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D E C I S I O N
of 12 June 2001

Case Number: T 0152/98 - 3.2.5

Application Number: 90250336.6

Publication Number: 0435413

IPC: B41F 27/12

Language of the proceedings: EN

Title of invention:
Method of replacing plate for printing press and apparatus therefor

Patentee:
Komori Corporation

Opponent:
Heidelberger Druckmaschinen AG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0152/98 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 12 June 2001

Appellant: (Proprietor of the patent)
Komori Corporation
11-1, Azumabashi 3-chome
Sumida-Ku
Tokyo (JP)

Representative:
Wenzel, Heinz-Peter,Dipl.-Ing.
Patentanwälte Wenzel & Kalkoff
Postfach 73 04 66
D-22124 Hamburg (DE)

Respondent: (Opponent)
Heidelberger Druckmaschinen AG
Kurfürsten-Anlage 52-60
D-69115 Heidelberg (DE)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 30 October 1997 revoking European patent No. 0 435 413 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: W. Moser
Members: C. G. F. Biggio
P. E. Michel

Summary of Facts and Submissions

I. The appellant (patentee) lodged an appeal against the decision of the Opposition Division revoking patent No. 0 435 413.

Opposition had been filed against the patent as a whole based on Article 100(a) EPC (lack of inventive step).

The Opposition Division held that the subject-matter of claim 1 of each of the requests of the appellant did not involve an inventive step and thus offended against the provisions of Articles 52 and 56 EPC.

II. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents:

(a) main request:

- claims 1 to 5 submitted during oral proceedings on 12 June 2001,

- description: pages 4, 4a, 4b, 5, 15 and 16 submitted during oral proceedings on 12 June 2001, and pages 3, 6 to 14 as granted,

- drawings as granted; or

(b) auxiliary request:

- claims 1 to 5 filed as second auxiliary request on 11 May 2001.

The respondent (opponent) requested that the appeal be dismissed.

III. Claims 1 and 2 of the main request of the appellant read as follows:

"1. A plate replacing apparatus for a printing press comprising a plurality of printing press units, each of which includes one such plate replacing apparatus having a plate fixing apparatus arranged in a gap (2) in a circumferential surface of a plate cylinder (1) and consisting of a leading-side plate lockup device (5) for gripping one end of a plate (89, 105) wound around said circumferential surface and a trailing-side plate lockup device for gripping the other end of the plate (89,105), a plate lockup opening/closing unit, connected to said leading- and trailing-side plate lockup devices (5, 30) through a cam shaft (19, 38), for opening/closing said leading- and trailing-side plate lockup devices (5, 30) upon pivotal movement of said cam shaft (19, 38), a predetermined plate position stop unit including a motor (146) for pivoting said plate cylinder (1) to stop at a plate gripper position, a plate press unit (118) for pressing the new plate (105) inserted into said leading-side plate lockup device (5) and wound around said circumferential surface of said plate cylinder (1) and for inserting the other end of the new plate (105) into said trailing-side plate lockup device (30), and a controller for operating said plate lockup opening/closing unit and said predetermined plate position stop unit, characterized by:

a plate holding apparatus drive unit (84) for driving a plate holding apparatus (83) on said plate replacing apparatus between an operation position, in which a

distal end portion of said plate holding apparatus (83) comes close to said plate lockup devices (5, 30), and a storage position, in which said distal end portion of said plate holding apparatus (83) is separated from said plate lockup devices (5, 30),

a plate removal unit for gripping an old plate (89) released from said plate lockup devices (5, 30) and inserted into said plate holding apparatus (83) upon rotation of said plate cylinder (1), and for moving said old plate (89) into said plate holding apparatus (83);

a plate supply unit for inserting a new plate (105) loaded in said plate holding apparatus (83) into said leading-side plate lockup device (5);

a drive shaft (129) meshed with said plate cylinder (1) through gears to transfer rotation, said motor (146) having a driving gear (151) and said predetermined position stop unit further including clutch means (136, 138, 139-142, 144) for selectively connecting said driving gear (151) to a driven gear (132) mounted on said drive shaft (129) so as to rotate said plate cylinder by a predetermined angle, wherein upon disengagement of said driving gear from said driven gear, said drive shaft (129) is adapted to be driven by a belt,

said controller being adapted to sequentially operate said plate lockup opening/closing unit, said predetermined plate position stop unit, said plate holding apparatus drive unit, said plate removal unit, said plate supply unit and said plate press unit for said plurality of printing press units according to a predetermined timing in the order of the arrival of

each plate cylinder at its plate removal position and in the order of the arrival of each plate cylinder at its plate supply position, respectively, with the movement of all plate cylinders being performed synchronously in a first and a second direction, respectively."

