

CONVENTION APPLICATION FOR STANDARD
PATENT OR A STANDARD PATENT OF ADDITION

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ALLOWED 19-2-90

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Applicant(s)hereby apply for the grant of a standard patent
patent of addition
for an invention entitled

73313/87

"B-B TYPE PRINTING UNIT WITH SPOT COLOR DECK"

Title of
Invention

which is described in the accompanying complete specification.

DETAILS OF BASIC APPLICATION(S)

Number(s) of Basic Application(s)

P61-132957

Name(s) of Convention Country(ies) in which Basic
Application(s) was/were filed

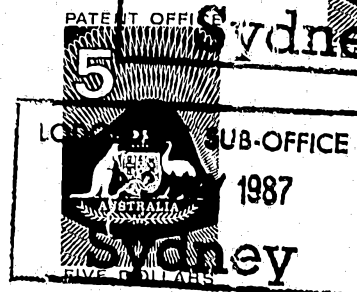
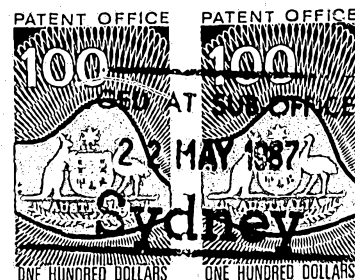
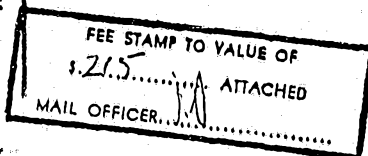
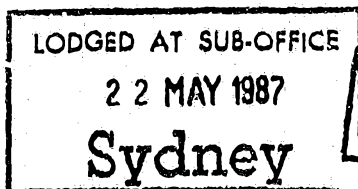
JAPAN

Date(s) of Basic Application(s)

June 9, 1986

(respectively)

(respectively)



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Dated this TWENTIETH day of MAY, 1987

KABUSHIKI KAISHA TOKYO KIKAI SEISAKUSHO

By:

Registered Patent Attorney

To: The Commissioner of Patents

DECLARATION IN SUPPORT OF A
CONVENTION APPLICATION FOR A PATENTIn support of the Convention Application made for a
patent for an invention entitled:

Title of Invention "B-B TYPE PRINTING UNIT WITH SPOT COLOR DECK"

Full name(s) and
address(es) of
Declarant(s)I/~~We~~ Kohei SHIBA, president of KABUSHIKI KAISHA TOKYO KIKAI
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do solemnly and sincerely declare as follows:--

Full name(s) of
Applicant(s)1. ~~I am/We are the applicant(s) for the patent~~

(or, in the case of an application by a body corporate)

1. I am/~~We are~~ authorised by

KABUSHIKI KAISHA TOKYO KIKAI SEISAKUSHO

the applicant(s) for the patent to make this declaration on
its/~~their~~ behalf.2. The basic application(s) as defined by Section 141 of the
Act was/~~were~~ made

Basic Country(ies)

in Japan

Priority Date(s)

on June 9, 1986

Basic Applicant(s)

by the name of KABUSHIKI KAISHA TOKYO KIKAI SEISAKUSHO

Full name(s) and
address(es) of
inventor(s)3. ~~I am/We are the actual inventor(s) of the invention referred
to in the basic application(s)~~

(or where a person other than the inventor is the applicant)

3. Komei KAWAHARA of 16-18, Nishi-Magome 1-chome, Ohta-ku,
Tokyo 144 Japan, andor Masahiko MIYOSHI of 1460-9, Fukaya-Toriuchi, Ayase 252
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(respectively)

~~I~~s/are the actual inventor(s) of the invention and the facts upon
which the applicant(s) is/~~are~~ entitled to make the application are
as follows:The Applicant is the assignee of the invention from
the inventorsSet out how Applicant(s)
derive title from actual
inventor(s) e.g. The
Applicant(s) is/are the
assignee(s) of the
invention from the
inventor(s)4. The basic application(s) referred to in paragraph 2 of this
Declaration was/~~were~~ the first application(s) made in a Convention
country in respect of the invention(s) the subject of the application.

Declared at Tokyo this 31st day of July 1986


Signature of Declarant(s)
Kohei SHIBA

To: The Commissioner of Patents

11/81

(12) PATENT ABRIDGMENT **(11) Document No. AU-B-73313/87**
(19) AUSTRALIAN PATENT OFFICE **(10) Acceptance No. 596417**

(54) Title
CYLINDER THROW-OFF MECHANISM FOR OFFSET PRESS

International Patent Classification(s)
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(56) Prior Art Documents
US 4526099
AU 433112 47683/68 51.3
AU 63160/65 51.3

(57) Claim

1. A blanket-to-blanket type printing system with a reversible spot color deck comprising a blanket-to-blanket type printing unit having a pair of blanket cylinders each accompanied with a cooperating plate cylinder; an impression throw-off mechanism which allows said pair of blanket cylinders to move in opposing directions relative to each other between a position of contact with each other and a throw-off position separate from each other; a spot deck with an additional printing cylinder provided at a position corresponding to one vertex of a substantially triangular configuration defined by said additional printing cylinder and said pair of plate cylinders, said pair of blanket cylinders being positioned inside said triangular configuration, wherein said spot color deck with said additional printing cylinder includes eccentric mounting means adapted to move said additional printing cylinder enabling the following four selective positions;

a) a first contact position where it is in contact with one of said pair of blanket cylinders which are in said contact position with each

other;

b) a first neutral position where it is separated from both of said pair of blanket cylinders which are in said contact position with each other;

c) a second neutral position where it is separated from both of said pair of blanket cylinders which are also in said throw-off, separated position; and

d) a second contact position where it is in contact with the other of said pair of blanket cylinders which are in said contact position with each other.

