

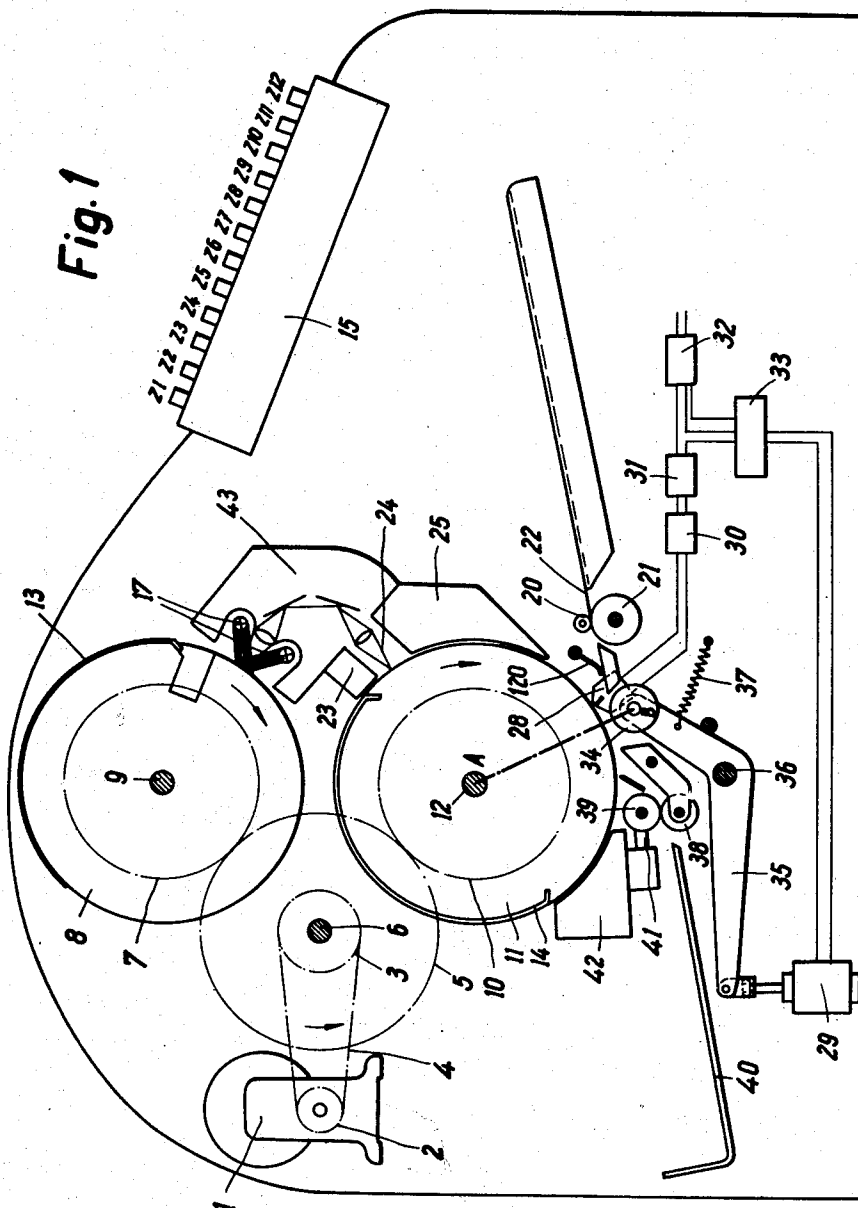
Nov. 5, 1963

W. RITZERFELD ETAL
XEROGRAPHIC DUPLICATOR

3,109,355

Filed March 28, 1960

4 Sheets-Sheet 1



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4 Sheets-Sheet 2.

