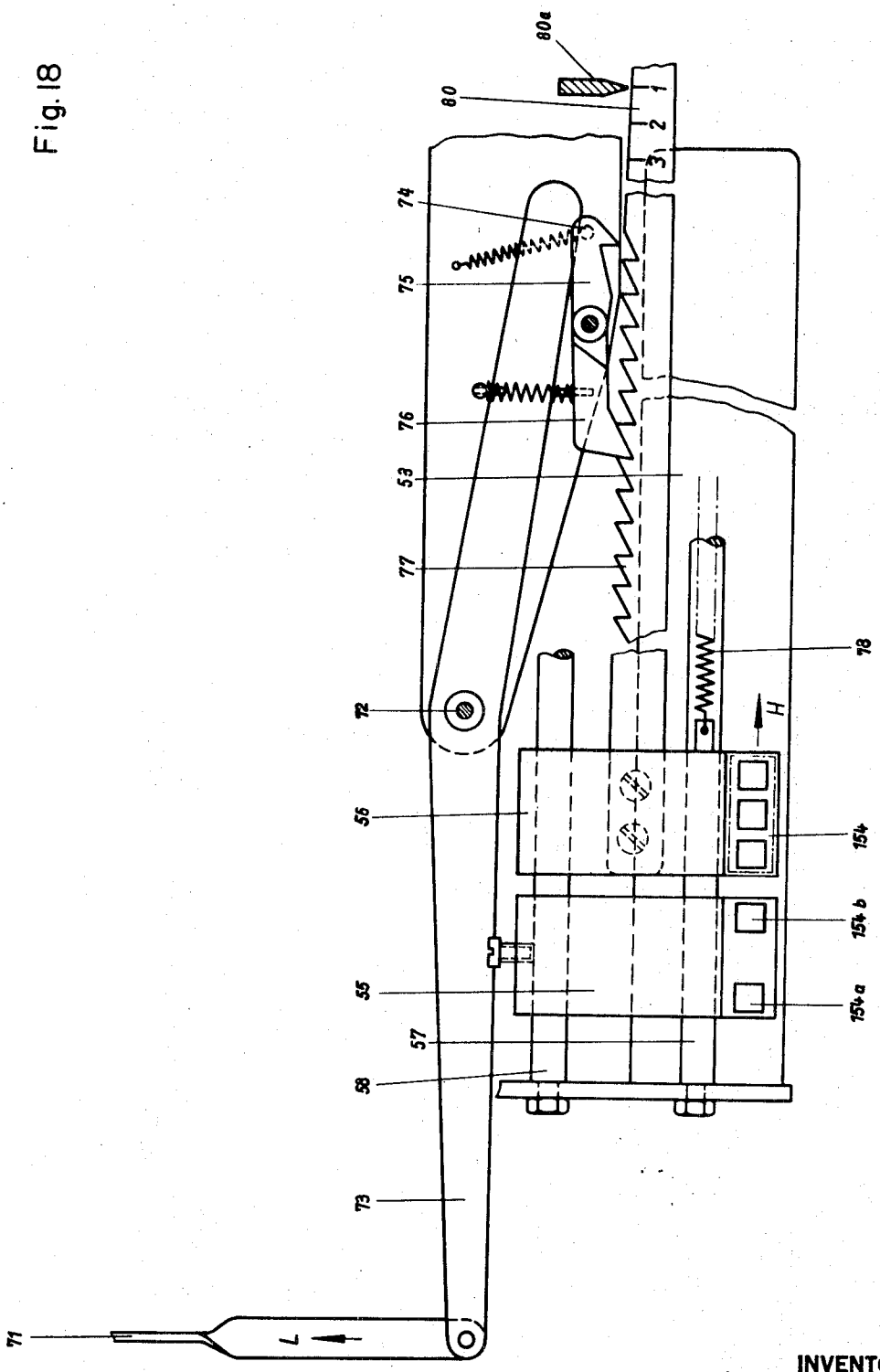

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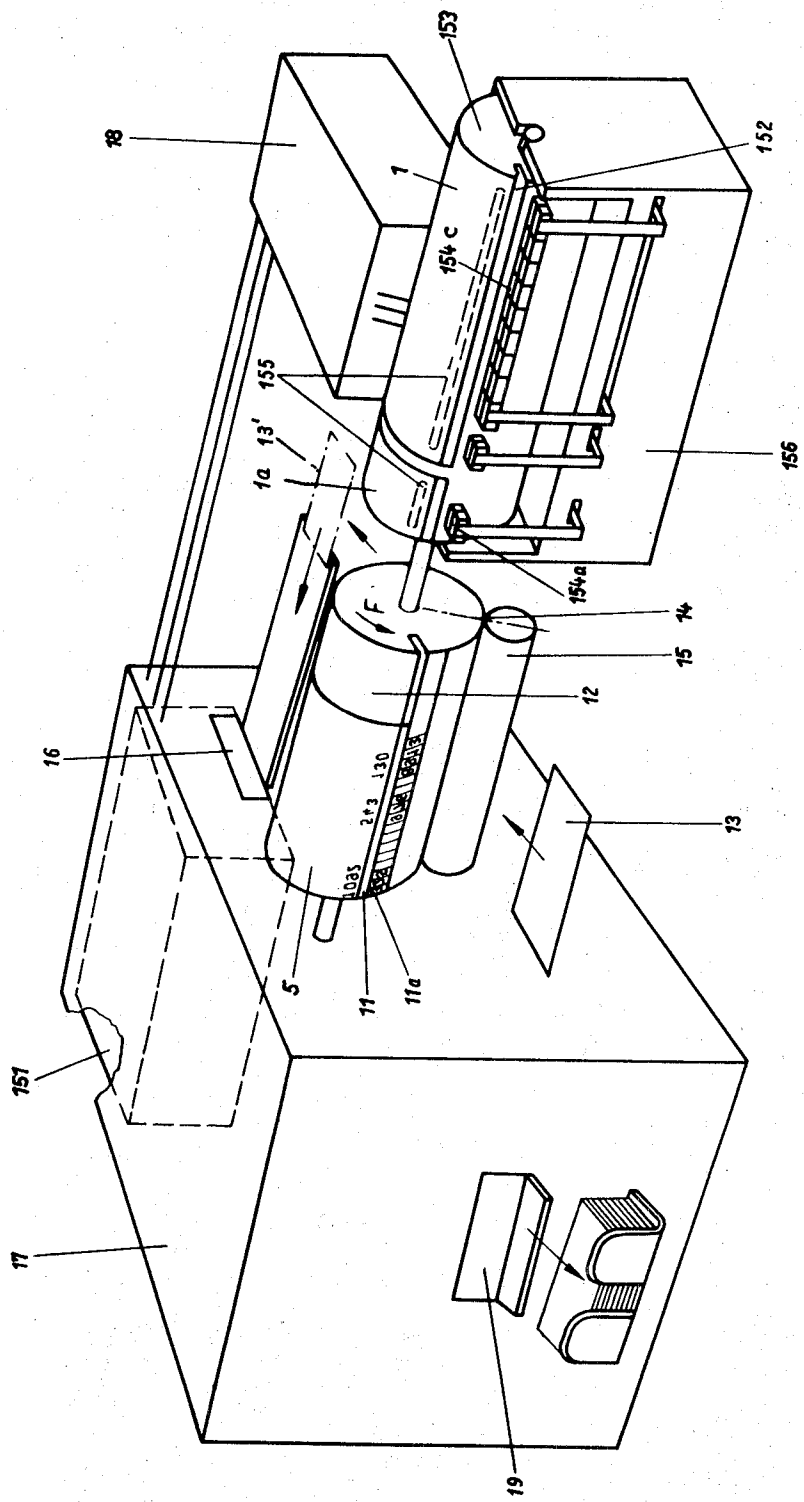
Fig. 19



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METHOD AND APPARATUS FOR PRINTING AND RECORDING ON A CARD

The present invention relates to a method and apparatus for printing and recording information on a card or the like, and more particularly to an arrangement by which the same information is printed and punched into a card in a simultaneous automatic operation.