4. A method for operating a blanket-to-blanket type printing system with a reversible spot color deck which includes a blanket-to-blanket type printing unit having a pair of blanket cylinders each accompanied with a cooperating plate cylinder and an impression throw-off mechanism which allow said pair of blanket cylinders to move in opposing directions relative to each other between a position of contact with each other and a throw-off position separate from each other, and a spot deck with an additional printing cylinder provided at a position corresponding to one vertex of a substantially triangular configuration defined by said additional printing cylinders being positioned in said triangular configuration, and an eccentric mounting means adapted to move said additional printing cylinder of said spot color deck, wherein said method comprises:

a) contacting said pair of blanket cylinders;

b) contacting said additional printing cylinder with either one of said pair of blanket cylinders while maintaining said contact specified in step a); and

c) removing said additional printing cylinder from said contact with either of said pair of blanket cylinders while said pair of blanket cylinders remain in said contact specified in step a)

for blanket-to-blanket operation thereof to enable printing one color on both sides of a web without operation of said additional printing cylinder.

596417

FORM 10

SPRUSON & FERGUSON

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE:

73313/87

Class

Int. Class

Complete Specification Lodged:

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Related Art:

This document contains the
amendments made under
Section 49 and is correct for
printing.

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Complete Specification for the invention entitled:

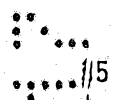
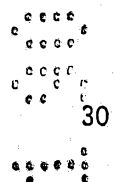
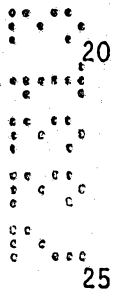
"B-B TYPE PRINTING UNIT WITH SPOT COLOR DECK"

The following statement is a full description of this invention,
including the best method of performing it known to us

SBR/TGK/12F

ABSTRACT OF THE DISCLOSURE

A B-B type printing unit has a pair of blanket cylinders each accompanied by a cooperating plate cylinder, and an impression throw-off mechanism which allows the pair of blanket cylinders to move between a position where they are in contact with each other and a position where they are separated from each other. The printing unit is provided with a spot color deck which comprises: a printing cylinder provided at a position corresponding to one vertex of a substantially triangular configuration defined by the printing cylinder and the pair of plate cylinders, the pair of blanket cylinders being positioned inside the triangular configuration; and eccentric mounting means adapted to move the printing cylinder among the following three positions: a first contact position where it is in contact with only one of the blanket cylinders which are in contact with each other; a neutral position where it is out of contact with any of the blanket cylinders which are either in said contact position or in said separate position; and a second contact position where it is in contact with only the other of said blanket cylinders which are in contact with each other.



TITLE OF THE INVENTION

B-B TYPE PRINTING UNIT WITH SPOT COLOR DECK

BACKGROUND OF THE INVENTION

1. Field of the Invention

10 The present invention relates to an apparatus wherein a B-B type cylinder arrangement which is a basic unit for offset printing is additionally provided with a spot color printing (additional printing) cylinder, thereby allowing one additional color to be partially printed on either a web having one color printed on each side thereof or a web having two colors printed on one side thereof.

2. Description of the Related Art

20 A cylinder arrangement which is generally employed as a basic unit for offset printing and incorporated in various practical modifications is known as B-B type cylinder arrangement wherein a pair of blanket cylinders each accompanied by a cooperating plate cylinder are adapted to be in contact with each other so as to simultaneously print one color on each side of a web which is passed through the area therebetween. This B-B type printing unit also enables two colors to be printed on one side of a web by arranging either one of the pair of blanket cylinders so as to serve as an impression cylinder.

As is well known, the blanket cylinders which are incorporated in the above-described B-B type printing unit

have heretofore been provided with a mechanism known as impression trip or throw-off mechanism which allows the blanket cylinders to be moved from the mutual contact position to a neutral position where they are separated from each other and also separated from their respective cooperating plate cylinders.

However, the B-B type printing unit ^{is restricted to} ~~enables~~ printing on a web in either one of two printing modes, that is, one color on each side of a web or two colors on one side of a web. For this reason, it has been demanded to enable one additional color to be partially printed on one side of a web having, for example, one color printed on each side thereof, and in order to meet such request, a modified B-B type cylinder arrangement has already been proposed and known in which a third plate cylinder is additionally provided and brought into contact with either one of the pair of blanket cylinders. This modified B-B type cylinder arrangement is known as B-B type printing unit with a spot color deck or an additional partial printing device, ^{For example, refer to German Offenlegungsschrift 2134397.}

The conventional B-B type printing unit with a spot color deck suffers, however, from the following disadvantage. Since the third plate cylinder is adapted to contact only either one of the pair of blanket cylinders, additional printing can be effected only on a predetermined side of a web, and the conventional B-B type cylinder



arrangement offers no choice to effect additional partial printing on the other side of the web.

