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Houghton et al.

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[54] **RECORD CARD READER, FEEDER AND TRANSPORT DEVICE**

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[52] **U.S. Cl.** **271/3,** 271/44, 271/49, 271/51, 271/DIG. 4

[51] **Int. Cl.**.....**B65h 5/06,** B65h 9/04

[58] **Field of Search**.....271/DIG. 4, 44, 49, 3, 59, 271/51, 58

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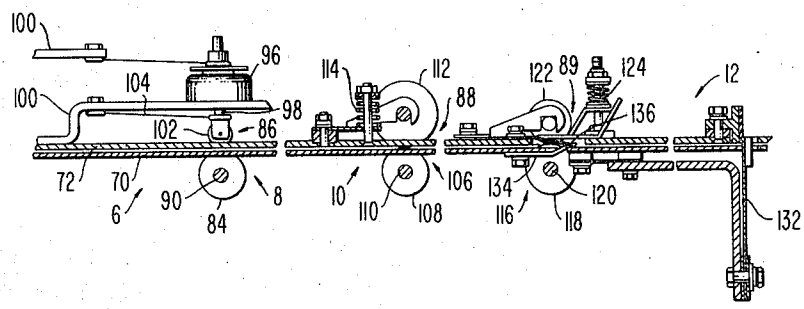
[57] **ABSTRACT**

A record card reader, feeder and transport is provided in which three, progressively disposed orthogonal, coplanar card paths are defined, each having card feeding and driving means, the feeding means of one being a plunger roller overlying and actuatable toward a drive roller peripherally recessed below the card path.