The term "card" is used in the present application to define any object capable of receiving imprints and recordings, for example punched perforations.

The present invention is particularly concerned with an apparatus including a selective printing machine operable to print only selected text sections of a printing form onto a card or other copy sheet, and in accordance with the invention, the information contained in the selected text sections is automatically recorded in the form of punched perforations on the imprinted card.

In accordance with the prior art, cards or other copy sheets printed in a selective printing machine, have to be punched later on to record information. Of the 80 positions of a standard punch card, often up to 60 positions had to be punched corresponding to information already punched on the card. Irrespective of that these operations require a great deal of time, a great number of perforators and testing perforators including complicated mechanisms are required, and cause errors which have to be checked again.

It is one object of the invention to overcome the disadvantages of known arrangements for punching information-representing perforations into a printed card, and to provide a method and apparatus for automatically recording information on a card which has just been printed.

Another object of the invention is to print on a card information in legible characters, and to automatically record, preferably by punching, the same information on the imprinted card.

Another object of the invention is to control the recording device, such as a punching device, by reading out a record carrier whose recordings were produced simultaneously with a printing form carrying the text by which the card is imprinted.

Another object of the invention is to provide a method and apparatus for automatically and rapidly producing a punch card having legible imprints representing the same information as the perforations of the punched card.

With these objects in view, a preferred method according to the invention comprises the steps of legibly printing information on a card; reading out information from a record carrier having recordings; transporting the printed card to a recording device, such as a punching device; transferring the readout information to the recording device; and operating the recording device to record on the printed card the previously readout information. In this manner, a card having machine readable recordings and legible imprints is produced.

The same information is printed on the blank card which is recorded on the record carrier. It is advantageous to simultaneously produce a printing form representing information, and recordings on the record carrier representing the same information. The printing form is used with the card so that legible imprints are produced on the same, and thereupon the recording device, such as a punching device, records the same information on the imprinted card under the control of the readout and storing devices. The term "recordings" is used in the present application to describe recordings which can be read out by a machine.

The recordings on the record carrier which are read out are preferably magnetic, but other recordings adapted to be read out by an optical readout device, or by a readout device using an electric contact feeler, may also be used. The printed card is preferably punched, but other recordings permitting automatic handling and sorting of the card may also be produced.

In the preferred embodiment of the invention, only selected sections of a printing form are printed on the card, and only the same selected sections of their record carrier are read out, so that the recordings or perforations on the printed card represent the same selected information which is imprinted in legible form on the card.

One embodiment of an apparatus according to the invention comprises printing apparatus including printing means for supporting a printing form representing information, and producing legible imprints of at least a part of the printing form on a card; readout apparatus including means for reading out recordings representing information recorded on a record carrier; storing means connected with the readout apparatus for storing readout information; and a recording device, preferably a punching device, having an inlet for receiving the printed card from the printing apparatus, and being connected with the storing means and controlled by the same to record the previously readout and stored information on the printing card, preferably in the form of punched perforations, so that the card has legible imprints and punched recordings representing information.

In the preferred embodiment of the invention, impression means are provided for simultaneously producing the text of the printing form and the recordings on the record carrier so that the same information is represented by the printing form and by the record carrier. The printing apparatus is preferably a selective duplicator of known construction which is capable of printing selected text sections, such as lines, of the printing form. The readout apparatus is operated by the printing apparatus to read out only recordings containing the same information as the selected sections of the printing form.

The printing apparatus may include a printing drum, and each card is printed during one revolution of the printing drum which is connected with the readout apparatus so that within the same revolution, the record carrier is also readout.

One embodiment of the apparatus of the invention has stamping means mounted on the printing drum adapted to produce magnetic script or legible imprints. Before the printing from the printing form, the stamping device produces an additional record carrier, which is readout together with the first mentioned record carrier so that the additional information printed by the stamping device on the card, is also recorded or punched into the card.

The printing apparatus is preferably a rotary duplicator from which a magnetic or optical readout apparatus is driven so that the readout operation is carried out simultaneously with the printing of the card by the rotary duplicator, and the readout apparatus is controlled to read out only selected sections of the record carrier if the duplicator prints corresponding selected sections of the printing form.

While the readout operation takes place during a single revolution of the printing drum of the rotary duplicator, it may be completed during part of the time required for one revolution.

In a preferred embodiment, the duplicating machine includes a counterpressure roller which is operated by cams or electromagnets to cooperate with the printing drum only when a selected section of the printing form passes through the printing line. The duplicating machine is provided with means for stepwise selecting lines of the printing form to be printed, and such means are connected with a readout device to cause stepwise movement of the same for successively reading out lines of recordings on the record carrier.

A rotary contact device is preferably provided for controlling the selective printing, and is connected with the means of the readout apparatus by which the lines of recordings of the record carrier are successively read out.

It is advantageous to magnetize the recordings of the record carrier directly before they are read out by the heads of the readout apparatus. It is advantageous to first magnetically erase previously made recordings on the record carrier, and to permit the storing of the readout information in a storage means only when the readout head moves in one direction. A decoding device is advantageously provided between the storage device and the punching device.

In one embodiment of the invention, a plurality of readout heads is provided for reading out the lines of recordings on the

record carrier, and are rendered operable when the respective line is printed by the printing apparatus.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view, and FIG. 2 is a fragmentary side view illustrating the making of a printing form and of a record carrier representing the same information, and being used for controlling the printing and punching operations on the card;

FIG. 3 is a schematic flow diagram illustrating the successive operations according to the invention;

FIG. 4 is a fragmentary perspective and schematic view illustrating an apparatus according to one embodiment of the invention including a selective duplicator, a readout apparatus, and a punching device;

FIG. 5 is a fragmentary schematic side view illustrating a duplicating machine and connecting parts connecting the same with the readout apparatus, one side wall being omitted for the sake of clarity;

FIG. 6 is a fragmentary sectional view taken on line VI in FIG. 5;

FIG. 7 is a fragmentary side view, partially in section along line VII in FIG. 6, and illustrating the parts connecting the duplicating machine with the readout apparatus;

FIG. 8 is a fragmentary view taken in the direction of the arrow E in FIG. 7;

FIG. 9 is a fragmentary side elevation illustrating the line shifting of the readout head;

FIG. 10 is a fragmentary side view, partially in section, illustrating an automatic stepping device for shifting the line selecting cams of the duplicating machine, FIGS. 9 and 10 including a diagram illustrating an electric circuit connecting the duplicating machine with the readout apparatus;

FIG. 11 is a fragmentary side elevation illustrating a modified embodiment of the duplicating apparatus in which the counterpressure roller is operated by an electromagnet;

FIG. 12 is a diagram illustrating the electric circuit of the machine illustrated in FIG. 11;

FIG. 13 is a fragmentary perspective view illustrating a modified embodiment of the invention employing a modified readout apparatus;

FIG. 14 is a diagram illustrating the electric circuit of the embodiment of FIG. 13;

FIG. 15 is a fragmentary perspective view illustrating another embodiment of the invention with a modified readout apparatus;

FIG. 16 is a fragmentary schematic side elevation of a rotary duplicator used in the embodiment of FIG. 15, one side wall being omitted for the sake of clarity;

FIG. 17 is a fragmentary sectional view taken on line XVII in FIG. 16;

FIG. 18 is a fragmentary side elevation illustrating a mechanism for operating the readout means to perform line steps; and

FIG. 19 is a fragmentary perspective view illustrating another embodiment of the invention incorporating a modified readout apparatus.

