United States Patent

[11] 3,598,400

[72] Inventor **Carl R. Nelson**
Kettering, Ohio

[21] Appl. No. **833,554**
[22] Filed **June 16, 1969**
[45] Patented **Aug. 10, 1971**

[73] Assignee **The National Cash Register Company**
Dayton, Ohio

[54] **DOCUMENT INPUT MECHANISM**
23 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** ..... **271/62 B**
[51] **Int. Cl.** **B65h 7/02**
[50] **Field of Search** 271/12, 61, 62

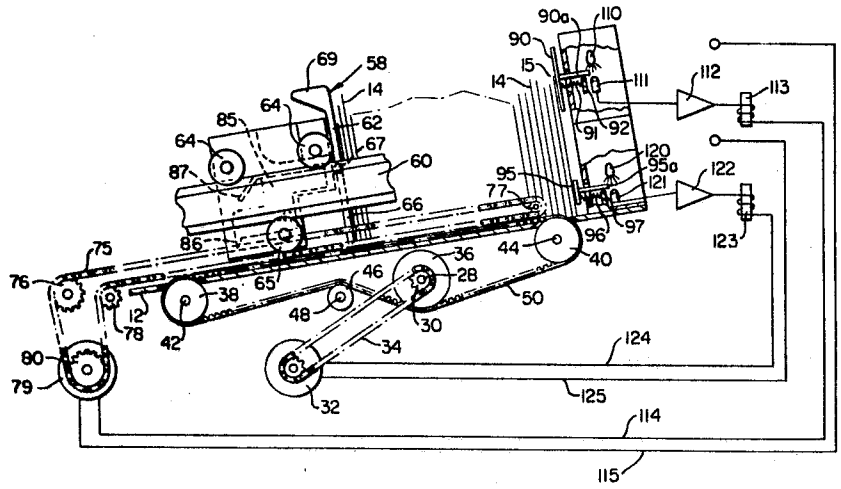
[56] **References Cited**

UNITED STATES PATENTS

2,444,504	7/1948	Grogan	271/30 A
2,621,928	12/1952	Lauffer	271/12
2,847,213	8/1958	Duncanson et al.	271/62 B

Primary Examiner—Joseph Wegbreit
Assistant Examiner—Bruce H. Stoner, Jr.
Attorneys—Louis A. Kline, Wilbert Hawk, Jr. and George J. Muckenthaler

ABSTRACT: A feeding device for a sorting machine including means for uniformly advancing a plurality of documents toward a pickup station and means for sensing surface forces on the face of the forwardly traveling document to maintain planar attitude of the documents in relation to the pickup station. Both belt drive means and paddle drive means are employed to advance the documents along a feed table to the pickup station, each drive means having its own element for sensing such planar attitude by responding to the position and surface pressure of the documents to maintain them substantially perpendicular to the table as they are being advanced and to present these documents at the pickup station in parallel fashion. The sensing elements include upper and lower sensing arms contactable with the face of the forward document for detecting forces existing at the upper and lower portions of the forward document. Each arm independently energizes its individual drive means for controlling the rate of document advancement.



