March 14, 1961 L. A. WILSON ET AL 2,974,951

CARD TRANSPORT

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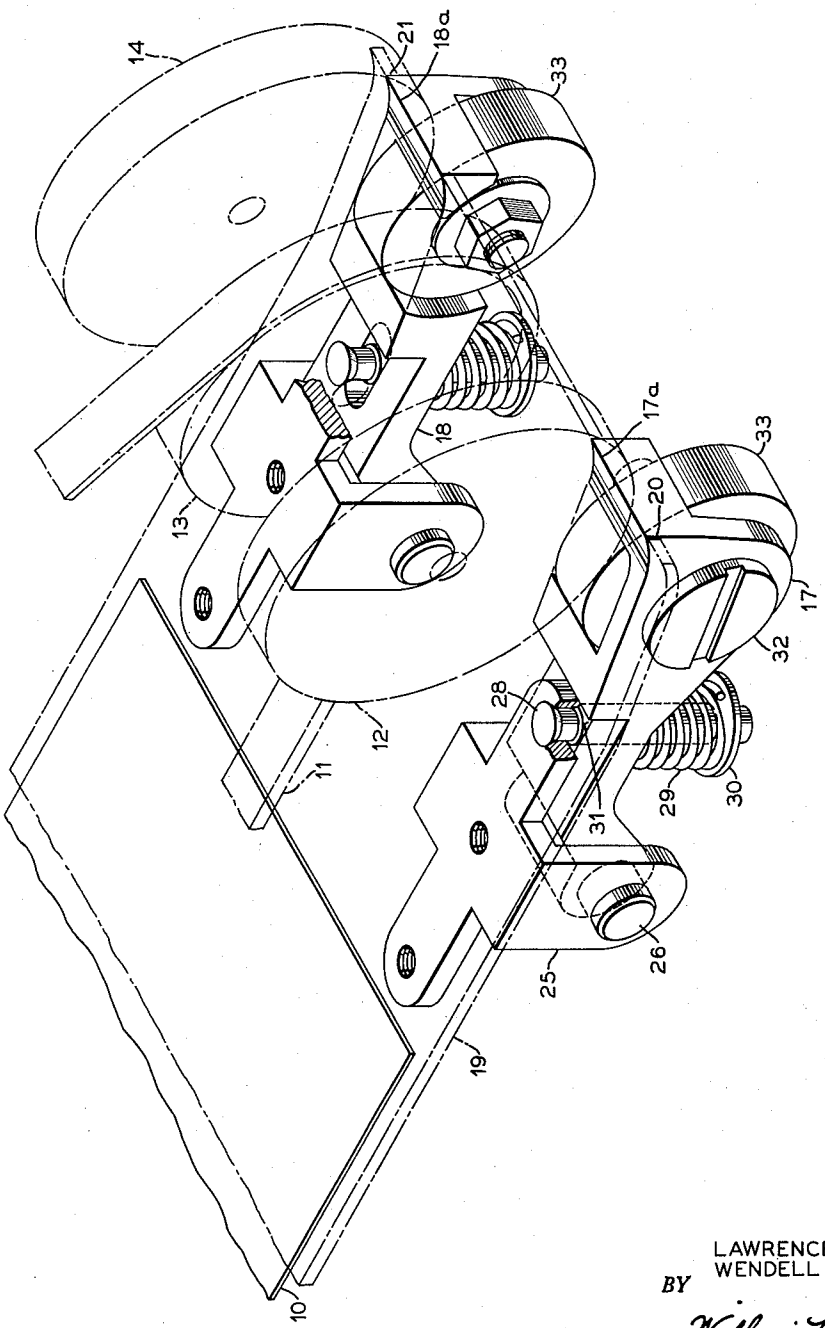


