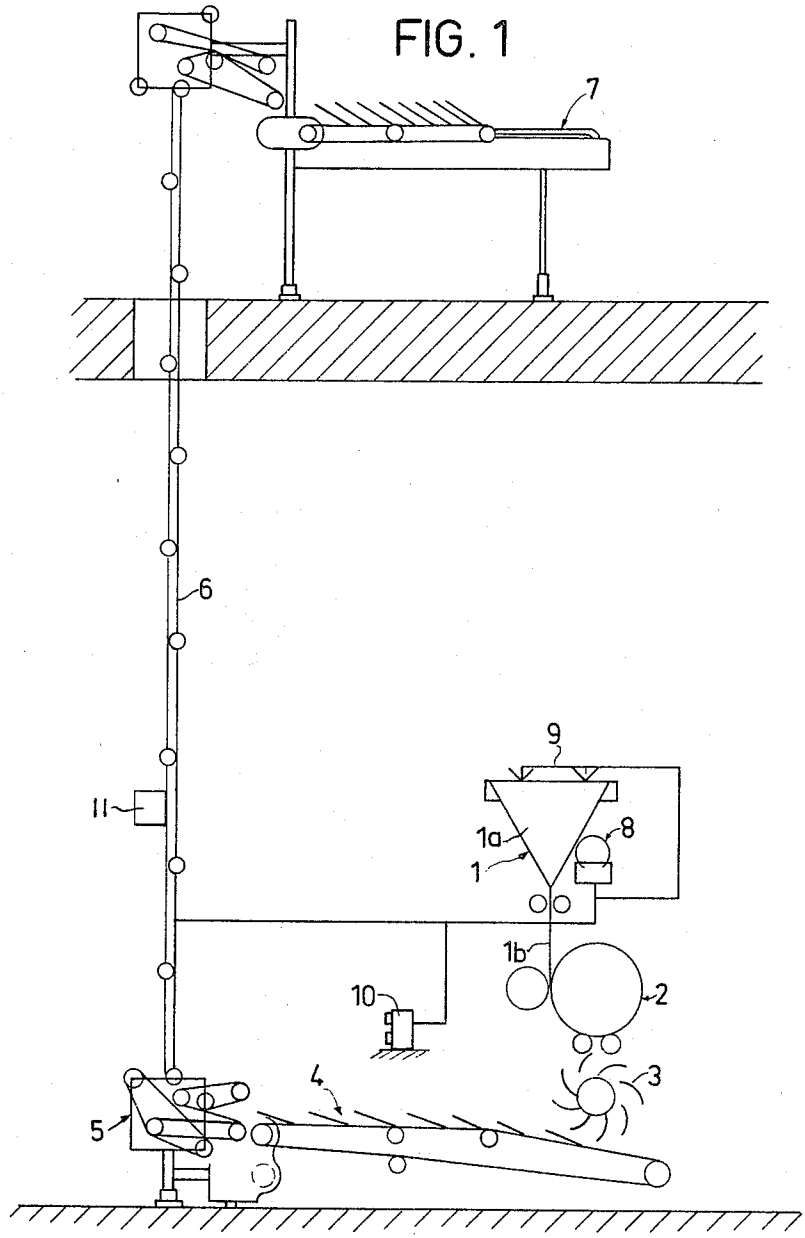
Dec. 6, 1966 G. B. DALIN 3,289,835

METHOD OF SORTING OUT DEFECTIVE PRINTED MATTER ARRIVING FROM ROTARY PRINTING MACHINES, PARTICULARLY NEWSPAPER PRINTING MACHINES, AND DEVICE FOR CARRYING THE METHOD INTO EFFECT