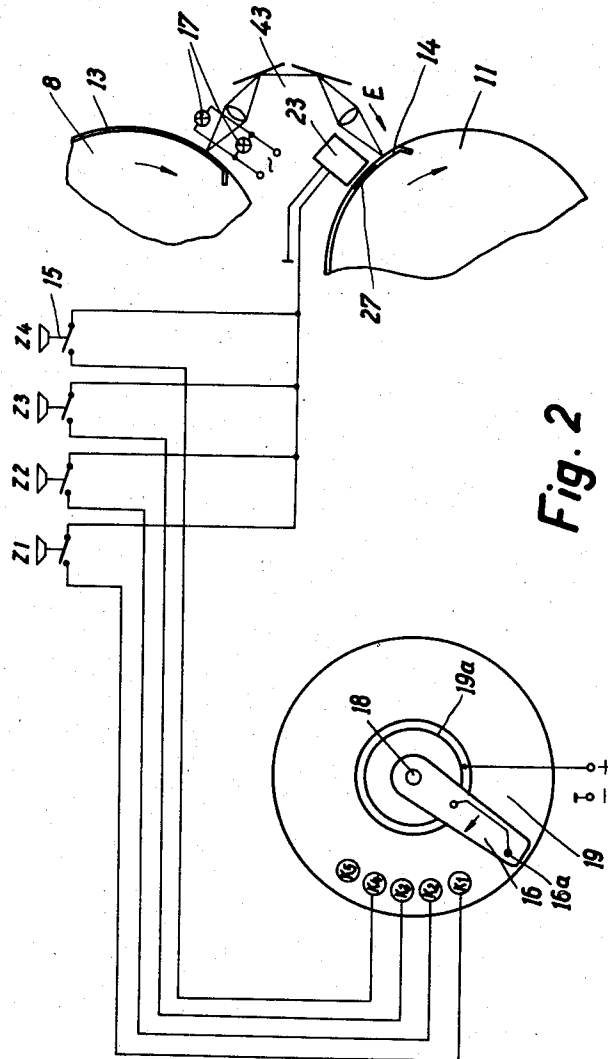


Fig. 2

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Nov. 5, 1963

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4 Sheets-Sheet 3

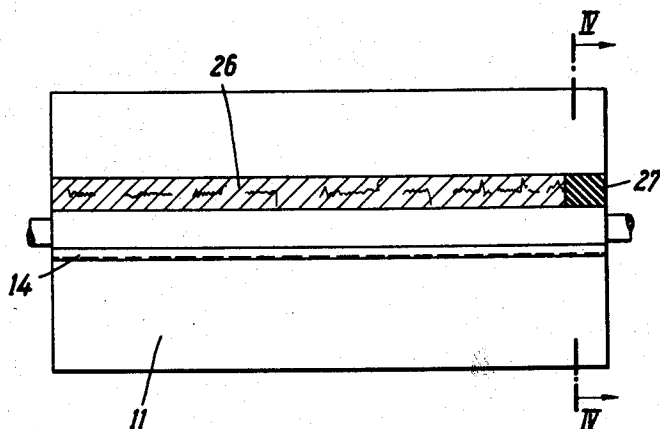


Fig. 3

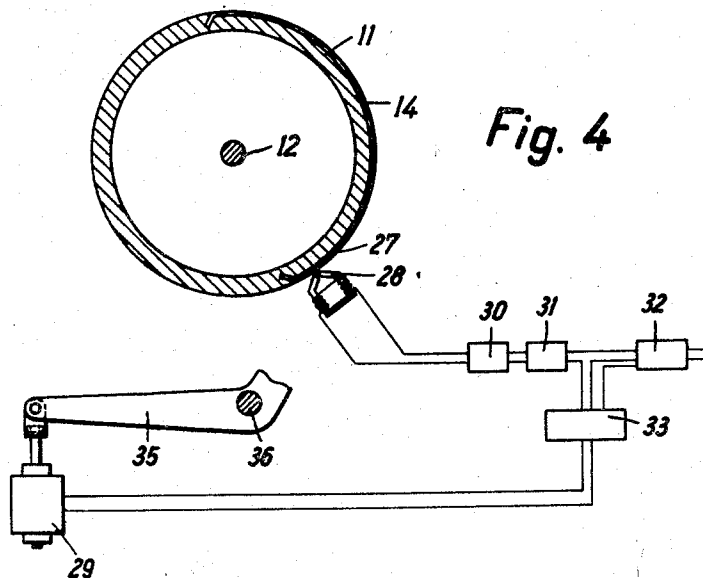


Fig. 4

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4 Sheets-Sheet 4

Fig. 5

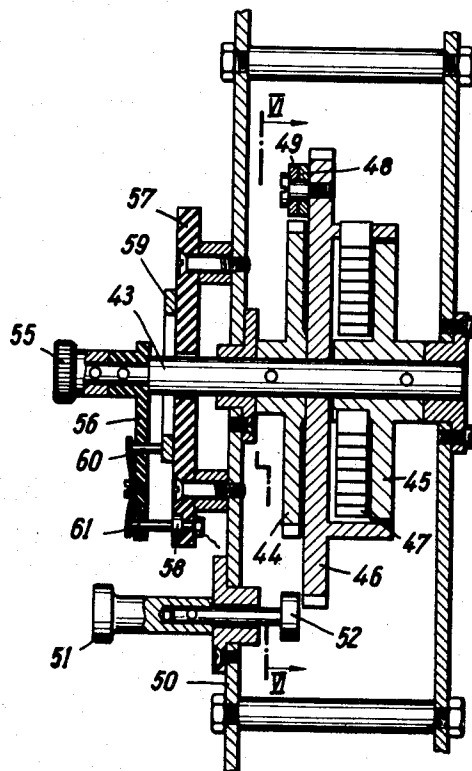
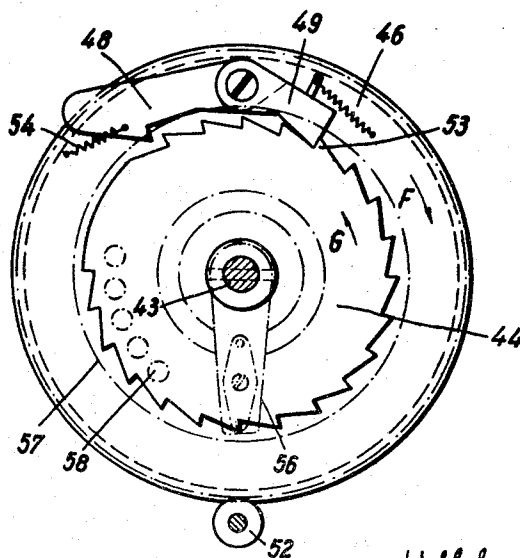