FIG. 1

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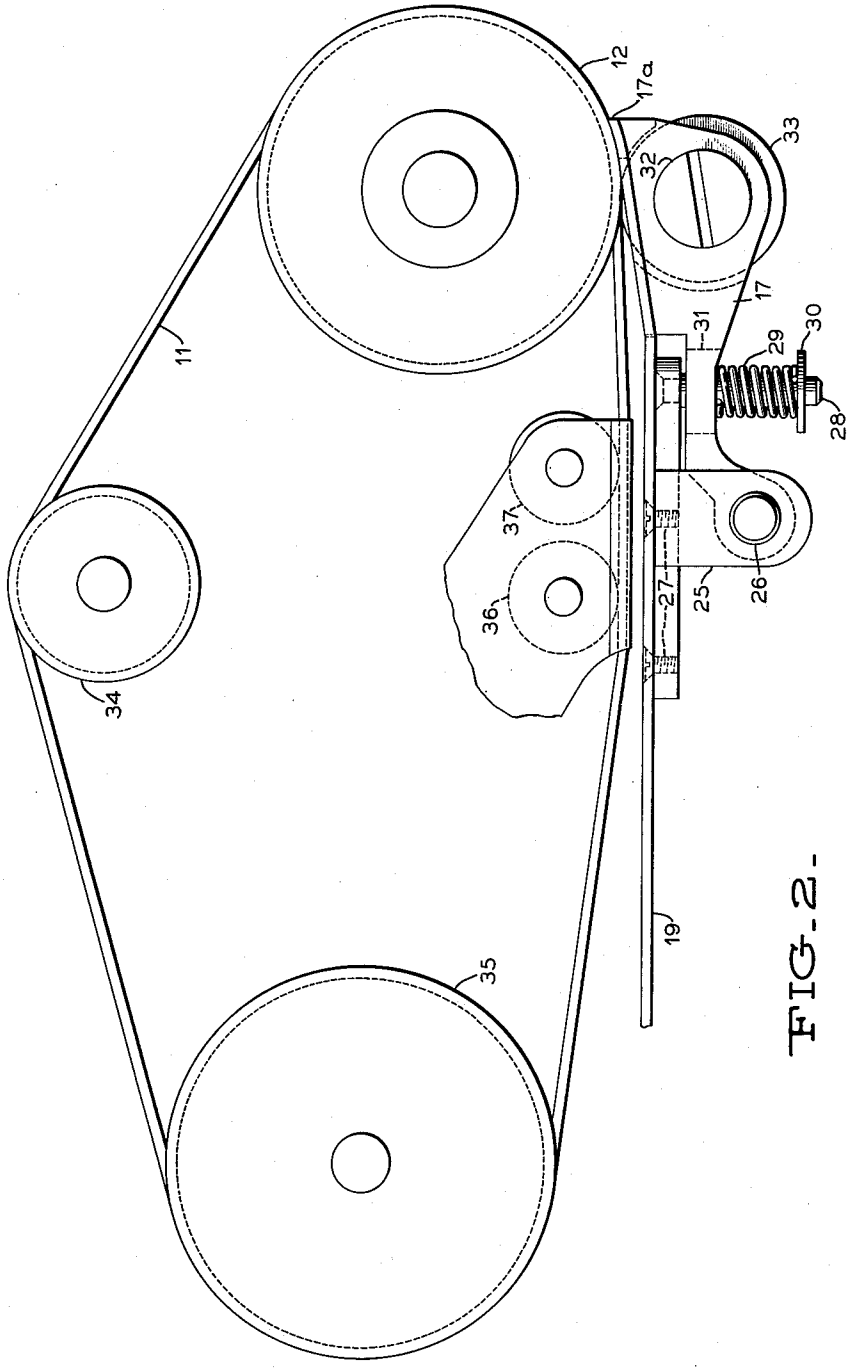


FIG-2-

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2,974,951

CARD TRANSPORT

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2 Claims. (Cl. 271—51)

This invention relates to an improved record card transporting station. In particular this invention relates to a card transport wherein cards are driven positively through a predetermined arc of a driving roll and in a predetermined tangential direction from said driving roll.

It is therefore an object of this invention to provide a card transporting apparatus wherein a card emerging from the transporting station will be positively driven by the driving roll through a predetermined arc of said driving roll.

It is a further object of this invention to provide a card transporting apparatus wherein a card emerging from said transport station will be positively driven in a predetermined tangential direction from said driving roll.

It is another object of this invention to provide a card transporting apparatus wherein the means for effecting a positive drive of a card through a predetermined arc in a predetermined tangential direction is self adjusting to compensate for diminution in the diameter of the driving roll.

Other objects of the invention will be pointed out in the following description and claims and illustrated in the accompanying drawings, which disclose, by way of examples, the principle of the invention and the best mode, which has been contemplated, of applying that principle.

In the drawings:

Figure 1 is an isometric view of the transporting station showing only the major structural features.

Figure 2 is a side view of the transporting station.

The apparatus shown in Figures 1 and 2 is part of the record card machine shown and described in the application to H. J. Klotz et al., Serial No. 631,855, filed December 31, 1956.

The apparatus, Figure 1, consists broadly of a guide plate on which record cards **10** are moved by a belt **11** and driving rolls **12** and **14** which in cooperation with idler rolls **33** and the ends **17***a*, **18***a*, of members **17** and **18** grip the card **10** and positively drive it to the next station while said ends determine the tangential direction of said emerging card.

Since the transport station is symmetrical about its center line only one side need be described and the description of the operation of one side will be equally applicable to the other.

A plate **19** acts as a support or guide for record cards such as **10** which are moved along over the top surface. The guide **19** has a turned up front edge portion adjacent the periphery of rolls **12**, **14** and extending therebetween with rectangular slots **20** and **21** formed therein. On the underside of plate **19**, Figure 1 or 2, a pivot block **25** is fastened by any desired method, shown in Figure 2, as screws **27**. Pivoted in said block is a member **17**. A stud **28** is mounted in said block **25** with a washer **30** fastened to its opposite end. The stud passes through a cutout **31** in member **17** so that said member **17** is freely movable. A spring **29** is placed between the washer **30** and the bottom plane of the member **17** to bias said member in an upward direction.