3 Claims, 4 Drawing Figures



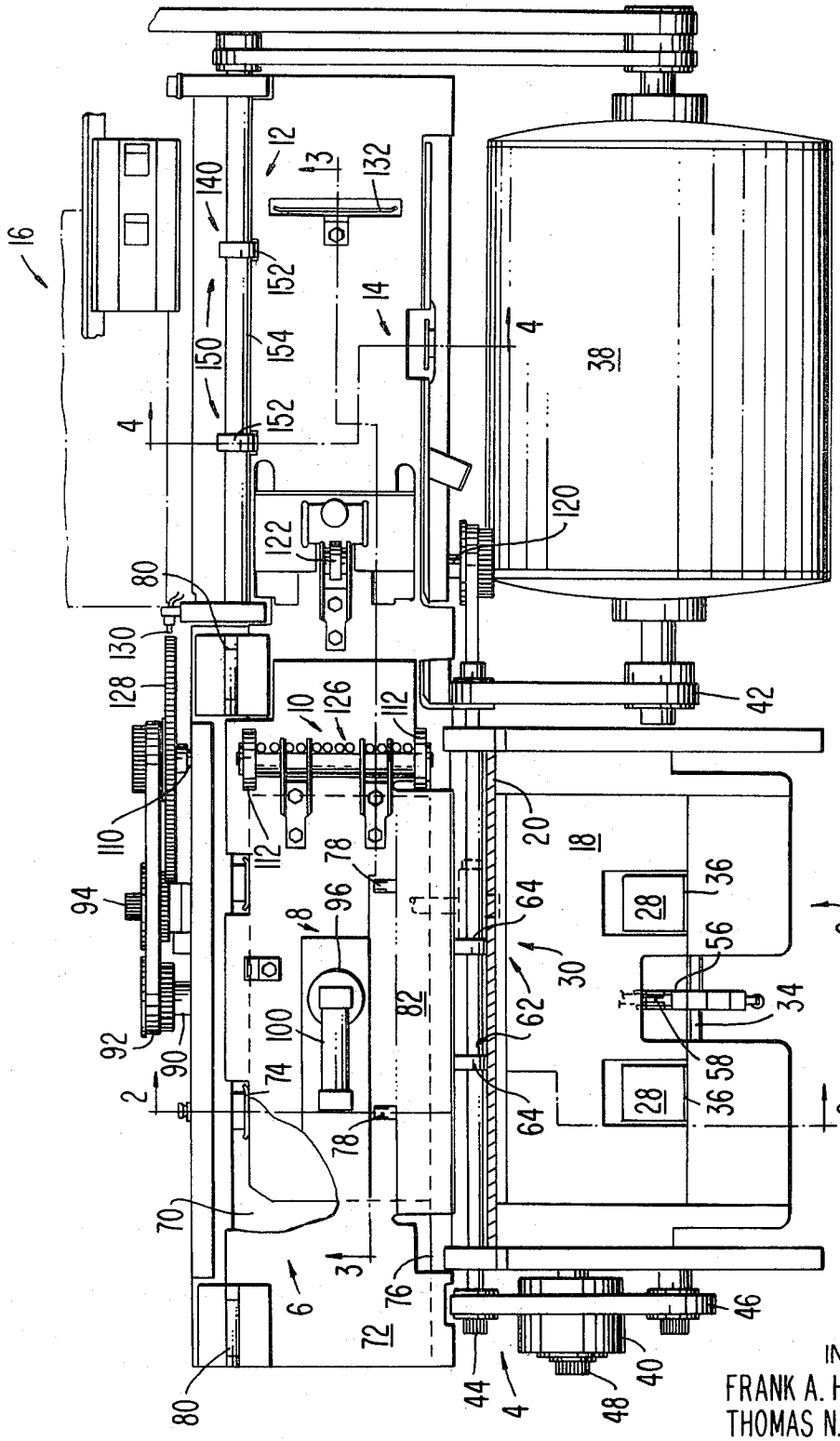


FIG. 1

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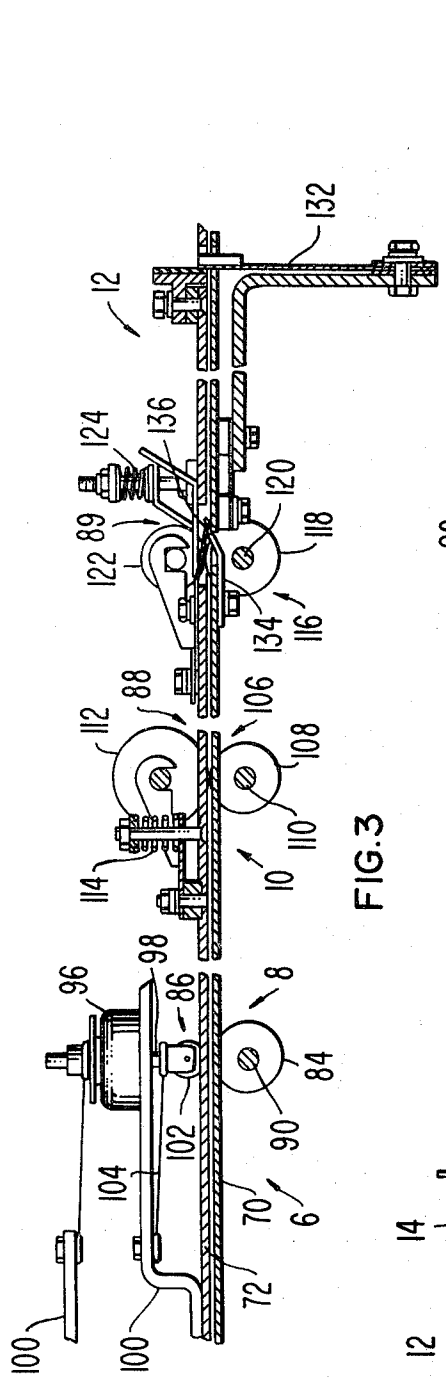