Fig. 6



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3,109,355

XEROGRAPHIC DUPLICATOR

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6 Claims. (Cl. 95—1.7)

The present invention relates to an electrophotographic duplicator, and more particularly to a rotary electrophotographic duplicating machine for producing on an electrophotographic plate images of selected text sections of a text sheet, and for transferring the images onto copy sheets on which imprints corresponding to selected text sections appear adjacent each other.

In the known electrophotographic printing process, electrophotographic plates, which may, for example, consist of selenium or zinc oxide, are made sensitive to light by being charged with an electro-static charge. The charge is dissipated where the light impinges it and only the portion of the electrophotographic plate where the light has not impinged, will remain charged. The plate is then covered with a negatively charged powder which adheres only to that portion of the electrophotographic plate which remains with a positive charge.

The latent image is thus converted into a visible image, since the powder is colored. The powder is then transferred from the electrophotographic plate to a copy sheet while the charge is neutralized. The imprint on the copy sheet is made permanent, for example by heating.

It is one object of the present invention to provide a rotary duplicating machine employing an electrophotographic process.

Another object of the present invention is to provide an electrophotographic duplicator producing on a copy sheet adjacent imprints of selected text portions of a text sheet.

Another object of the present invention is to provide an electrophotographic duplicator which produces on the electrophotographic plate images of selected text sections which are then developed and transferred to copy sheets.

Another object of the present invention is to provide an electrophotographic duplicator in which several text portions of the text sheet may be selected for producing images on an electrophotographic plate, and to provide means for transferring the developed images in adjacent position to copy sheets.

A further object of the present invention is to provide an electrophotographic duplicator including manually operated selector keys whose operation will result in the printing of selected text sections on copy sheets.

A further object of the present invention is to provide an electrophotographic duplicator capable of producing on a series of successive copy sheets, an imprint of a head section of the text, and imprints of successive different line portions of the text.

A further object of the present invention is to provide an electrophotographic duplicator including a counterpressure roller which is movable to a position for pressing copy sheets against an electrophotographic plate only when an image of a selected text section passes through the printing line between the counterpressure roller and the electrophotographic plate.

It is yet an object of the present invention to provide an electrophotographic duplicator capable of producing on copy sheets adjacent imprints of selected text sections and operating in a simpler and more reliable manner than hectographic duplicators.

With these objects in view, the present invention relates to an electrophotographic duplicator and comprises

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a first carrier for supporting a text sheet having a plurality of text sections, such as lines or columns; a second carrier; an electrophotographic plate mounted on the second carrier; charging means for charging the electrophotographic plate so that during relative movement between the electrophotographic plate and the charging means, successive sections of the electrophotographic plate are located opposite the charging means; selector means operatively connected to the charging means and effecting energization of the charging means only when a section of the electrophotographic plate correlated to a text section selected by said selector means is located opposite the charging means; optical means for successively projecting images of successive text sections onto charged sections; and means for treating the electrophotographic plate to develop the images thereon.

As explained above, the charged sections of the electrophotographic plate are partly discharged corresponding to the images projected by the optical means on the electrophotographic plate, and when such images are developed, for example by applying a colored powder to the electrophotographic plate, the images can be transferred to copy sheets.

In accordance with the present invention, the images are transferred from the electrophotographic plate by apparatus comprising counterpressure roller means movable to a position defining a printing line with the electrophotographic plate; means for successively feeding copy sheets to the printing line; sensing means for sensing charged sections of the electrophotographic plate; and means connecting the sensing means with the counterpressure roller means for moving the same to the operative position defining a printing line only when a charged section of the electrophotographic plate passes through the printing line. In this manner, imprints of the developed images on the electrophotographic plate are produced adjacent to each other on each copy sheet.

The optical means which are used in the preferred embodiment of the present invention include a source of light projecting light onto an area of the text sheet corresponding to a text section, and a reflector means for reflecting the image of illuminated text sections onto correlated text sections of the electrophotographic plate which lead the charged sections so that charged sections directly pass into the area where they are impinged by the reflected image of the respective selected text section so that the latent image forms on the respective charged electrophotographic plate section.

The selector means of the preferred embodiment of the present invention include a set of manually operated contact means, and switch means which are controlled by one of the carriers to close for selected time periods during which sections of the electrophotographic plate are charged, if the respective selector conduct means are closed.

The counterpressure roller is preferably operated by an electromagnetic operating means which respond to an amplified impulse produced by a sensing member sensing charged image-carrying sections of the electrophotographic plate. The sensing means include, for example, ferrodur magnets, and control the electromagnetic operating means through electronic elements.

