APPARATUS FOR ACTIVATING A PRINTING MASTER

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Abstract

The heat-absorbing text of a printing master on a duplicating drum is placed in contact with a dye coating on a sheet and irradiated so that portions of the dye coating in contact with the heat-absorbing text melt and adhere to the heat-absorbing text while the remainder of the dye coating remains on the sheet when the same is pulled off the master. During the following revolutions of the duplicating drum, copy sheets are fed so that the activated text is printed on successive copy sheets.

15 Claims, 9 Drawing Figures
APPARATUS FOR ACTIVATING A PRINTING MASTER


BACKGROUND OF THE INVENTION

The invention relates to an apparatus for making, regenerating and activating a printing master so that the same can be used for making imprints on copy sheets moistened with alcohol.

In known printing arrangements using printing masters, an amount of dye is on the master which is picked up by successive imprints. The number of copies which can be obtained depends on the type of hectographic master and is maximal 400 copies. Thereupon, a new master has to be written.

It has been proposed to regenerate the master by means of a hectographic inkjet sheet which is subjected to differentiated heat radiation. This requires a special thermographic apparatus for producing a differentiated infrared radiation. The use of an additional apparatus is uneconomical and time-consuming so that a certain given amount of orders or invoices cannot be handled in the required time.

Independently of the above disadvantages, organizational duplicating systems require the use of an existent master in different successive printing operations, each of which requires newly written additional masters, for example for part deliveries. If the master is made for a great number of copies, and the additional masters only for smaller numbers of copies, a substantial color difference between the parts of the copies made by the main master and the parts of the copies made by the additional masters occurs which results in a poor appearance of the copies if purple duplicating ink is used, and which is intolerable if black hectographic inking sheets are used. However, particularly the use of black hectographic inking sheets which can produce only a limited number of copies, is particularly necessary for producing a deep black imprint of all parts of the text on all copies.

The use of hectographic masters with duplicating ink brings about soiling of the fingers of the typist making the master and of the machine operator during the duplication and during the regeneration of the master. Also, the use of hectographic masters in high speed printers in modern data processing machines causes difficulties due to the soiling of the high speed printer and of the person operating the same. It has been recently suggested to use for writing or printing of masters soot containing inks which do not contain a hectographic dye.

SUMMARY OF THE INVENTION

It is one object of the invention to overcome the disadvantages of the prior art regarding making and activating duplicating masters, and to provide an arrangement which permits the making, regenerating and activating of hectographic duplicating masters of high quality without soiling the machine or its operator.

Another object of the invention is to provide an apparatus for making or regenerating a hectographic duplicating master in a short time, and by using the duplicating machine.

With these objects in view, the present invention is concerned with the activation of a master whose text is radiation absorbing.

An apparatus of one embodiment of the invention comprises a rotary carrier, such as the printing drum of a duplicating machine, holding means on the carrier for holding the master with the radiation absorbing text on the outside, positioning means, such as a second holding means, or transporting means for the sheet, for placing at least a section of a sheet coated with a dye on the outside of the master, pressure means for holding the respective section of the sheet in contact with a corrinoiding section of the master, and a source of radiation disposed for irradiating at least the superimposed sections of the sheet and master.

The dye used in the coating is preferably a triphenylmethane dye embedded in a bonding substance, and the radiation is preferably either infra-red radiation, or high frequency waves producing sufficient energy to melt the dye coating only where the radiation is absorbed by the text of the master which is in contact with the dye coating.

When the melted dye has hardened again and is securely attached to the text of the master, the coated sheet is either manually or mechanically pulled off the master.

When a duplicating drum is used for carrying the master and the coated sheet, a gripper automatically engages the leading edge of the coated sheet and thus pulls the same off the master which continues to rotate with the rotating duplicating drum.

It is possible to transfer a coating and to separate the sheet from a master during one revolution, or during two successive revolutions of the duplicating drum or other carrier.

In one embodiment of the invention, the coated sheet is a hand shaped web which is taken off a first reel and wound up on a second reel. The section between the reels is pressed against the master and irradiated. The wind-up reel is driven from the rotary carrier of the master through a friction roller so that the web is moved substantially in synchronism with the revolving master.

In another embodiment of the invention, the coated sheet is superimposed on the master, and both sheets are held tight on the periphery of the carrier or duplicating drum. The carrier of the master is either part of an additional apparatus, or the drum of the duplicating machine can be used.

