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Research On The Paper Conveying System Of A Business Machine

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***Abstract*—The new multifunctional business machine is different from the traditional machine. The new machine is embedded with a computer internally, which not only has the powerful capability of the word processing and the programmable logic IC, but also enables machine to have the ability of feedback control system. The new multifunctional business machine is like a robot that can't walk. The paper conveying system inside the multifunctional business machine has the ability of feedback control. The entire paper conveying system is including the followings: (1) the air-assisted paper feeding technology. After the expansion paper cassette is installed, the new business machine can accurately feed different types of the paper and can prevent series paper jams caused by the slippage and the vibration. (2) the preventing paper curl technology: Preventing the paper curling, reducing the probability of paper curling, ensuring the high quality and the stable paper transfer work. (3) the belt conveyor system: After the paper is attached to the belt, the gap can be eliminated to ensure that the toner is fixed on the belt to reduce the change of missing text and images and make the output perfectly.**

Keywords—programmable logic IC, feedback control system, air-assisted paper feeding technology, paper curling, belt conveyor system.

I. Introduction

The main structure of the paper conveying system for a business machine is as follows: (1) the paper movement track (2) the large capacity input tray (LCIT) (3) the booklet finisher (4) the bridge unit (5) the automatic reverse drive file (ARDF) (6) the paper feed group (7) the internal finisher (8) the pressure plate cover (9) the bide tray (10) the bin tray.

The technology of the paper conveying system can be divided into two categories according to the different feeding methods. The first is the manual feeding and the second is the tray feeding.

1. The manual feeding: The

Situation is relatively rare. It is used for the photocopying of the non-standard size paper or documents requiring double-sided photocopying. The step of manual feeding is as follows: (1) lift the dust cover (2) let the paper guide slide outside (3) insert the paper into the tray until the paper stop. Pay special attention that the inserted paper stack cannot exceed the limit guide to avoid the paper jam due to too much paper. (4) move paper guides in so that they are the same width as the non-standard size paper and bring the paper guide close to and align with the edge of the paper. (5) put down the dust cover and start to print. The manual feeding has followings point needed to note. (a) load one sheet at a time for each print (b) not

suitable for the second printing on already printed side (c) not suitable for A5 size paper.

2. The tray feeding: This is a normal

paper feeding action. Its operation steps are as follows: (1) using the display to enter the desired function into the function key. (2) placing the original document on the glass of the original document or in the document feeder. (3) selecting the type of paper size on the operation panel of the display. (4) manually load blank paper into the paper tray if the selected paper is not in the stock.

II. Literature review

Here are a few article about the technology of the paper conveying system of a business machine as the example. In the literature [1], Taiwan Ricoh company made the operation method of a business machine that is produced by himself into a manual, the content is very detailed.

III. Explanation of principle

A. The introduction of the overall business machine

Fig.1 The appearance of a business

Machine

B. The frame of the paper conveying system of a business machine

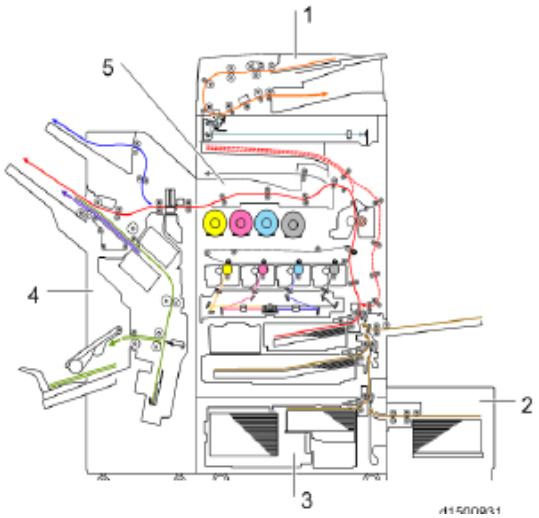

Fig.2 The paper movement track 1 [1]