To overcome this problem, United States Patent No. 4,526,099 has proposed a B-B type printing unit with a reversible spot color deck in which the axes of rotation of a pair of blanket cylinders in the printing unit can be selectively moved in the same direction as each other, and a third printing cylinder is provided at a mid position between the blanket cylinders, thereby allowing both the blanket cylinders to be selectively brought into contact with the third printing cylinder.

The above-described known printing unit with a reversible spot color deck is arranged such that either one of the two blanket cylinders is moved so as to come in contact with the third printing cylinder and also come in contact with the other of the two. In this cylinder arrangement, therefore, either one of the two blanket cylinders is uselessly in contact with the third printing cylinder even when spot color printing is not conducted.

When the spot color deck of the type described above is additionally provided on a B-B type printing unit, the impression throw-off mechanism for the pair of blanket cylinders which is an essential part of the B-B type printing unit must be replaced with a completely novel one.

As described above, B-B type printing units are very

frequently employed in offset printing and also incorporated in other modified printing units as described above, and they are produced in a large number as well as being basic units which are interchangeable and sophisticated.

Therefore, it is not preferable to specially modify an essential part of a B-B type printing unit when the above-described reversible color deck is applied thereto, and the required modification should be realized within the additionally provided equipment itself. If this requirement is satisfied, it will be possible to speedily, readily and inexpensively cope with a change in design of a B-B type printing unit before it is installed, and addition, removal and replacement of a spot color deck after a B-B type printing unit has been installed.

SUMMARY OF THE INVENTION

It is a first object of the present invention to provide a B-B type printing unit with a reversible spot color deck which enables one additional color to be selectively printed on one side of a web having one color printed on each side thereof and can be used as an ordinary B-B type printing unit for printing one color on each side of a web and which, when used as an ordinary B-B type printing unit, allows both the blanket cylinders to be separated from the third printing cylinder.

It is a second object of the present invention to

provide a B-B type printing unit with a reversible spot color deck which is so designed that a plant unit which is to be added is able to complete its displacement operation within the unit itself, and it is possible to combine together this plant unit and a B-B type printing unit to which the plant unit is added without the need to change various mechanisms incorporated in the B-B type printing unit, thereby allowing addition, removal and replacement of the plant unit to be effected readily, simply and inexpensively.

To these ends, the present invention provides a B-B type printing unit having a conventional impression throw-off mechanism and including a pair of plate cylinders and a pair of blanket cylinders, the B-B type printing unit comprising: a printing cylinder provided at a position corresponding to one vertex of a substantially triangular configuration defined by the printing cylinder and the pair of plate cylinders, the pair of blanket cylinders being positioned inside the triangular configuration; and eccentric mounting means adapted to move the printing cylinder among the following three positions; a first contact position where it is in contact with only one of the blanket cylinders which are in contact with each other; a neutral position where it is out of contact with any of the blanket cylinders which are either in said contact position or in said separate position; and a second contact position where it is in contact with only the other of said



blanket cylinders which are in contact with each other.

When the pair of blanket cylinders in the B-B type printing unit are at the mutual contact position, if the eccentric mounting means is activated so as to move the printing cylinder to the first contact position, additional spot color printing can be effected on one side of a web.

If the eccentric mounting means is activated so as to move the printing cylinder to the second contact position, additional spot color printing can be effected on the other side of the web.

If the eccentric mounting means is activated so as to move the printing cylinder to the neutral position, it is possible to effect an ordinary printing operation alone in such a manner that one color is printed on each side of a web.

To throw off the pair of blanket cylinders in the B-B type printing unit, the eccentric mounting means is first activated so as to move the printing cylinder to the non-contact or neutral position, and the known impression throw-off mechanism for the blanket cylinders is then actuated, whereby all of the printing cylinder and the pair of blanket cylinders are brought out of contact with each other.

The above and other objects, features and advantages of the present invention will become clear from the following description of the preferred embodiments thereof, taken in



conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 schematically shows the arrangement of various cylinders in a first embodiment of the present invention;

Figs. 2(A) to 2(D) respectively show examples for passing a paper web in the first embodiment;

Fig. 3 schematically shows the arrangement of various cylinders in a second embodiment of the present invention;

Figs. 4(A) to 4(D) respectively show examples of passing a paper web in the second embodiment;

Fig. 5 is a schematic view of an essential part of the second embodiment shown in Fig. 3, which particularly shows the state of the displacing mechanism when the third printing cylinder is at the first contact position;

Fig. 6 is a schematic view of an essential part of the second embodiment shown in Fig. 3, which particularly shows the state of the displacing mechanism when the third printing cylinder is at the throw-off (neutral) position; and

Fig. 7 is a schematic view of an essential part of the second embodiment shown in Fig. 3, which particularly shows the state of the displacing mechanism when the third printing cylinder is at the second contact position.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will be described hereinunder in

detail by way of embodiments and with reference to the accompanying drawings.

Embodiments respectively shown in Figs. 1 and 3 are identical to each other in that they employ a conventional B-B type printing unit 1. These embodiments are, however, different in that the embodiment shown in Fig. 1 is additionally provided with a plate cylinder 21 alone, whereas the embodiment shown in Fig. 3 is additionally provided with a blanket cylinder 22 accompanied by a cooperating plate cylinder 21.

