Aug. 29, 1961 W. RITZERFELD ET AL 2,997,949

MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

Filed Feb. 18, 1959 9 Sheets-Sheet 1

Fig. 1

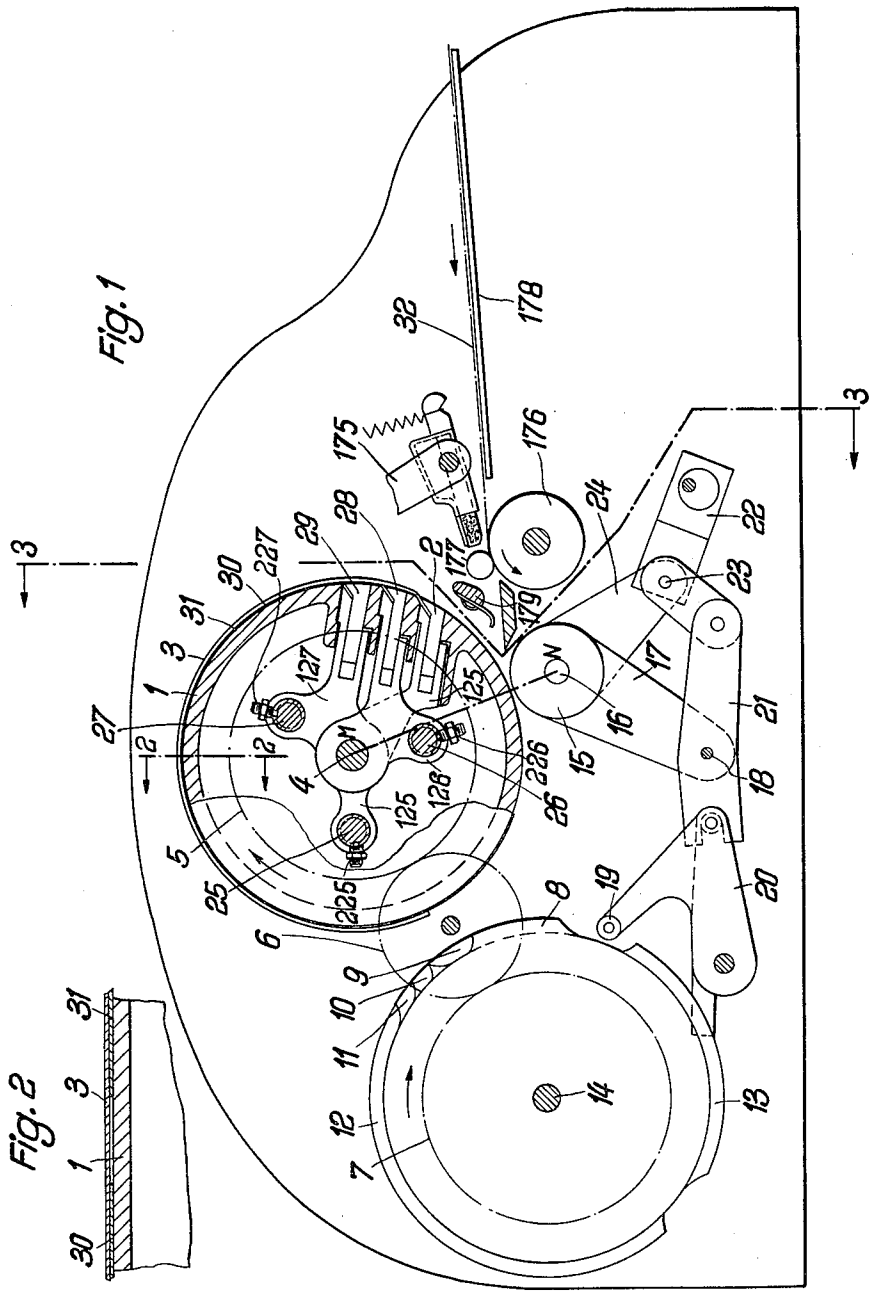


Fig. 2

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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

Filed Feb. 18, 1959 9 Sheets-Sheet 2

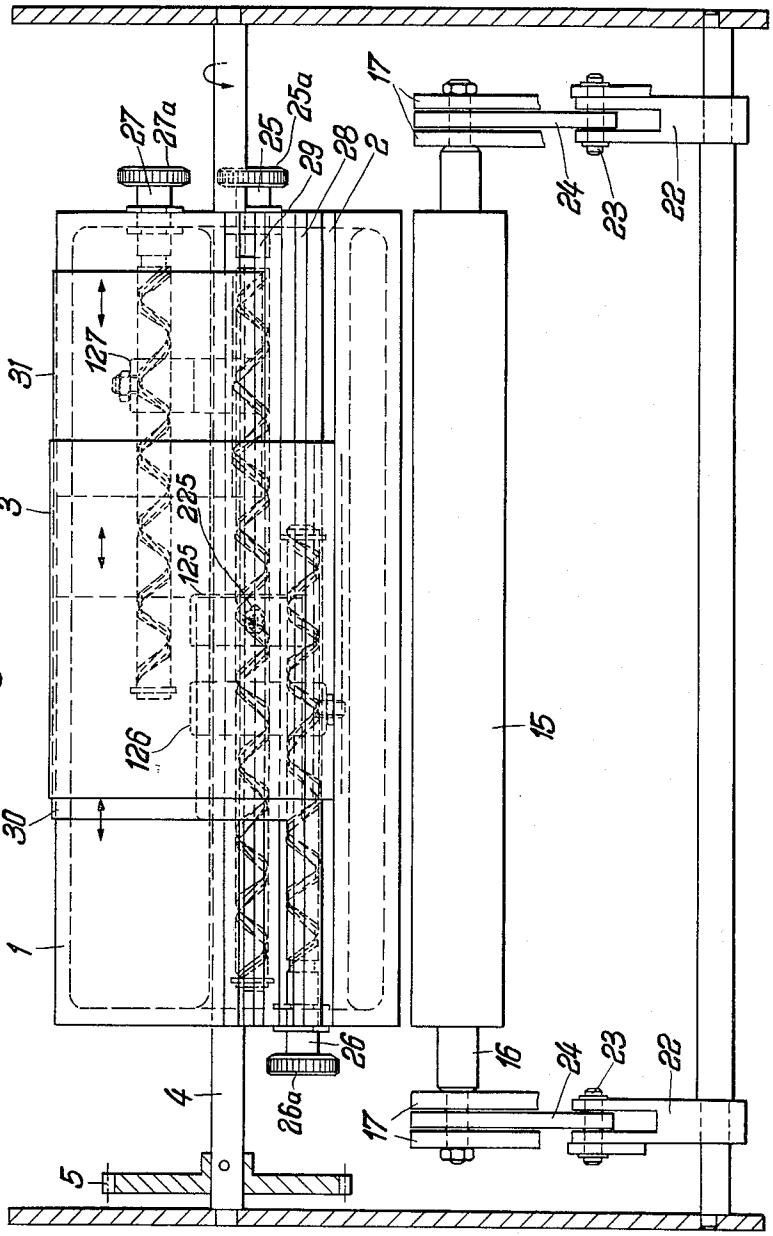


Fig. 3

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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

