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MOTORLESS REAR PHOTO TRAY FOR C PATH PRINTER

HP INC

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Motorless rear photo tray for C path printer

This disclosure relates to the field of rear photo tray design for C path inkjet printers which has a main tray at bottom of product.

A design is disclosed that a rear photo tray is tapping its transmission from turn roller movement which moves forward direction only. The transmission can be engaged/disengaged by service station movement which currently drives printhead capping and wiping system as well as pick arm up/down movement.

For C path printer, as the tray is at bottom of printer and usually is sealed, it is not convenient to switch between plain paper and photo media, as users are required to pull out tray and replace with photo media, adjust width adjustors and put back. To improve user experience, one solution is to equip a motor driven rear tray for users to load photo media, however the cost would be higher. Another solution is to use a rear feed slot however it can only support 1 page.

This article explains a motorless rear photo tray design on C path inkjet printers. C path printer paper path is illustrated in Fig.1. Paper motor drives line feed and drives pick and turn roller through a swing arm, which ensures pick and turn roller still go forward if linefeed reverses, which is for de-skew purpose. Service station slider is at capping position in Fig.1, at this time pick tire is lifted up. When slider moves towards right side of the image (rear of the printer) while pick toggle is still on the flat surface, it is printing position. When slider continues move to the rear end, pick arm is down, it is paper picking position.
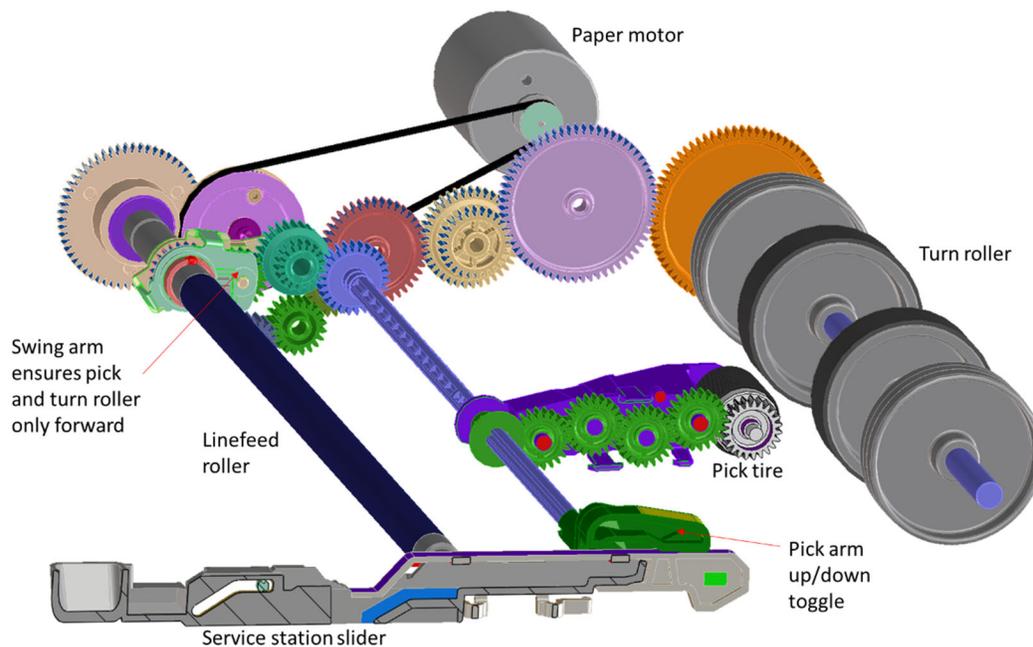

Fig.1 Paper path of a C path printer

The rear photo tray design is illustrated in Fig.2. Photo tray is equipped with pick tire and separation mechanism to support multiple pages. Its drive is tapping turn roller rotation through a swing arm with a knob. When turn roller forward, swing arm rotates and connects with rear photo tray gear to drive photo tray pick tire.
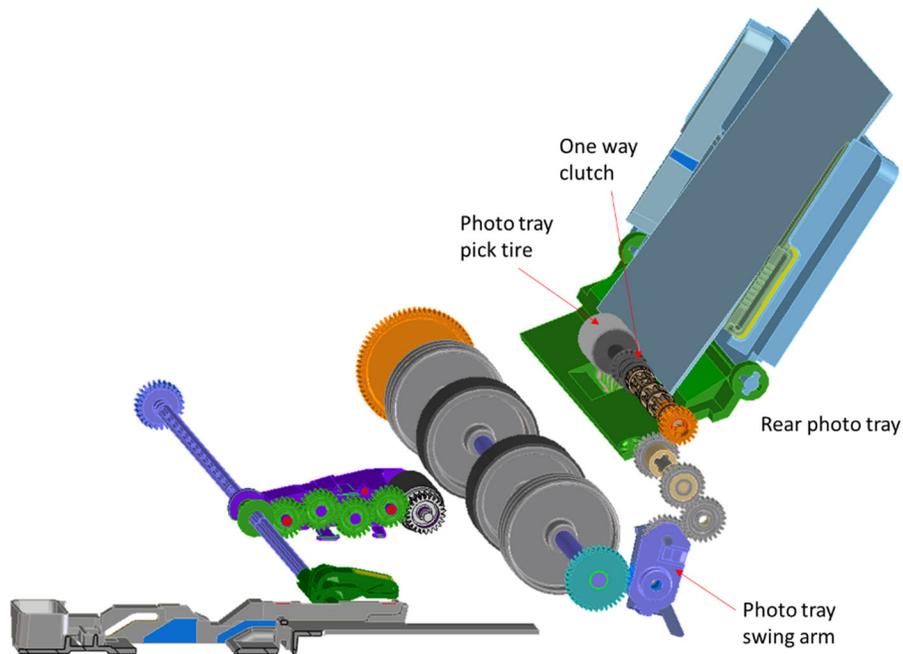