1.the paper movement track (the double dumbbell track) 2.the large capacity input tray (LCIT) 3.the booklet finisher 4.the bridge unit

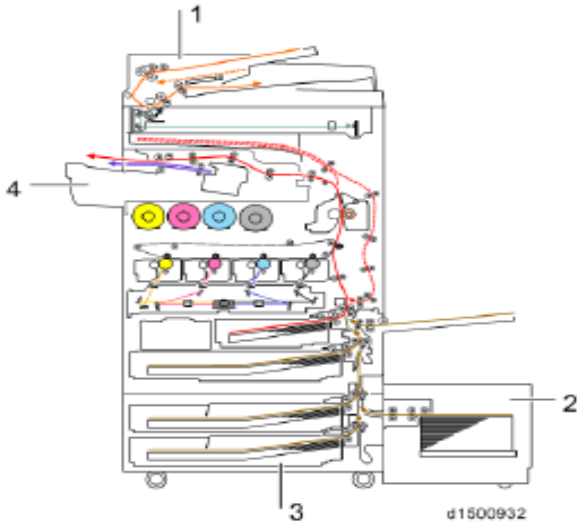

Fig. 3 The paper movement track 2 [1]

1.the automatic reverse drive file (ARDF) 2.the large capacity input tray (LCIT) 3. The paper feeder 4.the internal finisher

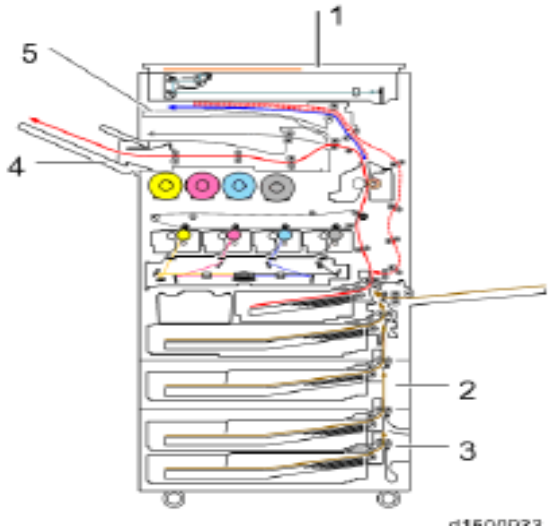

Fig. 4 The paper movement track 3 [1]

1.the pressure plate cover 2. The paper feed group 3.the side tray 4. The bin tray

IV. The practical operation of the paper conveying system of a business machine

Fig. 5 View the paper conveying system light set

Fig. 6 View the automatic reverse drive file (ARDF)

Fig. 6 Overhauled the paper conveying system

V.Conclusion

For the paper conveying system of a business machine: Compared with the old business machine and the new business machine, the new business machine has the following improvement.

(1)New machines use large-capacity input tray (LCIT). It can input many kinds of papers of different sizes at the same time (just adjust paper guides). Types of paper it can be applied to are much better than the old machine.

(2)In order to reduce the amount of paper as much as possible that is due to environmental protection requirements, double-sided photocopying has become a very important requirement. The new model is equipped with an automatic reverse document feeding (ARDF). It provides flexible reverse photocopying which greatly reduces the use of paper. This feature is not available in older machines. Protecting the forest to reduce the warming.

(3)In the new machine, the motor used for paper feeding and the motor used for paper conveying are separated and different. Designed in this way to increase the flexibility of paper conveying is without

tangling. For older machines, the motor used for paper feeding is the same as the motor used for paper conveying. In this way, it is very easy to jam the paper, waste the paper and consume the time. The improvement of the new machine in this regard is obvious to all. Although it increase a little cost, it is still worthy.

VI. Reference

[1](2015), “Service manual of Ricoh university: learning, knowledge, performance”, page 1-4~1-45, Ricoh Americas corporation, 1st edition.