In one embodiment of the invention, two pressure rollers closely spaced from each other about the coated sheet and hold a section of the same in contact with the master and the heat absorbing text thereon. The radiation source is disposed behind and between the pressure rollers to direct radiation between the same through the base of the coated sheet and the coating toward the master.

In another embodiment of the invention, a cylindrical tubular radiation permeable pressure member is in rolling contact with the outside of the coated sheet, and envelops the source of radiation. Preferably, the tubular pressure member consists of glass with an elastic cover permeable to infra-red radiation, and a source of infra-red radiation and its reflector are located within the glass tube.

In the preferred embodiment of the invention, the pressure means and the source of radiation are mounted on a common support which can be moved between an operative position and an inoperative position further spaced from the coated sheet. The movement of this support can be effected by manual operation, or by cam means driven from the rotary carrier so that the pressure means do not engage the peripheral surface of the duplicating drum when the same is not covered by the master.

Preferably, switching means including a member rotating with the carrier or duplicating drum, are provided for energizing the source of radiation only when the same is located opposite the master.

Since the pressure means and source of radiation are only operative when passed by the master, a soiling of the duplicating drum is prevented.

It is preferred to combine the source of radiation, the pressure means, and the take-off and wind-up reels in a unit which can be attached to, or detached from the duplicating machine.

However, in another embodiment of the invention additional holding means are provided on the duplicating drum for holding the coated sheet superimposed on the master, and the additional holding means are either manually operated to hold or release the coated sheet, or are controlled by a cam rotating in synchronism with the duplicating drum to release the coated sheet when the transfer of dye has been completed.

It is advantageous to provide an ejector which is controlled by a cam to push the leading edge of the coated sheet away from the master when the additional holding means has released the coated sheet. During further rotation of the
duplicating drum, the leading edge of the coated sheet is gripped and the coated sheet is pulled off the master sheet.

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.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary sectional view illustrating a duplicating machine provided with the apparatus of the invention in a position of rest;

FIG. 2 is a fragmentary sectional view of the apparatus illustrating another operational position at the start of the transfer of dye to the master;

FIG. 3 is a fragmentary sectional view illustrating the apparatus in another operational position shortly before removal of the coated sheet from the master;

FIG. 4 is a fragmentary sectional view illustrating an operational position of the master in which the coated sheet is pulled off the master;

FIG. 5 is a fragmentary sectional view illustrating a modified construction of the pressure means in a position of rest of the duplicating machine, parts illustrated in FIGS. 1 to 4 being omitted in FIG. 5 for the sake of simplicity;

FIG. 6 is a fragmentary sectional view taken on lines D–E in FIG. 3;

FIG. 7 is a fragmentary sectional view illustrating another embodiment of the invention with a detachable unit which can be used in an existent duplicating machine;

FIG. 8 is a fragmentary sectional view illustrating a duplicating machine provided with the unit shown in FIG. 7, wherein the pressure means are modified; and

FIG. 9 is a fragmentary sectional view taken on lines I–H in FIG. 7.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, a duplicating drum 1 is mounted on a rotary shaft 2 and has a first holding means 3 for clamping the master 4 to the periphery of drum 1. The drum has on its outside a carbon mirror script text 6, and on its inside a positive legible outline 5 of the text. A sheet 9 has an inner coating 10 consisting of a dye such as a triphenylmethylene dye in a bonding base, and is held in a second holding means 7. In FIG. 1, the apparatus is shown in a position of rest, but when rotation of the duplicating drum 1 is started, the coated sheet 9, 10 is superimposed on the outside of master 4. A manually operable rod 11 has a cutout 14 which can be hooked onto a corresponding arresting part of a bracket 15 by which rod 11 is guided. When rod 11 is moved to the right, lever 16 turns about pivot 17 in the direction of the arrow A, and shifts, while lever 18 turns about pivot 19, link 20 in the direction of the arrow B. Toggle levers 21 and 22 are displaced along the path defined by lever arm 23 turning about pivot 19 so that the support 24 with pressure rollers 12 and 13 and the source of radiation 25 move away from duplicating drum 1 and assume an inoperative position.

Parts 126 to 135 constitute a one revolution clutch effecting stopping of duplicating drum 1 after a single revolution. A motor, not shown, drives through a gear 126, the gear 127 which is freely rotatable on shaft 2 and fixedly connected with a ratchet wheel 129 and a flange 142. When latch 132 is held by spring 134 in the position of FIG. 1, a pawl 130 is arrested and cannot turn about its pivot 135 under the action of spring 131 to a position engaging the ratchet wheel and coupling the same through pivot 135 to the duplicating drum 1 so that the same is arrested in the position of FIG. 1.