Referring now to the drawings, and more particularly to FIGS. 1 and 2, four sheets 1, 4, 5, 6 are placed in superimposed positions, although illustrated in a spaced position in FIG. 2 for the sake of clarity. The stack of sheets is located between a type lever 3 and a platen 3*a*. Type lever 3*a* has a special type face adapted to produce impressions which can be read out by suitable readout apparatus. Sheet 1 is a record carrier and receives legible impressions 2 which are adapted to be read out by a magnetic head. The known CMC 7 font is suitable for this purpose. Sheet 4 is a carbon paper which produces corresponding imprints on sheet 5 which is a printing form or master sheet adapted to be used in a duplicating machine. An inking sheet 6 follows the printing form 5, and produces on the right side of the printing form mirror script from which duplicating copies can be made in a well known manner. The left side of the printing form 5 receives from the carbon paper 4, legible imprints so that the contents of the mirror script of the printing form 5 can be ascertained.

It will be seen that by operation of a special typewriter producing CMC 7 imprints, a record carrier sheet 1 having magnetic or magnetizable impressions 2, and a printing form 6 having a text adapted to be duplicated are simultaneously produced, and that the information contained in the text of the printing form is identical with the information represented by the recordings 2 of the record carrier sheet 1.

Referring now to FIG. 3 which illustrates successive operations according to the invention, the special typewriter 150 of which a type lever 3 and the platen 3*a* were described with reference to FIG. 2, produces the legible recordings on the record carrier sheet 1, and the mirror script text on the printing form 5. The printing form is placed on the periphery of a printing drum 12 which cooperates with a pressure roller 15. A blank card is inserted between pressure roller 15 and printing drum 12, and due to the engagement of the printing form 5 with the blank card 13, the latter is imprinted with a text of the printing form. If the counterpressure roller 15 is moved away from the printing drum 12 while undesired line sections of printing form 5 pass the printing line, the respective undesired sections are not printed, and only desired sections of the printing form are printed on the blank card 13.

The impressions on the record carrier 1 are magnetically or optically read out by a readout apparatus R which includes readout heads 9 and 9*b*. The impulses produced by the readout apparatus are stored in a storing means 18, decoded in a decoding device 151, and supplied to a recording device in the form of a punching device 17 of known construction. The imprinted card 13' is also supplied to the punching device 17 which is controlled by the impulses received from readout device R, to punch the information contained in the recordings of the record carrier sheet 1 into the printed card 13' so that the finished card 13'' contains information in the form of perforations and in the form of legible imprints. Since record carrier sheet 1 and printing form 5 were simultaneously produced to have the same impressions representing the same information, the same information is also represented by the punched perforations and by the legible imprints on the finished card 13''.

The making of the record carrier sheet 1 and of the printing form 5 by the special typewriter 150 is independent of the printing and punching of the card, and can be carried out at a different time. FIG. 4 illustrates an apparatus according to one embodiment of the invention in which a record carrier sheet and a printing form are used. The record carrier sheet 1 is placed on a table of the readout apparatus R and secured by a clamping means 8. Illuminated slots 10 are provided in table 7 to permit an accurate positioning of the record carrier sheet 1 in relation to the magnetic heads 9, 9*a*, 9*b*. Before the record carrier sheet 7 is clamped, a line thereon is accurately aligned with one of the illuminated slots 10. An additional record carrier sheet 1*a* is also aligned with a slot 10, and clamped by suitable clamping means, not shown. The additional record carrier sheet 1*a* carries impressions corresponding to impressions 2 on record carrier sheet 1, and adapted to be read out by a magnetic head 9*a*.

The printing form 5 is clamped to the periphery of a printing drum 12 in a position in which its lines extend in axial direction of the printing drum, and the side of the printing form 5 which was provided with inked impressions by the inked sheet 6 faces outward. A counterpressure roller 15 cooperates with the printing drum along a printing line located in a printing plane 14 passing through the axes of rollers 15 and 12.

During rotation of the printing drum 12 in the direction of the arrow F, a blank card 13 is supplied to the printing line and

imprinted with the text of the printing form. If the pressure roller **15** is moved to the operative printing position only if a desired and selected line, or group of lines, of the printing form passes the printing line, only desired and selected lines of the printing form are printed on the blank card **13**, whereas undesired lines of the printing form are omitted. Card **13** is then automatically transported by transporting means, not shown, to the position **13'**, and then transported by a conveyor **16***a* into the inlet opening **16** of a decoding device **151** which forms part of a recording and punching device **17**.

The rotary printing drum **12** is connected by a shaft to a mechanism within the readout apparatus R which causes a movement of the magnetic heads **9**, **9***a* and **9***b* in the directions of the arrows G, which is the direction of the lines of impressions or recordings on the record carrier sheet **1**. The mechanism also causes shifting of magnetic head **9** when the reading out of one line has been completed, and the magnetic head **9** is to be moved to the next following line of impressions for reading out the same. These operations will be described in greater detail hereinafter.

The impulses produced in the magnetic heads **9** and **9***a* by the magnetizable impressions on the record carrier sheet **1**, which are preferably magnetized by magnetic head **9***b*, are amplified and supplied to storing means **18**, preferably a core storage device **18** which has a storing means for each readout line. When card **13** moves through the inlet opening **16**, it is sensed by a sensing means, not shown, which is connected with storage device **18** and causes the storing device **18** to supply impulses to the decoding device **151** representing the information read out from record carrier sheet **1**. Decoding device **151** controls the punching device **17** to punch corresponding coded perforations into card **13** so that the cards **13''** discharged from outlet opening **19** and deposited in a stack, are imprinted with legible impressions, and provided with perforations representing the same information. While the information can be immediately determined by an operator reading the legible imprints, the cards can also be used in sorting machines and accounting machines which are controlled by the punched perforations. Evidently, the device **17** may produce also magnetic recordings on the cards which can be interpreted in a similar manner.

Referring now to FIGS. **5** and **6**, FIG. **5** illustrates parts of a conventional duplicating machine including a printing drum **12** supporting the printing form **5** and rotating in direction F. A gear train **20**, **21**, **22** connects the printing drum with a shaft **23**. A counterpressure roller **15** is mounted on a lever **41**, and can be operated by a linkage **35**, **37**, **42** to move between the illustrated inoperative positions spaced from the printing drum, and in operative printing position for pressing a blank card against the printing form **5**. The blank card is transported by transporting rollers **50***a* and moistened by a moistening device M with alcohol in order to receive an imprint of the inked printing form **5**. These conventional parts of a rotary duplicator are shown in FIGS. **5** and **6** in connection with readout apparatus by which the record carrier sheet **1** and the additional record carrier sheet **1***a* are read out, as described with reference to FIG. **4**. The reading out takes place in the direction of the arrow G, and the shifting of the magnetic heads **9** takes place in the direction of the arrow H, as shown in FIG. **6**.

Shaft **23** which is driven from the shaft of the printing drum **12** carries fixed thereon a wheel **24** carrying stepping pawls **26** and **27** cooperating with a ratchet wheel **28**. Pawls **26** and **27** are biased by springs **66** and **67**. Pawl **26** transmits the rotary motion from wheel **24** to ratchet wheel **28** which is connected by a flanged member **29** with cams **30**, **31** and **32** associated with the lines of the printing form. A cam **33** for printing a head section of the printing form on all successive cards is fixed to shaft **23**. During rotation of the printing drum and of shaft **23**, cams **30** to **33** cooperate with the follower rollers **34** of cam follower levers **35** so that the same turn about the journal **36** in the direction of the arrow J, turn lever **37** about its journal **38** whereby link **39** is displaced in the direction of the arrow K acting on the pivot pin **39***a* of a pair of toggle levers **40** and **41** so that counterpressure roller **15** is displaced and turns with lever **42** about journal **38** to the printing position in close proximity with the printing drum **12**. The exact position of counterpressure roller **15** can be adjusted by turning the eccentric member **40***a* which provides the pivot axis for toggle lever **40**.

By means of a flanged member **43**, the line cams **31** and **32** can be displaced along shaft **23** to a position cooperating with a cam follower roller **34** so that the counter pressure roller **15** is also actuated under the control of cams **31** and **32**. In this manner, the counterpressure roller can be held in the printing position while a corresponding number of lines of the printing form passes the printing line. In the illustrated embodiment **1**, **2**, or **3** consecutive lines of the printing form can be selected for printing during one revolution of the printing drum. The selection of lines of the printing form in this manner is known, and not an object of the invention.