In one embodiment of the present invention, selector contacts are automatically operated to produce charged image sections on the electrophotographic plate of the head section of the text, and of a line section of the text, a different line section being automatically selected during each revolution of a rotary carrier supporting the text sheet.

The carrier of the electrophotographic plate is preferably a cylinder, and when the entire electrophotographic

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plate has passed through the printing line, the charged image-carrying sections are neutralized, so that the selecting operation can be repeated during the following revolution of the carrier of the electrophotographic plate.

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, illustrating an electrophotographic duplicator according to the present invention;

FIG. 2 is a diagram illustrating the circuit of the duplicator illustrated in FIG. 1;

FIG. 3 is a side view illustrating an electrophotographic plate mounted on a rotary carrier;

FIG. 4 is a fragmentary side view illustrating the carrier and the electrophotographic plate in section;

FIG. 5 is a sectional view illustrating an automatic mechanism for selecting different sections for successive printing; and

FIG. 6 is a side view, partly in section taken along line VI—VI of FIG. 5.

Referring now to the drawings, and more particularly to FIG. 1 which shows the machine with one side wall omitted, a motor 1 drives through a chain drive 2, 3, 4 a gear 5 mounted on a shaft 6. A first carrier 8 is mounted on shaft 9 which is driven from gear 5 through a gear 7. A second carrier 11 is mounted on a shaft 12 and driven by gear 10 from gear 5 so that carriers 10 and 11 rotate in synchronism. A text sheet 13 is secured to the peripheral surface of carrier 8 and an electrophotographic plate 14 is secured to the peripheral surface of carrier 11. The text sheet 13 is assumed to have a head section, and a plurality of line sections. In accordance with the present invention text sections are selected for printing by operation of a set of manually operated selector means including the keys or buttons Z1 to Z12 which are respectively associated with the text sections on the text sheet 13.

A source of light, illustrated as two lamps 17 with suitable reflectors projects light on a substantially rectangular area of the cylindrical peripheral surface of carrier 8, so that successive text sections on text sheet 13 are successively illuminated during rotation of carrier 8 with text sheet 13. A lens and reflector system 24 receives the light reflected from the surface of the text sheet and projects an image of the respective text section onto the peripheral surface of carrier 11. As best seen in FIG. 3, the image 26 is of rectangular shape and extends almost through the entire axial length of carrier 11, but does not cover a small area 27 near one end face of the carrier 11.

During rotation of carrier 11, the image is projected onto successive areas 26 of the electrophotographic plate.

The electrophotographic plate may consist of amorphous selenium and is charged by a charging means 23 which confronts the peripheral surface of carrier 11 and the electrophotographic plate. During the rotation of carrier 11 with electrophotographic plate 14, a rectangular area 26, 27 is charged by charging means 23, if the charging means are energized.

Treating and developing means 25 are provided for developing latent images on the electrophotographic plate, and include means for applying a negative charged powder to the electrophotographic plate.

As shown in FIG. 2, each selector key Z1 is connected to a selector contact 15, which is closed when the respective key is operated. Selector contacts 15 are respectively connected to the stationary contact K1 to K12, on which

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only the contact K1 to K5 are shown. A contact arm 16 is fixed to a shaft 18 which rotates in synchronism with shaft 6, 9 and 12, and is coupled to one of these shafts. Contact arm 16 carries bridge contact 16a one end of which slides on a slide ring 19a, while the other end successively engages the contact K1, K2 and so forth during rotation of the machine. Slide ring 19a is connected to one terminal of a source of electric power, while the charging means 23 is connected to the other terminal of the source, and to the selector contacts 15. Whenever contact arm 16 moves to a position connecting a contact K with the slide ring 19a, the charging means 23 is energized if the respective selector contact 15 was previously selected and closed by operation of the respective key Z.

Since shafts 9, 12 and 18 rotate in synchronism, the machine can be set in such a manner that whenever a text section on text sheet 13 selected by operation of a key Z passes through the area illuminated by source of light 17, a corresponding section of the electrophotographic sheet 24 passes under the charging means so that the respective section 26, 27 is electrically charged. When carrier 11 turns further in the direction of the arrows in FIGS. 1 and 2, the charged area is impinged on an area 26 by the reflected image projected by the optical means 24 so that a latent image is formed on the electrophotographic plate since only the portion of the electrophotographic plate where the light has not impinged, will remain charged. Uncharged sections of the electrophotographic plate will also be impinged by the projected image of the corresponding text section, but no latent image can form on the electrophotographic plate, where the same was not previously charged by charging means 23. Colored powder is applied by the treating means 25 to the electrophotographic plate and renders the latent image visible.