FIG. 3

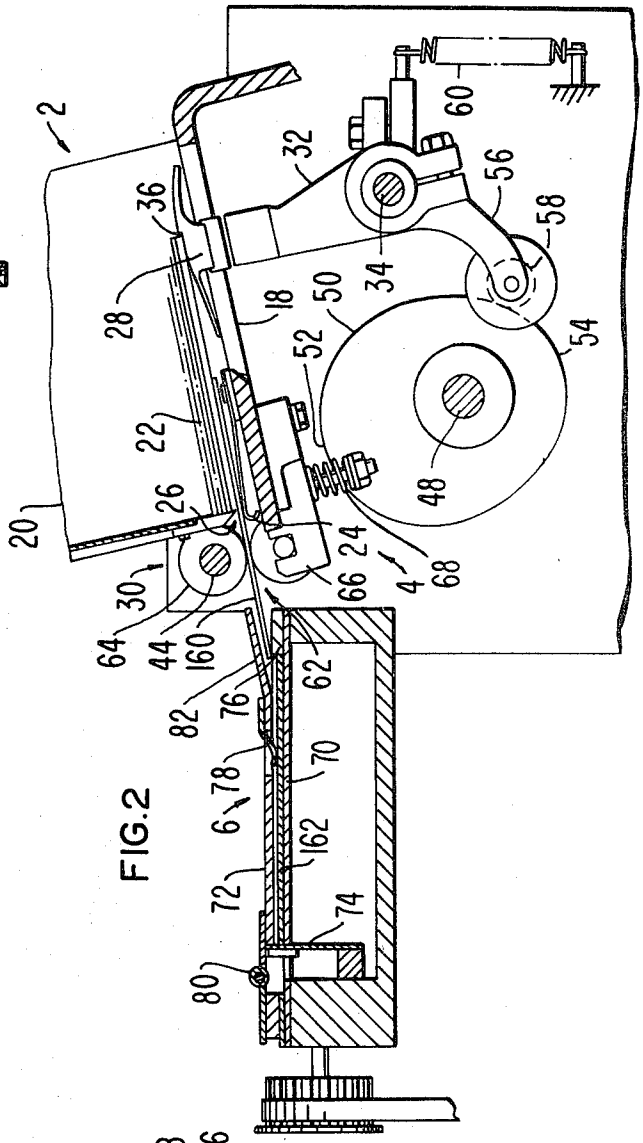

FIG. 2

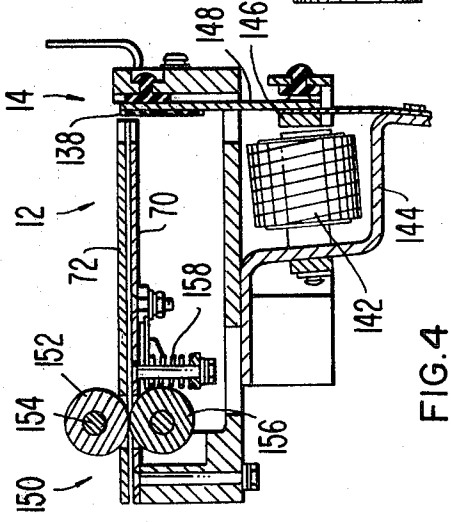

FIG. 4

RECORD CARD READER, FEEDER AND TRANSPORT DEVICE

BACKGROUND OF THE INVENTION

This invention relates generally to record processing apparatus and more particularly concerns a machine for feeding record cards from a hopper, past a reading device and into a stacker.

Prior art discloses many record card reader transport systems. A typical example, one closely related to the present invention, may be found in record card readers where cards are fed from a hopper, past a read station and into one or more stackers. Some of these, in a manner also similar to the present invention, feed individual cards from a hopper to temporary holding or ready stations, wherefrom they are driven upon demand effectively through read stations at a constant speed, from there to be transported to stackers.

The transports described are subject to limitations of card travel speed since the cards fed from the hoppers must be stopped in the ready stations. The speed of travel must be below that which would cause leading edge damage to cards as they impact the stop members in the ready stations. For a given transport system, the over-all card processing rate is also necessarily limited by this relatively slow card speed. Also, since cards are stopped in the ready station, the feeding of cards must be maintained below a desirable level to prevent jamming, thereby further reducing the effective card processing rate. The processing time for the transport systems disclosed in the prior art are also limited by the distance the cards are commonly transported, since cards naturally require greater lengths of time to travel greater distances at given speeds.

SUMMARY OF THE INVENTION

The invention resides in the provision of a record card reader, feeder and transport device to transport record cards from a hopper station to a stacker station by way of a read station.

Accordingly, it is an object of the present invention to provide a record card reader, feeder and transport device which will compensate for or otherwise offset the previously mentioned disadvantages imposed by card speed limitations.

It is another object of the invention to provide a device which will substantially reduce leading edge damage to cards as they are stopped in ready stations.

It is yet another object of the invention to provide a device with a relatively high card processing rate.

Still another object of the invention is to provide a device with a relatively low card jam rate despite an excessive card feeding rate.

Another object of the invention is to provide a device which will improve card processing time limitations imposed by transport lengths.

An important aspect of the invention is the use of three, progressively disposed orthogonal, coplanar card transport paths, the effective intersection of each path presenting a ready station where cards individually fed thereinto from one direction are held temporarily before being issued therefrom in a direction normal to that of their ingress.

Another important aspect of the invention is the use of ready stations which permit a card entering from one direction to partially overlap a card exiting in a direction normal thereto.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects, aspects and advantages of the invention will be more clearly understood from the following description when read in conjunction with the accompanying drawings, in which:

FIG. 1 is a plan view, partially fragmented, of a record card reader, feeder and transport device embodying features of the invention;

FIG. 2 is a sectional view taken in the direction of the arrows 2—2 in FIG. 1;

FIG. 3 is a sectional view taken in the direction of the arrows 3—3 in FIG. 1; and

FIG. 4 is a sectional view taken in the direction of the arrows 4—4 in FIG. 1.

Detailed Description of the Invention

Referring to the drawings, the record card reader, feeder and transport device shown has a hopper station 2, a first transport 4, a read ready station 6, a second transport 8, a read station 10, a stacker ready station 12, a third transport 14, and a stacker station 16. The hopper station 2 is operatively coupled to the read ready station 6 by the first transport 4, which communicates therebetween. The read ready station 6 is operatively coupled to the stacker ready station 12 in a like manner by the second transport 8, the read station 10 being effectively disposed substantially central thereto. The stacker ready station 12 is operatively coupled to the stacker station 16 by the third transport 14 which similarly communicates therebetween.