During rotation of the printing drum **12**, the magnetic heads **9**, **9***a* and **9***b* also perform a motion in the direction of the arrow G for reading out lines of the record carrier sheet **1**, and of the additional record carrier sheet **1***a*.

The pawl-carrying wheel **24** has peripheral gear teeth meshing with a pinion **44** which drives a gear **45** on a shaft **46**, as best seen in FIG. **6**. A bevel gear **47** on shaft **46** meshes with another bevel gear **49** secured to a spindle **48** which is rotatably mounted in a frame of the machine.

Spindle **48** has a grooved track **50** engaged by a follower shuttle **52** mounted on a holding screw **51**. Screw **51** is secured to a plate **53** carrying a rod **54** which is slidably mounted in a body **56**, as best seen in FIG. **7**.

A body **55** is secured to rods **57** and **58**, while body **56** by which the shifting of the magnetic head **9** to different lines is controlled, is mounted for sliding movement on guide rods **57** and **58**. A winding, not shown, magnetizes the magnetic head **9***b* so that the same magnetizes the magnetizable impressions on the record carrier sheet **1**, whereas another winding, not shown, is energized by the readout head **9** when the magnetic impressions are read out. The readout head **9***a* on body **55** reads out a line on the additional record carrier sheet **1***a*.

In a modified arrangement of the magnetic head means **9**, an eraser winding is provided for erasing remnant magnetism, whereupon the magnetizing winding and the readout winding become successively operative.

In the embodiment of FIGS. **6** and **7**, the readout head **9** is rendered operative by electric switching means, not shown, when plate **53** has reached an end position after moving in the direction G and abuts stop **61** on spindle **50**. The readout head **9** is again disconnected from the circuit when plate **53** arrives in its other end position abutting the stop **62**. In this manner, reading out of a line of recordings in the wrong direction from the right to the left is prevented.

While magnetic heads and magnetizable impressions have been described, it will be understood that optical readout means, or sensing means for reading out graphite recordings on record sheet **1** may also be used.

After a line of recordings on record carrier sheet **1** has been read out corresponding to a line printed from printing form **5**, and another line or section of the printing form is to be printed and punched on the card, line cam **30**, and if desired also line cams **31** and **32**, must move opposite to the normal direction of rotation F, while the readout head makes a step in the direction H.

A shifting roller **63** which is mounted on a stationary frame wall, as best seen in FIG. **6**, is shifted to a position located in the plane of the pawls **26** and **27** as illustrated by dash-and-dot lines in FIG. **6**. When shifting pawl **27** runs against shifting roller **63** during rotation of pawl carrying wheel **24**, pawl **27** engages the ratchet wheel **28**, and causes locking pawl **26** to release the same so that a spiral spring **64** whose ends are secured to a hub portion of pawl carrying wheel **24** and to the flanged member **29**, turns the latter together with line cams **30**, **31** and **32** in a direction opposite to the arrow F until a tooth of ratchet wheel **28** abuts a tooth **65** of shifting pawl **27**.

During further rotation of wheel **24**, shifting roller **63** releases shifting pawl **27**, and springs **66** and **67** turn pawls **26** and **27** to the normal position shown in FIG. **5** in which shifting pawl **27** releases ratchet wheel **28**, and locking pawl **26** locks the same against turning movement under the action of spring **64** in counterclockwise direction opposite to the arrow F.

By the turning movement of flanged member **29** on which the line cams **30** to **32** are mounted, the latter have assumed an angular position for actuating cam follower means **34**, **35** in an angular position of printing drum **12** in which counterpressure roller **15** is in the operative printing position while the next line, or the next two or three lines, depending on line cams **32** and **33**, pass through the printing line along which counterpressure roller **15** engages printing drum **12** and the printing form **5**, with the blank card located between printing form **5** and the counterpressure roller **15**.

Since a different line will be printed during the next following revolution of printing drum **12**, it is also necessary that the next following line of the record carrier sheet **1** is read out.

The motion of locking pawl **26** caused by shifting pawl **27** under the control of shifting roller **63** is used for controlling the line shifting operation of the readout apparatus.

A follower roller **68** on an angular lever **70** which is mounted on a stationary stud **69** is engaged by the displaced shifting pawl **27** so that lever **70** turns in the direction of the arrow L in FIG. **5**.

A link **71** is raised by turning of lever **70** in the direction of the arrow L as best seen in FIG. **8** so that a long lever **73** mounted on a stationary pivot **72** is turned and acts with its free end on a stud **74** of a shifting pawl **75** cooperating with a locking pawl **76** which is urged by a compression spring **76***a* into engagement with the teeth of a rack bar **77**. Shifting pawl **75** is held by tension spring **75***a* in the illustrated position spaced from rack bar **77**.

When shifting pawl **75** is operated by lever **73**, rack bar **77** is moved one step in the direction H under the action of spring **78** while locking pawl **76** releases rack bar **77**. The movement is stopped when the tooth of pawl **75** is engaged by a tooth of rack bar **77** after the same has performed one step. Rack bar **77** and spring **78** are secured to the body **56**, as best seen in FIG. **6**, so that the same and the magnetic readout head **9** are moved one step to a position in which the readout head **9** is aligned with the next following line of magnetic recordings on record carrier sheet **1**.

The rod **54** by which body **56** and readout head **9** are moved in line direction for reading out the respective line, can move together with body **56** in the direction H, since a slot **79**, best seen in FIG. **8**, is provided in the plate **53**.

Rack bar **77** has a scale **80** cooperating with a pointer **80***a* for indicating which line of the record carrier sheet **1** cooperates with the readout head **9** so that this position can be adjusted to correspond to the position of the line cams **30**, **31** and **32**.

After the printing of the last selected line of the printing form **5**, the line cams **30**, **31** and **32** with ratchet wheel **28** and flanged member **29** are turned back to the initial position for reading out the first line of another printing form by a windup pinion **81** meshing with gear teeth along the periphery of the flanged member **29**, as best seen in FIG. **6**. Pinion **81** may be manually turned, or driven by a motor, not shown.

In order to place the readout head **9** on body **56** in the initial position for reading out the first line of another record carrier sheet, button **82** on rack bar **77** is engaged by the operator, and the rack bar with body **56** pushed against the action of spring **78** in a direction opposite to the direction H, rod **54** moving in slot **79**.

In the above description, it was assumed that only one line cam **30** is operative, and that the readout head **9** is shifted one step to the next following line of the record carrier sheet **1**. When line cams **31** and **32** are shifted on the hub portion of flanged member **29** to a position cooperating with cam follower roller **34**, see FIG. **6**, three successive lines of the printing form will be imprinted on the blank card. In this event, not only shifting roller **63**, but also shifting rollers **63***a* and **63***b*, see FIG. **5**, are shifted to the operative position shown in chain lines in FIG. **6** so that the pawl **27** and **26** are three times actuated, and that the ratchet wheel **28** performs three steps to place the group of line cams **31** to **33** in the next following position for printing the next three lines.

Pawls **26**, **27** are thus displaced by shifting rollers **63**, **63***a*, **63***b* in three angular positions. While only one angular lever **70** is illustrated in FIG. **5** for the sake of simplicity, it will be understood that corresponding angular levers are provided and operated by pawl **27** in the three angular positions in which the same is actuated.

Each of the three angular levers **70** is connected with link **71** and causes angular displacement of lever **73** so that pawls **75**, **76** permit rack bar **77** to perform three steps whereby body **56** and readout head **9** is shifted three steps corresponding to three lines of magnetic recordings on the record carrier sheet **1**.