As is well known, the B-B type printing unit 1 includes four cylinders which are in sequential contact one with another, the four cylinders consisting of a pair of blanket cylinders 11 and 12 respectively accompanied by cooperating plate cylinders 13 and 14. When a web 3 is fed from the position shown by the solid line W so as to be passed through the area between the pair of blanket cylinders 11 and 12 which are in contact with each other, one color is printed on each side of the web 3. When the web 3 is fed from either the position shown by the chain line X1 or the position shown by the chain line X2 so as to be passed through the area between the cylinders 11 and 13 or the area between the cylinders 12 and 14, respectively, and further passed through the area between the cylinders 11 and 12, two colors are printed on either one or the other side of the

web 3. As is also well known, the B-B type printing unit 1 is provided with an eccentric mechanism (not shown) which allows the pair of blanket cylinders 11 and 12 to move for impression throw-off between the mutual contact position (shown by the solid line) and the separate position (shown by the two-dot chain line) where they are separated from each other.

10 According to the present invention, such conventional B-B type printing unit is additionally provided with a reversible spot color deck without imparting any change to the mechanisms or arrangement of this B-B type printing unit, whereby the web 3 is usually passed as shown in Figs. 2(A) and 2(B) and Figs. 4(A) and 4(B), and according to need, it is passed as shown in Figs. 2(C) and 2(D) and Figs. 4(C) and 4(D), thereby allowing one additional color to be partially printed on any desired side of the web 3.

20 The plate cylinder 21 for spot color printing shown in Fig. 1 and the blanket cylinder 22 for spot color printing shown in Fig. 3 are each provided at a position corresponding to one vertex of a substantially triangular configuration which is defined by said cylinder and the associated pair of plate cylinders 13 and 14, the associated pair of blanket cylinders 11 and 12 being positioned within this triangular configuration.

When the pair of blanket cylinders 11 and 12 are at the

mutual contact position, the plate cylinder 21 or the blanket cylinder 22 is movable to the first contact position where it is in contact with the left-hand blanket cylinder 11 as viewed in the corresponding figure, and is also movable to the second contact position where it is in contact with the right-hand blanket cylinder 12 as viewed in the figure.

However, the direction of rotation of the cylinder 21 or 22 at the first contact position and that at the second contact position are opposite to each other, and the change of rotational direction of the cylinder 21 or 22 can readily be effected by means of a drive system (not shown).

In addition, it is possible to set the cylinder 21 or 22 at a neutral position which is intermediate between the first and second contact positions and where the cylinder 21 or 22 is in out of contact with any of the blanket cylinders 11 and 12. The movement for throw-off of the pair of blanket cylinders 11 and 12 is started on condition that the cylinder 21 or 22 is at the neutral position. The interlocking means for this operation is readily attained simply by inputting a signal from an electric sensor or a limit switch.

Figs. 5 to 7 exemplarily show eccentric mounting means employed in the embodiment shown in Fig. 3, Figs. 5 to 7 illustrating various portions when the cylinder 22 is at the first contact position, the neutral position and the second

contact position, respectively.

10 It should be noted that the eccentric mounting means for the embodiment shown in Fig. 1 can be formed from constituent members of the arrangement shown in Figs. 5 to 7 from which the link and lever provided between the eccentric mounting means and the plate cylinder 21 are eliminated, and it will be readily understood by reading the "blanket cylinder 22" in the following description as the "plate cylinder 21" in the embodiment shown in Fig. 1 and eliminating the "plate cylinder 21" in the following explanation; therefore, illustration and description of the eccentric mounting means for the first embodiment are omitted.

Referring to Figs. 5 to 7, a first eccentric sleeve 4 is rotatably supported on one end face of the blanket cylinder 22 through a shaft 221, and an arm 41 projects radially from the sleeve 4. The free end of the arm 41 is operatively connected to the free end of a first lever portion 43 of a bell crank lever through a link 42.

20 A second eccentric sleeve 5 is rotatably supported on one end surface of the plate cylinder 21 through a shaft 211, and an arm 51 projects radially from the sleeve 5. The free end of the arm 51 is operatively connected to the free end of a second lever portion 53 of the bell crank lever through a link 52.

The bell crank lever having the first and second lever portions 43 and 53 is secured at the center thereof to a shaft 6 by means, for example, keying. One end portion of the shaft 6 is pivotally received through a frame 23 so as to project from the rear side of the frame 23, and the other end portion of the shaft 6 is pivotally supported by a frame (not shown) disposed in opposing relation to the frame 23. A bifurcated arm 7 is secured by means of, for example, keying to one end portion of the shaft 6 projecting from the rear side of the frame 23. The arm 7 consists of first and second arms 71 and 72. A guide pin 73 is stretched between the respective free end portions of the first and second arms 71 and 72, the guide pin 73 being rotatable and having an external thread formed on the outer periphery thereof. The external thread may be provided over the entire length of the guide pin 73. Alternatively, an appropriate length of an external thread may be provided at each longitudinal end of the guide pin 73, and the remaining portion thereof may be reduced in diameter.

A fluid actuator, e.g., an air cylinder 8 is pivotally mounted at the tail end thereof to the rear side of the frame 23 through a pin 81. A rod 82 projects from the free end of the air cylinder 8, and the distal end portion of the rod 82 is connected to a slider block 73 which is in thread engagement with the external thread formed on the guide pin

73.