The first, second and third transports, 4, 8 and 14 respectively, define record card paths from the hopper station 2 to the read ready station 6, from the read ready station 6 to the stacker ready station 12, and from the stacker ready station 12 to the stacker station 16 respectively. The card paths thus defined each extend at right angles to the path immediately anterior or posterior to it, the paths defined by the first transport 4 and by the third transport 14 respectively being parallel and spaced apart, the path defined by the second transport 8 being normal to both and effectively communicating therebetween, the plane of each of the three defined card paths being substantially coincident.

With reference to FIGS. 1 and 2, the hopper station 2 has a lower support or base member 18 acutely angled to the horizontal toward the read ready station 6, and upright support members 20 affixed normally to the base member 18. The configuration of the upright support members 20 conforms to the dimensions of record cards to be supported thereby such that the hopper station 2 is capable of maintaining a uniformly aligned card stacker 22. Due to the inclination of he base member 18, the record cards 22 stacked in the hopper station 2 will be likewise inclined with their respective leading edges lowermost and toward the read ready station 6. A resilient card support member 24 is mounted atop the hopper base plate 18 to support the leading edge of the card stack 22 and extends under and slightly past the leading upright support member 20. The lower edge of the leading upright support member 20 is disposed above the card support member 24 by a thickness slightly greater than the thickness of a single record card to form a throat 26 to prevent the simultaneous feeding of more than one card.

Referring to FIG. 2, the first transport 4 has a pair of feed knives 28 and a first driver 30. The feed knives 28 are affixed to the upper ends of a pair of feed knife supporting levers 32 secured to a pivotable shaft 34 journaled below the hopper station base plate 18 and extending effectively upward therethrough to support the trailing edge of the lowermost card stacked in the hopper station 2. Impelling projections 36 extend upward from the bodies of the feed knives 28 and are normally positioned slightly behind the trailing edge of the lowermost card. The feed knives 32 are disposed parallel to, but spaced-apart from each other, the distance separating them being somewhat less than the length of record cards to be fed thereby.

A drive motor 38 is operatively coupled to an actuatable clutch 40 via a motor drive belt 42, a driven shaft 44 and a clutch belt 46 (FIG. 1). Upon demand, the clutch 40 may be actuated, resulting in one revolution of an intermittently rotatable drive shaft 48 journaled below the hopper station base plate 18. Affixed to the intermittently rotatable shaft 48 and rotatable therewith is a feed actuate cam 50 having a high portion 52 and a low portion 54. A cam follower lever 56 extends from the shaft 34, to which it is affixed at a point central to the points of attachment of the feed knife supporting levers 32, such lever being disposed toward the cam 50. A cam follower roller 58 is rotatably mounted on the free end of the cam follower lever 56, and is urged against the cam 50 by a helical spring 60. When at rest, the low portion 54 of the cam 50 is adjacent the cam follower roller 58.

The first driver 30 has a double set of first pinch rollers generally designated at 62 in FIG. 2. To the driven shaft 44 are affixed a pair of first drive rollers 64. The rollers 64 are spaced apart on the shaft 44 and are disposed slightly anterior to and peripherally in line with the leading edge of the lowermost card in the hopper station card stack 22. Pivotally mounted below each of the first drive rollers 64 is a first pressure roller 66 resiliently biased by a helical spring 68 upward against its respective drive roller 64. The mutual points of contact between the drive rollers 64 and the pressure rollers 66 is tangentially adjacent the card hopper throat 26 to receive cards individually fed therefrom. The path traveled from the hopper station 2 to the read ready station 6 defines the first card path.

With reference again to FIGS. 1 and 2, the read ready station 6 has a horizontally elongated transport base plate 70, a similar horizontally elongated cover plate 72, first resilient stop members 74, a first guide member 76, and first resilient downward biasing members 78. The cover plate 72 overlies the transport base plate 70, being parallel thereto but spaced therefrom by a distance slightly greater than the thickness of a record card, and is pivotally mounted by hinges 80 such that it may be swung upward, away from the base plate 70, to provide access thereto. The cover plate 72 is normally held in its position overlying the base plate 70 by standard clamps, which are not shown.

The first guide member 76 is a narrow, horizontally elongated strip mounted along the edge of the base plate 70 nearest the hopper station 2. The base plate 70 is disposed relative to the first driver 30 such that record cards fed therefrom will normally pass over the first guide member 76 when entering the read ready station 6.

The first resilient stop members 74 are essentially a pair of reed-type springs secured at their lower ends below the level of the base plate 70 and extending upward thereby and past the edge of the cover plate 72 farthest from the hopper station 2, the upward ends of the stop members 74 being resiliently self-biased against this edge of the cover plate 72. The stop members 74 are spaced apart and are disposed opposite the read ready station 6 from the first driver 30 to stop cards fed thereby from the hopper station 2.