The construction illustrated in FIGS. **5** to **8** obtains the shifting of the readout head by mechanical means. However, the line shifting motion of the readout head **9** can also be obtained by the electromechanical device illustrated in FIGS. **9** and **10**. A rack bar **83** is secured to the body **56** in which the readout head **9** is mounted. A spring **95** is connected with the rack bar and with a fixed point on the frame of the machine. The rack bar **83** has gear teeth meshing with a gear **85** provided with a scale **84**, so that the position of gear **85** is indicated in a window **101**. A ratchet wheel **86** is connected with gear **85** for turning movement with a shaft **82**.

A pawl **88** controlled by an electromagnet **89** and a pawl **92** controlled by an electromagnet **91** cooperate with the ratchet wheel, and are connected to each other by a spring **93** which urges pawl **92** against a stop **94** which limits movement of pawl **92** so that the same cannot engage ratchet wheel **86** unless shifted by the armature **99** of electromagnet **91** to a position in which the cylindrical stop **94** is located in an arcuate groove **92***a*. Pawl **88** is turnable about a journal **90** and it is held by spring **93** in engagement with ratchet wheel **86**. Electromagnets **91** and **89** are connected in parallel and in series with a switch **152** and a pair of contacts **96** to a voltage source. Contact **96** has an actuating portion **97** cooperating with the pair of pawls **26**, **27** which control the ratchet wheel **28** which is mounted on a hub portion of the wheel **24** the construction is the same as described with reference to FIG. **5**, the only difference being that instead of the angular lever **70**, the actuating member **97** is displaced by pawl **27** when the same engages one of the shifting rollers **63**, **63***a*, **63***b*.

When shifting roller **63**, for example, is displaced to be located in the path of movement of shifting pawl **27**, the same is operated to close contacts **96** while the line cam **31** is displaced to a position for controlling through cam follower roller **34**, the counterpressure roller **15**. When shifting roller **63** is placed in the operative position, a switch **152** is also closed, so that upon the line shifting movement of pawl **27**, and corresponding closing of contacts **96**, impulses are given to electromagnets **89** and **91**. Electromagnet **91** includes a resistor which causes shifting of the armature **99** against the action of spring **102** with a certain delay after the operation of electromagnet **89** so that first locking pawl **88** is released, whereupon pawl **92** is shifted in the direction of the arrow N to a position in which spring **93** pulls tooth **92***a* into engagement with a tooth of ratchet wheel **86**. While ratchet wheel **86** is released by both pawls **88** and **92**, spring **95** pulls rack bar **83** to the left as viewed in FIG. **9** so that gear **95** turns in counterclockwise direction until a tooth of ratchet wheel **86** abuts tooth **92***a* of pawl **92**. Armature **99** continues its movement so that ratchet wheel **86** is turned in clockwise direction as viewed in FIG. **9** together with gear **85** whereby rack bar **83** is shifted one step against the action of spring **95** in the direction of the arrow H. In this manner, body **56** with readout head **9** is shifted one step to a position in which readout head **9** is aligned with the respective following line of recordings on record carrier sheet **1**.

Pin 94 and the arcuate recess 92*a* are designed so that at the beginning of the movement of pawl 92 in direction of the arrow N, tooth 92*a* first moves into a notch of ratchet wheel 86 and then moves along a circular path so that tooth 92*a* remains in engagement with the respective tooth of the ratchet wheel 86.

When readout head 9 is in the correct position aligned with the next following line, pin 98, by which actuating member 97 was engaged to close contacts 96, moves off actuating member 97 so that contacts 96 open and interrupt the circuits of electromagnets 89 and 91. Spring 93 pulls locking pawl 88 into engagement with the ratchet wheel 86 so that readout head 9 is arrested in the new position, which is indicated in the window 101 by a number of the scale 84.

Spring 102 retracts armature 99 with pawl 92 until tooth 92*a* is separated from ratchet wheel 86.

When readout head 9 has been moved into successive positions for reading out all lines of the record carrier sheet 1, rack bar 83 is manually returned with body 56 to a position in which readout head is positioned to read out the first line of a record carrier sheet 1. It is only necessary to operate locking pawl 88 to relieve ratchet wheel 86, whereupon spring 95 will return rack bar 83 with body 56 and readout head 9 to the initial position.

The above described embodiments assume a fixed record carrier sheet, and a readout head 9 which is stepwise moved to successive positions for reading out successive lines. It is also possible to reverse the arrangement and to mount the record carrier sheet 1 on the stepwise shiftable table which can be displaced in two transverse directions for causing reading out by the stationary readout head, and association of successive lines of the record carrier sheet with the stationary readout head.

While in the embodiment of FIGS. 5 and 6, the counterpressure roller is operated by cams, the embodiment of FIGS. 11 and 12 uses electromagnetic means for this purpose. The printing drum which carries the printing form 5 cooperates with a counterpressure roller 15 mounted on a shaft 128 by means of an angular lever 127 which is connected to the armature 126 of an electromagnet 125 so that upon energization of the electromagnet 125, the counterpressure roller is moved in the printing plane 14 to the operative printing position for pressing a card 13 against a selected line section of printing form 5. The blank card 13 is transported by transporting rollers 129 and 130 and is moistened by moistening means M. The shaft of the printing drum drives another shaft 122 through a gear train 20, 21 and 22. A circular set of contacts 120 is provided on a stationary contact means 119. Shaft 122 drives a contact arm 121 whose contact 123 successively engages contact 120 during rotation of the printing drum. Each contact 120 is associated with a line of the printing form 5, and the arrangement is such that contact 123 engages the contact 120 whose associated line passes through the printing plane 14 during rotation of the printing drum and rotary contact arm 121. Rotary contact arm 121 has an actuating projection 135 cooperating with three contacts 136, each of which has an actuating portion located in the circular path of movement of the actuating projection 135, and the contacts 136 are so positioned that each contact is closed when its actuating portion is engaged by projection 135.

A stepping magnet 137 cooperates with three contact members 138, 138*a*, 138*b* to shift the same stepwise in counterclockwise direction, when energized.

The movable contact member 138, 138*a*, 138*b* cooperate with a circular set of stationary contacts 140 and remain in all angular positions connected into the circuit by slide contacts engaging contact rings secured to the stepwise movable contact members.

As best seen in the circuit diagram of FIG. 12, the slide rings of the selector contact device 134 are connected to the contacts 136 which are operated by projection 135 of the rotary contact arm 121, and also connected with switches 133, 133*a*, 133*b* which are selectively operated to select the printing of one, two or three lines. The operating electromagnet 125 of the counterpressure roller is connected by a slide contact and slide ring 124 to contact 123 of the rotary contact arm 121, and the stationary contacts 120, 120*a* . . ., are respectively connected to relay contacts 116, 116*a* . . . of relays 113, 113*a*, 113*b*, 113*c* . . ., each of which is connected with a switch 110 on the manually operated keyboard 111, see FIG. 11. The stationary contact members 139, 140 are respectively connected through diodes to the manually operated switches and to the relays.

Each relay has another relay contact 115, 115*a*, . . . connected with a signal lamp 117, 117*a*, . . ., and voltage sources 118 for the operating magnet 125, 114 for the relay windings, and 118*a* for the signal lamps are provided.

When switch 110 on the keyboard 111 is closed, the circuit for relay 113 to voltage source 114 is completed so that contacts 115 and 116 close. Contact 115 connects the signal lamp 117 to the voltage source 118*a* so that the illuminated signal lamp 117 indicates that line 1, for example, is ready for printing. Contact 116 connects voltage source 118 with contact 120, which is associated with the first line of the printing form 5. When printing drum 12 rotates together with contact arm 121 in the direction of the arrow F, contact 103 successively engages contacts 120, and the contact 120 associated with the first line of the printing form is the first to be engaged. Consequently, the circuit of the operating electromagnet 125 is closed, and the pair of levers 127 is operated to move counterpressure roller 15 to the printing position in which the card 13 is pressed against the first line of the printing form which passes through the printing plane 14 so that the first line is imprinted on card 13. When movable contact 123 moves beyond the first stationary contact 120, the circuit of electromagnet 125 is interrupted, and spring 131 retracts the pair of levers 127 on which the counterpressure roller is supported. The printing of the first line is completed.