PATENTED AUG 10 1971

3,598,400

SHEET 1 OF 3

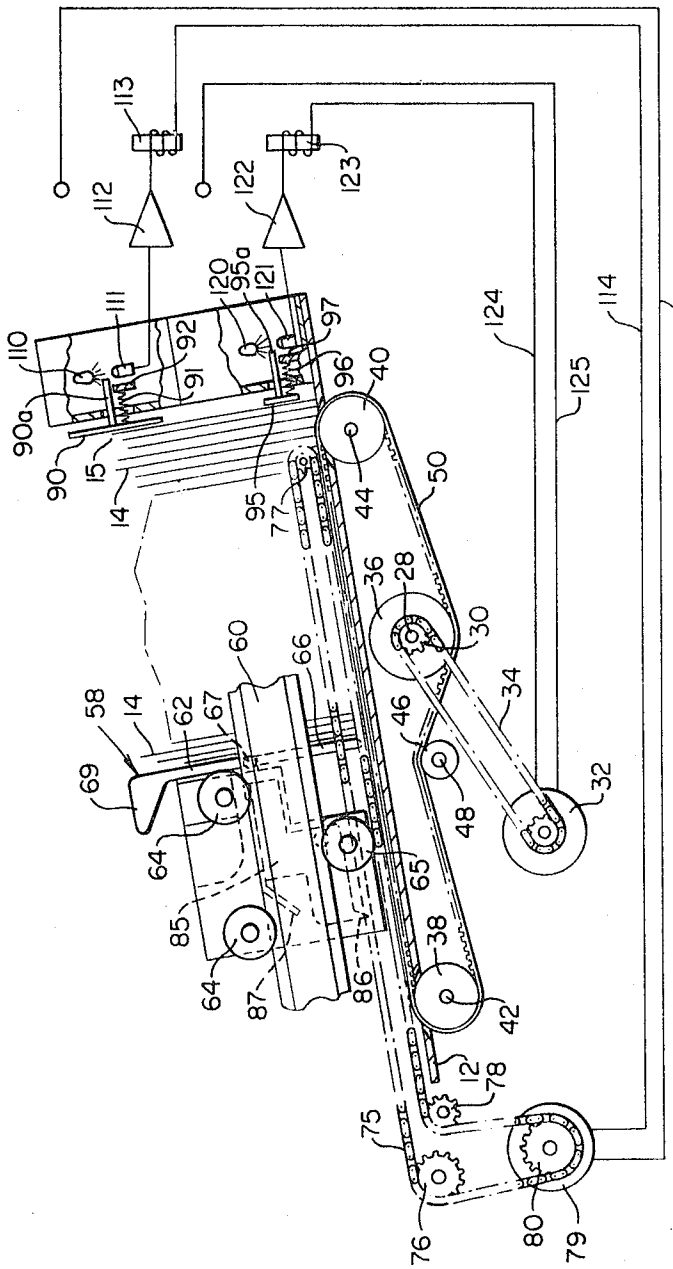


FIG. 1

INVENTOR
CARL R. NELSON

BY Louis A. Kline
Wilbert Hawk, Jr.