"2. A method of replacing old plates (89) mounted on the circumferential surfaces of each of first to Nth plate cylinders (1 - 11 - 1 - N1) of a printing press with new plates (105),
including
stopping said first plate cylinder (1 - 11) in a plate removal position and removing an old plate (89) from said first plate cylinder while synchronously rotating said first to Nth plate cylinders (1 - 11 - 1 - N1) in a first direction, removing each old plate (89) from each further corresponding plate cylinder (1) as this has reached its respective plate removal position and has been stopped, during synchronous rotation of said first to Nth plate cylinders (1 - 11 - 1 - N1) in said first direction,
stopping the last plate cylinder (1) from which the old plate (89) has been removed at its plate supply position and supplying the new plate (105) to said last plate cylinder (1) while synchronously rotating said first to Nth cylinders (1-11 - 1 - N1) in the other (second) direction, and
stopping each further plate cylinder (1) as it reaches its respective plate supply position and supplying a new plate (105) during synchronous rotation of said first to Nth plate cylinders (1-11 - 1 - N1) in said other direction, until said first cylinder (1 -11) has been supplied with the new plate(105)."

IV. The following documents have been referred to in the appeal procedure:

E1: JP-A-61-248834

E3: EP-A-0 268 857.

V. In the written and oral procedure, the appellant argued essentially as follows:

Document E3 constitutes the closest prior art and discloses a plate replacing apparatus having all the features of the preamble of claim 1 of the main request. In the apparatus of document E3, it is necessary for the operator to initiate individual plate removal and supply steps.

The problem to be solved is thus to enable fully automatic plate replacement, thereby eliminating operator error and reducing preparation time, this problem being solved by the features specified in the characterising portion of claim 1 of the main request.

The cited prior art does not render this solution obvious. Document E1 discloses a cassette mechanism which could be incorporated in the apparatus of document E3 in order to reduce handling of plates during plate exchange. Document E1 does not, however, suggest that manual initiation of the individual plate removal and supply steps could be eliminated. The combination of documents E3 and E1 thus does not lead to the apparatus and method as claimed in claims 1 and 2 respectively of the main request.

The reference in document E3 to plate exchange for a plurality of colour stages being carried out "in

parallel" (column 10, lines 5 to 15) does not constitute a disclosure of overlapping plate removal and supply. Document E3 teaches a method in which plate removal is completed for each colour stage in turn, and subsequently fresh plates are supplied to each stage in sequence. The plate exchange procedure taught by document E3 renders it impossible to carry out plate removal and supply as each plate cylinder arrives at its plate supply position.

VI. In the written and oral procedure, the respondent argued essentially as follows:

It is accepted that the subject-matter of claims 1 and 2 of the main request is new. It is further agreed that the disclosure of document E3 constitutes the closest prior art.

The subject-matter of claims 1 and 2 of the main request does not, however, involve an inventive step.

In conventional printing machines, the printing units are connected by means of gears, so that stoppage and rotation of all the plate cylinders occurs synchronously. It is also known in the art, as acknowledged in the patent in suit at column 2, lines 53 to 58, to remove old printing plates and to supply fresh printing plates in sequence.

Document E3 discloses that plate exchange for a plurality of colour stages is carried out "in parallel" (column 10, lines 5 to 15), that is, plate removal and supply are carried out as each plate cylinder arrives at its plate supply position as required by claim 1 of the patent in suit. As shown in Figure 2 of document

E3, the plate cylinders of the printing press units (1,4) are in phase with each other. Plate removal and supply can thus take place simultaneously for all plate cylinders. It follows that, in the case where the phases of the plate cylinders are displaced relative to one another, plate removal and supply are carried out as each plate cylinder arrives at its plate supply position.

It is not relevant that, according to the procedure disclosed in the patent in suit that plate exchange could take place in a sequence other than that in which the printing press units are arranged. Plate exchange in the sequence in which the printing press units are arranged is nevertheless included within the scope of claims 1 and 2 of the main request.