The first resilient downward biasing members 78 are also effectively reed-type springs and are affixed at their upper ends atop the cover plate 72, their free ends extending obtusely downward therethrough and in a direction angled away from the first driver 30 to form relatively small angles at their points of contact with the base plate 70. These downward biasing members 78 are spaced apart a distance similar to that of the stop members 74, and pass through the cover plate 72 at points just behind the first guide member 76 to press record cards fed thereover down toward the base plate 70.

The edge of the cover plate 72 adjacent the first driver 30 is acutely inclined upward at an angle to the horizontal that is slightly greater than the angle made to the horizontal by a record card as it is fed from the hopper station 2 by the first driver 30. This inclined portion 82 of the cover plate 72 forms a deflector to guide cards into the read ready station 6.

With reference to FIGS. 1 and 3, the second or medial transport 8 has a continuously rotating drive roller 84, an actuatable plunger 86, a second driver 88, and a third driver 89. The base plate 70, cover plate 72 and first guide member 76 form a guideway defining a second card path extending from the read ready station 6 to the stacker ready station 12, along which cards fed by the second transport 8 travel.

The driver roller 84 is affixed to a continuously driven shaft 90 journaled transversely beneath the base plate 70, and is disposed central to and peripherally below the upper surface of the base plate 70. The shaft 90 is rotated by the drive motor 38 via a belt 92 and a shaft 94 and other standard operative coupling means not shown in the drawings. An actuatable solenoid 96 having a depending plunger 98 is mounted atop the cover plate 72 by a solenoid mounting bracket 100. An idling pinch roller 102 is rotatably secured to the lowermost, free end of the plunger 98 and is disposed effectively overlying the drive roller 84 but peripherally recessed above the lower surface of the cover plate 72. The plunger is normally maintained in this position by a plunger retaining spring 104 attached at its ends to the plunger 98 and the bracket 100 respectively. The pinch roller 102 is movable toward the drive roller 84 upon actuation of the solenoid 96.

The second driver 88 is provided with a double set of second pinch rollers generally designated at 106. A pair of second drive rollers 108 are affixed to a continuously rotating driven shaft 110 underlying the base plate 70. The rollers 108 are spaced apart on the shaft 110 a distance somewhat less than the width of a record card fed thereby, and peripherally extend upward through the base plate 70 to a point central to the cover plate 72 and the base plate 70. Pivotally mounted atop the cover plate 72 above each of the second drive rollers 108 is a second pressure roller 112 resiliently biased by a heli-

cal spring 114 downward through the cover plate 72 and against its respective driver roller 108. The mutual point of contact between the drive rollers 108 and the pressure rollers 112 is tangentially adjacent the leading edge of a card resting in the read ready station 6, to receive cards individually fed therefrom.

The third driver generally designated at 89 has a single set of third pinch rollers 116, consisting of a third drive roller 118 and a third pressure roller 122. The drive roller 118 is affixed to a continuously rotating drive shaft 120 underlying the base plate 70 at a point central thereto and peripherally extending upward therethrough to a point between the cover plate 72 and the base plate 70. The third pressure roller 122 is pivotally mounted atop the cover plate above the drive roller 118, and is resiliently biased by a helical spring 124 downward through the cover plate 72 and against the drive roller 118.

The read station 10, centrally disposed within the transport path 8, has an optical record card reader 126, which is of a well-known type having a light source effectively opposing a light detector for each punched row of a record card that is to be read by being fed therebetween. The read station 10 is disposed just beyond the second pinch rollers 106, such that cards being read are under constant drive and are therefore traveling at a constant speed through the read station. The basic timing for the read and other functions of the card reader is obtained from a serrated timing disc 128 affixed to the drive shaft 110, the disc being rotated adjacent a transducer 130 which produces an output of electrical pulses in a well known manner.

The stacker ready station 12 is provided with a second resilient stop member 132, a second guide member 134, and a pair of second resilient downward biasing members 136. The second resilient stop member 132 is essentially a reed-type spring secured at its lower end below the level of the base plate 70 and extending upward thereby and past the edge of the cover plate 72 at the extreme end of the stacker ready station 12, opposite the read ready station 6, the upward end of the stop member 132 being resiliently self-biased against this edge of the cover plate 72. The stop member 132 is so disposed as to stop cards upon their entry into the stacker ready station 12.

The second guide member 134 is a narrow, horizontally elongated strip mounted on the lower surface of the base plate 70 normal to the direction of initial card travel. One edge of the guide member 134 is inclined so that it angles upward through the base plate 70 in the direction of the second resilient stop member 132, continuing upward until it protrudes effectively into the card guideway formed between the cover plate 72 and the base plate 70, such that cards entering the stacker ready station will pass over the guide member 134. The second resilient downward biasing members 136 are also comprised of reed-type springs, and are affixed at their uppermost ends atop the cover plate 72, the free ends thereof extending obtusely downwardly therethrough and in a direction angled toward the second resilient stop member 132 to provide relatively small angles at their points of contact with the base plate 70. The downward biasing members 136 are spaced apart a distance somewhat less than the width of a record card, contacting the base plate 70 at points just behind the second guide member 134.