If during the following revolutions of printing drum 12, every time the respective next following line is to be printed, the keyboard 111 need not be actuated again, but it is sufficient to close contact 133 which connects contact 136 into the circuit so that every time contact 136 is closed by projection 135 the next following line is printed. When the printing of two, or of three lines is desired during each revolution, switches 133*a*, or 133*b*, respectively are operated.

When movable contact 123 has passed beyond the last stationary contact 120 during a revolution of contact arm 121 with printing drum 12, projection 135 engages contact 136 and closes the same. Stepping magnet 137 is connected to voltage source 114 and shifts the three contact members 138, 138*a*, and 138*b* one step in the direction of the arrow Q. Contact member 138 moves from contact 139 to contact 140 so that contact 139 no longer connects relay 113 into the circuit of voltage source 114, and relay contact 116 opens and disconnects the first line contact 120. Consequently when contact 123 engages the first line contact 120 during the next following revolution, the printing electromagnet 125 is not energized, and the first line is not printed. Contact 115 of signal lamp 117 also opens indicating that the first line will not be printed.

Since contact member 138 has engaged contact member 140, the relay 113*a* of the second line is energized, and contacts 116*a* and 115*a* close. Signal lamp 117*a* for the second line lights up, and the second line contact 120*a* is connected into the circuit so that printing electromagnet 125 is energized when contact 123 engages stationary line contact 120*a*.

The readout apparatus cooperating with the printing apparatus described with reference to FIGS. 11 and 12, has already been described with reference to FIG. 9. The stepping magnets 89 and 91 of FIG. 9 which accomplish the line shifting of the readout head 9 are connected into the circuit shown in FIG. 12 in parallel with stepping magnet 137 which controls the line shifting of the printing apparatus. It is evident that everytime an impulse is supplied to stepping electromagnet 137 due to the closing of contact 136 by the movable contact

arm projection 135, electromagnets 91 and 89 will be energized and cause shifting of the rack bar 83 with body 56 and readout head 9 a corresponding line spacing distance. The mechanical control of contact 96 shown in FIG. 10 is, of course, eliminated in the electric control circuit of FIG. 12, contact 136 replacing contact 96. Body 56 with readout heads 9 is transported over the record carrier sheet 1 in as many steps as the stepping device 134 is actuated to move.

For some organizational problems, it is advantageous to simultaneously store information read out from several lines of the record carrier sheets 1, or 1*a* in the core storage device 18. As shown in FIG. 13, as many readout heads 9*c* can be provided as there are lines of recordings on record carrier sheet 1. Each readout head 9*c* is associated with a key of the keyboard 111 shown in FIG. 14, the keyboard being constructed as shown in FIG. 11. The printing apparatus described with reference to FIG. 11 is used in the embodiment shown in FIGS. 13 and 14. Since a readout head 9*c* is provided for each line of the record carrier sheet, shifting of the readout heads from line to line in the direction H is not necessary, so that the magnetic readout heads 9*a* of the additional record carrier sheet 1*a*, and 9*c* of the record carrier sheet 1, perform movements only in the direction of the arrow G. From a comparison of FIGS. 12 and 14 it will be apparent that the circuits of FIGS. 12 and 14 are the same as far as the circuit parts required for printing successive lines or groups of lines are concerned. Stepping magnets 91 and 89 are omitted, since no shifting of a readout head from line to line is required. Each of the relays 113. 113*a*, 113*b*, 113*c* has a third relay contact 141, 141*a*, 141*b*, 141*c* which are respectively connected to the readout heads 9*c* and to an additional voltage source 142.

When printing drum 12 rotates in the direction of the arrow F, the magnet readout heads 9*a* and 9*c* move in the readout direction G under the control of the mechanism described in detail with reference to FIG. 7. The readout information of each read out line is entered into corresponding storage means of the core storage device 18 and then transmitted to the recording or punching device 17 so that corresponding recordings are made on the imprinted card in the form of perforations. As explained above, the imprinted card is automatically transported through the inlet opening 16 into the recording or punching device 17. When the operations are to take place without automatic line spacing, the key switches 110, 110*a*, 110*b*, . . . of key board 111 are selectively operated switches 110, 110*a*. . . .
recorded and punched on the card are selected, together with the corresponding lines of the printing form. Assuming that key switch 110 is closed, relay 113 is energized and closes not only contacts 115 and 116 whose operation has been described above, but also contact 141 so that the respective magnetic readout head 9*c* is energized and produces impulses for storing device 18 when passing in the direction G over the respective line of recordings on record carrier sheet 1.

Automatic shifting can be accomplished by the stepping device 134, stepping magnet 137, contact 136, and switches 133, 133*a*, 133*b* without requiring actuation of the key switches 110, 110*a*, . . .

Contact members 138, 138*a*, 138*b* are shifted by stepping magnet 137 over the stationary contact members 139, 140 so that the respective next following relay 113*a*, 113*b*, . . . is energized, and the relay associated with the preceding printed line is de-energized. Relay contacts 141, 141*a*, . . . cause a successive energization of the readout heads 9*b* and the reading out of the respective lines of record carrier sheet 1.

Another embodiment of the invention is illustrated in FIGS. 15 to 18. While in the previously described embodiments, the record carrier sheet 1 is mounted on a table, and the reading out of the lines of recordings takes place by relative movement between the readout head, or heads, and the record carrier sheet, in the embodiment of FIGS. 15 to 18, the record carrier sheet 1, and also an additional record carrier sheet 1*a*, are mounted on a cylinder 153. Readout head 154*a* cooperates with the additional record carrier sheet 1*a*, and magnetic heads 154*b* and 154 cooperate with the record carrier sheet 1. Readout head 154 is movable in the direction H to the position for reading out successive or selected lines of the record carrier sheet 1 which is secured by a clamping means 152 to cylinder 153 in a position in which its lines extend in circumferential direction of cylinder 153. Printing drum 12, counterpressure roller 15, storing device 18, decoding device 151, and recording or punching device 17 are arranged as described with reference to FIG. 4, and the operations are carried out in the sequence described with reference to FIG. 3. Printing drum 12 is connected with cylinder 153 for synchronous rotation, and it is not necessary to axially align printing drum 12 with cylinder 153. Cylinder 153 may be placed above, behind or completely separated from the same, but in any event it must rotate in synchronism with the printing drum since the reading out of the lines of recordings is associated with the printing from the printing form 5. The term "synchronism" is used in a rather broad sense, since the printing drum 12 and the cylinder 153 do not have to rotate at the same rotary speed, it is, however, necessary that a rotation of cylinder 153 during which the reading out of a line takes place, must be completed not later than the corresponding revolution of printing drum 12.

Illuminated slots 155 are provided in cylinder 153, and aligned with optical marks in record carrier sheets 1 and 1*a* so that the lines of the same register with the readout heads.

Printing form 5 is clamped by clamping means 11 so that its lines extend in axial direction of printing drum 12.

The selected lines of the printing form are printed on the blank card 13 by moving the counterpressure roller to its printing position whenever a selected line passes through the printing plane 14. The rotation of printing drum 12 also causes the movement of the readout 154 from line to line in the direction of the arrow H.

During the rotation of cylinder 153 with record carrier sheets 1 and 1*a*, the recordings on record carrier sheets 1 and 1*a*, which preferably have the form of legible impressions in the CMC 7 font, are readout by the magnetic readout heads. The readout heads are slightly spaced by a gap from the surface of cylinder 153, and the record carrier sheets 1 and 1*a* have such a thickness that this gap is filled by the record carrier sheets and the readout heads slide on the record carrier sheet. The impulses produced by the readout head are stored in storing device 18, and transmitted to the recording device 17 when a sensing means senses the entering of a card 13' into the inlet 16.