When the operator releases latch 132 by turning the same about pivot 133, spring 131 moves pawl 130 to its coupling position engaging ratchet wheel 129, and the duplicating drum 3 starts its rotation in clockwise direction of the arrow until pawl 130 engages latch 132 after one revolution of the drum, and is separated from the ratchet wheel so that the drum stops.

The duplicating drum is part of a conventional duplicating machine which includes a counter pressure roller 1a, a pair of transport rollers 1b for transporting the copy sheets to the printing line defined by the duplicating drum 1 and counter pressure roller 1a, and moistening means 1c which moisten copy sheets supplied on a table 1d to transporting rollers 1b. In the position of rest of the duplicating drum, a slanted plate 8 holds the coated sheet 9, 10 while its leading edge is clamped by holding means 7. During the following operation, no copy sheets are supplied.

In the operational position of FIG. 2, the duplicating drum has turned so far that the pressure roller 13 engages the outside of the coated sheet 9 and presses the same with the ink coating 10 against the carbon text 6 of the master which has radiation absorbing properties. Counter pressure roller 1a also holds the coated sheet 10 superimposed on the master. The source of radiation 25, which may produce infra-red radiation or a high frequency radiation, irradiates the leading portions of the coated sheet 9 and of the master 4 in the position of FIG. 2, since support 24 is held in its operative position by the lever system due to the fact that rod 11 is in its operative position.

During further rotation of the duplicating drum, the apparatus assumes the position of FIG. 3 so that consecutive pairs of sections of the coated sheet 10 and of the master 4 are irradiated. In the position of FIG. 4, the superimposed sheets have passed beyond pressure roller means 12, 13, and the duplicating drum 1 approaches its position of rest in which pawl 130 will engage latch 132 and separate the driven ratchet wheel 129 from the duplicating drum.

Referring again to FIG. 2, it is not necessary to energize the source of radiation when the duplicating drum is in the position of FIGS. 1 or FIG. 4, in which the coated sheet and master are not located in the region of the source of radiation 25.

As shown in FIG. 2, a part circular member 76a is secured to the end face of drum 1 and is engaged by slide contact 76 which is connected with a switch 75 in the circuit, not shown, of the radiation source 25. Radiation source 25 is only energized when slide contact 76 is engaged by part circular member 76a which is disposed to close the circuit of the radiation source shortly before the same is passed by the leading edges of sheets 9 and 4, and to open the same shortly after the trailing edges of the sheet have passed the radiation source.

The circuit of the radiation source is closed such a time before the leading parts of the superimposed sheets 9 and 4 reach the region of radiation source 25 that the same has warmed up and is fully heated when acting on the superimposed sheets.

The pressure rollers 12 and 13 smooth sheets 4 and 9 and hold the same in contact with each other and with the periphery of the duplicating drum. The carbon text 6 on master 4 is irradiated through the dye coating 10 of sheet 9 and is heated so that the portions of the dye coating 10 abutting the heat absorbing carbon text 6 are heated to such a temperature as to melt and adhere to the heat absorbing carbon text of the master sheet, while the remainder of the dye coating, which did not receive a heat from the carbon text 6 remains attached to sheet 9.

FIGS. 3 and 6 show the apparatus in a position in which the source of radiation 25 is passed by sections of the superimposed sheets to successively irradiate the entire coated sheet and master sheet. The leading edge of coated sheet 9 and master sheet 4 and the holding means 7 and 3 approach a gripper 33. Holding means 7 of the coated sheet 10 is opened, and the released leading part of coated sheet 10 is being pushed by an ejector member 26 away from the peripheral surface of the duplicating drum and into the region of gripper 33.

As best seen in FIG. 6, two releasing members 94 are mounted on a shaft 93 and cooperate with holding means 7.
During rotation of the duplicating drum, cam 95 which is mounted on a pivot 30 acts on a roller 97 of cam 92 on shaft 93 to effect the opening of holding means 7 at the proper moment. A manually operated rod 91, guided in a bracket 96, is connected with cam 95 and is shiftable to a position in which its cutout 91a is hooked into bracket 96 so that cam 95 is retracted to an inoperative position in which it cannot actuate cam follower means 92, 97 to open holding means 7. While holding means 7 is thus closed and inoperative, duplicating operations may be carried out. If cam 95 would remain operative during duplicating operations, holding means 7, which is not used during such operation, would be unnecessarily opened and closed.