A counterpressure roller 34 is turnably mounted on lever means 35 which is supported on a shaft 36. Operating means are provided for moving counterpressure roller 34 to and from the printing position located in close proximity to the peripheral surface of carrier 11, and include a spring 37 and electro-magnetic means 29. Consequently, whenever electro-magnetic means 29 are energized, counterpressure roller 34 will move to the printing position, and define with the electrophotographic plate a printing line located in the axial plane A, B. Copy sheets 22 are fed along a supporting table to a pair of transporting rollers 20, 21 which transport each copy sheet toward the printing line. Resilient holding means 120 are provided for holding the fed copy sheets stationary when counterpressure roller 34 is spaced from carrier 11. When counterpressure roller 34 is moved to its printing position, the respective copy sheet is gripped, and passes through the printing line in contact with the electrophotographic plate 14. Images produced on the electrophotographic plate will be transferred to the copy sheet. The imprinted copy sheet passes through a pair of heated rollers 38, 39, which bake the transferred image on the copy sheet to make it permanent, whereupon the copy sheet is deposited on a receiving table 40. During further turning of carrier 11, electrophotographic plate 14 passes through an electric eraser device 42 which neutralizes the charged sections of the electrophotographic plate so that the operation may be repeated. A suitable felt wiper 41 cleans the surface of roller 39 from adhering powder particles.

As best seen in FIG. 3 a small portion 27 of the charged section is not provided with an image, and portion 27 passes a sensing member 28 which is responsive to charges on the electrophotographic plate to produce an electric impulse which is supplied through a transformer 30 to an amplifier 31. A rectifier 32 is connected to amplifier 31 and to a control apparatus 33 which includes a thyatron. Control device 33 is connected to the winding of electro-magnetic means 29. Whenever a charged section 27 produces an impulse in sensing member 28,

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electro-magnetic means 29 is energized, and actuates counterpressure roller 34 to move to the printing position. Consequently, copy sheets are pressed against the electrophotographic plate only if charged sections 26, 27 pass through the printing line, while uncharged sections of the electrophotographic plate pass through a printing line while counterpressure roller 34 is retracted, and the copy sheet is held stationary by holding means 120. If several charged sections are produced on the electrophotographic plate, the imprints produced by such sections will appear on the respective copy sheet adjacent each other.

FIGS. 5 and 6 illustrate a mechanism by which successive text sections are automatically selected for printing during successive revolutions of the carriers. A shaft 43 carries a contact arm 56 which has two connected slide contacts 60 and 61 which respectively slide over a circular contact 59 and over a set of stationary contacts 58 which are arranged in a circle. Contacts 58 and 59 are connected into the circuit of the selector contact means 15, and each contact 58 is correlated to a contact 15 and to a line section of text sheet 13. Contacts 58 are respectively connected to contacts K, and contact 59 is connected to the charging means, so that the circuit of the charging means 23 is completed by contacts 58, 59, 60 and 61 in the same manner as by operation of a selector contact 15. A complete revolution of contact arm 56 corresponds to a successive closing of all contacts 15.

A stepping wheel 44 and a spring motor housing 45 are fixed to shaft 43. A spiral spring 47 is connected to shaft 43 by member 45, and has an outer end connected to a gear 46 mounted on shaft 43. Gear 46 pivotally supports a stepping pawl 48 and an arresting pawl 49. When spring 47 is wound up, contact arm 56 tends to rotate with shaft 43, but such rotation is prevented by the arresting pawl 49.

A manually operated device including a knob 51 and a roller 42 is provided for actuating the stepping device.

When push button 51 is depressed to place roller 52 in the path of the pawl 48, the automatic stepping device operates. When the machine is started so that carriers 8 and 11 perform the first revolution, gear 46 is driven by suitable means, not shown, to rotate in the direction of the arrow F. Shortly before the carriers arrive again at the initial positions thereof, pawl 48 engages roller 52, and is depressed against the action of spring 54 to move into a recess of stepping wheel 44. At the same time, arresting pawl 49 moves to a releasing position, permitting stepping wheel 44 to turn a single step in the direction of arrow G under the pressure of spiral spring 47. Turning movement of wheel 44 is limited to a single step, since stepping pawl 48 arrests the stepping wheel 44. When pawl 48 passes beyond the roller 52, spring 54 retracts pawl 48, and the next following tooth 53 is engaged by pawl 49. When stepping wheel 44 turns a single step, contact arm 56 turns also a step, and connects the next following contact 58 into the circuit. During the first revolution of the carriers, the contact 58 associated with selector contact 15 of the first line section closes the circuit of charging means 23. During the second revolution, the contact 15 associated with the second line of the text is shunted, and so forth. Consequently, charging means 23 is energized during the first revolution of the carrier of the electrophotographic plate when passed by the section of the electrophotographic plate correlated to the first line of the text. During the second revolution of carrier 11, charging means 23 is energized when a second section of the electrophotographic plate corresponding to the second line of the text passes through the respective area. A pair of stationary contacts may remain closed during all revolutions, and effect repeated printing of the head portion of the text.

The electrophotographic duplicator described with reference to FIGS. 1 to 6 operates in the following manner: Assuming that only selected sections of the text on text

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sheet 13 are to be printed, the respective keys Z are depressed so that the respective contacts 15 are closed. For example, key Z2 may be depressed, and the respective text section selected for printing.

