



US 20100072695A1

(19) **United States**

(12) **Patent Application Publication**  
**GRASMÜCK et al.**

(10) **Pub. No.: US 2010/0072695 A1**

(43) **Pub. Date: Mar. 25, 2010**

(54) **METHOD AND DEVICE FOR EJECTING DEFECTIVE SHEETS AT A FEEDER OF A PROCESSING MACHINE AND FEEDER HAVING THE EJECTING DEVICE**

(30) **Foreign Application Priority Data**

Sep. 23, 2008 (DE) ..... 10 2008 048 407.5

**Publication Classification**

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(51) **Int. Cl.**  
**B65H 7/06** (2006.01)

(52) **U.S. Cl.** ..... **271/258.01**

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(57) **ABSTRACT**

A method and a device for ejecting a defective sheet at a feeder of a processing machine, in particular a sheet-fed rotary printing machine, include a transporting device, which can be regulated independently of machine operation, for transporting a sheet identified as a defective sheet with deceleration in such a way that gripper devices of a cylinder cannot grip the sheet and the sheet is transported to a depositing location by the transporting device and a guide. A feeder of a sheet-fed rotary printing machine having an ejecting device, is also provided.

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(21) Appl. No.: **12/560,531**

(22) Filed: **Sep. 16, 2009**

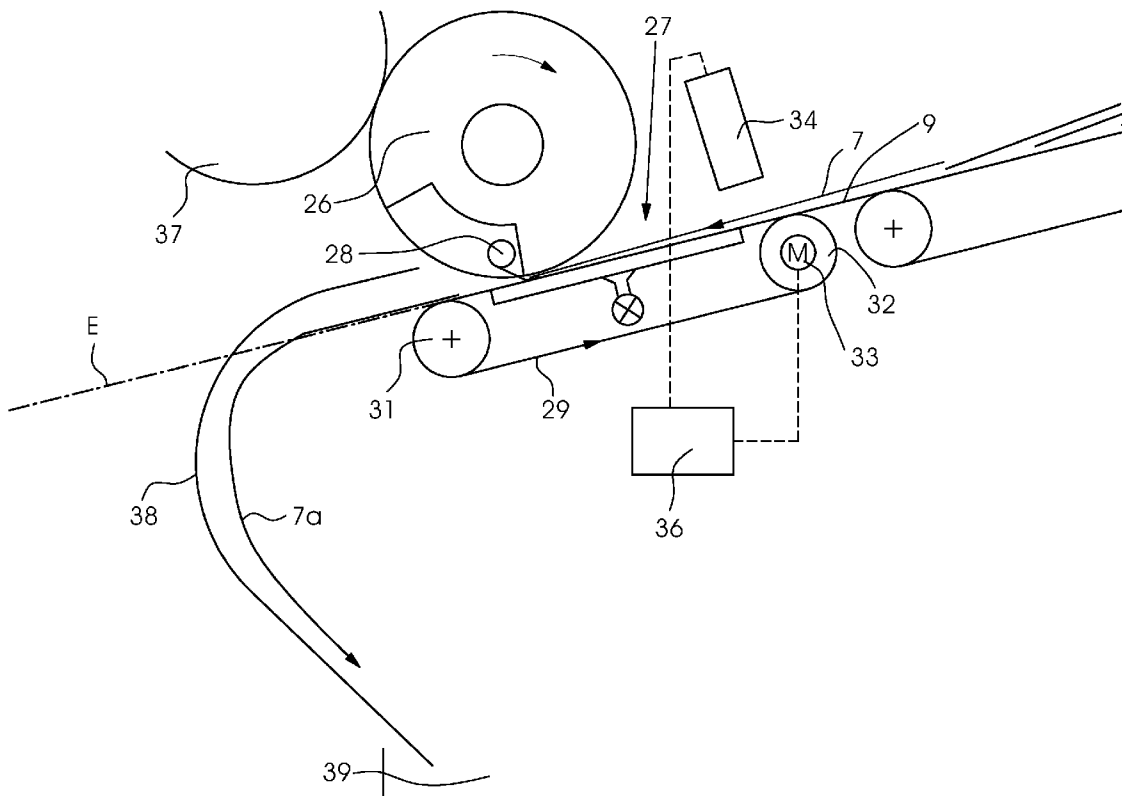


FIG. 1

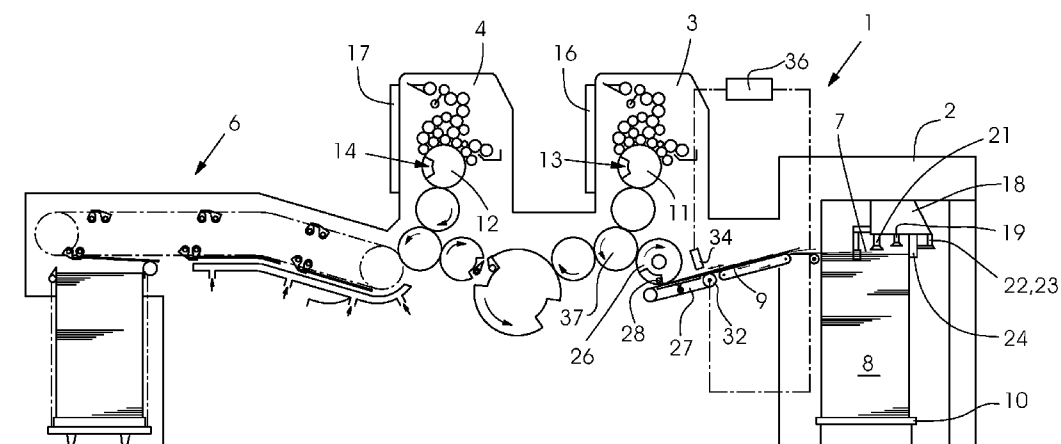


FIG. 2

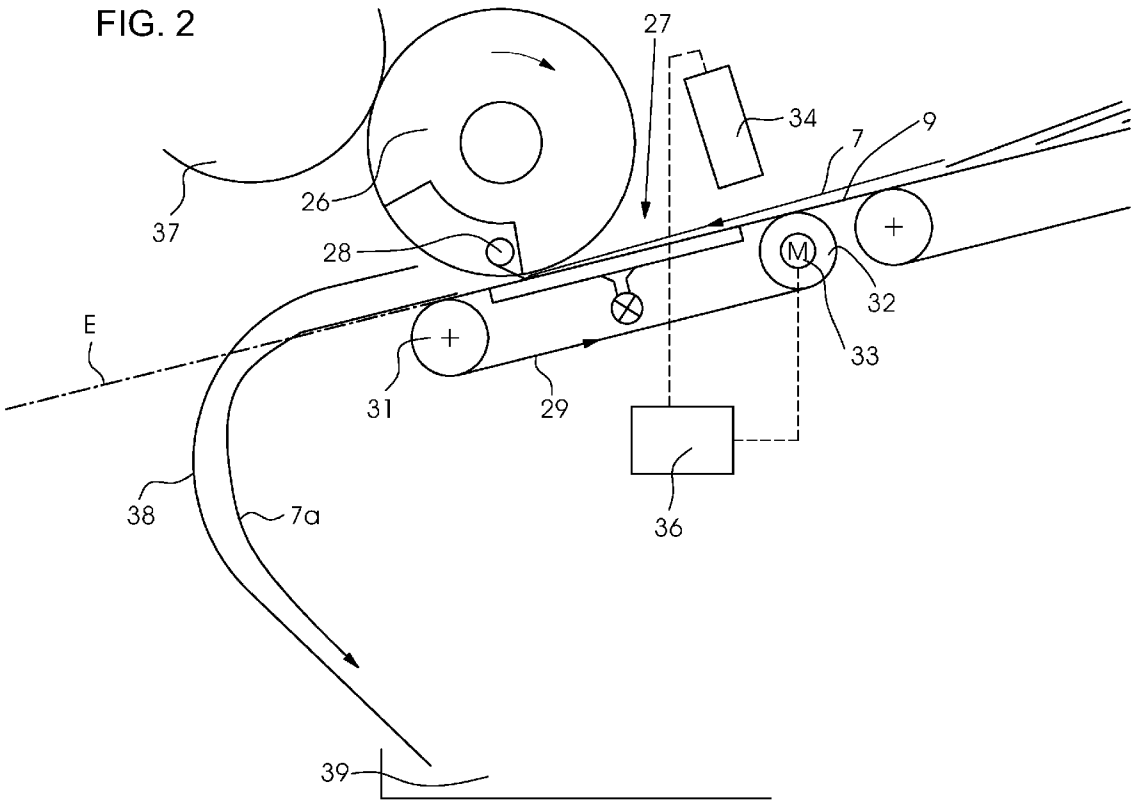
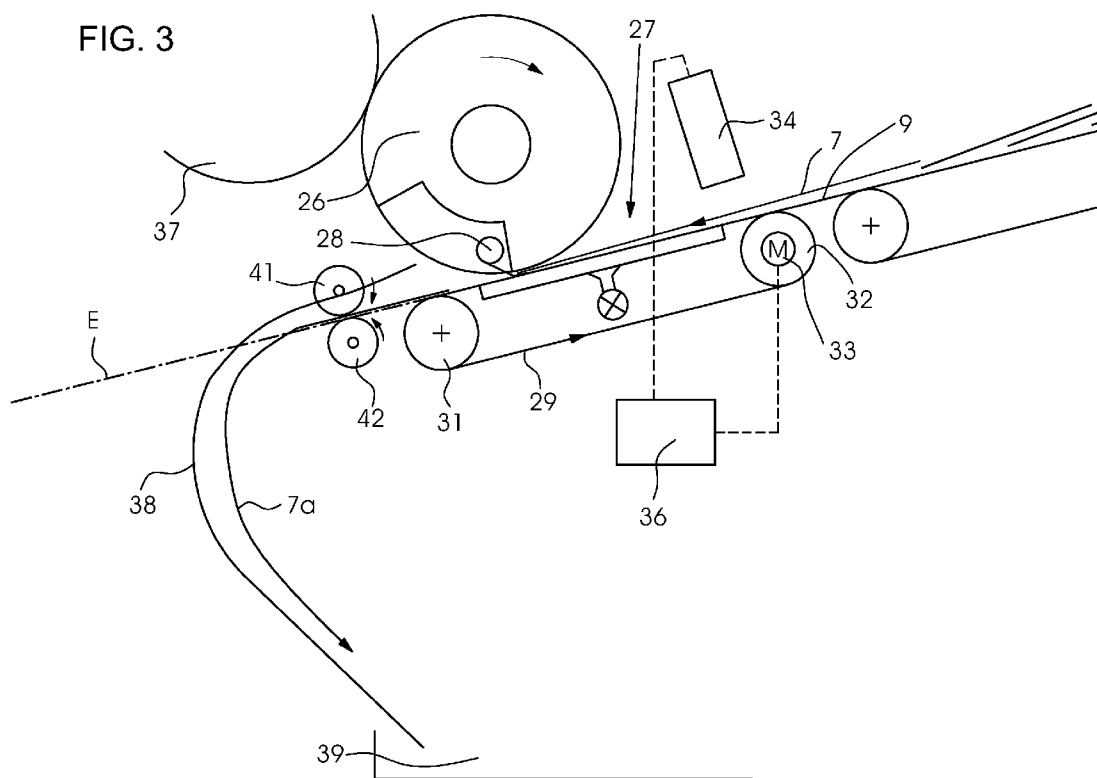