With reference to FIGS. 1, 3 and 4, the third transport 14 has an actuatable feed plate 138 and a fourth driver 140. An actuatable solenoid 142 (FIG. 4) is mounted below the base plate 70 by a solenoid mounting bracket 144. To its armature 146 is affixed the lower end of an elongated plate 148, the other end of which extends vertically past the respective edges of the base plate 70 and the cover plate 72 at a point opposite the stacker ready station 12 from the stacker station 16 and approximately central to the second guide member 134 and the second resilient stop member 132. Affixed to the upper end of the elongated plate 148 is the feed plate 138, which, in its normal position, is effectively adjacent but clear of the respective edge of a card in the stacker ready station 12. The cover plate 72 and the base plate are recessed at this point to allow a degree of movement of the feed plate 138 in the direction of the stacker station 16 upon actuation of the solenoid 142.

The fourth driver 140 has a double set of fourth pinch rollers 150. A pair of fourth drive rollers 152 is affixed to a continuously rotating drive shaft 154 overlying the cover plate 72. The rollers 152 are spaced apart on the shaft 154 a distance somewhat less than the length of a record card fed thereby and peripherally extend downward through the cover plate 72 to a point central to the base plate 70 and the cover plate 72. Pivotally mounted to the lower surface of the base plate 70 below each of the fourth drive rollers 152 is a fourth pressure roller 156 resiliently biased by a helical spring 158 upward through the base plate 70 and against its respective drive roller 152. The mutual point of contact between the drive rollers 152 and the pressure rollers 156 is tangentially adjacent what will next be the leading edge of a card resting in the stacker ready station 12 to receive cards individually fed therefrom by the feed plate 138.

With reference to FIG. 1, the stacker station 16 (not completely shown) is of a well-known type which has a number of selectable pockets to receive record cards conveyed thereto by the third transport and to assemble them in an ordered sequence dictated by the logic sections of the card reader.

Operation of the Invention

With reference to FIG. 1, the overall operation of the embodiment shown may be illustrated. A number of record cards to be read would be stacked in the hopper station 2 oriented with their leading edges facing upward with respect to the drawing. When a card is to be read, it would be fed from the bottom of the card stack 22 in the hopper station 2 by the first transport 4 into the read ready station 6. It would then be fed by the second transport 8 to the right past the read station 10 to the stacker ready station 12. The card would then be fed upward once again, as viewed in FIG. 1, by the third transport 14 to the stacker station 16, where it would be received by a preselected one of a number of card pockets (not shown).

With reference to FIG. 2, the operation of hopper station 2 and the first transport 4 may be illustrated in greater detail. The card stack 22 is shown supported in the hopper station 2. The lowermost card is supported at its leading edge just behind the hopper throat 26 by the resilient card support member 24, and its trailing edge rests on the top of the feed knives 28 just ahead of the impelling projections 36 thereon.

When a card is to be fed, an appropriate signal is generated in the logic section of the card reader and applied to the clutch **40** (FIG. **1**). Upon receiving this signal, the clutch **40** is engaged temporarily to cause one complete rotation of the intermittently rotatable drive shaft **48**. Upon rotation of the shaft **48**, the feed actuate cam **50** affixed thereto also rotates. The cam follower roller **58** is shown biased against the cam **50** by the helical spring **60** at the low portion **54** of the cam **50**. As the high portion **52** of the cam **50** approaches the cam follower roller **58**, the cam follower lever **56** is forced to pivot in a counterclockwise direction about the pivotable shaft **34** to which it is affixed. The feed knife supporting levers **32**, which are also affixed to the pivotable shaft **34**, are also pivoted in a counterclockwise direction, the feed knives **28** mounted thereon being rocked to the left with respect to the drawing to thereby force the lowermost card in the card stack **22** in the same direction as impelled by the feed knife projections **36**. After the high portion **52** of the cam **50** is rotated past the cam follower roller **58**, the cam follower lever **56** is pivoted clockwise under the urging o the helical spring **60**, the feed knife supporting levers **32** being pivoted in a clockwise direction to return the feed knives **28** to their rest position with their impelling projections **36** effectively positioned behind the new lowermost card. After one complete rotation of the intermittently rotatable shaft **48**, the actuatable clutch **40** is disengaged, allowing the shaft **48** to cease its rotation.