Geo. J. Marchesenault

HIS ATTORNEYS

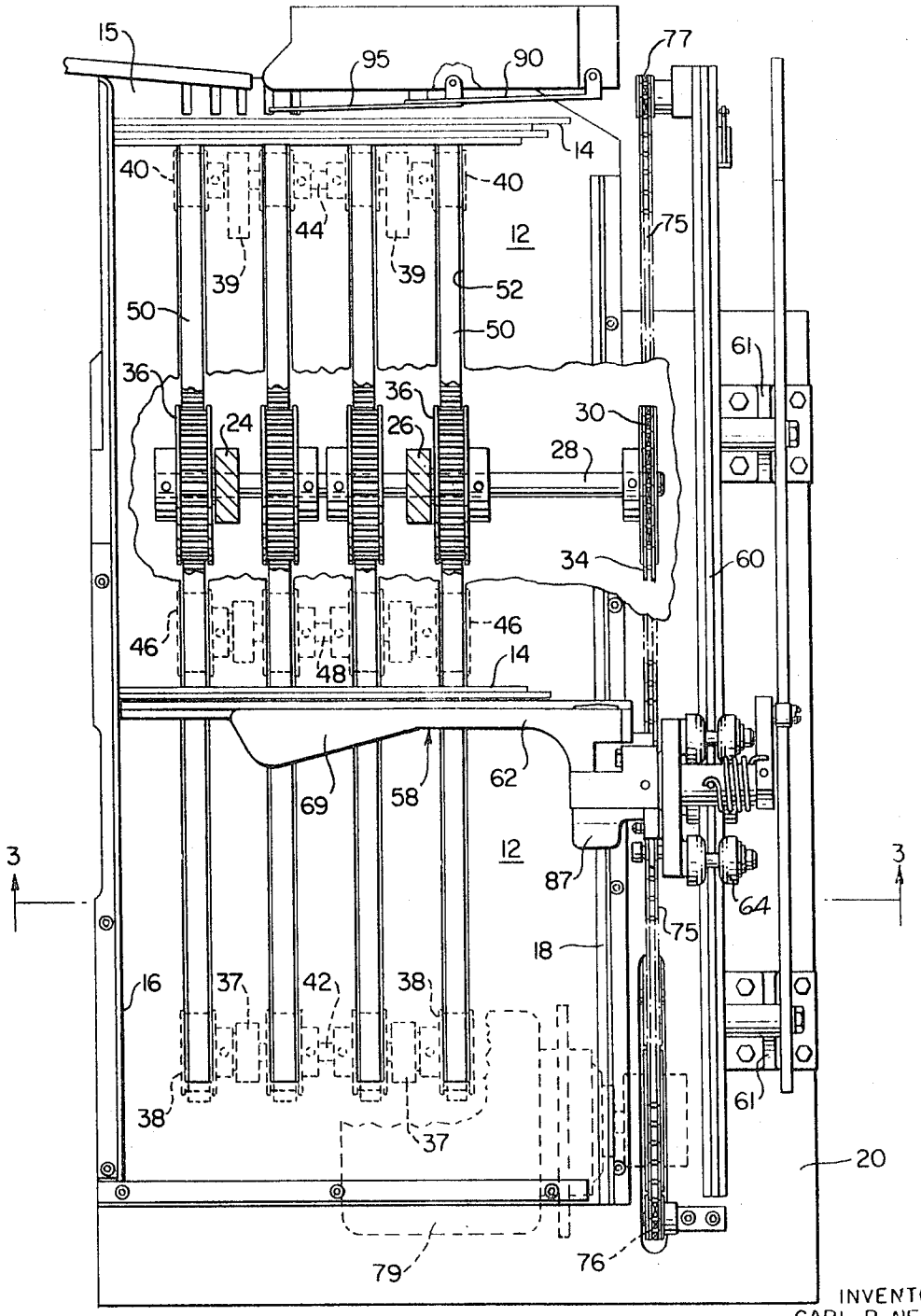


FIG.2

INVENTOR
CARL R. NELSON
Louis A Kline
BY Wilbert Hawk, Jr.
Geo J Muckenthaler
HIS ATTORNEYS