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Fig. 4

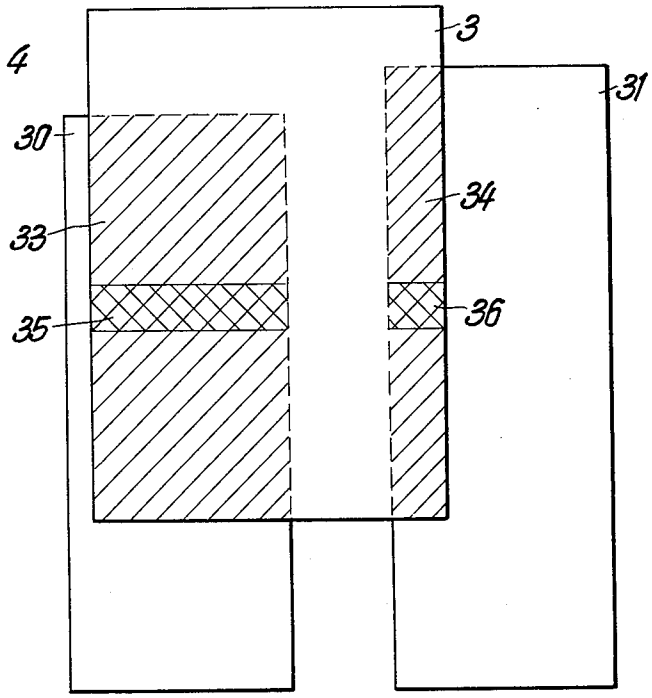
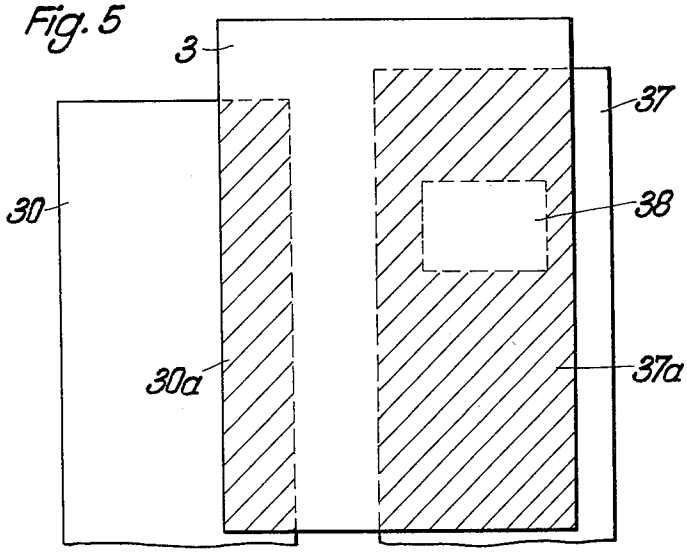


Fig. 5



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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

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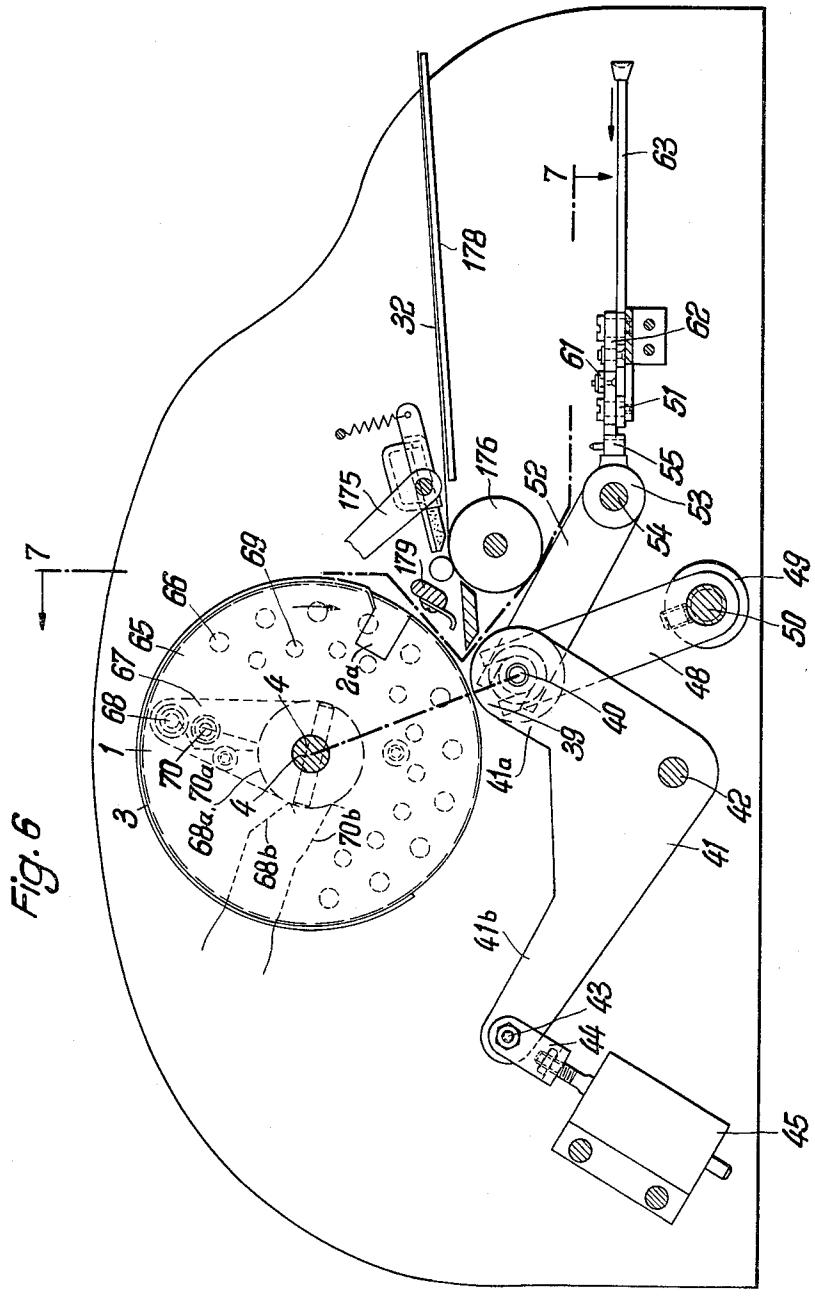


Fig. 6

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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

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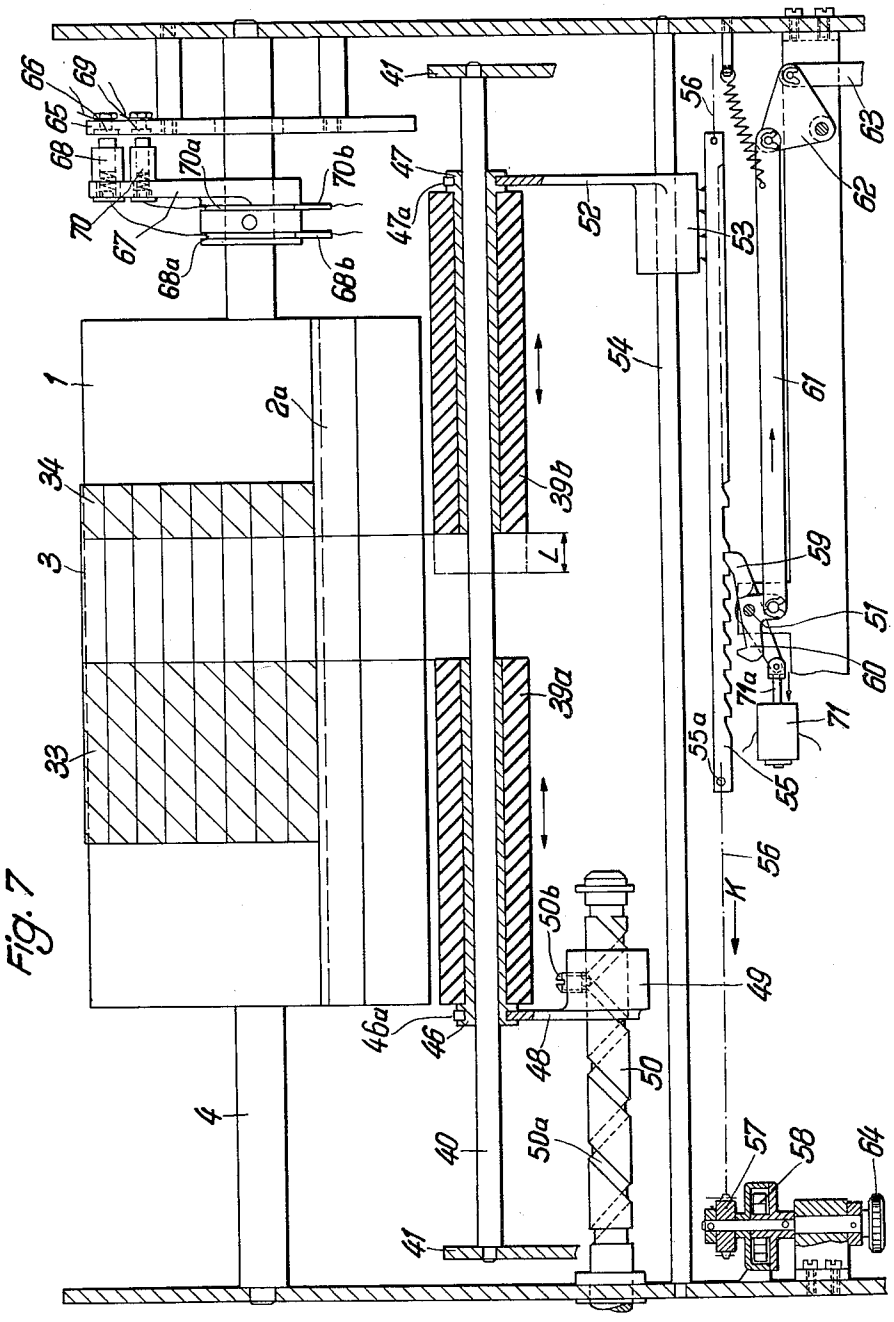