The control of the readout operations by the printing apparatus will now be described with reference to FIGS. 16 to 18. The printing apparatus is shown to be a duplicator of the type described with reference to FIG. 5, and includes printing drum 12, counterpressure roller 15, moistening means M, and a spring loaded stepping device including a pawl carrying wheel 24 carrying pawls 26 and 27, ratchet wheel 28, and cams 30 to 33 which operate a cam follower lever 35 with a cam follower roller 34 of a linkage which causes by toggle levers 40, 41 the movement of counterpressure roller 15 from the illustrated inoperative position to a printing position for pressing a blank card or copy sheet, previously moistened with alcohol by moistening means M, against the mirror script inked text of the printing form 5 whereby an imprint is produced on the card. Shaft 23 which carries cams 30 to 33 is rotated in synchronism with the printing drum through a gear train 20, 21, 22 and turns wheel 24 with pawls 26 and 27. Pawl 26 transmits the rotary motion to the ratchet wheel 28 which turns through the flanged member 29 the line cams 30, 31, 32 in the direction of the arrow F for actuating the counterpressure roller. A cam 33 for producing repeated imprints of a head portion of the printing form is fixedly secured to shaft 23. If desired, line cams 31 and 32 can be shifted in axial direction to a position cooperating with line cam 30 to operate the counterpressure roller so that several lines are successively printed. In the illustrated example, one, two or three lines can be printed during one operation of the counterpressure roller.

In accordance with the invention, during each revolution of the printing drum **12**, the readout head **154** must move in the direction of the arrow H to a position cooperating with the next following line of the record carrier sheet **1**.

Magnet head **154***b* serves for magnetizing the recorded impressions on the record carrier sheet. It is, however, also possible to provide record carrier sheets which have over the entire surface thereof a magnetizable coating, or to provide magnetizable strips with magnetic recordings.

If it is desired to print the next line of the printing form, and to punch in the imprinted card the same information, it is necessary that the line cams **30, 31** and **32** perform an angular step opposite to the direction of rotation F, and that the readout head **154** performs one step to the next line in the direction H. A shifting roller **63** is shifted to the position indicated in chain lines in FIG. **17** in which it is located in the path of movement of pawls **27, 26** so that shifting roller **63** moves pawl **27** with tooth **65** into a notch of ratchet wheel **28**, while locking pawl **26** releases the ratchet wheel. The spiral spring **64** turns flanged member **29** with the line cams **30, 31, 32** in the direction opposite to the direction F until a flank of a tooth of a ratchet wheel **28** abuts tooth **65**. When pawl **27** moves beyond shifting roller **63**, springs **66** and **67** return pawls **26** and **27** to the initial position shown in FIG. **2**. While pawl **27** releases ratchet wheel **28**, spring **64** pulls ratchet wheel **28** to a position in which the next following tooth thereof abuts pawl **26** so that the line cams **30** to **32** are in the position required during the next following revolution of printing drum **12** for printing the next line, or lines.

The movement of pawls **27, 26** by shifting roller **63** is also used for moving readout head **154** one step to the next following line. An angular lever **70** is mounted for turning movement on a shaft **69** and is engaged by the displaced pawls **27, 26** to turn out of the illustrated position in the direction of the arrow L so that a link **71** is raised and turns a long lever **73** which is mounted on a fixed pivot **72** so that the free end of lever **73** engages a pin **74** on a pawl **75** which is articulated to a pawl **76**. When pawl **74** engages the rack bar **77**, pawl **76** releases the same so that the rack bar is permitted to move one step under the action of spring **78** whereby body **56** with the readout head **154** is shifted one step in the direction H to the next line of the record carrier sheet **1**. The construction and operation is the same as described with reference to FIG. **8**, but it is not necessary to move the readout head in a readout direction since a corresponding motion is produced by the rotating cylinder **153** supporting the record carrier sheet **1**. A scale **80** cooperating with the pointer **80***a* indicates the line position of the readout head **154** so that the readout head registers with a line of recordings having the same information as the corresponding line of the printing form **5** which is being printed during the same revolution of the printing drum **12** and cylinder **153**.

After the last line of printing form **5** has been printed, the line cams **30** to **32** with ratchet wheel **28** and flanged member **29** are returned to the initial position by operation of the wind-up gear **81** meshing with gear teeth on the flange member **29**.

Body **56** with readout head **154** is returned to the initial position registering with the first line by operation of the button **82** which is secured to the rack bar **77**.

When only one shifting roll **63** is rendered operative, successive lines are printed and read out. If also shifting roll **63***a*, or shifting rolls **63***a* and **63***b* are shifted to the operative position located in the path of movement of the pawls **26, 27** a group of three lines is printed and read out. In addition to lever **70**, two further levers **70**, not shown, are provided and are actuated under the control of shifting rollers **63***a*, **63***b* for raising link **71** so that the rack bar **77** is shifted three successive steps.

The embodiment of FIG. **19** is a combination of the embodiment described with reference to FIGS. **15** to **18**, and the embodiment described with reference to FIGS. **13** and **14**. As in the embodiment of FIG. **15**, the record carrier sheets **1** and **1***a* are mounted on a cylinder **153** in a position in which the lines of recordings extend in circumferential direction of cylinder **153**, and cylinder **153** is rotated in timed relation with the rotation of the printing drum **12**. However, instead of shifting the readout head **154** in axial direction of cylinder **153** to different lines on the record carrier sheet, as many readout heads **154***c* are provided as there are lines of magnetized legible impressions or other recordings on the record carrier sheet **1**.

Each readout head **9***c* can be selected by actuation of a corresponding key switch **110**, **110***a*, . . ., as described with reference to FIG. **14**.

The information read out in each line by a readout head **9***c* is stored in a corresponding storing means of the storage device **18**, and all readout heads **9***c* are stationary since the reading out is accomplished by rotating the record carrier sheets on cylinder **153**.

In a modified arrangement, not illustrated, only a single readout head **154** is provided, and the cylinder **153** with the record carrier sheets **1** and **1***a* is shifted in axial direction such a distance that the stationary readout head is located for reading out the next following line.

Instead of providing magnetizable impressions on the record carrier sheet **1**, it is also possible to use a record carrier sheet coated with a magnetizable layer, which may consist of iron oxide, on which recordings were made by an impulse recording device. In all embodiments of the invention, the recording device or punching device **17** is also operated from the shaft of the printing drum **12** to make recordings, particularly punched perforations, in time relation with the printing and reading out of the information.

As shown in FIGS. **4, 13** and **15**, the clamping means **11** by which the printing form **5** is held on the printing drum **12** is provided with stamping means **11***a* which can be set by the operator to represent particularly numerical data, and which stamp each card **13** with impressions representing such data. In accordance with the present invention, the stamping means are constructed to produce impressions of the kind indicated at **2** in FIG. **1**, which are legible but also adapted to be read out by a readout device.

If it is desired to represent the numerical data impressed by the stamping means on the card also by punched perforations, a record carrier sheet blank is run through the printing machine before the other operations start, and receives legible impressions adapted to be read out from the stamping means. This record carrier sheet is inserted as record carrier sheet **1***a* into the readout device, and is read out by readout head **9***a* together with the record carrier sheet **1**, as explained above. Consequently, the punching device **17** will not only punch the information contained on the printing form into the finished card **13''**, but will also punch the information impressed by the stamping means **11***a* onto each printed card. The stamping means may include a plurality of rollers each carrying a set of digits and being settable so that the operative stamping faces are aligned in axial direction of the printing drum **12**, representing a multi-order number or several numbers.

Instead of producing magnetizable impressions, electrically conductive impressions may be made by the stamping means, and read out by a suitable optical readout head.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of arrangements for printing and recording information on a card or copy sheet differing from the types described above.