When holding means 7 has been opened in the position of FIG. 3, the roller 27 of a cam follower 28 on a shaft 29 is engaged by a cam 32 which is mounted on a pivot 31, and turns cam follower lever 28 in the direction of the arrow C so that shaft 29 turns in its bearings in the end walls of the duplicating drum and displaces ejector 26 which pushes the leading part of the coated sheet 9 away from the duplicating drum and into the region of gripper 33. Cam 32 is connected with a manually operable rod 99, and can be turned by the same to an inoperative position spaced from roller 27 so that ejector 26 is not actuated during a duplicating operation.

After ejector 26 has performed its function, cam follower roller 97 is moved by the duplicating drum beyond cam 95, so that a spring connected with cam follower 92 returns member 94 to its original position closing holding means 7.

The rotary movement of duplicating drum 1 carries the released leading portion of a coated sheet 9 into gripper 33 which has a fixed jaw and a movable jaw which is turnable on a shaft 35 which rigidly supports the fixed jaw. The movable jaw is part of an angular lever 34 loaded by a spring 36 and carrying a cam follower roller 36 cooperating with a rotary cam 37 secured to a shaft 42 driven through a gear train 41, 40, 39 from the duplicating drum. Cam 37 has such a shape that the gripper is open until the leading edge of the coated sheet 9 is moved by the duplicating drum between the two jaws of gripper 33. Thereupon, a higher portion of cam 37 engages cam follower roller 38 and closes the gripper so that the leading edge of the coated sheet 9 is clamped, as shown in FIG. 4.

During further turning movement of duplicating drum 1, roller 27 moves beyond cam 32 and permits the return of lever arm 28 by a spring to its original position in which ejectors 26 are retracted into the interior of the duplicating drum whose peripheral wall has cutouts for the passage of ejectors 26.

Referring now to FIG. 4, gripper 33 gradually pulls the coated sheet 9 off master 4 which continues to move with the duplicating drum 1. Since the coat 10 adheres to the master, the coated sheet 9 forms a loop. The portion of coating 10 adhering to the heat absorbing text 6 of master 4 is torn out of the remaining coating 10 and firmly adheres to the text 6 so that the master is actuated to be used during a great number of duplicating operations in which the dye is gradually transferred to successive copy sheets.

When the coated sheet 9 is completely separated from master 4, roller 38 is moved by the action of spring 36 to the lower portion of cam 37, and the gripper opens and releases the coated sheet 9, which is either manually removed from the machine or guided into a receptacle, not shown.

Cam 37 is mounted on shaft 42 shiftable in axial direction to an inoperative position spaced from cam follower roller 38 of gripper 33 so that duplicating operations can be carried out without operation of gripper 33.

FIG. 5 corresponds to FIGS. 1 and 6 as far as the duplicating machine, the gripper, the ejector, and the first and second holding means 3 and 7 are concerned, but the radiation and pressure unit is modified. The source of radiation 25 is mounted on a support 45 which is operated from a manually operable rod 14. The source of radiation is located within a glass cylinder superimposed with a soft transparent layer 43. A tubular member 44, 43 abuts the peripheral surface of the duplicating drum 1, and the superimposed sheets 9 and 4 along a first line. Two spaced lines of the tubular member 43, 44 are engaged by a pair of rollers 46, 47 mounted on support 45. Consequently, the tubular transparent member 43, 44 is rotatably supported at three points, and rotates due to the frictional engagement with the peripheral surface of the duplicating drum 1 or with sheet 9. The pressure of the tubular member 43, 44 on the superimposed sheets smoothes the same and holds the dye coating in contact with the heat absorbing carbon text on the outside of master 4. The pressure rollers used in the embodiment of FIG. 1 are replaced by the transparent tubular pressure tube 44, 43.

The removal of the coated sheet 9 from the master has been described with reference to FIG. 4 to be carried out at the end of the same revolution during which the coated sheet is irradiated, and portions of its coating transferred to the heat absorbing text of master 4. However, it is possible to irradiate the coated sheet and master during a first revolution, and to open holding means 7, operate ejector 26, and close gripper 33 during a second revolution of the duplicating drum.