FIG. 3



**METHOD AND DEVICE FOR EJECTING DEFECTIVE SHEETS AT A FEEDER OF A PROCESSING MACHINE AND FEEDER HAVING THE EJECTING DEVICE**

**CROSS-REFERENCE TO RELATED APPLICATION**

[0001] This application claims the priority, under 35 U.S.C. §119, of German Patent Application DE 10 2008 048 407.5, filed Sep. 23, 2008; the prior application is herewith incorporated by reference in its entirety.

**BACKGROUND OF THE INVENTION**

**Field of the Invention**

[0002] The invention relates to a method and a device for ejecting defective sheets at a feeder of a processing machine, in particular a sheet-fed rotary printing machine. The invention also relates to a feeder in a sheet-fed rotary printing machine having the ejecting device.

[0003] The detection of defective sheets at the feeder of a processing machine gives rise to the problem that the machine has to be stopped in order for a sheet identified as a defective sheet not to be conveyed into the machine. An appropriate method is disclosed in German Published, Non-Prosecuted Patent Application DE 101 05 991 A1.

[0004] A device for ejecting a sheet at the delivery is described, for example, by German Published, Non-Prosecuted Patent Application DE 10 2005 004 881A1. In that case, a deflecting device is pivoted into an interspace between two grippers of a sheet-transporting chain-gripper system.

**SUMMARY OF THE INVENTION**

[0005] It is accordingly an object of the invention to provide a method and a device for ejecting defective sheets and a feeder having the ejecting device, which overcome the hereinbefore-mentioned disadvantages of the heretofore-known methods and devices of this general type and which can be used at a feeder of a processing machine.