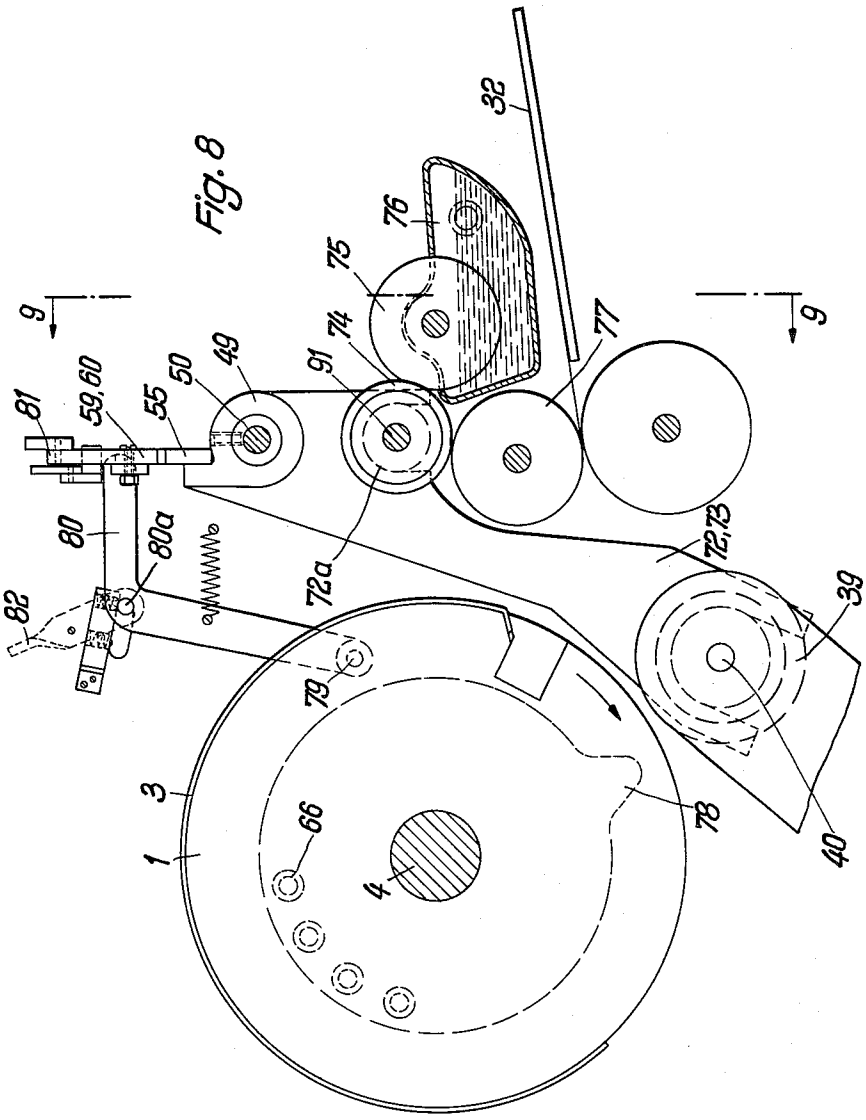
Fig. 7

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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

Filed Feb. 18, 1959 9 Sheets-Sheet 6

Fig. 8



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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

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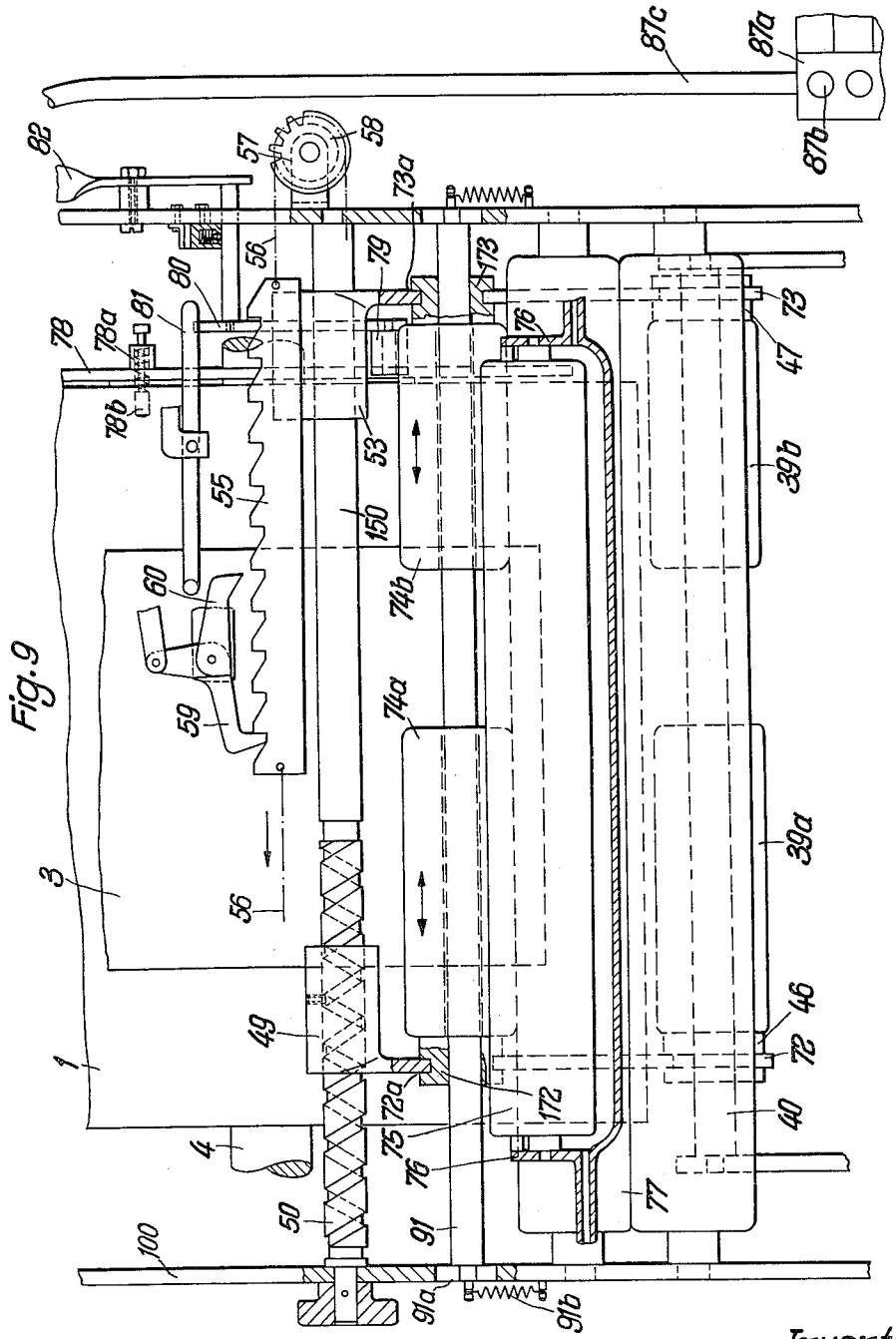