Reasons for the Decision

Main request of the appellant

1. *Amendments*

Claim 1 differs from claim 1 as granted substantially in the following features:

(a) the claim is restricted to a plate replacing apparatus for a printing press comprising a plurality of printing press units;

(b) a belt-driven drive shaft is provided which meshes with the plate cylinders through gears; and

(c) the controller is "adapted to sequentially operate

said plate lockup opening/closing unit, said predetermined plate position stop unit, said plate holding apparatus drive unit, said plate removal unit, said plate supply unit and said plate press unit for said plurality of printing press units according to a predetermined timing in the order of the arrival of each plate cylinder at its plate removal position and in the order of the arrival of each plate cylinder at its plate supply position, respectively, with the movement of all plate cylinders being performed synchronously in a first and a second direction, respectively."

In the application as filed, the preferred illustrated embodiment incorporates feature (a), feature (b) is present in claim 2 as granted, the subject-matter of which was disclosed in the application as filed, and feature (c) is described with reference to Figures 16 to 21 at column 18, line 53 to column 26, line 38 of the published version of the application as filed.

Claim 2 differs from claim 3 as granted, the subject-matter of which was disclosed in the application as filed, only by virtue of clarifying linguistic amendments.

The amendments to the independent claims 1 and 2 thus comply with the requirements of Article 123(2) EPC. In addition, the amendments involve a restriction of the protection conferred and thus also comply with the requirements of Article 123(3) EPC.

2. *Inventive step*

2.1 Closest prior art

As accepted by both parties, the closest prior art is represented by document E3.

The disclosure of document E3 is largely concerned with automatic plate exchange in a single printing press unit. The procedure for removing an old plate and mounting a fresh plate is described at column 8, line 20 to column 10, line 4.

As disclosed in this passage, the procedure for removing an old plate and mounting a fresh plate is carried out by the sequential operation of five push buttons (54a) to (54e), as illustrated in Figure 3.

In order to remove a plate (16), a plate dismount preparation push button (54a) is depressed. This results in relaxation of the plate, followed by the trailing side lockup device (17b) being brought to a dismount position, whereafter the plate cylinder (10) stops. Thereafter, the trailing side lockup device is opened, these operations being carried out automatically. Then, the trailing side of the plate is gripped manually by the operator.

Next, a plate removal start button (54b) is depressed. The plate cylinder is rotated in the reverse direction, and when the leading side lock-up device (17a) has come to the dismount position, the plate cylinder stops. The plate is then removed. This plate removal operation is summarised in Figure 1A.

In order to start mounting of a plate, a plate mount preparation button (54c) is depressed. The plate cylinder rotates in the normal direction, and when the leading side lock-up device has reached a mount position (through the procedure shown in Figure 1C),

the plate cylinder stops. The new plate is then inserted manually into the leading side lock-up device.

Next, the plate bite start push button (54d) is depressed in order to press the plate against the plate cylinder by means of a tightening roller.

Thereafter, a plate wrap start push button (54e) is depressed and the plate cylinder rotates in the normal direction, and the tightening roller advances to press the plate against the plate cylinder. The plate cylinder is then further rotated, and when the trailing side lock-up device has come to the plate mount position, the plate cylinder is stopped, whereafter mounting of the plate is completed.

The only disclosure in document E3 relating to the application of this procedure to a plate replacing procedure for a printing press comprising a plurality of printing press units is at column 10, lines 5 to 15, which reads as follows:

"While a method for exchanging a plate for one color stage has been described above, it is also possible to control in a similar manner the operation in which exchanges of plates are performed in parallel for a plurality of color stages. Also, while it is not shown in the illustrated embodiment, there are provided alarm means to operate when an abnormal condition has occurred during an automatic operation and display means for informing the location of the abnormal condition as well as a control circuit for these means."

It is thus necessary to construe the meaning of the reference in this passage to plate exchange being

carried out "in parallel". It is suggested on behalf of the respondent that this refers to a procedure involving overlapping plate removal and supply.

However, such a procedure cannot be carried out using the mode of operation and the control system described in document E3 for a single colour stage. Thus, during removal of a plate, after the trailing side lockup device has been brought to the dismount position and has been opened, the trailing side of the plate is gripped manually by the operator.

The operator must then press the plate removal start button, whereupon the plate cylinder rotates in the reverse direction, and continues to rotate until the leading side lock-up device has reached the dismount position, whereupon the plate cylinder stops. During this time, the operator holds the plate in his hands. The plate is then removed.

During this procedure, all the plate cylinders rotate synchronously, since, in a conventional printing press, they are all connected by means of gears to a common longitudinal shaft.

In contrast, in order to carry out the method of claim 2 of the patent in suit, it is necessary to halt the rotation of all the plate cylinders at the point at which each of the remaining plate cylinders reach their respective plate removal positions. This is not compatible with the plate removal procedure described above.