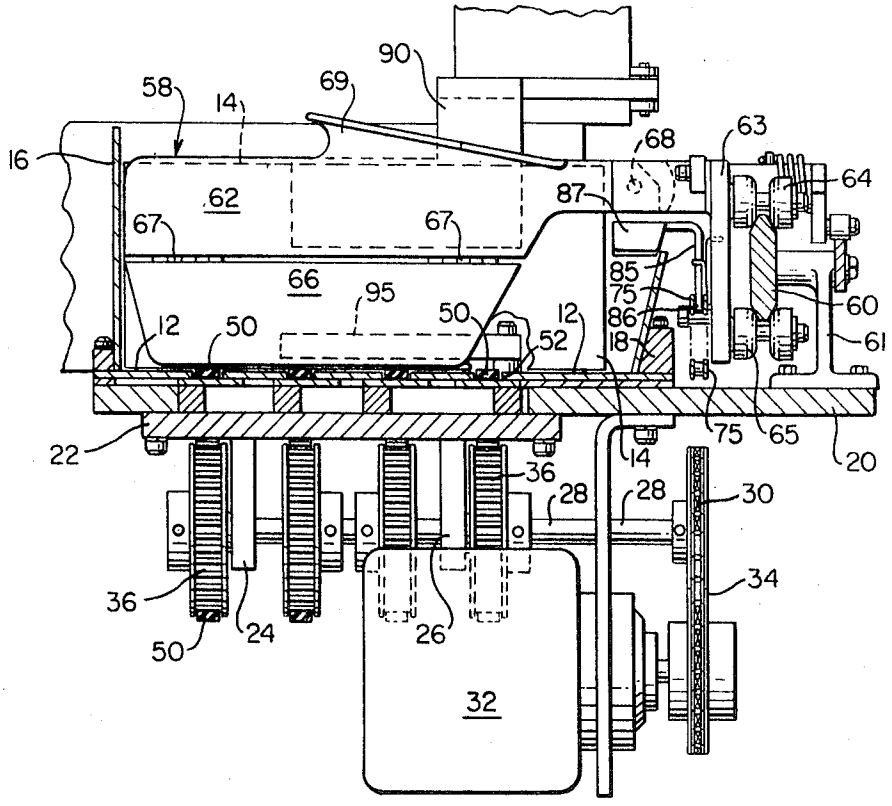


FIG. 3

INVENTOR
CARL R. NELSON

BY Louis A Kline
Wilbert Hawk, Jr.
Geo J Muchenthaler
HIS ATTORNEYS

DOCUMENT INPUT MECHANISM

BACKGROUND OF THE INVENTION

In the art of volume document feeding being practiced by the businesses of today, it is desirable that the documents be presented parallel to a pickup station with a controlled force which is nearly uniform between the face of the presented document and the pickup station. For instance, in a sorting machine, a plurality of documents are placed in a hopper and carried across a feed table to a pickup station, where each forwardly presented document is successively removed or picked up and then delivered in singular fashion by transport mechanism to a specific sorter pocket, so it is imperative that the documents be presented at the correct attitude in relation to the pickup station.

The reliability of picking off single documents from a stack for subsequent depositing in a pocket is increasingly important with the advent of the higher volume sorting machines, so it is desirable to provide improved mechanism and techniques for this purpose. If the document is not presented parallel to the pickup station with a controlled predetermined force, the pickup device cannot function properly, and performance of the sorting machine is impaired. Poor document presentation at the pickup station may result in missed feeds, double feeds, out-of-time documents, spacing errors, or jamming of the material in the machine. Ordinarily, if all the documents being sorted are of the same size and condition, the mechanism operates satisfactorily, but, when the type, the size, and the condition of the documents vary, it becomes more important that each one be presented in parallel fashion to the pickup station. If the document is leaning either forward or rearward at the top, an unbalance of forces between the pickup station and the surrounding guides causes an erratic pickup action. This results in skip feeds, multiple feeds, spacing errors, and jams, as mentioned. Such a poor document presentation may result from pivoting of the documents about their lower edges due to frictional engagement with the input bin table, or the documents may lean at the top if the lower edges are perforated or ragged, which thus increases their thickness along that edge.

The prior art teaches, in one instance, an input mechanism having one document-driving surface and one sensing device; and, in another instance, a mechanism having one document-driving surface and two sensing devices. In the case of the multiple-sensing devices, one or the other analyzes the attitude of the document stack to determine whether the one driving surface should be operated to advance the stack. This particular structure requires that the one driving surface be fixed to maintain a predetermined attitude with respect to the pickup station. If performance is not satisfactory, the driving surface must be adjusted for varying conditions of the documents, because the driving surface itself cannot readily correct, during operation, for nonuniformity of forces between the documents and the pickup station. An example of such prior art teaching is U.S. Pat. No. 3,149,833, which issued on Sept. 22, 1964, on the application of Arnaldo Rolon, and which shows and describes a feeding device having a document-supporting table with a backplate document driver and a sensing finger engageable by the documents for detecting whether or not the driver should be actuated. Since the attitude of the backplate driver must be predetermined and fixed in relation to the attitude of the sensing finger, the driver itself cannot correct for the various document conditions. In addition to the pivoting of the documents on their lower edges and their leaning at their top edges, as mentioned above, the documents may slide away from the registration side of the stack bin if they are of varied lengths and the leading edge of the stack is of a dimension greater than that of the trailing edge. This results in a wedge-shaped stack. A larger leading edge dimension is typical, due to prior hand and machine handling causing a frayed or otherwise worn leading edge. It is, therefore, desirable to provide an improved feed mechanism for maintaining the documents, regardless of size and condition, in correct relationship to the surface of the pickup device.