Motor 1 is started, and drives carriers 8 and 11, and contact arms 16 in synchronism. At first, the peripheral surface of carrier 8 is illuminated by the source of light 17, and the image of the respective surface portion is reflected by optical means 24 on the peripheral surface of carrier 11. When the first text line passes through the illuminated area, contact 16a of contact arm 16 is located on contact K1. However, the circuit of carrier means 23 is not closed, since selector contact 15 of selector means Z1 is not closed. The correlated area of the electrophotographic plate 14 passes under the charging means 23 without being charged, and then through the area illuminated by optical means 24. Since the respective area is not charged, the image projected onto the area has no effect whatsoever.

During further turning of the carriers, contact 16a engages contact K2, and since the selector contact 15 associated with the second text section was previously closed by the operator, the circuit of charging means 23 is completed, and the corresponding area 26, 27 is charged on electrophotographic sheet 14. When the second line section of text sheet 13 passes through the illuminated rectangular area a corresponding image is projected by the operator means 24 onto the electrophotographic plate, and the operation is timed in such a manner that the charged section 27 arrives under the optical means and is illuminated by the same at the moment in which the second text section of text sheet 13 is illuminated by the source of light 17. Consequently, the charged area 26 is partly neutralized in accordance with the projected image, so that a latent electro-static image is formed. Portions of section 26 which are not impinged by light, remain charged, and when the latent electro-static image passes through the treating and developing means 25, a colored powder applied to the electrophotographic plate will adhere only to the charged portions of the image, so that a visible mirror image is produced. Charged portion 27 is not impinged by projected light, and during further turning of carrier 11, charged portion 27 passes the sensing member 28 which produces an impulse which is amplified and supplied to electro-magnetic means 29 which are energized and actuate lever 35 to move counterpressure roller 34 to printing position. A copy sheet previously supplied to the printing line is thus gripped between the electrophotographic plate and the counterpressure roller 34, and the powder is transferred to the copy sheet and forms on the same a positive imprint of the image of the second text section of text sheet 13. When the charged portion 27 has passed sensing member 28, electro-magnetic means 29 is de-energized and spring 37 retracts counterpressure roller 34. The copy sheet is gripped by the pair of heating rollers 38, 39 which fuse the powder to the copy sheet and make the image permanent, whereupon the copy sheet is deposited on the receiving table 40.

The charged section of the electrophotographic plate passes through the eraser 42 which neutralizes the charge so that electrophotographic plate is ready for the next operation. If another selector key was depressed before the start of the operation, the respective correlated section of the text will also be charged and effect operation of the counterpressure roller and transfer of the image to the copy sheet. Since the copy sheet is not transported by counterpressure roller 34 and carrier 11 when counterpressure roller 34 is retracted, imprints of selected text sections appear adjacent each other on the copy sheet, even if the sections are widely separated on the text sheet 13.

When the manually operated button 51 described with reference to FIGS. 5 and 6 is depressed, the automatic selector becomes operative, and gear 46 is rotated in syn-

chronism with the carriers so that after each revolution of the carriers stepping wheel 44 performs a step, and moves contact arm 56 one step so that contact 61 successively connects contact 58 into the circuit, resulting in successive shunting of contacts 15 so that during each revolution of the carriers, another line section is selected, charged, and printed.

From the above description of the rotary duplicator of the present invention, it will become apparent that contact arms 16, 16a and contacts 19a and K constitute switch means which are connected to and controlled by the carriers to close during movement of the carriers for selected time period during which successive sections of the electrophotographic plate are located opposite charging means 23. Selector contacts 15 and 58, 59 constitute selector means which are operatively connected to the charging means so that the charging means is only energized when a section of the electrophotographic plate correlated to a selected text section passes the charging means. In the illustrated embodiment, carriers 8 and 11 move relative to the charging means 23 and the optical means 17, 24 which are mounted on a stationary support 43, and carrier 11 moves relative to the treating means 25, the sensing member 28, and the erasing means 42.

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 electrophotographic printing machines differing from the types described above.

While the invention has been illustrated and described as embodied in a rotary electrophotographic duplicator for printing selected text sections on copy sheets, 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 an electrophotographic duplicating machine, in combination, a first movable carrier for supporting a text sheet having a plurality of text sections a second movable carrier connected to said first carrier for synchronous movement; an electrophotographic plate with an electrostatic charge mounted on said second carrier for movement therewith; electric charging means for charging said electrophotographic plate and confronting a section of said electrophotographic plate so that during movement of said second carrier and electrophotographic plate successive sections of said electrophotographic plate are located opposite said charging means; a plurality of manually operable selector means respectively correlated with said text sections and operatively connected to said charging means for energizing and actuating said charging means only when a section of said electrophotographic plate correlated to a text section selected by said selector means is located opposite said charging means whereby the respective section or sections of said electrophotographic plate are charged; optical means for successively projecting during movement of said first carrier images of successive text sections onto a section of said electrophotographic plate leading the charged sections in direction of movement of said carrier so that the charged sections of said electrophotographic plate are partly discharged corresponding to said images; treating means adjacent said carrier for treating said electrophotographic plate so as to develop the images thereon; counterpressure roller means; operating means for actuating said counter-

pressure roller means to move to and from a printing position in close proximity with said second carrier to define a printing line with said electrophotographic plate; means for successively feeding copy sheets to said printing line, fed copy sheets being gripped and transported by said counterpressure roller and said second carrier only in said printing position; sensing means adjacent said second carrier for sensing the electrostatic charge of charged sections of said electrophotographic plate; and means connecting said sensing means with said operating means for actuating the same when a charged section of said electrophotographic plate passes through the printing line whereby imprints of said developed images on said electrophotographic plate are produced adjacent to each other on each copy sheet.