A similar analysis applies to the procedure for mounting fresh plates.

After the leading side of a new plate is inserted manually into the leading side lock-up device, the plate bite start push button is depressed in order to press the plate against the plate cylinder by means of a tightening roller. Then, the plate wrap start push button is depressed and the plate cylinder rotates in the normal direction, and the tightening roller advances to press the plate against the plate cylinder. The plate cylinder is then further rotated, and when the trailing side lock-up device has come to the plate mount position, the plate cylinder is stopped, whereafter mounting of the plate is completed. Again, during this procedure, the operator holds the plate in his hands and it would not be feasible to halt the mounting operation of a plate each time one of the other plates reaches its mount position.

Further, Figure 2 of document E3 shows two colour stages of a printing press in which two plate cylinders are in phase. Whilst this would in principle enable plate exchange in each colour stage to be carried out simultaneously, this would require the simultaneous presence of operators required to remove and supply plates for each printing press unit. It is therefore more practical, also in the case of the plate cylinders being in phase, to remove and supply plates to the plate cylinders sequentially, that is, plate removal and supply for each plate cylinder only being initiated after plate removal or supply for a previous plate cylinder has been completed.

In the case of a printing press comprising a plurality of printing press units, the procedure disclosed in document E3 could thus be carried out according to either of the two methods described to in the patent in suit at column 2, lines 30 to 58 and referred to as the

first and second methods. It thus appears that the reference at column 10, lines 8 and 9, of document E3 to exchanges of plates being "performed in parallel for a plurality of color stages" refers to plate exchange being carried out according to the second method. That is, plate removal operations for all the colour stages are carried out sequentially for each plate cylinder, whereafter plate supply operations for all the colour stages are carried out sequentially for each plate cylinder.

It is thus considered that document E3 does not contain a clear and unmistakable disclosure of a method in which, while synchronously rotating the plate cylinders in a first direction, each old plate is removed from each further corresponding plate cylinder as it has reached its respective plate removal position and has been stopped. Similarly, it is considered that document E3 does not contain a clear and unmistakable disclosure of an apparatus in which a controller is provided which is adapted to sequentially operate a plate lockup opening/closing unit, a predetermined plate position stop unit, a plate holding apparatus drive unit, a plate removal unit, a plate supply unit and a plate press unit for a plurality of printing press units according to a predetermined timing in the order of the arrival of each plate cylinder at its plate removal position and in the order of the arrival of each plate cylinder at its plate supply position, respectively, with the movement of all plate cylinders being performed synchronously in a first and a second direction, respectively.

2.2 Object of the invention

The object of the invention is to shorten the time

required to carry out plate exchange.

As stated below, the object of the invention is not considered to be to enable fully automatic plate replacement. This could be achieved by use of a cassette as disclosed in document E1, but would not result in the method and apparatus as claimed in the patent in suit.

2.3 Solution

This object is achieved in a method of plate exchange as specified in claim 2, which results in overlapping of the plate removal and plate supply operations for the individual printing press units. Such a method is made possible in a printing press comprising plurality of printing press units by virtue of the provision of a controller as specified in the last sub-paragraph of claim 1.

This solution is not suggested by the cited prior art. Document E1 discloses a cassette which houses both old and new plates thus reducing the amount of handling of the plates during plate exchange. Such a cassette could be incorporated in the printing machine of document E3 in order to achieve this aim. The elimination of the necessity for the operator to manually handle the plates during plate exchange is a prerequisite for the method and apparatus of the patent in suit, in view of the number of personnel which would otherwise be required. This does not, however, imply that plate removal and plate supply operations are carried out in an overlapping manner, and there is no suggestion in document E1 that this should be done. The passage at page 6, lines 14 to 16 of the German translation of document E1 (E1c) merely states that the procedure

described for a single printing unit should be repeated for each printing unit of a printing press having a plurality of printing units.

The subject-matter of claims 1 and 2 thus involves an inventive step. Claims 3 to 5 are directly or indirectly appendant to claim 2 and relate to preferred embodiments of the method according to the invention. The main request of the appellant is thus allowable and consideration of the auxiliary request is not necessary.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:

   (a) Claims 1 to 5 submitted during oral proceedings;

   (b) description:

pages 4, 4a, 4b, 5, 15 and 16 as submitted during oral proceedings, and pages 3 and 6 to 14 as granted;

(c) drawings as granted.

The Registrar: The Chairman:

M. Dainese W. Moser