SUMMARY OF THE INVENTION

The present invention relates to a sorting machine and, more particularly, to an improved feeding mechanism wherein the documents to be sorted are advanced from a stack under uniform pressure and are presented in parallel manner at the pickup station, where they are individually carried to the correct sorting pockets. The mechanism includes a feed table having slots therein for permitting a plurality of belts to emerge up through the table to engage with and drive the lower edge of the documents in the stack. A second drive means includes a multiportion paddle engageable with the rear surface of the document stack for advancing the documents toward the pickup station. The upper portion of the paddle is driven to specifically advance the upper portion of the documents, while the lower portion of the paddle is swingable, but biased, to cooperate with the upper portion in advancing the lower portions of the documents during a specific time interval in the document travel.

Upper and lower sensing means are positioned to detect the force on the upper and lower portions of the forwardly presented document at all times in the travel toward the pickup station, the sensing means performing to separately actuate one or the other of the drive means to maintain the documents in a correct attitude. The sensing devices incorporate spring-loaded arms which detect variation in document pressures and, through control devices, cause actuation of motors to drive the belts and the paddle. Depending upon the attitude of the document stack in relation to the pickup station, either or both of the drive means may be actuated at any point of time in the document stack travel along the feed table.

In line with the above discussion, the principal object of the present invention is to provide an improved document input mechanism for a sorting machine.

A further object of the present invention is to provide an input mechanism that will present a stack of documents to a pickup station with nearly uniform forces between the documents and the station.

An additional object of the present invention is to provide an input mechanism having a plurality of document drivers and sensing devices which correct the position of advancing documents to maintain a proper attitude with the pickup station.

Another object of the present invention is to provide a driving force along the full length of the input mechanism while permitting individual selection of the documents at the pickup station.

Additional advantages and features of the present invention will become apparent and fully understood from a reading of the following description taken together with the annexed drawings, in which:

FIG. 1 is a side elevational view in diagrammatic form showing the document-sensing means and the document-driving means of the present invention;

FIG. 2 is a top plan view showing the paddle drive and the belt drive of the driving means in relation to the sensing means; and

FIG. 3 is a sectional view taken on the line 3–3 of FIG. 2.

Referring now to FIG. 1, there is shown a feed table 12 extending from left to right in an upwardly sloping fashion and supporting a plurality of documents 14, such as bank checks or the like. The documents are stacked on edge and are carried in this attitude up the inclined table to a pickup station, where the forward check is selected and picked off the stack in succession to be carried by transport mechanism (not shown) to a further station or pocket. The pickup station is defined by a zone 15, at the upper extent of the table and adjacent the transport mechanism, wherein the documents are ultimately positioned at the end of their upward travel. The zone generally includes the space between a plane coincident

with the document-engaging surface of movable sensing arms at the upper end of the table and a plane substantially perpendicular to the table and parallel to the first-mentioned plane, this space being occupied by the forwardly advanced documents. In this manner, a stack of checks is placed or loaded on the feed table and, through mechanism to be described, is caused to be driven to the pickup station for subsequent sorting of each check into its proper channel or pocket according to the desires of the operator of the system. The inclination of the table **12** is but a small amount—sufficient to prevent the documents from leaning or falling forward (toward the right in FIG. **1**). A left guide plate **16** (FIGS. **2** and **3**) acts as a registration edge for the documents as they travel up the incline, so that, at the point of pickoff, the leading edges of the documents are positioned correctly for being transported to the left by the appropriate mechanism. A right guide plate **18**, also shown in FIG. **3**, is sufficient to contain the longest check placed on the table.