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FIG. 1



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FIG. 2

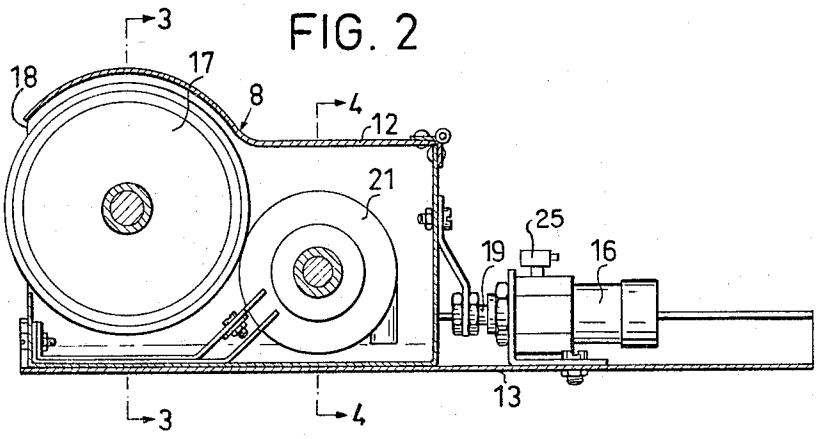


FIG. 3

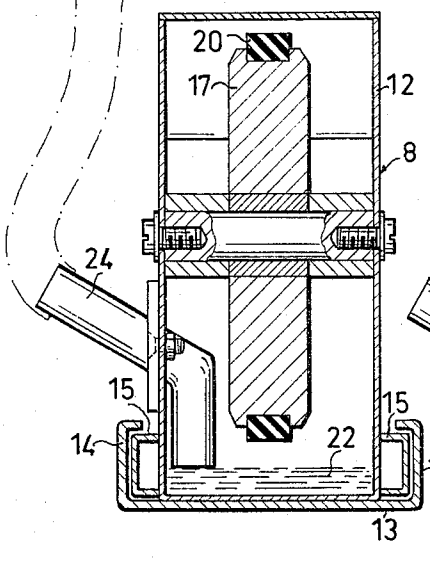
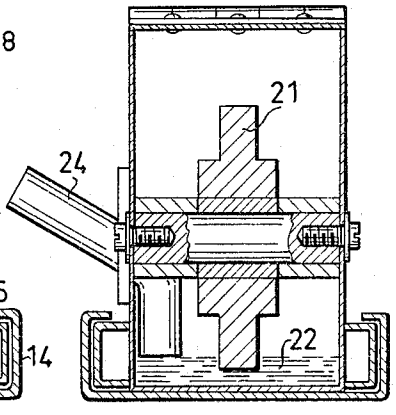


FIG. 4



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3,289,835

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10 Claims. (Cl. 209—125)

This invention relates to rotary printing machines, particularly newspaper printing machines, wherein the newspapers leaving the machine are fed onto a delivery table and by means of a conveyor are further passed to a distribution station for packing and circulation. More exactly the invention relates to a method and a device for sorting out defective printed matter arriving from such printing machines.

The most common defects resulting in rejection are due to fracture and displacement of paper webs, but also acceleration and retardation of the printing machine result in unsatisfactory newspapers because in such cases the tension of the paper webs is not the same as in normal operation. Hitherto it was common practice that the operators supervising the printing operation in case of defects released a locking device which catches newspapers arriving on the delivery table from the printing machine until normal conditions of operation are prevailing again. Especially in case of fracture of paper webs automatically operating control devices have been used for releasing the locking device. The caught newspaper copies have been removed from the delivery table by operators designed for this purpose who also had manually to withdraw the locking device.

The object of the invention is to simplify the sorting operation and to reduce the required number of operators, and the effort according to the invention is characterized in its broadest aspect by applying, in case of failure in the machine, a defect indicating ink or paint to portions of defective copies of newspapers or the like which have been printed prior to the elimination of the failure and are passing from the last impression cylinder or cylinders to the conveyor, which portions are clearly visible in the positions which the newspapers assume at the discharge end of the conveyor, and sorting out the rejected copies as the newspapers delivered by the conveyor to the distribution station are taken charge of. As a result no special operatives are required for sorting out newspapers in the printing roll and the sorting operation is performed instead by operators normally occupied at the distribution station.

In its broadest aspect a device for carrying out the method according to the invention is characterized in that between the last impression cylinder or cylinders and the conveyor there is provided an automatically and/or manually controlled operator for applying defect indicating ink or paint to an external page of the finished newspaper.

The invention will be described more in detail hereinbelow with reference to the annexed drawings which illustrate an embodiment of a device constructed in accordance with the invention and associated with a newspaper printing machine.

FIG. 1 is a diagrammatic elevation of the discharge end of a newspaper printing machine provided with a device according to the invention for applying defect indicating paint. FIG. 2 is a longitudinally sectional view of an embodiment of the paint applying apparatus according to the invention. FIG. 3 is a cross-sectional view along

the line 3—3 in FIG. 2. FIG. 4 is a cross-sectional view along the line 4—4 in FIG. 2.

A part only of the newspaper printing machine necessary for the understanding of the invention is illustrated.

Referring to the drawing numeral 1 denotes a device in which the paper webs 1*a* arriving from the impression cylinders are moved together and folded and possibly pasted or sewn together. The webs 1*b* folded and moved together are passed to a cutting device 2 in which the finished newspaper copies also are folded and from which they pass to a flier 3 which deposits a row of newspapers on a delivery table 4 which conveys the newspapers out of the printing machine.

At the discharge end of the delivery table 4 the newspapers are passed to a conveyor device 5 comprising a vertical conveyor 6 which transports the newspapers up to a room which is located above the printing room and in which the newspapers are delivered to a receiving table 7 from which they are lifted backwise by operatives attending to the distribution of the newspapers.

Associated with the folding device 1 is an apparatus 8 for applying defect indicating paint to the portion of the outermost paper web which forms the front page of the finished newspaper. The paint applying apparatus 8 is adapted to be controlled by an automatically operating web fracture detector 9 and by one or more manually operable control devices 10 mounted on the outside of the printing machine. Preferably the web fracture detector 9 is also adapted to send an impulse to an acoustical or optical signal device.

By means of the manual control devices 10 the paint applying apparatus 8 can be started and stopped. When the printing machine is started the paint applying apparatus is maintained activated until the machine attains its full speed, and the paint applying apparatus is correspondingly activated when the machine is to be stopped. In addition the paint applying apparatus is manually activated upon established web displacement and is likewise manually disengaged after this trouble has been eliminated. Further, the paint applying apparatus 8 is activated in case of web fracture sensed by the detector 9.