In the above-described arrangement, Fig. 5 shows a state wherein the rod 82 of the air cylinder 8 is maximumly withdrawn into the cylinder 8, and the slider block 83 is at a position where it is in contact with the first arm 71. In consequence, the bifurcated arm 7 and the bell crank levers 43 and 53 are pivoted together with the shaft 6 so as to effect angular displacement in the clockwise direction, thus causing the eccentric sleeves 4 and 5 to be turned counterclockwise through the links 42 and 52 and set at respective angular displacement positions. As a result, the blanket cylinder 22 is brought into contact with the left-hand blanket cylinder 11, thereby allowing spot color printing to be conducted.

In the state shown in Fig. 6, the rod 82 is extended from the air cylinder 8, causing the bifurcated arm 7 and the bell crank levers 43 and 53 to effect angular displacement in the counterclockwise direction. Therefore, in response to the movement of the levers 43 and 53, the eccentric sleeves 4 and 5 are angularly displaced clockwise. In consequence, the blanket cylinder 22 is separated from both the pair of blanket cylinders 11 and 12 and, at the same time, the plate cylinder 21 is also separated from the blanket cylinder 22. If, in this state, a web is passed through the area between the blanket cylinders 11 and 12, one

color is printed on each side of the web. Under this set of conditions, further, the known impression throw-off mechanism (not shown) of the B-B type printing unit is activated so as to move the pair of blanket cylinders 11 and 12 from the broken line positions to the two-dot chain line positions shown in Fig. 6 where they are separated from each other.

10 In the state shown in Fig. 7, the slider block 83 provided at the distal end of the extend rod 82 is moved on the guide pin 73 so as to come in contact with the second arm 72 and, in this state, the rod 82 is withdrawn into the cylinder 8. In consequence, the bifurcated arm 7 and the bell crank levers 43 and 53 are pivoted together with the shaft 6 so as to be angularly displaced counterclockwise, and in response to this movement, the first eccentric sleeve 4 is angularly displaced clockwise, while the second eccentric sleeve 5 is angularly displaced counterclockwise. Thus, the blanket cylinder 22 is brought into contact with the right-hand blanket cylinder 12, thereby allowing spot color printing to be conducted.

20 Although the links 42 and 52 which are arranged in one unit are shown in Figs. 5 to 7 for the purpose of simplifying the illustration, it is a matter of course that a known length adjusting means constituted by, e.g., a screw mechanism is provided at a position intermediate between the

links 42 and 52.

The present invention is not necessarily limited to the arrangements exemplified in the above-described embodiments, and various changes and modifications may be imparted thereto without departing from the spirit and scope of the invention.

As has been described above in detail, it is possible, according to the present invention, to enable the third printing cylinder 21 (shown in Fig. 1) or 22 (shown in Figs. 3 to 7) to be selectively brought into contact with the pair of blanket cylinders 11 and 12 simply by installing the additional deck 2 without the need to change the arrangement of the existing B-B type printing unit 1. In addition, the third printing cylinder 22 is allowed to be set at a position where it is out of contact with any of the cylinders 11, 12 and 21 (see Fig. 6) in consideration of an ordinary printing operation in which one color is printed on each side of a web and of impression trip or throw-off.

Accordingly, the present invention allows not only an ordinary printing operation wherein one color is printed on each side of a web by the B-B type printing unit, but also a selective additional printing which is effected on either one or the other side of a web by means of the reversible spot color deck.

In addition, since the reversible spot color deck can

be unitized, it is possible to speedily, readily and inexpensively cope with a design change before the B-B type printing unit is installed, and addition, removal as well as replacement of the color deck after the printing unit has been installed.

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The claims defining the invention are as follows:

1. A blanket-to-blanket type printing system with a reversible spot color deck comprising a blanket-to-blanket type printing unit having a pair of blanket cylinders each accompanied with a cooperating plate cylinder; an impression throw-off mechanism which allows said pair of blanket cylinders to move in opposing directions relative to each other between a position of contact with each other and a throw-off position separate from each other; a spot deck with an additional printing cylinder provided at a position corresponding to one vertex of a substantially triangular configuration defined by said additional printing cylinder and said pair of plate cylinders, said pair of blanket cylinders being positioned inside said triangular configuration, wherein said spot color deck with said additional printing cylinder includes eccentric mounting means adapted to move said additional printing cylinder enabling the following four selective

positions;

a) a first contact position where it is in contact with one of said pair of blanket cylinders which are in said contact position with each other;

b) a first neutral position where it is separated from both of said pair of blanket cylinders which are in said contact position with each other;

c) a second neutral position where it is separated from both of said pair of blanket cylinders which are also in said throw-off, separated position; and

d) a second contact position where it is in contact with the other of said pair of blanket cylinders which are in said contact position with each other.

2. A printing system according to claim 1, wherein said additional printing cylinder is a plate cylinder, and said eccentric mounting means comprises:

an eccentric sleeve mounted on one axial end of said plate cylinder in such a manner that said sleeve can be rocked;

a lever operatively connected to said sleeve through a link; and

a fluid actuator mounted in such a manner that it is able to angularly displace said lever.

3. A printing system according to claim 1, wherein said additional printing cylinder is a blanket cylinder accompanied with a cooperating plate cylinder, and



said eccentric mounting means comprises;

eccentric sleeves mounted on the respective axial ends of said blanket cylinder serving as said printing cylinder and the associated cooperating plate cylinder in such a manner that said sleeves can be rocked;

5 a bell crank lever operatively connected to said sleeves through respective links; and

a fluid actuator mounted in such a manner that it is able to angularly displace said lever.