2. In an electrophotographic duplicating machine, in combination, a first movable carrier for supporting a text sheet having a plurality of text sections; a second movable carrier connected to said first carrier for synchronous movement; an electrophotographic plate mounted on said second carrier for movement therewith; electric charging means for charging said electrophotographic plate with an electrostatic charge and confronting a section of said electrophotographic plate so that during movement of said second carrier and electrophotographic plate successive sections of said electrophotographic plate are located opposite said charging means; a set of manually selector contact means respectively correlated with said text sections; means connecting said selector means and said charging means so that said charging means is energized during said time periods only when a section of said electrophotographic plate correlated to a text section selected by a selector contact means is located opposite said charging means whereby the respective section or sections of said electrophotographic plate are charged; optical means for successively projecting during movement of said first carrier images of successive text sections onto a major portion of a section of said electrophotographic plate leading the charged sections in direction of movement of said carrier so that said major portions of the charged sections of said electrophotographic plate are discharged corresponding to said images and the remaining portions of said sections remain charged; treating means adjacent said carrier for treating said electrophotographic plate so as to develop the images thereon; counterpressure roller means; operating means for actuating said counterpressure roller means to move to and from a printing position in close proximity with said second carrier to define a printing line with said electrophotographic plate; means for successively feeding copy sheets to said printing line, fed copy sheets being gripped and transported by said counterpressure roller and said second carrier only in said printing position; sensing means adjacent said second carrier for sensing said remaining portions of said charged sections of said electrophotographic plate; and means connecting said sensing means with said operating means for actuating the same when a charged section of said electrophotographic plate passes through the printing line whereby imprints of said developed images on said electrophotographic plate are produced adjacent to each other on each copy sheet.

3. In an electrophotographic duplicating machine, in combination, a first rotary carrier for supporting a text sheet having a plurality of text sections; a second rotary carrier connected to said first carrier for synchronous movement; an electrophotographic plate mounted on said second carrier for movement therewith; electric charging means for charging said electrophotographic plate with an electrostatic charge and confronting a section of said electrophotographic plate so that during movement of said second carrier and electrophotographic plate successive sections of said electrophotographic plate are located opposite said charging means; a set of manually operated selector contact means respectively corre-

lated with said text sections; switch means connected to and controlled by one of said carriers to close during rotation of said one carrier for selected time periods during which said sections of said electrophotographic plate are located successively opposite said charging means; circuit means connecting said selector contact means, said switch means, and said charging means in series so that said charging means is energized during said time periods only when a section of said electrophotographic plate correlated to a text section selected by a selector contact means is located opposite said charging means whereby the respective section or sections of said electrophotographic plate are charged; optical means for successively projecting during rotation of said first carrier images of successive text sections onto a section of said electrophotographic plate leading the charged sections in direction of rotation of said carrier so that the charged sections of said electrophotographic plate are partly discharged corresponding to said images; treating means adjacent said carrier for treating said electrophotographic plate so as to develop the images thereon; counterpressure roller means; operating means for actuating said counterpressure roller means to move to and from a printing position in close proximity with said second carrier to define a printing line with said electrophotographic plate; means for successively feeding copy sheets to said printing line, fed copy sheets being gripped and transported by said counterpressure roller and said second carrier only in said printing position; sensing means adjacent said second carrier for sensing the electrostatic charge of charged sections of said electrophotographic plate; and means connecting said sensing means with said operating means for actuating the same when a charged section of said electrophotographic plate passes through the printing line whereby imprints of said developed images on said electrophotographic plate are produced adjacent to each other on each copy sheet.

4. In an electrophotographic duplicating machine, in combination, a first rotary carrier for supporting a text sheet having a plurality of text sections; a second rotary carrier connected to said first carrier for synchronous movement; an electrophotographic plate mounted on said second carrier for movement therewith; electric charging means for charging said electrophotographic plate with an electrostatic charge and confronting a section of said electrophotographic plate so that during movement of said second carrier and electrophotographic plate successive sections of said electrophotographic plate are located opposite said charging means; a plurality of manually operable selector means respectively correlated with said text sections and operatively connected to said charging means so that said charging means is energized only when a section of said electrophotographic plate correlated to a text section selected by said selector means is located opposite said charging means whereby the respective section or sections of said electrophotographic plate are charged; optical means for successively projecting during movement of said first carrier images of successive text sections onto a section of said electrophotographic plate leading the charged sections in direction of movement of said carrier so that the charged sections of said electrophotographic plate are partly discharged corresponding to said images; treating means adjacent said carrier for treating said electrophotographic plate so as to develop the images thereon; counterpressure roller means; operating means for actuating said counterpressure roller means to move to and from a printing position in close proximity with said second carrier to define a printing line with said electrophotographic plate, said operating means including electro-magnetic means; means for successively feeding copy sheets to said printing line, fed copy sheets being gripped and transported by said counterpressure roller and said second carrier only in said printing position; sensing means adjacent said second carrier for sensing the electrostatic charge of charged sec-