The printed newspaper copies are delivered to the receiving table 7 together with the other copies. From this table the newspapers are lifted pack-wise with for instance 25 copies in each pack. Packs containing exclusively flawless newspaper copies are directly circulated whereas packs containing one or more defective, rejected copies are put aside. If required individual flawless copies are taken from the last named packs to supplement packs which do not contain exactly 25 newspapers. In this way the flawless copies are sorted out without involving significant additional work for the circulation operatives.

Provided at the vertical conveyor 6 is a counter 11 for counting the number of flawless newspapers. In prior-art methods the defective newspaper copies have been sorted out already on the delivery table 4 and, consequently, only flawless copies have been transported by the conveyor 6. Since in the procedure according to the present invention both flawless and defective newspaper copies are passing the counter 11, this counter is connected with the control circuit for the paint applying apparatus 8 in a manner such as to be put out of operation while paint is applied to the defective copies.

FIGS. 2 to 4 illustrate an embodiment of the paint applying apparatus 8. A container 12 for defect indicating paint is displaceably mounted on a plate 13 which is secured to the frame of the newspaper printing machine and provided with guide members 14 engaging corresponding projections 15 on the container. The container

is moveable to and fro by means of a pneumatically operated servo-motor, such as a pneumatic cylinder **16**, controlled by a solenoid valve **25** and secured to the plate **13**. Rotatably mounted in the container is a paint applying roller **17** which projects outwards through an opening **18** in one end wall of the container and is adapted to be brought into contact with, and to be driven by, the paper web **1***a* when the paint container is activated, that is, when the pneumatic cylinder **16** is operated and its piston rod **19** moves the container to the front end position thereof in which the roller **17** by means of a rubber ring **20** abuts against the paper web **1***a* for applying defect indicating paint thereto. Also rotatably mounted in the container is a paint feeding roller **21** which engages the rubber ring **20** of the roller **17** and is driven thereby. The roller **21** is partly immersed in the paint bath the level of which is indicated at **22**. Defect indicating paint is continuously admitted from a supply tank **23** located at a higher level than the paint container **12**. The downwardly directed end of an inlet pipe **24** extending into the container is located on a level with the desired level of the paint. It will be apparent that defect indicating paint will be transferred from the bath by the roller **21** to the roller **17** and therefrom to the paper web if the apparatus **8** is activated, that is, if the container **12** assumes its front end position. If the apparatus **8** is disengaged, that is, if the container **12** has been displaced to its rear end position, the roller **17** is spaced apart from the paper web **1***a* and no paint will be applied thereto.

The invention is not limited to the embodiment illustrated and described the details of which may be modified within the scope of the appended claims. For instance, the paint applying apparatus may be of any suitable construction and located at a place other than proximate to the folding device **1**. The paint applying apparatus may be operated exclusively electro-magnetically.

What is claimed is:

1. A method of sorting out defective printed matter arriving from rotary printing machines, particularly newspaper printing machines, wherein the newspapers leaving the machine are fed onto a delivery table and by means of a conveyor are further passed to a distribution station for packing and circulation, characterized by applying, in case of failure in the machine, a defect indicating ink or paint to portions of defective copies of newspapers or the like which have been printed prior to the elimination of the failure and are passing from the last impression cylinder or cylinders to the conveyor, which portions are clearly visible in the positions which the newspapers assume at the discharge end of the conveyor, and sorting

out the inked or painted copies as the newspapers delivered by the conveyor to the distribution station are taken charge of.

2. The method as claimed in claim **1**, characterized by applying the defect indicating paint at or near the part of the machine where the printed paper webs are moved together and cut.

3. The method as claimed in claim **1**, characterized by putting a counter appertaining to the machine out of operation during the time paint is applied.

4. A device for marking defective printed matter in connection with a rotary printing machine, particularly a newspaper printing machine, which is succeeded by a delivery table and a conveyor table leading to a distribution station, comprising an automatically and/or manually controlled apparatus interposed between the last impression cylinder and the conveyor for applying defect indicating ink or paint to an external page of the printed matter.

5. A device as claimed in claim **4**, characterized in that the paint applying apparatus is adapted to be activated by an impulse from a web fracture detector.

6. A device as claimed in claim **4**, characterized in that the paint applying apparatus is adapted to remain activated at low speeds of the printing machine, for instance during retardation and acceleration when the machine is stopped and started, respectively.

7. A device as claimed in claim **4**, characterized in that the paint applying apparatus is adapted to be activated in response to an impulse manually given by supervising operators.

8. A device as claimed in claim **4**, characterized in that the paint applying apparatus is pneumatically operated and controlled by a solenoid valve.

9. A device as claimed in claim **4**, characterized in that the paint applying apparatus is of the type in which paint is applied to the moving paper web by means of a roller adapted to be forced against the web.

10. A device as claimed in claim **4**, characterized in that a counter appertaining to the printing machine is connected to the paint applying apparatus or the control system thereof in a manner such as to be put out of operation during the time said apparatus is in operation.

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