FIGS. 7, 8 and 9 illustrate a modified embodiment of the invention in which the irradiating and pressure unit can be attached to and detached from a standard duplicating machine. The duplicating drum 1 has only one holding means for the master sheet 4, and the coated sheet is not mounted on the duplicating drum, but is a band-shaped web 79 whose dye coating 82 is located opposite the peripheral surface of the duplicating drum and the carbon text 6 on the outside of master 4. A support member 88, 136 can be operated to move between the inoperative position shown in FIG. 7 to an operative position in which a drive roller 86 frictionally engages the peripheral surface of duplicating drum 1 and is rotated by the same. A pulley 83 is connected by a clutch 100 to the drive roller 86 and drives through a belt 84 a pulley 81 on a shaft 76 rotating the take-up reel of the band-shaped coated web 79.

The coated web 79 is unwound from a take-off reel on shaft 80 which is braked by a brake 112, biased by spring 113 and mounted on a pivot 111. During duplicating operations, when the coated web must not engage the duplicating drum, the support 88, with cam 136 is in the retracted position shown in FIG. 7, and the drive roller 86 is separated from the duplicating drum so that the same can perform the usual duplicating operations producing imprints of the master on copy sheets.

In order to hold the device in this inoperative position, the support 88, 136 is shifted by a linkage connected with the manually operated rod 102.

When the rod 102 is shifted to the right and cutout 101 is hooked onto bracket 103, lever 115 turns in the direction of the arrow F about pivot 116 and shifts, while turning lever 117 about pivot 118, latch 119 in the direction of the arrow G.

Due to this motion, toggle levers 120, 121, which are controlled by lever 122 turning about pivot 118, move the source of radiation 25, the pressure rollers 12, 13, the drive roller 86, and the support 87 of the radiation source by means of support 88 and 136 to the inoperative position spaced from the duplicating drum. Support 88, 136 is mounted on support 87 of the source of radiation, which also supports pressure rollers 12 and 13 for rotation.

The housing 90 on which the above-described parts are mounted has brackets 137, 138, 139 and 140 which are mounted in slots in the side walls of the duplicating machine.

When the dewatering of the master 4 is required, cam 109 causes movement of support 88, 136 to the operative position in the proximity of the duplicating drum 1 when the leading part of the master approaches the region of the source of radiation 25. Spring 124 holds the cam follower roller in this position of rod 102 on the lower portion of cam 109. A switch 75 has a slide contact 76a which cooperates with an arcuate contact 76a on the end walls of the duplicating drum as described with reference to FIG. 2 so that the source of radiation 25 is energized shortly before the leading part of the master approaches the source of radiation, and is deenergized when the trailing portion of the master has passed beyond the same.
As mentioned above, the source of radiation may produce infra-red radiation, or a high frequency ion radiator may be used. The transfer of dye from the coated sheet to the text 6 and erase releases several components of the printing duplicating drum. The brake 112 prevents inertia rotation of the take-off reel which may move the web into contact with the drum when the unit is moved to the inoperative position of FIG. 7 in which the take-up reel is not driven by drive wheel 86 since the same is spaced from the drum.

If the counter pressure roller 1a, transporting roller 1b and the printing duplicating drum is limited to the dyeing of the master sheets, and is not used for duplicating operations so that drum 1 constitutes a carrier for the master 1 and is not used as a duplicating drum.

FIG. 8 illustrates a modified arrangement which corresponds to the construction described with reference to FIG. 7, but has instead of pressure rollers 12 and 13, a tubular transparent pressure member consisting of a glass tube 44 with a thin transparent cover 43, and enveloping the source of radiation, as described with reference to FIG. 5.

The apparatus of the invention permits the use of a conventional duplicating machine for providing the text of the master with a layer of dye, or activating a master, the dye of whose text is exhausted by imprints on many copy sheets since the remaining text permits the adhering of dye from the coated sheet, as explained above.

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 duplicating machine provided with a unit for transferring a dye from a coated sheet to the carbon text of a master, 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.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims:

1. Apparatus for activating a master having on one side radiation absorbing means forming a text, and for printing the text on copy sheets, comprising, in combination, a printing machine having a rotary duplicating drum, a counter pressure roller cooperating with said drum, supply means for feeding copy sheets to the right between said drum and said counter pressure roller, and holding means on said drum for holding said master on said rotary drum with said radiation absorbing means on the outside; positioning means for placing at least a section of a sheet having on one side a coating of a transferable dye with said one side and said coating on the outside of said master; pressure means having an inoperative retracted position, and an operative position engaging said section of said sheet for holding said section in contact with a corresponding section of said master; a source of radiation disposed for irradiating at least said section from the other outer side thereof in said operative position of said pressure means; means for selectively exposing said master means for activating said master by said radiation absorbing means of consecutive sections of said master heats during rotation of said drum portions of said coating on corresponding sections of said sheet located opposite said radiation absorbing means whereby said portions of said coating adhere to said radiation absorbing means and activate said text of said master; ejecting means for separating and removing said sheet with remaining coating from said master when said master on said drum has an activated text; means for moving said pressure means between said inoperative and operative positions; and means for starting the operation of said printing machine while said pressure means is in said inoperative position and said sheet is removed so that said supply means feed successive copy sheets into the right between said drum with said master and said counter pressure roller so that said activated text imprints successive copy sheet during successive revolutions of said drum.