[0006] With the foregoing and other objects in view there is provided, in accordance with the invention, a method for ejecting a defective sheet. The method comprises providing a processing machine with a feeder at which the defective sheet is to be ejected, a sensor for sensing defective sheets, a cylinder, gripper devices, and a transporting station for feeding a sheet to the cylinder. A sheet identified as a defective sheet is transported through the transporting station with deceleration and the sheet is transported further without the defective sheet being received by the gripper devices.

[0007] With the objects of the invention in view, there is also provided, in a processing machine having a feeder, a cylinder and a machine drive, a device for ejecting a defective sheet at the feeder. The device comprises a transporting station for feeding sheets to the cylinder. The transporting station has a drive to be regulated in time, cycle or sequence with the processing machine, but independently of the machine drive.

[0008] In accordance with another particularly advantageous feature of the invention, the sheets identified as defective sheets are not fed to the processing machine and stoppage of the processing machine is avoided at the same time. In a particularly advantageous manner, it is provided that blanket cylinders disposed in the printing units are disconnected one

after the other from the impression cylinder in accordance with the arrival of the ejected defective sheet.

[0009] In accordance with a further feature of the invention, the transporting device for feeding the sheets to the feed cylinder is advantageously constructed as a suction belt. As a result of this measure, the transporting device also serves for transporting the sheet during the ejecting operation. The ejecting device is formed by a curved directing plate on which the defective sheet is guided to a depositing location in part by the motive power of the suction belt and in part by the gravitational force acting on the sheet.

[0010] In accordance with a concomitant advantageous feature of the invention, transporting rollers, which can be driven in opposite directions, grip the sheet securely and transport it away to be disposed in an ejecting path.

[0011] Other features which are considered as characteristic for the invention are set forth in the appended claims.

[0012] Although the invention is illustrated and described herein as embodied in a method and a device for ejecting defective sheets at a feeder of a processing machine and a feeder having the ejecting device, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

[0013] The construction and method of operation of the invention, however, 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 SEVERAL VIEWS OF THE DRAWING**

[0014] FIG. 1 is a diagrammatic, longitudinal-sectional view of a sheet-fed rotary printing machine;

[0015] FIG. 2 is an enlarged, fragmentary, longitudinal-sectional view of a sheet-ejecting device; and

[0016] FIG. 3 is a view similar to FIG. 2 of the sheet-ejecting device with a transporting-roller configuration.

**DETAILED DESCRIPTION OF THE INVENTION**

[0017] Referring now to the figures of the drawings in detail and first, particularly, to FIG. 1 thereof, there is seen a machine for processing sheets 7, e.g. a printing machine 1, which has a feeder 2, at least one printing unit 3 or 4 and a delivery 6. The sheets 7 are removed from a sheet stack 8 and fed separately or in imbricated form, over a feed table 9, to a sheet-feeding device 27, which transfers the sheets 7 with acceleration to the printing units 3 and 4. These printing units each contain a plate cylinder 11, 12, in a known manner. The plate cylinders 11 and 12 each have a device 13, 14 for fastening flexible printing plates. Furthermore, each plate cylinder 11, 12 is assigned a device 16, 17 for semi-automatic or fully automatic printing-plate changeover.

[0018] The sheet stack 8 rests on a stacking panel 10 which can be raised in a controlled manner. The sheets 7 are removed from the top side of the sheet stack 8 through the use of a so-called suction head 18 which has, inter alia, a number of lifting and pulling suckers 19, 21 for separating the sheets 7. Also provided are blowing devices 22 for loosening the top sheet layers and follower elements 23 for stack adjustment. A

number of lateral and rear stops 24 are provided in order to align the sheet stack 8, in particular the top sheets 7 of the sheet stack 8.

[0019] The sheet-feeding device 27 is constructed as a second transporting station disposed downstream of the feed table 9, which is constructed as a so-called "suction-belt table," as seen in a sheet-transporting direction. This second transporting station 27 accelerates the sheet 7 before the latter is gripped by a gripper device 28 of a cylinder 26, e.g. a feed cylinder. The transporting station 27 may, for example, be a pre-gripper or a gripper device which is driven in linear fashion.