The stepped portion of member **17** is adapted to be movable in slot **20** and is formed to have the same general contour as guide plate **19**. Supported on the end portion of member **17** is an idler roll **33** secured by a bolt **32** so that said idler is freely rotatable. The periphery of said idler projects above the surface of said member **17** by a distance which is sufficient to allow the end **17***a* of member **17** to be displaced from the driving roll **12** by a distance of approximately .004". The thickness of a card such as **10** is about .007". Since the member **17** is spring biased by **29**, the roll **33** contacts roll **12**.

With reference to Figure 2, the cooperation between member **17** and drive roll **12** can be readily appreciated. The end portion **17***a* of member **17** comprises an area extending from the slot **20**, through which idler **33** protrudes, to the tip of member **17**. This end **17***a* (and **18***a* for member **18**) is formed with a radius of curvature which is substantially the same as the driving rolls **12** and **14**. In the absence of a card between rolls **12** and **33**, the end **17***a* is spaced (as mentioned previously) from roll **12** by a distance of approximately .004" to prevent contact of roll **12** with end **17***a* and avoid friction.

In the operation of the transport station a card **10** (Figure 1) is moved to a position beneath pulleys **36** and **37** by a means (not shown) where it is moved by apparatus (not shown) into contact with the rotating belt **11**. The card is then moved by said belt to the driving rolls **12** and **14** which moves the card to the next position. After the end of a card such as **10** has passed from under pulleys **36** and **37**, the driving action is from rolls **12** and **14** exclusively.

When the card has passed through the bite of the driving rolls **12**, **14** and idler rolls **33** and the idler rolls are spring biased to contact said driving rolls, the end of the card is caught between **17***a*, **18***a* and driving rolls **12** and **14**. This action operates to positively drive the card to the end of **17***a* and **18***a*. The extent of the end portions **17***a*, **18***a* determines the tangential direction of the card with respect to the driving rolls.

Accurate spacing between ends **17***a*, **18***b* and drive rolls **12**, **14** is maintained by idler rolls **33** spring biased to contact drive rolls **12** and **14**. As the material of the driving rolls, e.g., cork, wears due to the movement of cards, the ends **17***a*, **17***b* are kept at constant distance from drive rolls **12**, **14** and accurate feeding is maintained.

The device described herein is used, for example, in any apparatus wherein it is desired to positively drive a record card beyond the bite of the feed rolls and impart or predetermined tangential direction to said card. In the aforesaid application to Klotz et al., this transport mechanism is used where it is desired to overlap cards which are moving in a different direction with respect to one another without interference and/or where the cards are to be stopped in a predetermined distance in front of said transport and this distance is approximately equal to the width or length of the card. In a situation such as the one last mentioned, the positive driving feature of this apparatus permits accurate placement of said cards by driving the card to a stop located at said predetermined distance and preventing rebound by the use of members **17** and **18** which act as backstops when the card has cleared these members.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention.

It is the intention, therefore, to be limited only as indicated by the scope of the following claims.

What is claimed is:

1. In a card transport, a planar guide formed with a curved lip thereon for supporting cards fed to said transport, a first roll mounted for rotation about a fixed axis and having its peripheral edge in close proximity to said guide, a pivot block fixed in relation to the underside of said guide, a member pivoted in said block, said member having a curved end portion whose radius of curvature is substantially equal to the radius of curvature of said first roll, an opening formed in said member, spring means secured to said member and biasing said member toward said guide, a follower roll mounted for rotation on said member and extending through said opening to contact said first roll at a point above the surface of said guide, the periphery of said first roll and said curved end portion being spaced apart less than the thickness of a card to be transported whereby said curved end portion and said first roll will determine the tangential direction of a card emerging from between said first roll and said follower roll and positively contact said emerging card for a distance equal to the peripheral extent of said curved end portion.

2. In a card transport, a slotted guide formed with a curved edge thereon for supporting cards fed to said transport, a first roll mounted for rotation about a fixed axis and having its peripheral edge in close proximity to said slot, a pivot block secured to the underside of said guide, a member pivoted in said block, a stud secured to said pivot block and projecting downwardly through said pivoted member, a spring secured to said stud and terminated on the underside of said member, a follower roll mounted for rotation on said member and spring biased by said spring to contact said first roll, said follower roll and said first roll being in contact at a point above the surface of said guide, a curved surface having a radius of curvature substantially equal to the radius of curvature of said first roll formed on said pivoted member at a point coinciding with the curved surface of said guide, said curved surface and the periphery of said first roll being spaced apart a distance less than the thickness of a card whereby a card emerging from the bite of said follower and said first roll is secured to said first roll by said curved surface portion of said member.

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