As the lowermost card **160** in the hopper station **2** is pushed forward by the feed knives **28**, its leading edge will pass through the hopper throat **26**. The dimensions of the throat **26**, as previously indicated, are such that only one card will pass therethrough at one time, thus the next higher card in the card stack **22** will be retained to become the new lowermost card. The leading edge of a card exiting the hopper station **2** will travel past the throat only a short distance before encountering the first driver **30**, which comprises the pair of first pressure rollers **66** bearing resiliently upward against the pair of continuously rotating first drive rollers **64**. The first driver **30** will force the card toward and into the read ready station **6**.

As the card **160** moves toward the read ready station **6**, its leading edge will pass over the first guide member **76** and be deflected downward toward the base plate **70** by the inclined cover plate edge **82**. The card will continue to move in this direction under the influence of the first driver **30** while passing therethrough. After clearing the first driver **30**, the card will continue in the same direction under the influence of inertia until its leading edge contacts the first resilient stop members **74**. The stop members **74** will be deflected somewhat by the force of the impacting card but will stop the card's forward motion and then, in restoring itself to its rest position, will force the card in a direction opposite to its original motion until the trailing edge of the card abuts the first guide member **76**. The first resilient downward biasing members **78** will urge the trailing edge of the card downward against the base plate **70** to thereby ensure that the card's trailing edge will in fact abut the first guide member **76**. The card will have thus been positioned in the read ready station **6**, as illustrated at **162**, where it will remain until it is fed to the read station **10**.

To feed a card so positioned in the read ready station **6** to the read station **10**, with reference to FIGS. **1** and **3**, an appropriate signal is generated in the logic section of the card reader and applied to the solenoid **96**. Upon receiving this signal, the solenoid **96** forces its depending pinch **98** downward. The plunger roller **102** rotatably mounted to the lower end of the plunger **98** presses the card positioned thereunder downward against the continuously rotating second transport drive roller **84**. Since the surface of the drive roller **84** has a relatively high coefficient of friction, this pressure of the roller **102** upon the card will cause the card to be accelerated toward the read station **10**. Upon termination of the signal to the solenoid **96** (which is of short duration), the pinch roller **102** is restored to its rest position, peripherally recessed just above the lower surface of the cover plate **72**, under the influence of the plunger return spring **104**.

When positioned in the read ready station **6**, the right-hand edge of a card, with respect to the drawings, will be located adjacent the second driver **88** and will represent the leading edge of the card when in this position. The card exiting the read ready station **6** will travel only a short distance before its leading edge encounters the second driver **88** comprised of second pressure rollers **112** and the continuously rotating second drive rollers **108**. The second driver **88** forces the card toward and into the read station **10**.

Due to the relatively short card travel path, referring briefly to FIG. **2**, there may be insufficient time for cards stopped in the read ready station **6** to be cleared completely therefrom before the next card fed from the hopper station **2** begins to enter. The construction of the read ready station **6** is such that one card is permitted to overlap another. As previously described, each card entering the read ready station **6** travels over and is then pressed down behind the first guide member **76**. The next card entering the read ready station **6**, before the card already positioned therein has been completely cleared, is directed over the previous card by the first guide member **76**. The first card will be completely evacuated from the read ready station **6**, however, before the second card is fully positioned between the first resilient stop members **74** and the first guide member **76**.

As a card is fed through the read station **10**, the encoded information contained thereon in the form of punched holes will be read by the combinations of light sources and detectors. Since the read station **10** is disposed just beyond the second driver **88**, the cards being read are under constant drive and therefore travel through the read station **10** at a constant speed. As mentioned previously in the detailed description, the basic timing for the read and other functions of the card reader is obtained from the serrated timing disc **128**, affixed to the drive shaft **110** rotating the second drive rollers **108**, the timing disc and the adjacent transducer **130** producing an output of electrical pulses. As the card continues through the read station **10**, its leading edge encounters the third driver **89** comprised of third pressure roller **122** and the continuously rotating third drive roller **118**. The third driver **89** maintains the constant speed of the card traveling through the read station **10** and forces the card toward and into the stacker ready station **12**.

As a card enters the stacker ready station **12**, its leading edge passes over the second guide member **134** and is deflected downward toward the base plate **70** by the second resilient downward biasing members **136**. The card continues to move in this direction under the influence of the third driver **89** while passing therethrough. After clearing the third driver **89**, the card continues in the same direction under the influence of inertia until its leading edge contacts the second resilient stop member **132**. The stop member **132** is deflected somewhat by the force of the impacting card but will stop the card's forward motion and then, in restoring intself to its rest position, will force the card in a direction opposite to its original motion until the trailing edge of the card abuts the second guide member **134**. The second resilient downward biasing members **136** will urge the trailing edge of the card downward against the base plate **70** to thereby ensure the card's trailing edge will in fact abut the second guide member **134**. The card will have thus been positioned in the stacker ready station **12** where it will remain until it is fed to the stacker station **16**.