2. Apparatus as claimed in claim 1 wherein said pressure means include roller means engaging said section of said sheet in said operactive position of said pressure means.

3. Apparatus as claimed in claim 1 wherein said pressure means include a tubular cylindrical transparent pressure member in rolling contact with said sheet spaced in circumferential direction of said drum; and wherein said radiation source is located intermediate said rollers for emitting radiation passing between said rollers onto said sheet and through the same toward said drum.

4. Apparatus as claimed in claim 1 wherein said pressure means includes a tubular cylindrical transparent pressure member in rolling contact with said sheet along a first line, and enveloping said source of radiation, and two pressing rollers in rolling contact with said pressure member along two second lines, said three lines forming the corners of an imaginary triangle.

5. Apparatus as claimed in claim 1 and including switching means having a part rotating with said drum, and connected with said source of radiation so that the same is energized shortly before the leading part of said sheet reaches the region of said source of radiation, and is deenergized after the trailing part of the master passes said source.

6. Apparatus as claimed in claim 1 wherein said sheet is a band-shaped web; wherein said positioning means comprise take-off means and windup means for said web; wherein said radiation source is located outwardly of the web section, and wherein said pressure means act on said last-mentioned web section; and comprising operating means driven from said rotary drum for operating said windup means whereby consecutive sections of said web are placed opposite corresponding consecutive sections of said master and subjected to radiation.

7. Apparatus as claimed in claim 6, wherein said radiation source is located between said take-off means and said windup reel.

8. Apparatus as claimed in claim 6 and including a support for said pressure means and for said source of radiation and located between said take-off and windup means; and actuating means for moving said support between an operative position close to said carrier means, and an inoperative position farther spaced from the same.

9. Apparatus as claimed in claim 8 wherein said actuating means include cam means rotating in synchronism with said carrier means and cam follower means operated by said cam means and connected with said support for moving the same between said positions thereof.

10. Apparatus as claimed in claim 8 comprising manually operable means connected with said actuating means for operating the same.

11. Apparatus as claimed in claim 1 wherein said sheet is a band-shaped web; wherein said positioning means comprise take-off means and windup means for said web; wherein said radiation source is located outwardly of the web section between said take-off means and said windup means; wherein said pressure means act on said last-mentioned web section; comprising operating means driven from said rotary carrier means for operating said windup means whereby consecutive sections of said web are placed opposite corresponding consecutive sections of said master and subjected to radiation; and including a support for said pressure means and for said source of radiation and located between said take-off and said windup means; actuating means for moving said support between an operative position close to said carrier means, and an inoperative position farther spaced from the same; and wherein said actuating means are connected with said operating means so that said windup means is only driven when said support is in said operative position.
12. Apparatus as claimed in claim 11 and including brake means for braking said take-off means; and wherein said operating means of said windup means include a drive roller in frictional contact with said rotary drum and driven by the same.

13. Apparatus as claimed in claim 1 comprising a common support for said positioning means, said pressure means, and said source of radiation forming with the same a unit attached to said printing machine, and being detachable from the same.

14. Apparatus as claimed in claim 1 wherein said duplicating drum has a peripheral surface on which said holding means hold said master; and wherein said positioning means is a second holding means on said drum having an operative position for holding said sheet superimposed on said master; comprising actuating means for moving said second holding means between said operative position and a releasing position in which said second holding means releases said sheet when the same has been radiated; said ejecting means separating said sheet from said master after release of said sheet by said second holding means; gripper means for gripping the separated sheet whereby the same is pulled off said master; and means for operating said ejecting means and said gripper means.

15. Apparatus as claimed in claim 14 wherein said actuating means include rotary cam means rotating in synchronism with said duplicating drum, and cam follower means controlled by said cam means and connected with said second holding means for operating the same; and cam means and cam follower means connected with said ejecting means for operating the same to move the leading edge of said sheet away from said master, and connected with said gripper means for operating the same to detach said sheet from said master during rotation of said duplicating drum.

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