Fig. 9

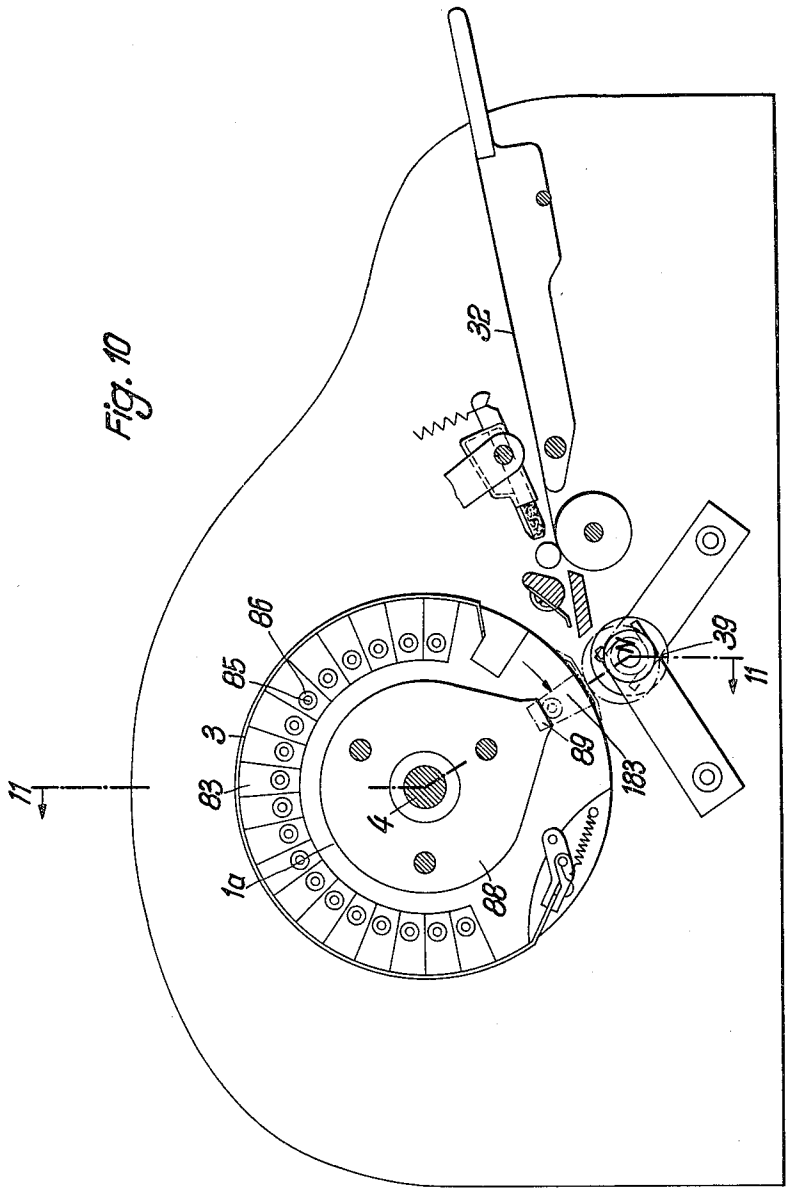
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Aug. 29, 1961 W. RITZERFELD ET AL 2,997,949

MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

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Fig. 10



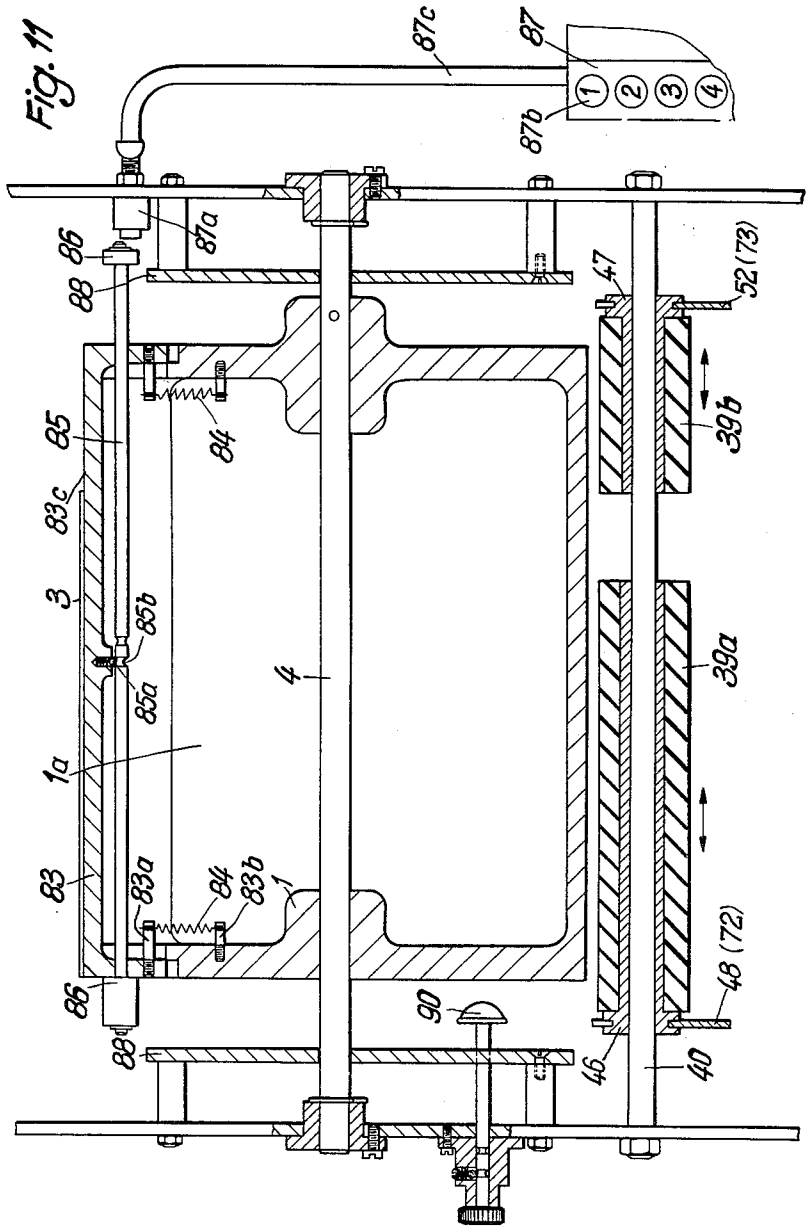
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MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

Filed Feb. 18, 1959 9 Sheets-Sheet 9

Fig. 11



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2,997,949

MACHINE FOR PRINTING SELECTED PORTIONS OF A PRINTING FORM

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Filed Feb. 18, 1959, Ser. No. 794,146
Claims priority, application Germany Feb. 19, 1958
8 Claims. (Cl. 101—132.5)

The present invention relates to a machine for printing selected portions of a printing form, and more particularly to a duplicating machine of the type in which sections of the printing form extending in axial direction of the duplicating roller are selectively printed on moistened copy sheets.

