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October 2019

TUR AS AN INPUT DEVICE TO COMMUNICATE WITH THE PRINTER

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Recommended Citation

INC, HP, "TUR AS AN INPUT DEVICE TO COMMUNICATE WITH THE PRINTER", Technical Disclosure Commons, (October 29, 2019)

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TITLE

TUR as an input device to communicate with the printer

PROBLEM SOLVED

Large format printers that are capable of printing in roll-to-roll mode usually have a Take-Up Reel (TUR) that is located in a low position of the printer. For this reason, if the user wants to operate the TUR, usually it has to bend down to a position from where it is not possible to reach the front panel of the printer. In these cases, during TUR operation it is not possible to command the printer unless there are some devices in the TUR module (such as buttons, levers, switches, ...) that allow the user to do it. Generally, though, these devices are only intended to move the TUR forward and backwards to facilitate the media loading operation and/or to choose the winding direction.

The present feature enables the user to transmit orders to the printer through the TUR itself by means of some sequences of inputs.

DESCRIPTION

In order to describe this feature, first let's assume that the TUR can be manually controlled with the support of an "assisted mode". However, as it will be covered later on, the same concept can be applied in the case of a TUR that is controlled by means of buttons, levers, etc., thereby extending their range of applications.

When the TUR is in "assisted mode", the algorithm that controls it enables the user to effortlessly spin the media roll core to facilitate the loading of the TUR.

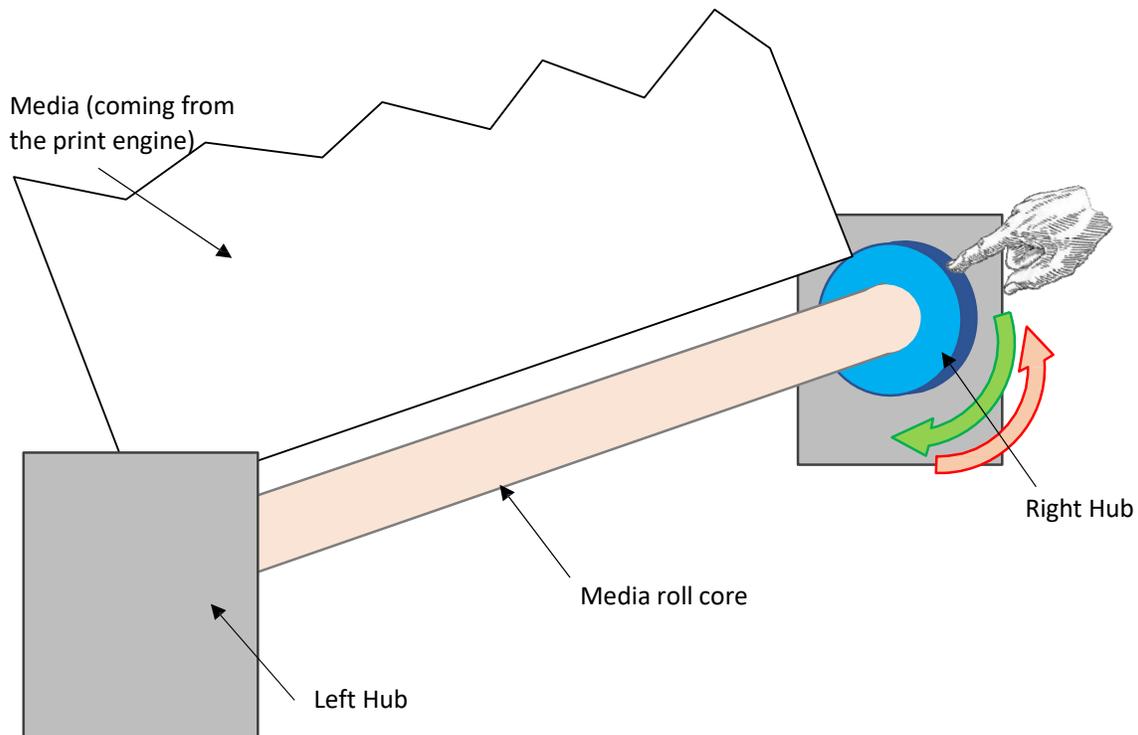


Figure 1. In "assisted mode", the user can easily move the media roll core by manually moving a hub (or the core itself).

Taking advantage of this mode as well as the fact that one of the hubs in the TUR is linked to a motor with an encoder, the TUR itself can be used as an input device. Thus, following some predefined combinations of back and forth movements that can vary in terms of duration, angle rotated, speed, etc., the user can transmit some orders to the printer.

Let's illustrate this feature with some examples:

Input sequence	Command
 Quick and short back and forth movement.	The TUR starts to follow the media drive roller while applying tension to the media, winding the media in forward direction.
 Quick and short forth and back movement.	The TUR starts to follow the media drive roller while applying tension to the media, winding the media in backwards direction.
 Three quick and short forward movements	The printer media drive roller moves the media forward, feeding media to the TUR. The length of the media advance is controlled by the TUR.
 Three quick and short backwards movements	The printer media drive roller moves the media backwards. The length of the media advance is controlled by the TUR.
 One quick and short forward movement + One quick and long forward movement	The TUR acts as a media rewinder in forward direction.
 One quick and short backwards movement + One quick and long backwards movement	The TUR acts as a media rewinder in backwards direction.

This is just a proposal of a set of input sequences and the corresponding commands that could be sent to the printer through the TUR. Obviously, the number of input sequences and commands can be infinite.

As said before, the same concept can also be applied for TURs that are operated with the help of buttons, levers, switches or any other input device instead of a manually operated TUR like the one described above. For these cases, instead of a combination of back/forth movements of the roll, it would be necessary to perform a combination of buttons, lever positions, input signals of a sensor, etc. With this solution, the input devices in the TUR could be used to control a wide range of actions in the printer rather than only moving the TUR on demand.

ADVANTAGES

- Allows the user to control a wide range of actions from the TUR.
- Increases the range of uses of the buttons, levers, switches, etc. of a TUR with this kind of input devices.
- Facilitates the overall media loading process in Roll-to-Roll printing mode.
- Enhances usability perception of the printer.

Disclosed by Joan Velasco Figueras, Ezequiel Jordi Rufes and Lluís Vallès, HP Inc.