4. A method for operating a blanket-to-blanket type printing system with
10 a reversible spot color deck which includes a blanket-to-blanket type printing unit having a pair of blanket cylinders each accompanied with a cooperating plate cylinder and an impression throw-off mechanism which allow said pair of blanket cylinders to move in opposing directions relative to each other between a position of contact with each other and a
15 throw-off position separate from each other, and a spot deck with an additional printing cylinder provided at a position corresponding to one vertex of a substantially triangular configuration defined by said additional printing cylinders being positioned in said triangular configuration, and an eccentric mounting means adapted to move said additional printing cylinder of said spot color deck, wherein said method comprises:

20 a) contacting said pair of blanket cylinders;
b) contacting said additional printing cylinder with either one of said pair of blanket cylinders while maintaining said contact specified in
25 step a); and

c) removing said additional printing cylinder from said contact with either of said pair of blanket cylinders while said pair of blanket cylinders remain in said contact specified in step a)

30 for blanket-to-blanket operation thereof to enable printing one color on both sides of a web without operation of said additional printing cylinder.

5. A blanket-to-blanket type printing system substantially as hereinbefore described with reference to Figures 1 to 2 or 3 to 7 of the drawings.

35 6. A method of operating a blanket-to-blanket type printing system substantially as hereinbefore described with reference to Figures 1 to 2 or 3 to 7 of the drawings.



DATED this FIFTEENTH day of JANUARY 1990
K K TOKYO KIKAI SEISAKUSHO

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Patent Attorneys for the Applicant
SPRUSON & FERGUSON

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FIG. 2

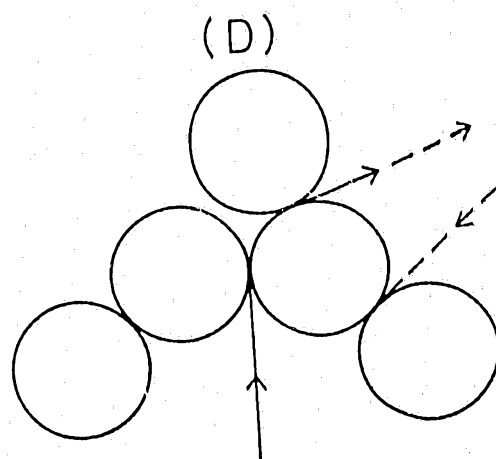
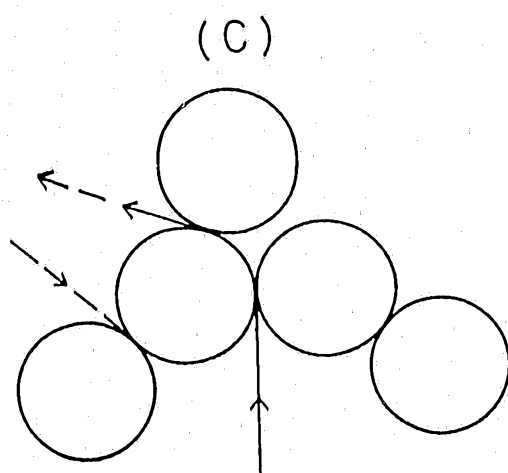
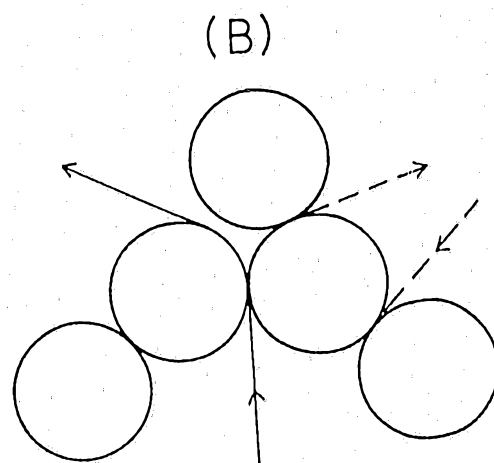
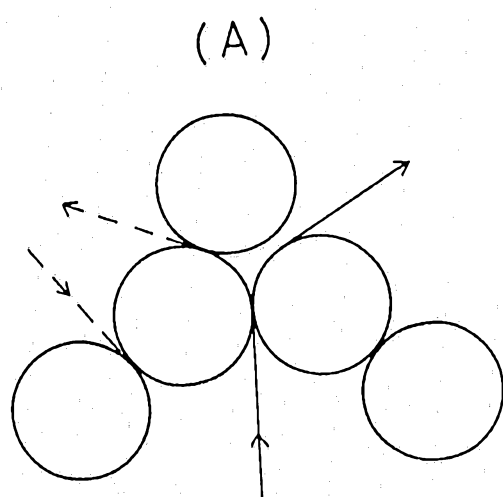