Other duplicating machines are known which produce on copy sheets imprints of circumferentially or axially extending portions of the printing form. Consequently, the known printing machines of this type are capable of printing either lines of the printing form, or columns of the same, while printing of selected lines of selected columns has not been possible with apparatus of the prior art

It is one object of the present invention to overcome this disadvantage of the prior art constructions, and to provide a printing machine capable of producing prints of selected lines of selected columns of a printing form.

Another object of the present invention is to provide in a printing machine including a printing roller and a single counter pressure roller, pressure members on one of said rollers which are shiftable in axial direction to select circumferentially extending portions of the printing form for printing on a copy sheet, and finally assume an abutting position for printing the entire printing form.

Another object of the present invention is to provide in a duplicating machine of this type, moistening means which are capable of moistening only those portions of the copy sheets on which imprints of selected circumferential portions of the printing form are intended.

With these objects in view, the present invention mainly consists in a printing or duplicating machine which comprises printing roller means; and counter pressure roller means cooperating with the printing roller means. One of the roller means includes a plurality of pressure members movable in axial direction of the roller means to a plurality of axially spaced positions and an abutting position so that the pressure members define differently interrupted printing lines or a continuous printing line with the other roller means. At least a part, or parts of one of the roller means is movable to and from a printing position, and preferably means are provided for moving the respective roller means in a selected sequence to and from the printing position thereof. The printing roller means includes means for holding a printing form thereon so that only portions of the printing form which are located on the pressure members when passing through the printing line, produce imprints on the copy sheets.

Since the axial position of the pressure members, and the moments at which one of the roller means assumes its printing position, can be selected, selected line and column portions on the printing form can be printed on copy sheets. The arrangement has the particular advantage that portions of the printing form can be selectively included, or excluded, from the printing operation, so that the undesired covering of the printing form by cover sheets can be avoided.

The pressure members according to the present invention have in abutting position a total axial width which corresponds to the axial width of the printing form so that the entire printing form produces an imprint.

In one embodiment of the present invention the counter pressure roller is moved to and from a printing position, and includes the pressure members in the form of two rollers which cooperate with the printing roller. In another embodiment of the present invention, the pressure members are curved pressure sheets mounted on the printing roller for movement in axial direction, and being controlled by manually operated shifting means. By shifting the pressure sheet members, or the pressure rollers, columns of the printing form can be selected for printing, while other columns can be excluded from printing by arranging a gap between two pressure members in the region of the undesired columns.

The selective printing of lines can be obtained by different operations. For example, the counter pressure roller means can be moved toward the printing roller, or printing members on the printing roller can be moved to an advanced position when printing of lines of the printing form located on such printing members is desired.

According to one embodiment of the present invention, the printing form is held by holding means which are movable in axial direction of the printing roller, so that selected columns of the printing forms can be placed opposite the gap between two pressure members. It is also possible to shift the pressure members in axial direction to obtain the same result.

In order to avoid that undesired parts of the printing form, which are not under pressure while passing through the printing line, produce smudges on the copy sheets, it is preferred to moisten only those parts of the copy sheets which are under pressure of the pressure members when passing through the printing line.

In a preferred embodiment of the present invention the axially shiftable pressure members are respectively connected to axially shiftable moistening members which moisten only those portions of the copy sheet which are later on subjected to the pressure of the axially shifted pressure members when passing through the printing line.

In one embodiment of the present invention, the pressure members are parts of the counter pressure roller means, and are connected to corresponding moistening roller means.

A preferred embodiment of the present invention includes means for automatically shifting the pressure members in axial direction during each revolution of the printing roller. In this manner, different columns of the printing form are printed during each revolution.

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 side view, partly in section, of one embodiment of the present invention;

FIG. 2 is a sectional view of the detail taken on line 2—2 in FIG. 1;

FIG. 3 is a sectional view taken on line 3—3 in FIG. 1;

FIG. 4 is a schematic view illustrating the position of the printing form in relation to pressure members;

FIG. 5 is a schematic view similar to FIG. 4 and illustrating a pressure member with a cutout;

FIG. 6 is a side view, partly in section, illustrating another embodiment of the present invention;

FIG. 7 is a sectional view taken on line 7—7 in FIG. 6;

FIG. 8 is a fragmentary side view of a further embodiment of the present invention;

FIG. 9 is a sectional view taken on line 9—9 in FIG. 8;

FIG. 10 is a side view, partly in section, of another embodiment of the present invention; and

FIG. 11 is a sectional view taken on line 11—11 in FIG. 10.

Referring now to the drawings, and more particularly to FIGS. 1 to 4, a printing or duplicating roller means 1 is rotatably mounted on a shaft 4, and is connected by a rear transmission 5, 6, 7 to a set of turnable control cam means 8, 9, 10, 11, 12, 13 which are mounted on a shaft 14. Consequently, the control cam means rotate in timed relation with the duplicating roller means 1. A cam follower lever 20 has a cam follower roller 19 which cooperates with the control cam means. The control cams 8 to 13 are shiftable in axial direction so that control cam which cooperates with cam follower roller 19 can be selected.

A counter pressure roller 15 is mounted on a shaft 16 and is supported by a pair of levers 17 for turning movement about a shaft 18. Cam follower lever 20 is articulated to a lever 21, which is also mounted on shaft 18, and lever 21 is articulated to a link which acts on the pivot 23 of a pair of toggle levers 22 and 24. Lever 24 is turnably connected to shaft 16. In accordance with the shape of the selected control cam which cooperates with the cam follower 19, 20, the counter pressure roller 15 will be moved by the toggle levers 22, 24 to and from a printing position in close proximity to duplicating roller 1. A plane M—N passing through the axes of shafts 4 and 16, defines the printing line between the roller means 1 and 15.

A moistening device 175 is provided for moistening copy sheets which are fed by transporting rollers 176, 177 in the plane 32 along a table 178. A sheet holding means 179 is provided for holding the copy sheets while the same are not gripped by the roller means 1 and 15 in the retracted position of counter pressure roller means 15.

A holding means 2 is mounted on the duplicating roller means 1 for movement in axial direction, and holds a printing form, such as a master sheet 3. A threaded spindle 25 is turnably mounted in the end walls of duplicating roller 1 and is provided with a knob 25*a* for manual operation. A member 125 is mounted on shaft 4 for axial movement, and has one arm secured to holding means 2, and another arm terminating in a nut means which is preferably in the form of an annular member provided with an adjustable threaded pin 225 which has a projecting end portion engaging the helical groove which constitutes a thread of spindle 25. When spindle 25 is turned by operation of knob 25*a*, the nut means 125 will travel in axial direction together with the holding means 2 and will displace the printing form 3 in axial direction.

In addition to the holding means 2, two further holding means 28 and 29 are provided which clamp and hold two pressure sheet members 30 and 31, respectively. Holding means 28 and 29 are secured to members 126 and 127 which are constructed in the same manner as member 125, and have pins 226 and 227 engaging helical thread grooves in spindles 26 and 27 which are also mounted in the end walls of duplicating roller 1, and have knobs 26*a* and 27*a* for manual operation. Consequently, each of the pressure sheet member 30 and 31 can be shifted and positioned independently of the other pressure sheet member, and of the printing form 3.

