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Research On The Duplex System Of A Business Machine

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***Abstract*—In the 21st century, all human industrial and commercial activities must be completed by business machines including transportation, politics, culture, technology, law, examination, monitoring, voting, political parties, environmental protection, finance, agriculture, finishing, litigation, internal affairs, diplomacy, military, finance and taxation, etc. The administrative work that can be completed by the business machine includes the following items: procurement, inquiry, price comparison, pricing, contract signing, prosecutor's indictment, legal notarization documents, official document transmission and archiving, industrial manufacturing drawings, etc. The so-called duplex system refers to: these sensors detect the bidirectional response of each operations of the business machine and send signals to the microcomputer. The microcomputer then makes appropriate judgments and makes corrections that are based on feedback signals (that is, the automatic control of feedback). To make it simpler, the duplex system is a simplified version of the artificial intelligence system. In the other word, the duplex system is equal to a simplified version of an artificial intelligence system.**

Keywords—artificial intelligence, appropriate judgment, automatic control of the feedback, bidirectional response.

I. Introduction:

The main architecture of the duplex system of the business machine is as follows: ①Duplex entrance motor ②Duplex unit open/close sensor ③Duplex entrance sensor ④By-pass unit open/close sensor ⑤By-pass unit open/close sensor ⑥By- pass /Duplex motor ⑦Double feed sensor ⑧By-pass paper end sensor ⑨Duplex exit sensor ⑩Main scanning sensor ⑪By-pass length sensor ⑫Side fence paper contact sensor ⑬Side fence drive motor.

II. Literature review:

Research on the duplex system of a business machine, here are a few papers as examples. In literature [1], Ricoh Taiwan Company has finished a complete operation manual of the company's business machine, which is very detailed. In literature [2], Lin Zongde graduate student published "Research on digital industry green competition strategy—taking C company's business machine as an example". Under the green environmental protection requirements, how does the operation of the business machine meet the requirements? In literature [3], Wong Junxin graduate student published "Research on improving the service performance of multi-function machine service staff". This thesis is to review how to make good service of the business machine including supplementary rescue of consumable materials, routine (periodical) maintenance work, temporary emergency troubleshooting, etc. How to implement every service?

How to establish a service performance evaluation system?

III. Explanation of principle:

Fig.1 The appearance of a business machine

A. The position of the duplex system in a business machine:

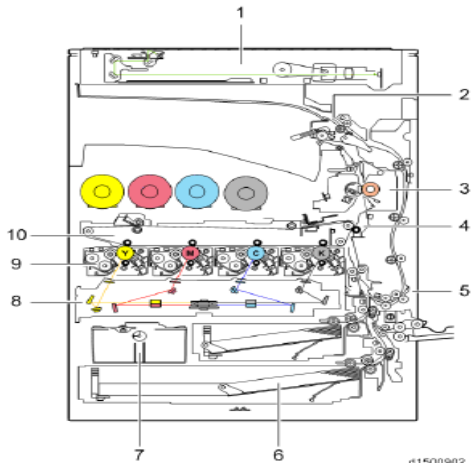

Fig.2 The main structure of a business machine

5. Duplex system

B. The fine construction of the duplex unit:

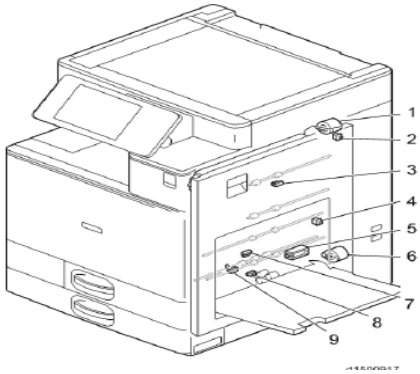

Fig.3 The fine construction of the duplex system

①duplex entrance motor ②duplex unit open/close sensor ③ duplex entrance sensor ④ by-pass unit open/close sensor ⑤by-pass pick-up solenoid ⑥by-pass /duplex motor ⑦double feed sensor ⑧by-pass paper end sensor ⑨duplex exit sensor

C. The fine construction of by-pass unit:

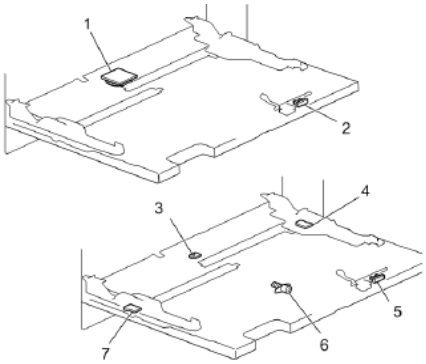

Fig.4 The fine construction of by-pass unit

1.&3. main scanning sensor 2.&5. by-pass length sensor 4.&7. side fence paper contact 6. side fence paper contact sensor

D. The drive layout of duplex unit:

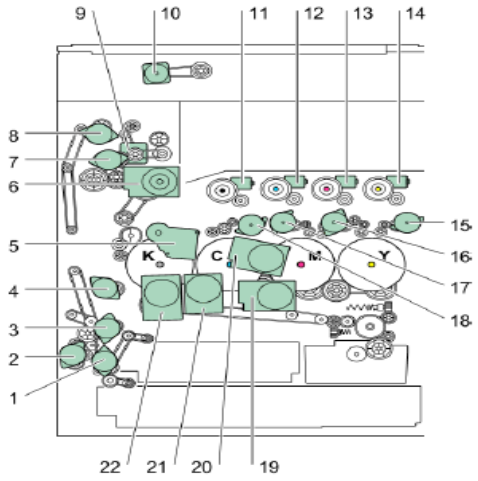

Fig.5 The drive layout of duplex unit

1.paper feed motor 2.duplex/by-pass motor 2.transport motor 4.registration motor 5.paper transfer contact motor

6. fusing motor 7.paper exit/pressure

release motor.

IV. Practical operations of the duplex system of a business machine:

Fig.6 The inspection of the duplex system

Fig.7 The testing of by-pass unit

V.The experimental result of the duplex system:

Fig.8 Checked completely entrance motor, power distribution board, sensor, etc.

Fig.9 Tested completely the by-pass sensor, pick-up solenoid, etc.

VI. Conclusion:

For the duplex system, the new business machine has following significant changes compared with the old business machine.

(1) The internal paper tray reverse

switching feedback system is used to replace the traditional internal reverse system, which can greatly increase the paper capacity and reduce the size.

(2) The light-emitting diode (LED) of the

new machine is equipped with the paper jam detection, which is more convenient for the user to track the position of the paper jam than the old machine without the paper jam detection

(3) The new machine uses the real jam

animation to improve user convenience compared to the old machine without the real jam animation.

(4) The new machine uses the side

fence set assist function to improve the user's convenience compared to the old machine without the side fence set assist function.

VII. Reference:

[1] (2015), "Service manual of Ricoh university: learning, knowledge, performance", page 1-1~1-44, Ricoh Americas corporation, 1st edition.

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[3]Wong J.X., (2009), "Research on improving the service performance of multi-function business machine service staff", master dissertation, Changhua, Taiwan, national Changhua normal university, department of information management.