A lower frame member **20** (FIG. **3**) supports the feed table **12** and additional document drive structure, said member **20** carrying a plate **22** bolted thereto, the plate **22** having brackets **24** and **26** secured thereunder to journaly support a shaft **28**. The shaft **28** is driven by a sprocket **30** connected to a drive motor **32** by means of a chain **34** (see also FIG. **1**). The shaft **28** drives a plurality of identical pulleys **36** aligned laterally across and about halfway up the underside of the inclined feed table **12** (FIG. **2**). Also supported from the plate **22**, by means of brackets **37** placed near the lower end of the inclined feed table, are a plurality of pulleys **38**, and, by means of brackets **39** near the upper end of the table, a plurality of pulleys **40**, the pulleys **38** and **40** being carried on shafts **42** and **44**, respectively. A set of idler pulleys **46** (FIGS. **1** and **2**) is positioned in line with and between the pulleys **36** and **38**, the idlers being carried on a shaft **48**. A belt **50** is trained over each of the drive pulleys **36**, the end pulleys **38** and **40**, and the idler **46**, there thus being four of these belts **50** so positioned to be driven in a path whereby the upper run of each belt emerges slightly through a slot **52** provided therefor in the feed table **12**. As illustrated, this provides a plurality of surfaces for contacting and for carrying the lower edge of the documents in their travel up the incline to the pickup station. The belts **50**, therefore, frictionally engage the lower edge of the documents for driving them along the incline and in registration with the left guide plate **16**, thus keeping them in proper position for pickup at the upper end of the table **12**.

A second drive means is supported above the feed table **12** to ride therealong on a rail **60** secured to a support arm **61** bolted to the outer side of the frame member **20** (FIGS. **2** and **3**). This drive means includes a multiportion paddle, generally designated as **58**, having an upper driving member **62** supported from a bracket mechanism **63** carried by means of upper rollers **64** and lower rollers **65** riding on the rail **60**, and a lower driving member **66** swingably supported from the member **62** by means of a pair of spring hinges **67**, allowing the paddle to swing bottom downward or to the left (FIG. **1**) but biased upward or to the right into contact with the lower portion of the documents directly in contact therewith. The paddle **58** is pivotally connected by means of a pin **68** (FIG. **3**) for "swing-away action" to facilitate loading of a stack of documents onto the feed table, a handle **69** being provided for raising and lowering the paddle about said pivot pin.

A chain **75**, trained over a plurality of sprockets **76**, **77**, and **78**, and driven by a motor **79** from a sprocket **80** thereon (FIG. **1**), is positioned and supported by suitable means adjacent the right side of the feed table **12**. An arm **85**, secured to the bracket mechanism **63** (FIG. **3**), includes a downwardly projecting finger **86** formed to engage with the links of the chain **75**, so that, as the chain is driven clockwise (as seen in FIG. **1**), the paddle is driven up the incline to advance the documents along the table. A release lever **87** is attached to the arm **85**, with which to manually disengage the finger **86** from the chain and allow the paddle to be manually retracted to the document-stack-loading position.