As best seen in FIG. 3, the pressure sheet members 30 and 31 are located underneath the printing form 3 and directly on the peripheral surface of the duplicating roller 1. The pressure sheet members 30 and 31 can be shifted to a position in which the confronting edges thereof abut each other. The total axial length of pressure sheet members 30 and 31 is at least equal to the axial extension of the printing form 3 so that printing form 3 is fully supported on pressure sheet members 30 and 31 when the same abut each other. The axial space between the pressure sheet members 30 and 31, and the relative position of such axial space with respect to the printing form can be selected by operation of the knobs 25*a*, 26*a*, and 27*a*. Assuming that there are columns provided in the text of the printing form 3, and that such columns extend in circumferential direction of the printing roller 1, pressure sheet 31 can be placed underneath selected columns on one side of the printing form, and pressure sheet member 30 can be placed underneath other selected columns on the other side of the printing form. By shifting of the pressure sheet members and of the printing form in the direction of the arrows in FIG. 3, columns of the printing form can be selected which are located on the pressure sheet members 30 and 31, while other columns are located over an axially extending gap between pressure sheet members 30 and 31. The apparatus operates in the following manner:

Assuming that a control cam is selected for cooperation with the cam follower means 19, 20, which holds counter pressure roller 15 in printing position while the entire printing form 3 passes through the printing line, then copy sheets moistened by moistening means 175 and supplied to the printing line will be under pressure only where the printing form 3 is supported by pressure sheet members 30 and 31. In the space intermediate the pressure sheet members 30 and 31, no printing pressure will be exerted, so that the corresponding part of the copy sheet will not receive any print thereon. This is illustrated in FIG. 4 in which the portions of the printing form 3 which are located on the pressure sheet members 30 and 31 are hatched to illustrate the parts of the printing form which will produce imprints on the copy sheet. When another control cam is selected, which has a short circumferential cam track, counter pressure roller means 15 will be held in printing position only for a short time corresponding to one or several lines of the printing form, or may be repeatedly moved to printing position during each single revolution of the duplicating roller 1. In this event, not the entire hatched portions 33 and 34 of the printing form, but only the cross hatched portions 35 and 36 shown in FIG. 4, will be printed on the printing form. If the pressure sheet members 30 and 31 are positioned to effect printing of selected columns, and to prevent printing of undesired columns, and the counter pressure roller is only actuated for a short time as above described, only selected lines of the selected columns of the printing form will be printed on the copy sheet as indicated by the cross hatched portion in FIG. 4.

FIG. 5 shows a modified arrangement of the present invention in which a pressure sheet member 37 is provided with a rectangular cutout 38. If pressure sheet members of this type are used in the machine described with reference to FIGS. 1 and 2, the hatched portions 30*a* and 37*a* of the printing form 3 will be printed on the copy sheet, with the exception of the portion of the printing form which extends over the cutout 38. It is evident that the respective knob 27 can be manipulated to prevent the printing of any undesired small part of the printing form.

FIGS. 6 and 7 illustrate another embodiment of the present invention in which axially shiftable pressure members are arranged on the counter pressure roller.

A printing or duplicating roller means 1 has a holding means 2*a* for holding a printing form, such as a master sheet 3. A table 173 for copy sheets 32, transporting means 176, moistening means 175, and copy sheet holding means 179 are again provided.

A pair of angular lever means 41 is turnably mounted on a shaft 42. One pair of arms 41*a* supports a shaft 40 which carries the counter pressure roller means 39. The other pair of arms 41*b* is connected by pins 43 and fork-shaped members 44 to a pair of electro-magnetic means 45. Springs, not shown, are connected to the levers 41 so that levers 41 can be shifted by operation of the electro-magnetic means 45 between two positions

for moving the counter pressure roller means **39** between a retracted position, and an advanced printing position defining the printing line with the duplicating roller means **1**.

Switch means are provided for energizing the electro-magnetic means **45** whenever desired during each revolution of the duplicating roller means **1**. A stationary member **65** has contacts **66** arranged in a first circle, and contacts **69** arranged in a second circle of smaller diameter. A contact arm **67** has two movable contacts **68** and **70** which respectively cooperate with contacts **66** and **69** during rotation of the duplicating roller means **1**. Slide rings **68***a* and **70***a* are respectively connected to contacts **68** and **70**, and cooperate with slide contacts **68***b* and **70***b*.

Slide contact **68***b* and contact **66** are connected into the circuit of the electro-magnetic means **45**. Contacts **66** are selected by operation of a keyboard, not shown. When one or several contacts **66** are connected into the circuit of the electro-magnetic means **45**, electro-magnetic means **45** will be energized to operate lever **41** and counter pressure roller **39** whenever contact **68** passes over the respective selected contacts **66** during rotation of arm **67** with shaft **4** and duplicating roller means **1**. The construction of the keyboard, and the circuit of the electro-magnetic means **45** are not objects of the present invention. It will be understood that this arrangement serves the same purpose as the control cam means in the arrangement of FIG. 1, and effects movement of the counter pressure roller to an operative printing position in selected angular positions of the duplicating roller **1** in which desired lines of the printing form will pass through the printing line between duplicating roller means **1** and counter pressure roller means **39**. Contacts **69** and **70** serve a different purpose which will be explained hereinafter.

In the embodiment of FIGS. 6 and 7, the counter pressure roller means **39** includes a pair of tubular sleeves **46**, **47** on which pressure roller members **39***a* and **39***b* are, respectively, mounted. Members **46** and **47** have grooves **46***a* and **47***a* at the ends thereof which are engaged by the fork-shaped end portions of a pair of levers **48** and **52**. The connection permits rotation of sleeves **46** and **47** together with pressure roller members **39***a* and **39***b*, while arms **48** do not turn. A spindle **50** is turnably mounted in the frame of the machine, and is provided with a thread groove **50***a* engaged by a pin **50***b* of an annular nut means **49** which is integral with arm **48**. Consequently, turning of spindle **50** by a manually operated knob, not shown, will effect axial movement of member **48**, **49** which will displace pressure roller member **39***a* in axial direction.

Arm **52** is integral with a member **53** which is slidable along a rod **54** extending parallel to the axis of the shafts **4** and **40**. A rack bar **55** is fixedly secured to member **53** and is connected by a chain schematically indicated at **56**, to a chain wheel **57** which is connected to a spring motor **58** which tends to move rack bar **55** in direction of the arrow K by turning chain wheel **57**. A stop pawl **59** engages rack bar **55** and prevents movement of the same under the action of spring **58**. Pawl **59** and a ratchet pawl **64** are mounted on a pin **51** which is stationary. When a manually operated member **63** is pushed in direction of the arrow in FIG. 6, a turnable member **62** will act through a bar **61** to effect release of the stop pawl **59**, and shifting of the rack bar through one step after which it is held by pawl **60**. Chain **56** forms a loop over another chain wheel, not shown, and is secured to rack bar **55** at point **55***a*. Whenever the knob **64** is turned against the action of spring **56**, the chain **56** will move in a direction opposite to the direction of arrow K, and return rack bar **55** and thereby pressure roller member **39***b* to its initial position.

Electro-magnetic means **71** is connected into the circuit of contacts **69** and **70**, and is energized in predetermined

and selected angularly positions of the duplicating roller means **1** and arm **67**. The armature **71***a* of electromagnetic means **71** is articulated to stop pawl **59**, so that rack bar **55** is released for step-wise movement when electromagnetic means **71** is energized. Each time the rack bar **55** is released by operation of the electro-magnetic means **71**, or by operation of the push bar **63**, pressure roller member **39***b* moves one step to the left, as viewed in FIG. 7, and through a distance L to assume the position indicated by dash and dot lines in FIG. 7.

The apparatus operates in the following manner:

When electro-magnetic means **45** is controlled by contacts **66** to hold the pressure roller members **39***a* and **39***b* of the counter pressure roller means **39** in printing position while the entire printing form **3** moves through the printing line, only portions **33** and **34** of the printing form will be effective to produce imprints on copy sheets, since printing pressure is produced only between the peripheral surface of duplicating roller means **1**, and the peripheral surfaces of pressure roller members **39***a* and **39***b*. In the space intermediate pressure rollers **39***a* and **39***b*, no printing pressure can be exerted so that the respective part of the printing form **3** does not produce an imprint on the copy sheet. The effective portions **33** and **34** are hatched in FIG. 7 for the sake of clarity. It is evident that by manipulation of the shifting means **50**, **49**, the axial extension of the part **33** of the printing form can be determined. In a similar manner, the axial width of the selected portion **34** of the printing form can be determined before the printing operation by operation of the manually operated shifting means **59**, **60**, or **64**. However, contacts **69** can be selectively connected into the circuit of the electro-magnetic means **71** so that every time contact **70** passes a selected contact **69**, electro-magnetic means **71** is energized, turns pawl **59**, and effects shifting of the rack bar **55**, and of pressure roller member **39***b* one step to the left. In this manner, fewer columns **34** are printed from the leading part of the printing form, than of the trailing part of the printing form, since pressure roller member **39***b*, moving toward pressure roller member **39***a*, will reduce the space between the two pressure roller members, and thereby narrow the unprinted part of the printing form.