Fig.2 Motorless rear photo tray design

When photo media reaches turn roller, service station slider moves to printing position, which pushes photo tray swing arm knob and disengages it, as shown in Fig.3.
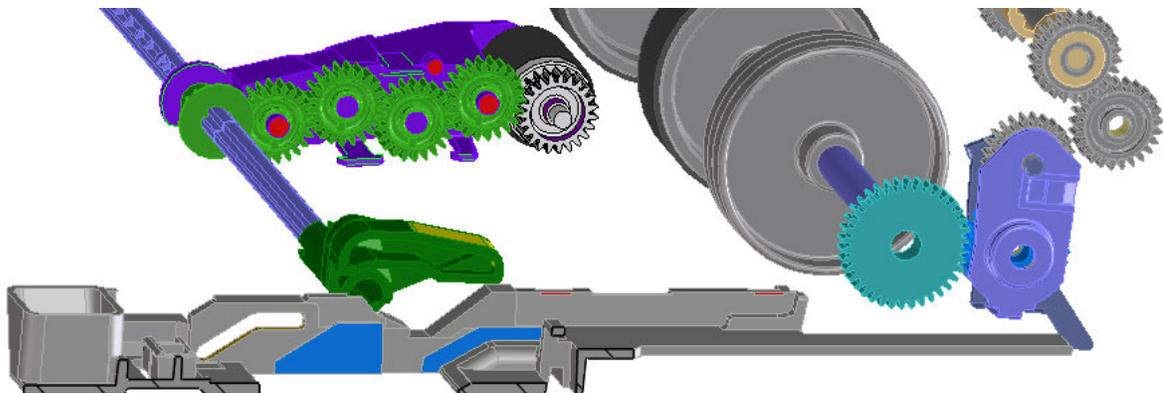

Fig.3 Printing state, photo tray transmission is disengaged

For print job from main tray, service station slider moves to rear home, where photo tray transmission is still disengaged, and pick arm drops down to touch paper in main tray, as shown in Fig.4.
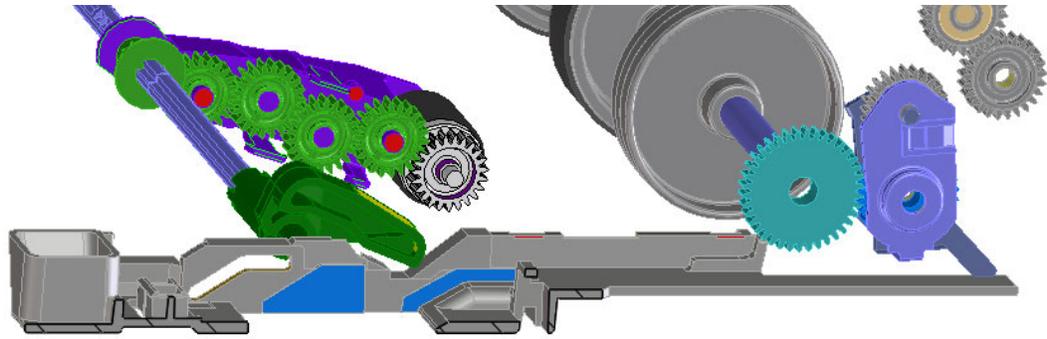
Fig.4 Main tray pick state

Sequence for a rear photo tray printing is:

1. When in cap, or just uncap position, paper motor will rotate to pick paper from rear photo tray;
2. When photo paper reaches turn roller, service station slider moves to printing position
3. De-skew and print
4. Eject (can be skipped for multi-page job)
5. Cap

A main tray printing sequence is:

1. Service station slider moves to rear home to uncap
2. Paper motor rotates to pick paper from main tray;
3. When photo paper reaches turn roller, service station slider moves to printing position
4. De-skew and print
5. Eject (can be skipped for multi-page job)
6. Cap

Disclosed by Ai-Qiang Yang, HP Inc.