To feed a card positioned in the stacker ready station **12** to the stacker station **16**, with reference to FIGS. **1** and **4**, an appropriate signal is generated in the logic section of the card reader and applied to the solenoid **142**. Upon receiving this signal, the solenoid **142** is energized, thus attracting the armature **146** to which is operatively coupled the feed plate **138**. The feed plate **138** is activated toward the stacker station **16**, driving the card in the stacker ready station **12** in the same direction. What has now become the leading edge of the card exiting the stacker ready station **12** travels only a short distance before encountering the fourth driver **140** comprised of the fourth pressure rollers **156** and the continuously rotating fourth drive rollers **152**. The fourth driver **140** forces the card toward and into the stacker station **16**, where it will be received by a preselected pocket according to the logic system of the card reader.

As was the case in the read ready station **6**, due to the relatively short card travel path, there may be insufficient time for cards stopped in the stacker ready station **12** to be cleared completely therefrom before the next card fed from the read station **10** begins to enter. The construction of the stacker ready station **12** is such that one card is permitted to overlap another. As previously described, each card entering the stacker ready station **12** travels over and is then pressed down behind the second guide member **134**. The next card entering the stacker ready station **12** before the card already positioned therein has been completely cleared, will be directed over the previous card by the second guide member **134** as the previous card exits. The first card will be completely evacuated before the second card is fully positioned between the second resilient stop member **132** and the second guide member **134**.

While the record card reader, feeder and transport device has been shown and described in considerable detail, it should be understood that many changes and variations may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. In a record card reader, feeder and transport device having a ready station disposed at each of two respective junctures of three, progressively disposed, orthogonal, coplanar card transport sections, the card paths therethrough being of predetermined, restricted lengths such that cards entering either ready station may temporarily and partially overlap cards exiting therefrom to maximize the rate of card processing while maintaining the rate of card travel at a level low enough to minimize card leading edge damage, there being card feeding and driving mechanisms operatively associated with each card path, the medial card transport section of the three aforesaid transport sections including, in combination:

a horizontally elongated base plate forming a card-supporting surface cooperating with a similar, superposing cover plate having a card-guiding surface in closely spaced, opposing relation to the card-supporting surface of the base plate and defining the medial card path therebetween,

a continuously rotatable drive roller disposed peripherally below the card-supporting surface of the base plate, said drive roller extending partially through the base plate but being peripherally recessed with respect to its card-supporting surface,

a pinch roller normally disposed peripherally above the card-guiding surface of the cover plate and actuatable through the cover plate toward said drive roller to depress individual record cards into engagement with the drive roller for feeding the same along the medial card path, and

means for feeding individual record cards into the medial card path in a direction normal to and in the plane of card travel therein from a preceding card path, each card passing freely thereinto by virtue of the peripherally recessed dispositions of the drive roller relative to the card-supporting surface of the base plate and of the pinch roller relative to the card-guiding surface of the cover plate.

2. In a record card transport system through which cards are fed in seriatum and having a card transport section disposed at the juncture of two orthogonally related, coplanar card paths of predetermined, restricted lengths such that a card entering the transport section will temporarily and partially overlap the preceding card exiting therefrom to maximize the rate of card processing while maintaining the rate of card travel at a level low enough to minimize card leading edge damage, there being card feeding and driving mechanisms operatively associated with each card path, the transport section including, in combination;

a horizontally elongated base plate forming a card-supporting surface cooperating with a similar, superposing cover plate having a card-guiding surface in closely spaced confronting relation to the card-supporting surface of the base plate and defining a narrow card path therebetween,

a rotatable drive roller disposed peripherally below the card-supporting surface of the base plate, said drive roller being rotatable about a fixed axis and being dimensionally related to the base plate so as to extend upwardly partially through the base plate but being peripherally recessed with respect to its card-supporting surface,

means connectible to a source of rotary power for rotating said drive roller continuously at a substantially constant rate of speed,

an idling pinch roller carried by the cover plate and normally disposed peripherally above the card-guiding surface of the cover plate and actuatable through the cover plate toward said drive roller to depress an individual record card in the transport section into engagement with the rotating drive roller so as to cause the record card to be propelled by the drive roller along the card path of the transport section, and

means for feeding record cards individually into the transport section in a direction normal to that in which each such card is propelled by the drive roller and in the plane of card path therein, each such fed card passing freely into the card path of the transport section during the normal peripherally recessed disposition of the pinch roller relative to the card-guiding surface of the cover plate and by virtue of the peripherally recessed disposition of the drive roller relative to the card-supporting surface of the base plate.

3. The record card transport system as defined in claim 2 characterized in that an electromagnetic device is carried by the cover plate for causing the actuation of the pinch roller toward the drive roller.

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