In the same manner, contacts **66** can be selected in a known manner to effect repeated movements of the counter pressure roller members **39***a* and **39***b* to printing position under control of electro-magnetic means **45**. In this event, selected lines of the column portions **33** and **34** of the printing form **3** will be printed as indicated by the cross hatched sections **35** and **36** in FIG. 4.

It will be understood that electro-magnetic means **45** and the associated switch means and circuit means constitute operating and control means for moving the counter pressure roller means **39** to and from a printing position in the same manner as the cam means **8** to **12** in the embodiment of FIG. 1. Electro-magnetic means **71**, and the associated switch means and circuit, constitute control means for the stepping mechanism **55**, **56**, **57**, **58**, **59** and **60** which is part of the shifting means for shifting the pressure roller member **39***b*.

FIGURES 8 and 9 illustrate a modification of the embodiment described with reference to FIGURES 6 and 7. The duplicating roller means **1** carries a printing form **3**, and cooperates with a counter pressure roller means **39** comprising two counter pressure roller members **39***a* and **39***b* shiftable in axial direction on a shaft **40**, as described with reference to FIGURES 6 and 7. A manually operated spindle **50** is mounted in the frame of the machine, and moves a nut means **49** in axial direction. The automatic shifting means for pressure roller member **39***b* include the stepping mechanism **55**, **56**, **57**, **58**, **59** and **60**. However, the arms **48** and **52** are replaced by longer arms **72** and **73** which are respectively secured to nut means **49** and to the shiftable member **53**. The ends of arms **72** and **73** are fork-shaped, and engage

corresponding grooves in the sleeves 46 and 47 associated with the counter pressure roller members 39*a* and 39*b*.

The moistening means of the embodiment of FIGURES 8 and 9 are improved, and include a container 76 with a moistening liquid as used for duplicating purposes, a transfer roller 75 partly immersed into the liquid in container 76, and turning to transfer the raised liquid to the moistening roller means 74 which includes two moistening roller members 74*a* and 74*b* which are mounted on a shaft 91 turnable and shiftable in axial direction. Shaft 91 has end portions mounted in slots 91*a* of the side walls 100 of the machine and is urged by spring means 91*b* into engagement with transporting roller 77 and transfer roller 75. Arms 72, 73 are formed with cutouts 72*a* and 73*a* which engage corresponding grooves in members 172 and 173 which form extensions of moistening rollers 74*a* and 74*b*, permitting rotation of the moistening rollers.

Pressure roller 39*a* has the same axial extension as moistening roller 74*a*, and pressure roller 39*b* has the same axial extension as moistening roller 74*b*. Arms 72 and 73 shift the moistening rollers the same axial distance as the pressure roller members. The liquid will be transferred from the container 76 through roller 75 to the surface of the moistening rollers 74*a* and 74*b*, and the moistening rollers will only wet corresponding surface portions of the transfer and transporting roller 77.

The wet surface portions of roller 77 moisten corresponding portions of the copy sheet, which are fed to the interrupted printing line between the peripheral surfaces of pressure roller members 39*a* and 39*b* and the printing form 3 when the counter pressure roller means are moved by electromagnetic means 45 to printing position. It is evident that only the portions of the copy sheet which were moistened by moistening rollers 74*a* and 74*b*, are subjected to the pressure of the pressure roller members 39*a* and 39*b* during the printing operation. The dry portion of the copy sheet is not pressed against the printing form, since the pressure roller members 74*a* and 74*b* are correspondingly spaced. Since an imprint can be only produced on a moistened copy sheet, accidental undesired imprints or smudges cannot be produced by the printing form in the center portion of the copy sheets.

As explained above, rollers 74*a* and 39*a* are simultaneously shifted by operation of spindle 50. Rollers 39*b* and 74*b* are simultaneously shifted by operation of member 53 which is slidable on a shaft 150 forming an extension of spindle 50. The stepping mechanism can be electro-magnetically operated, as described with reference to FIGURES 6 and 7, but in the modified embodiment of FIGURES 8 and 10, a mechanical control means is illustrated. An adjustable cam means 78 is mounted on the shaft 4, and can be secured by arresting pins 78*a* to the duplicating roller means for rotation therewith. A plurality of recesses 78*b* is arranged in a circle on duplicating roller means 1, so that the position of the dwell of control cams 78 can be selected. During rotation of the duplicating roller 1, cam 78 engages a roller 79 on an angular lever 80 and rocks the same. Lever 80 cooperates with another lever 61 which is turned by lever 80 to engage pawl 60 so as to effect a step-wise movement of rack bar 55 together with members 74*b* and 39*b*. As best seen in FIG. 9 pawl 60 engages a shoulder on pawl 59, so that turning movement of pawl 60 will also effect turning movement of pawl 59 for releasing rack bar 55 for a single step movement. A manually operated lever 82 is mounted on the frame of the machine and can be operated to shift the fulcrum pin 80*a* of lever 80 to a position in which lever 80 is inoperative so that no automatic shifting of rollers 74*b* and 39*b* takes place. FIG. 9 also illustrated a keyboard 87*a* on which keys 87*b* are provided. Suitable control means 87*c* connect the keys with contacts and switches in the circuit which connects switch means 66, 68 with the electro-magnetic means 45 so that the operation of keys 87*b*, lines of the printing form 3 can be selected for printing during a single revolution of the printing roller 1.

The embodiment illustrated in FIGURES 10 and 11 has a counter pressure roller means 39 including two pressure roller members 39*a* and 39*b* which are mounted on a shaft turnable and shiftable in axial direction. Sleeves 46 and 47 are again engaged by arms 48 and 52, if the construction of FIGURES 6 and 7 is used for shifting the counter pressure rollers 39*a* and 39*b*, or are provided with extended arms 72 and 73, if the construction of FIGURES 8 and 9 is provided in which moistening rollers 74*a*, 74*b* are shifted simultaneously with the counter pressure roller members 39*a* and 39*b*. Control and shifting means as illustrated in FIGURES 6 and 7, or as illustrated in FIGURES 9 and 10 may be provided.

In the embodiments of FIGURES 6 to 9, the selective printing of lines of the printing form is obtained by shifting the counter pressure roller means 39 to printing position whenever a desired line of the printing form passes through the printing line.