[0020] In the exemplary embodiment according to FIG. 2, the transporting station 27 is constructed as a suction-belt table. The latter has at least one transporting belt 29 circulating endlessly over deflecting rollers 31, 32, with the deflecting roller 32 being driven through the use of a drive motor 33. A sensor 34 for sensing defective sheets, which is disposed on the feed table 9 or on the transporting station 27, interacts with the drive motor 33 through the use of a control computer 36.

[0021] During routine operation of the machine, the respectively front sheet 7 of a sheet stream conveyed over the feed table 9 is gripped by the transporting station 27 and accelerated to machine speed or the speed of the feed cylinder 26. The gripper device 28 of the feed cylinder 26 grips the sheet 7 at its leading edge and transports it to a downstream cylinder 37, e.g. to an impression cylinder of the printing machine 1.

[0022] Beneath the feed cylinder 26, but above a feed plane E formed by the feed table 9 and the second transporting station 27, a preferably stationary directing device 38, e.g. a curved directing plate, of an ejecting device, is provided downstream of the location at which the leading sheet edge is transferred to the gripper device 28. This directing plate intersects the plane E and forms a guide for an ejected sheet 7a, with the guide terminating in a depositing location 39.

[0023] In the case of the exemplary embodiment according to FIG. 3, a sheet-transporting device including two interacting transporting rollers 41, 42, which are preferably driven in opposite directions, is disposed in an ejecting path formed by the directing plate 38 and the plane E.

[0024] When a defective sheet 7a is sensed by the sensor 34, the control computer 26 generates a signal which causes the transporting station 27 to accelerate the sheet 7a, or if necessary to brake it, only to the extent where, rather than it being gripped cyclically by the gripper device 28, it is transported further through the transporting station 27 on the plane E. In the case of the preferred exemplary embodiment according to FIG. 2, the sheet 7a is ejected into the depositing location 39 by the directing device 38. In the case of the exemplary embodiment according to FIG. 3, the leading edge of the sheet 7 which is to be ejected passes into a nip formed by the transporting rollers 41, 42 and is reliably transported away by the rotary movement of the transporting rollers 41, 42.

[0025] A further method step involves blanket cylinders being disengaged from their respective impression cylinders at a point in time at which the defective sheet 7a would have passed through the respective nip between the blanket cylinder and impression cylinder, in order to ensure that the appli-

cation of ink on the blanket cylinder which was intended for the sheet 7a does not soil the impression cylinder.

1. A method for ejecting a defective sheet, the method comprising the following steps:

providing a processing machine with a feeder at which the defective sheet is to be ejected, a sensor for sensing defective sheets, a cylinder, gripper devices, and a transporting station for feeding a sheet to the cylinder; and transporting a sheet identified as a defective sheet through the transporting station with deceleration and transporting the sheet further without the defective sheet being received by the gripper devices.

2. The method according to claim 1, wherein the processing machine is a printing machine.

3. The method according to claim 1, which further comprises transporting the defective sheet with the transporting station to a depositing location.

4. The method according to claim 3, which further comprises transporting the defective sheet to the depositing location with transporting rollers to be driven in opposite directions.

5. The method according to claim 1, which further comprises disengaging all blanket cylinders of the processing machine at discrete points in time one after the other in accordance with an intended arrival of the sheet in a respective nip between a blanket cylinder and an impression cylinder.

6. In a processing machine having a feeder, a cylinder and a machine drive, a device for ejecting a defective sheet at the feeder, the device comprising:

a transporting station for feeding sheets to the cylinder, said transporting station having a drive to be regulated in time with the processing machine, but independently of the machine drive.

7. The device according to claim 6, wherein said transporting station has at least one transporting belt.

8. The device according to claim 6, which further comprises a sensor for sensing a defective sheet, and a control computer connected to said drive and interacting with said sensor.

9. The device according to claim 6, which further comprises an ejecting device disposed downstream of said transporting station.

10. The device according to claim 9, wherein said ejecting device includes a directing device with a curved directing plate disposed in a stationary manner.

11. The device according to claim 10, wherein said directing plate is disposed beneath a feed cylinder and above a feed plane intersected by said directing plate.

12. The device according to claim 10, which further comprises a depositing location for sheets disposed downstream of said directing plate.

13. The device according to claim 11, which further comprises two interacting transporting rollers to be driven in opposite directions, said transporting rollers being disposed in an ejecting path formed by said directing plate and said plane.

14. A feeder of a sheet-fed rotary printing machine, said feeder comprising an ejecting device according to claim 6.

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