FIG.3

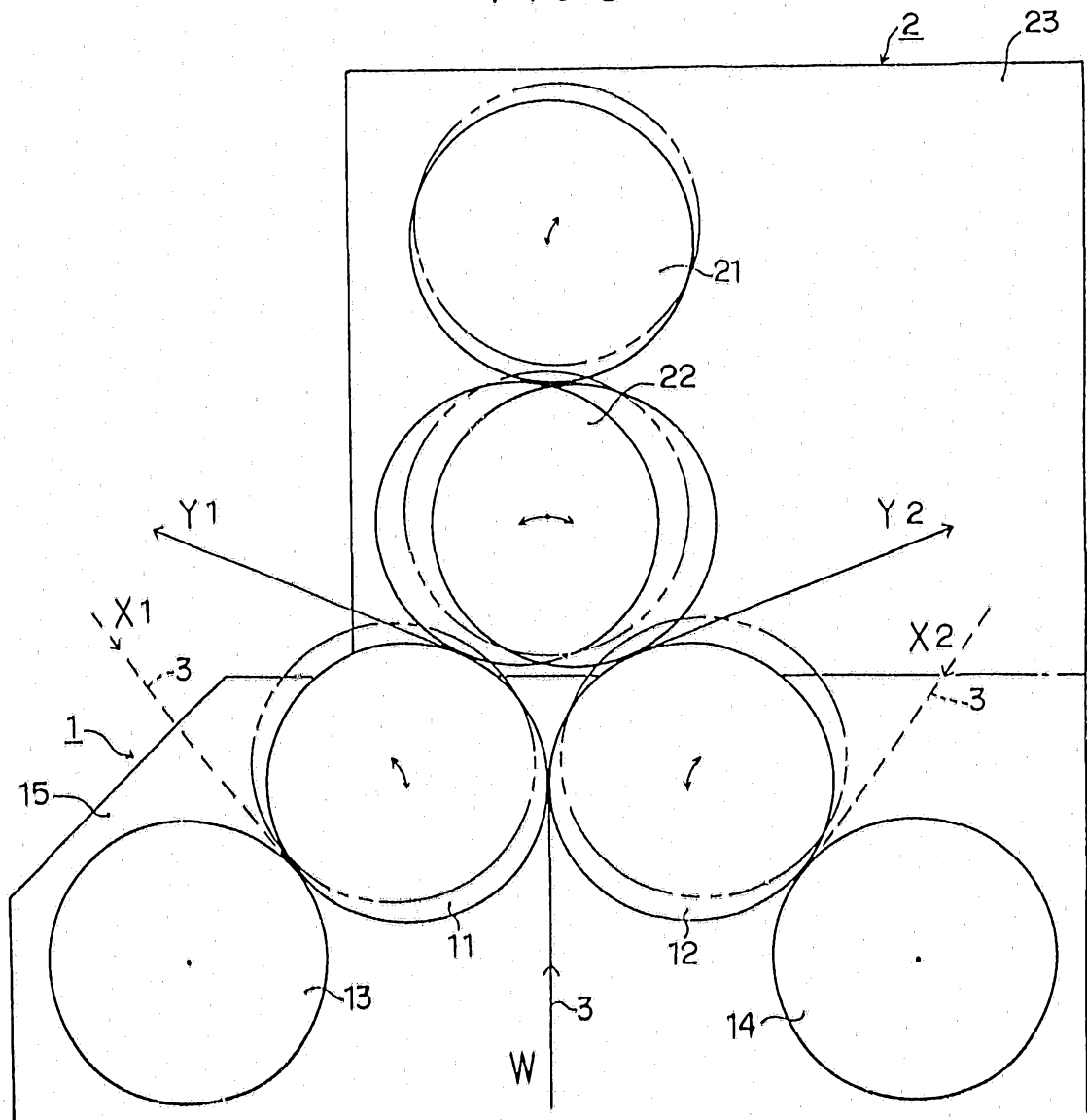
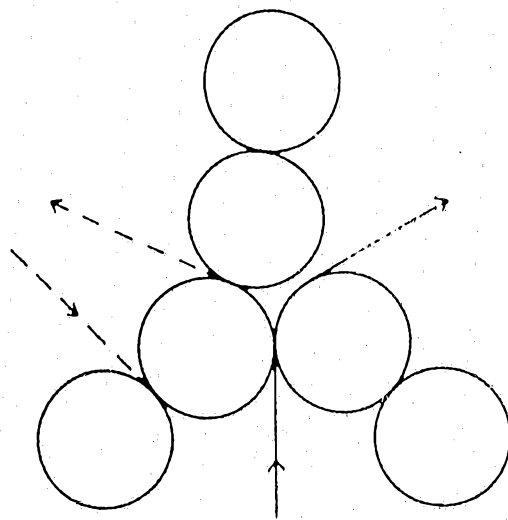
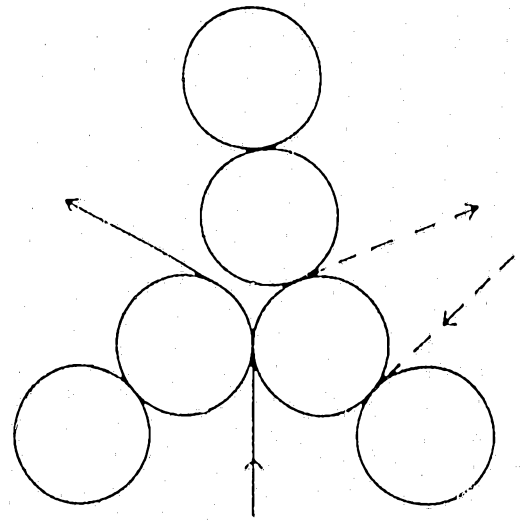