tions of said electrophotographic plate and including a sensing member responsive to electric charges and confronting said second carrier and said electrophotographic plate so as to produce an electric impulse when sensing the electrostatic charge of a charged section of said electrophotographic plate, and electrical means connecting said sensing member to the said electro-magnetic means to energize the latter in response to said impulses for actuating said operating means when a charged section of said electrophotographic plate passes through the printing line whereby imprints of said developed images on said electrophotographic plate are produced adjacent to each other on each copy sheet.

5. In an electrophotographic duplicating machine, in combination, a first rotary carrier for supporting a text sheet having a plurality of text sections; a second rotary carrier connected to said first carrier for synchronous movement; an electrophotographic plate mounted on said second carrier for movement therewith; electric charging means for charging said electrophotographic plate with an electrostatic charge and confronting a section of said electrophotographic plate so that during movement of said second carrier and electrophotographic plate successive sections of said electrophotographic plate are located opposite said charging means; a set of manually operated selector contact means respectively correlated with said text sections; switch means connected to and controlled by one of said carriers to close during rotation of said one carrier for selected time periods during which said sections of said electrophotographic plate are located successively opposite said charging means; circuit means connecting said selector contact means, said switch means, and said charging means in series so that said charging means is energized during said time periods only when a section of said electrophotographic plate correlated to a text section selected by a selector contact means is located opposite said charging means whereby the respective section or sections of said electrophotographic plate are charged; optical means for successively projecting during rotation of said first carrier images of successive text sections onto a portion of a section of said electrophotographic plate leading the charged sections in direction of rotation of said carrier so that the charged sections of said electrophotographic plate are partly discharged corresponding to said images and so that another portion of each charged section remains fully charged; treating means adjacent said carrier for treating said electrophotographic plate so as to develop the images thereon; counterpressure roller means; operating means for actuating said counterpressure roller means to move to and from a printing position in close proximity with said second carrier to define a printing line with said electrophotographic plate, said operating means including electro-magnetic means; means for successively feeding copy sheets to said printing line, fed copy sheets being gripped and transported by said counterpressure roller and said second carrier only in said printing position; sensing the electrostatic charge of means adjacent said second carrier for sensing charged sections of said electrophotographic plate and including a sensing member responsive to electric charges and confronting said second carrier and said electrophotographic plate in the region of said other fully charged portion of each charged section so as to produce an electric impulse when sensing said fully charged portion of a charged section of said electrophotographic plate, and electrical means connecting said sensing member with said electro-magnetic means to energize the latter in response to said impulses for actuating said operating means when a charged section of said electrophotographic plate passes through the printing line whereby imprints of said developed images on said electrophotographic plate are produced adjacent to each other on each copy sheet.

6. In an electrophotographic duplicating machine, in combination, a first rotary carrier for supporting a text

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sheet having a plurality of text section; a second rotary carrier connected to said first carrier for synchronous movement; an electrophotographic plate mounted on said second carrier for movement therewith; electric charging means for charging said electrophotographic plate with an electrostatic charge and confronting a section of said electrophotographic plate so that during movement of said second carrier and electrophotographic plate successive sections of said electrophotographic plate are located opposite said charging means; a plurality of manually operable selector means respectively correlated with said text sections and operatively connected to said charging means so that said charging means is energized only when a section of said electrophotographic plate correlated to a text section selected by said selector means is located opposite said charging means whereby the respective section or sections of said electrophotographic plate are charged, said plurality of selector means including a first selector means correlated to a head section of the text sheet, and a set of second selector means respectively correlated to different text sections of the text sheet, and shifting means including a member connected to one of said carriers for rotation and operatively connected to said second selector means for actuating successive second selector means during each revolution of said first carrier; optical means for successively projecting during rotation of said first carrier images of successive text sections onto a section of said electrophotographic plate leading the charged sections in direction of rotation of said carrier so that the charged sections of said electrophotographic plate are partly discharged

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corresponding to said images; treating means adjacent said carrier for treating said electrophotographic plate so as to develop the images thereon; counterpressure roller means; operating means for actuating said counterpressure roller means to move to and from a printing position in close proximity with said second carrier to define a printing line with said electrophotographic plate; means for successively feeding copy sheets to said printing line, fed copy sheets being gripped and transported by said counterpressure roller and said second carrier only in said printing position; sensing means adjacent said second carrier for sensing the electrostatic charge of charged sections of said electrophotographic plate; and means connecting said sensing means with said operating means for actuating the same when a charged section of said electrophotographic plate passes through the printing line whereby imprints of said developed images on said electrophotographic plate are produced adjacent to each other on each copy sheet.

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