While the invention has been illustrated and described as embodied in a method and apparatus for printing and automatically punching the same information on a card, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or

specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

I claim:

1. Apparatus for legibly printing and machine-readable recording information on a card or the like, comprising, in combination, printing apparatus including means for supporting a printing form representing information, and print effecting means for producing legible imprints of at least a part of said printing form on a card; a record carrier having recordings representing said information; readout apparatus including readout means for reading out said recordings on said record carrier; storing means connected with said readout apparatus for storing readout information; and a recording device having an inlet for receiving said card with said legible imprints thereon, and being connected with said storing means and controlled by the same for recording said previously readout and stored information on said card in the form of machine-readable recordings so that said card has said legible imprints and said machine-readable recordings which represent the same information.

2. An apparatus as claimed in claim 1 comprising impression means for simultaneously impressing (a) the text of said printing form on the same and (b) recordings on said record carrier representing the information represented by said printing form.

3. An apparatus as claimed in claim 2 wherein said impression means have impression faces for simultaneously making impressions on said printing form and other impressions on said record carrier when said printing form is superimposed on said record carrier, said other impressions being said recordings on said record carrier.

4. An apparatus as claimed in claim 1 wherein said printing apparatus includes selector means for selectively printing on said card only selected parts of said printing form; and means for operating said readout apparatus from said selector means of said printing apparatus to read out only selected recordings of said record carrier containing the same information as said selected parts of said printing form.

5. An apparatus as claimed in claim 1 wherein said print effecting means includes a rotary printing drum for supporting said printing form and operable so that said card is imprinted during one revolution of said drum with imprints representing a predetermined information; and comprising means operatively connecting said drum with said readout apparatus and operating the same to read out during said one revolution of said printing drum recordings representing the same information imprinted on said card during said one revolution.

6. An apparatus as defined in claim 1, wherein said recording device is a punching device for producing perforations in said printed card.

7. An apparatus as defined in claim 1 wherein said print effecting means includes a rotary printing drum for supporting the printing form, counterpressure roller means operable between an inoperative and a printing position cooperating with said printing drum, at least one line cam driven from said printing drum, means connecting said line cam with said counterpressure roller for operating the same, and shifting means for shifting said line cam after each revolution of said printing drum; and wherein said readout apparatus includes means connected with and operating in synchronism with said shifting means of said line cam to associate said readout means with lines of recordings on said record carrier representing the same information as the lines printed on said card.

8. An apparatus as defined in claim 1 wherein said print effecting means includes a rotary printing drum supporting said printing form, and a counterpressure roller cooperating with the same, and electric circuit means including a rotary contact arm rotating in synchronism with said rotary printing drum, and a plurality of line contacts associated with the lines of the printing form and being engaged by said contact arm whenever the corresponding line of the printing form passes through the printing line between the printing drum and said counterpressure roller, and a printing electromagnet connected into the circuit in series with said contact arm and line contact and operating said counterpressure roller.

9. An apparatus as defined in claim 1 wherein said readout means includes a magnetizing head for magnetizing recordings on said record carrier, and a readout head reading out the magnetized recordings on said record carrier.

10. An apparatus as defined in claim 1 and including a decoding device connecting said storing means with said recording device; and wherein said recording device is a punching device for punching perforations into the printed card in accordance with the readout, stored, and decoded information.

11. An apparatus as defined in claim 1 wherein said readout apparatus includes a readout head, and means controlled by said printing apparatus to move said readout head along a line of recordings on said record carrier, and for shifting said readout head to successive lines of recordings on said record carrier.

12. An apparatus according to claim 1 wherein said printing apparatus includes a rotary printing drum for supporting said printing form; a rotary contact arm driven from said printing drum, a plurality of line contacts respectively associated with lines of said printing form and of said record carrier, and electromagnetic line shifting means connected with said line contacts for effecting printing of selected or successive lines of said printing form, and for reading out corresponding selected or successive lines of recordings on said record carrier.

13. An apparatus as defined in claim 1 wherein said record carrier has a plurality of lines of recordings respectively corresponding to lines of said printing form; wherein said readout means include as many readout heads as there are lines of recordings and being respectively aligned with said lines for reading out the same; and wherein said storing elements respectively connected with said readout heads for storing information received from each of said readout heads in the form of impulses.

14. An apparatus according to claim 1 wherein said printing means includes a rotary printing drum for supporting said printing form, and stamping means mounted on said printing drum spaced from said printing form and adapted to produce on said card recordings adapted to be read out by readout means.

15. An apparatus according to claim 14 wherein said readout apparatus includes additional readout means for reading out recordings on an additional record carrier; and wherein said recordings made by said stamping means are made on the additional record carrier before the same is used in said readout apparatus.

16. An apparatus as defined in claim 1 wherein said readout apparatus includes a rotary cylinder driven in synchronism with said printing apparatus and having means for attaching said record carrier to the periphery thereof so that the recordings on said record carrier are read out by said readout means during rotation of said cylinder.

17. An apparatus as defined in claim 16 wherein said printing means include a rotary printing drum for supporting said printing form; and means connecting said printing drum with said cylinder for rotation.

18. An apparatus as defined in claim 17 wherein said printing apparatus includes means for printing successive lines of said printing form, said means being connected with said readout means for actuating the same to read out lines of recordings on said record carrier corresponding to the line printed by said printing apparatus.

19. An apparatus according to claim 18 wherein said readout means include a readout head shiftable in axial direction of said cylinder to positions for reading out successive or different lines of recordings on said record carrier.

20. An apparatus as defined in claim 18 wherein said readout means include a plurality of readout heads respectively positioned for reading out lines of recordings on said record carrier, and means for activating successive or selected

readout heads so that successive or selected lines of recordings are read out during rotation of said cylinder with said record carrier.

21. An apparatus according to claim 18 wherein said printing apparatus includes means for causing printing of groups of successive lines during each revolution of the printing drum; and means for activating corresponding groups of readout heads for reading out corresponding groups of lines during successive revolutions of said cylinder.

22. An apparatus according to claim 1 and having electric circuit means including a plurality of selector key switches respectively associated with corresponding lines of said printing form and of said record carrier; and wherein said circuit means are connected with said readout apparatus and with said printing apparatus to cause synchronized printing of lines of the printing form, and reading out of corresponding lines of recordings on said record carrier upon actuation of the selector key switch associated with the respective lines.

23. An apparatus as defined in claim 1 wherein said record carrier has a plurality of spaced lines of recordings; and wherein said readout means include a plurality of readout heads respectively associated with said lines of recordings; means controlled from said printing apparatus to move said record carrier and said readout heads relative to each other; and means for selectively or successively activating said readout heads.

24. A method for printing and recording the same information on a card, comprising, in combination, the steps of simultaneously making a printing form representing information, and recordings on a record carrier representing the same information; imprinting by said printing form a card with legible characters representing said information and supplying said card to a recording device; reading out said recordings on said record carrier and transferring the readout information to said recording device simultaneoulsy with imprinting said card and supplying the same to said recording device; and operating said recording device to make on said card recordings representing said information and adapted to be read out by a machine so that the same information can be read on said card by a person and by a machine.

25. The method defined in claim 24 including simultaneously producing mirror script characters forming the text of said printing form, and the same characters in a normal legible position on said record carrier as said recordings, so that said recordings are legible in addition to being adapted to be read out by a machine.

26. The method defined in claim 24, wherein said recordings are made of a magnetizable material; and including magnetizing said recordings of said record carrier before reading out said recordings.

27. The method defined in claim 24, including the steps of legibly printing additional information on said card; producing another record carrier having other recordings representing said additional information; reading out said additional information together with said first mentioned information; storing in a storing device said read out additional information; and transferring said stored additional information to said recording device so that said additional information is imprinted and recorded on said card.

28. The method of claim 24 comprising the step of storing in a storing device the information read out from said record carrier until said card has been imprinted and supplied to said recording device; and transferring the stored information to said recording device when said imprinted card is located in the same.

29. The method of claim 24 comprising the steps of superimposing a printing form blank and a record carrier blank; and simultaneously impressing said printing form blank and said record carrier blank with symbols having the same outline so that a printing form with printable symbols and a record carrier with machine-readable recordings are produced.