In contrast thereto, the counter pressure roller means of the embodiment of FIGURES 10 and 11 is not necessarily shifted to a printing position. The printing roller means 1*a* of the embodiment of FIGURES 10 and 11 includes a plurality of elongated printing members 83 which are mounted in the body of the printing roller means for movement in radial direction, as best seen in FIGURE 11. Each printing member 83 is provided with a pair of pins 83*a* which are connected by springs 84 to pins 83*b* on the body of the printing roller means 1. Consequently, the printing members 83 tend to assume a retracted position in which the pressure faces 83*c* on the outside thereof form a continuous circular surface on the printing roller means 1*a*. A rod 85 is shiftably mounted in each printing member 83, and carries rollers 86 at the ends. A catch means 85*a* on printing member 83 cooperates with two recesses 85*b* in rod 85, so that rod 85 can be arrested to axially shifted positions. In one of the positions, rod 85 and rollers 86 are inoperative. In the other operative position, at least one roller 86 is located in the same plane as a stationary cam means 88, so that during rotation of the printing roller means 1*a*, cam follower roller 86 engages the dwell 89 of cam means 88 whereby the respective printing member 83 is outwardly shifted into an operative printing position as illustrated at 183 in FIG. 10. The cam track of cam means 88, 89 is so shaped that each selected printing member is moved to printing position shortly before passing through the printing line, and is released for return by springs 84 directly after passing through the printing line. The selection of printing members for printing is effected by a control means 87 including keys 87*b* which are associated with different printing members and respectively associated lines of the printing form 3. Bowden cable means 87*c* respectively connect the keys with shifting members 87*d* which are respectively located opposite rods 85 of the printing members 83. Consequently, each rod 85 can be shifted to operative position by actuation of the respective associated key 87*b*. Every rod 85 in operative position has its cam follower rollers 86 located in the plane of cam means 88, so that the respective printing members 83 are shifted to printing positions during rotation of the printing roller means 1*a*. In this manner, selected lines, or groups of lines of the printing form 3 are printed when the printing member in printing positions passes through the printing line, while the adjacent portions of the printing form are not pressed against their counter pressure roller means 39*a* and 39*b* during passage through the printing line. By operation of the printing members, line portions are selected, and since by operation of the counter pressure-roller members 39*a* and 39*b*, columns of the printing form are selected for printing, selected lines of selected columns can be printed by the apparatus.

A clearing member 90 can be moved to an operative position in which it engages rods 85 in operative positions for shifting the same back to inoperative positions. Clearing member 90, of course, is so positioned that each rod 85 and the associated printing member 83, is returned to inoperative position after the respective printing member has passed through the printing line.

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 printing machines differing from the types described above.

While the invention has been illustrated and described as embodied in a rotary duplicator including pressure members shiftable in axial direction of the duplicating roller and counter pressure roller to select desired circumferentially extending portions of the printing form for selective printing, 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.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a printing machine, in combination, printing roller means; and counter pressure roller means cooperating with said printing roller means, said printing roller means including a plurality of printing members having faces together forming the peripheral surface of said one printing roller means, each of said printing members being selectively movable to a printing position cooperating with said counter pressure roller means; means for selectively moving said printing members to said printing positions during each revolution of said printing roller means, said counter pressure roller means including a plurality of roller members movable in axial direction of said counter pressure roller means between an abutting position and a plurality of spaced positions so that in said spaced positions of said roller members axially spaced circumferentially extending portions of the printing form, and in said abutting position the entire printing form are located in the regions of said peripheral surfaces of said roller members and produce imprints on copy sheets during rotation of said roller means in said printing position.

2. In a printing machine, in combination, a printing roller means; holding means on said printing roller means for holding a printing form on the peripheral surface of the same; said holding means being mounted on said printing roller means for movement in axial direction; means for shifting said holding means in axial direction so that said printing form can be positioned on said printing roller means in a plurality of axially displaced positions; a counter pressure roller means cooperating with said printing roller means, a part or parts of one of said roller means being movable to and from a printing position in which at least part of its peripheral surface is located in close proximity to the peripheral surface of the respective other roller means, said printing roller means including a plurality of pressure members having peripheral surfaces with a total axial extension adapted to be at least equal to the axial extension of the printing form, and elongate support means extending in axial direction of said printing roller means and supporting said pressure members for movement in said axial direction between an abutting position and a plurality of spaced positions, said pressure members being curved and adapted to be located underneath circumferentially extending portions of the printing form and to support in said abutting position the printing form along the entire axial extension thereof; means for supplying copy sheets to the bight between said roller means; and means for moving said part or parts of said movable roller means to and from said printing position so that only portions of the copy sheet extending over said surfaces of said members are printed during rotation of said roller means.

3. A machine as set forth in claim 2 wherein said pressure members have cutouts.

4. In a printing machine, in combination, a printing roller means; holding means on said printing roller means for holding a printing form on the peripheral surface of the same; a counter pressure roller means cooperating with said printing roller means, at least a part or parts of said printing roller means being movable to and from a printing position in which at least part of its peripheral surface is located in close proximity to the peripheral surface of the respective other roller means, said counter pressure roller means including a plurality of roller members having a total axial extension adapted to be at least equal to the axial extension of the printing form, and elongate support means extending in axial direction of said printing roller means and supporting said roller members for movement in said axial direction to a plurality of spaced positions; moistening means including an elongate support extending in axial direction of said roller means, and a plurality of moistening rollers mounted on said support for movement in axial direction to a plurality of spaced positions; means for supplying copy sheets to said moistening means and to the bight between said roller means; and connecting means connecting each of said moistening rollers to an associated roller member for simultaneous movement between corresponding axially spaced positions so that only those portions of the copy sheets are moistened which pass over said roller members; and control means including electro-magnetic means connected to said movable roller means and to said connecting means for moving at least said part or parts of said movable roller means to and from said printing position and other electromagnetic means for moving a connected pair of a moistening roller and a roller member between the respective positions of the same, rotary switch means operated by said printing roller means during each revolution thereof, and circuit means connecting said rotary switch means with both said electromagnetic means so that said roller member and moistening member is shifted in timed relation with the movement of said movable roller means.

5. In a duplicating machine, in combination, a duplicating roller means; holding means on said duplicating roller means movable in axial direction, and adapted to hold a master sheet on the peripheral surface of said duplicating roller means; a plurality of curved pressure sheet members located on the peripheral surface of said duplicating roller means; a plurality of holding members holding said curved pressure sheet members, respectively, and being mounted on said duplicating roller means movable in axial direction between a plurality of positions in which said curved pressure sheet members are spaced different distances in axial direction, said pressure sheet members being adapted to be located under different portions of said master sheet in said positions of said pressure sheet members; manually operated means respectively connected to said holding members and mounted on said duplicating roller means for moving said pressure sheet members between said positions of the same; counter pressure roller means cooperating with said duplicating roller means and being movable to and from a printing position in close proximity of the surface of said duplicating roller means and pressure sheet members; means for supplying copy sheets to the bight between said duplicating roller means and pressure sheet members, and said counter pressure roller means; operating means for moving said counter pressure roller means to and from said printing position;

and control means for actuating said operating means during each revolution of said duplicating roller means.

6. A duplicating machine as set forth in claim 5 wherein said manually operated means include a plurality of adjustable threaded means mounted on said duplicating roller and respectively connected to said holding members.

7. In a duplicating machine, in combination, duplicating roller means including a plurality of elongated printing members having pressure faces, each printing member being movable independently of the other printing members to and from a projecting printing position; holding means on said duplicating roller means for holding a flexible master sheet on the peripheral surface of said duplicating roller means and extending over said pressure faces of said printing members so that printing members in said projecting printing positions raise associated portions of said master sheet located on said pressure faces; counter pressure roller means cooperating with said duplicating roller means, and defining a printing line with printing members in said printing position, said counter pressure roller means including a shaft extending in axial direction of said duplicating roller means, and a plurality of roller members shiftably mounted on said shaft for movement between a plurality of axially spaced positions; means for supplying copy sheets to the bight between said duplicating roller means and said roller members; first control means for shifting selected printing members to said printing position before the respective selected printing member passes through said printing line; shifting means for selectively shifting selected roller members between said positions of the same; and second control means for actuating said shifting means during each revolution of said duplicating roller means.

8. In a printing machine, in combination, rotary duplicating roller means; rotary counter pressure roller means cooperating with said duplicating roller means, one of said roller means including a plurality of pressure members movable in axial direction of said roller means between a plurality of axially spaced positions, each of said pressure members having a peripheral circular pressure surface forming a printing line with the other of said roller means during rotation of said roller means; means for shifting selected pressure members between said positions of the same; means for supplying copy sheets to the printing lines between said pressure surfaces of said pressure members and other roller means; and holding means for holding a printing form on said duplicating roller means so that only portions of said printing form passing through said printing lines are printed on corresponding portions of said copy sheets.

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