FIG. 4

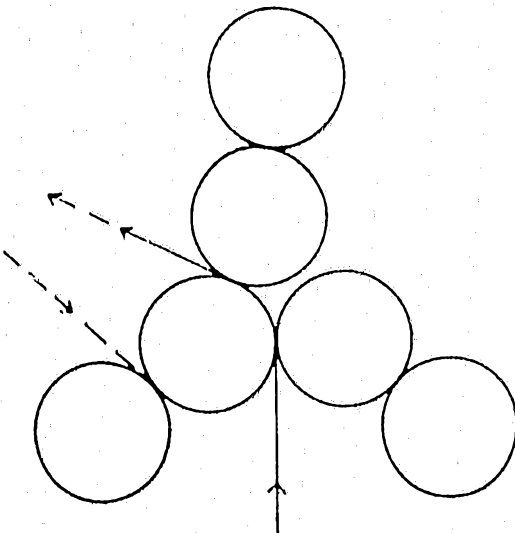
(A)



(B)



(C)



(D)

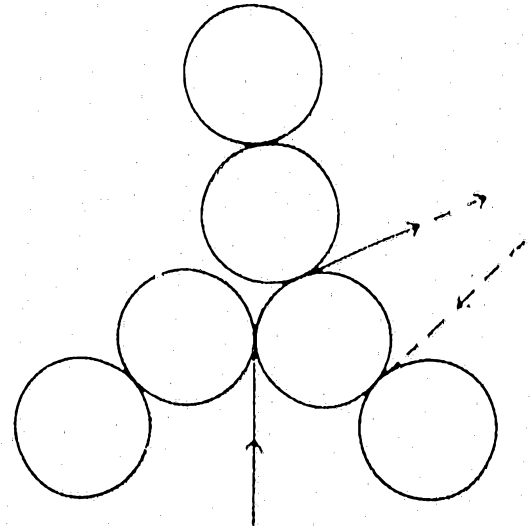


FIG. 5

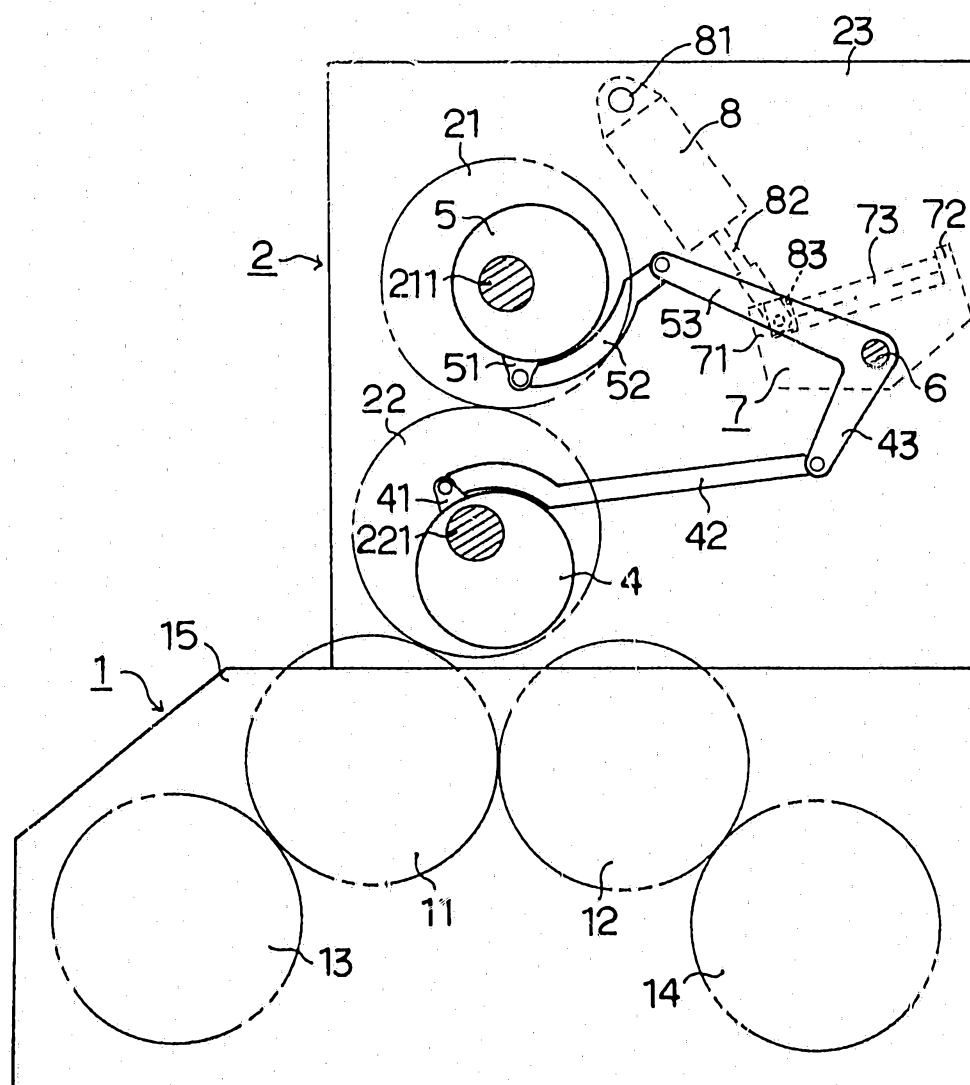


FIG. 6