At the upper end of the feed table **12** is the document-sensing mechanism, which includes an upper sensing arm **90** and a lower sensing arm **95**, each pivotally supported (FIGS. **2** and **3**) to move in a fore-and-aft direction in relation to the direction of travel of the documents. The upper sensing arm **90** is biased toward the advancing documents by means of a spring **91** connected between the arm and a bracket support **92** (FIG. **1**). The lower sensing arm **95** is similarly supported and biased by means of a spring **96** connected between the arm and a support **97**. The upper sensing arm **90** detects and responds to the force of the advancing documents exerted thereon by the upper portion of the documents being driven by the upper driving member **62** of the paddle **58**. The sensing arm **95** likewise responds to the force exerted thereon by the lower portion of the documents **14** being driven by the frictional engagement of the belts **50** with the lower edges thereof. As mentioned above, the pickup station is defined by a zone, adjacent and directly in front of the document-sensing arms **90** and **95**, wherein each document is successively presented from the stack being advanced up the table. When the forward document is advanced into position on a plane coincident with the engaging surface of the sensing arms **90** and **95**, it is capable of being selected and picked off the stack by a pickup device and moved to the left (FIG. **2**) to mechanism (not shown) for transporting it to a further station or pocket. The zone of pickup **15** is generally along this plane, although the plane itself may be changed slightly by reason of one or the other of the sensing arms being moved by the force of the advancing documents. The upper driving member **62** of the paddle **58** and the driving belts **50** cooperate to uniformly advance the documents along the table, it being understood that the driving paddle and the belts are independently controlled to advance either the upper portion of the stack or the lower portion of the stack at any given time, depending upon the attitude of the documents in relation to the pickup station. For instance, when the table is loaded with a stack of documents, the paddle **58** is manually moved against the stack, and thereafter the belt and the paddle drivers take over to advance the documents. If the top portions are advanced faster than the lower portions, the lower portions do not exert force against the sensing arm **95**, so it pivots outwardly toward the stack by reason of the spring **96**, thus allowing the sensing circuit to be completed and to start the motor **32** to drive the belts **50** and advance the lower portions. As soon as the belts advance the documents sufficiently, the force exerted against the sensing arm **95** increases to compress the spring **96**; the arm is pivoted to interrupt the sensing circuit; and the belts are stopped until the position of the lower portions again calls for advancement. The paddle drive means operates in similar manner to complete the sensing circuit for advancing the upper portions of the documents and to interrupt the circuit when the force builds up to swing the sensing arm **90** against the spring **91**. Therefore, the belt and the paddle drives generally operate intermittently, depending upon the attitude of the upper and lower portions of the documents in relation to a plane perpendicular to the table. If the upper portions lag from the perpendicular, the top member **62** of the paddle is advanced, and, if the lower portions lag, the belts **50** are advanced. Since the lower portion **66** of the paddle **58** is springably hinged at **67**, this portion does not exert a driving force on the documents until near the end of the run, thus allowing the belts **50** to advance the lower portions of the documents during their travel up the table.

In order that the documents may be readily picked up and fed into the transport mechanism, it is not desirable to have the belts **50** extend into the space immediately in front of the pickup station; therefore, the belts are turned short of this area, and the importance of the hinged lower portion **66** of the paddle **58** comes into play. Since the belts are turned short of the pickup station, they do not continue advancement of the lower portions of the documents, so the lower member **66** of the paddle aids in driving the portions. Additionally, when the stack of documents **14** decreases so that only a small number

of them remain to be selected, the belts **50**, of course, lose their full effectiveness in driving the lower portion of the documents, and the lower member thus maintains contact with the lower portions to advance these portions in line with the upper portions. It is at this time that the lower portion **66** of the paddle **58**, being springably hinged, is automatically brought into line with its upper portion **62** to continue the advancement of such small number of documents. During advancement of the documents along the table, the lower portion **66** of the paddle **58** is free to swing downwardly, or to the left in FIG. **1**, if the documents have uneven or ragged surfaces or edges which tend to increase the thickness of the stack. The weight of each spring **67** is selected to allow the lower portion **66** of the paddle to swing, with the result that no driving force is exerted on the lower portions of the documents until they leave the belts. As soon as the belts **50** turn downwardly around the pulleys **40** at the upper end of the table, the lower portion **66** of the paddle, by being swingably biased into the plane of the upper portion **62**, automatically maintains the lower portions of the documents in a plane with the upper portions to present the documents in a position which is parallel to the pickup station and also perpendicular to the table **12**.

The upper and lower sensing arms **90** and **95** are parts of upper and lower switch assemblies for detecting the force at the top surface and at the lower surface of the presented documents, respectively. The upper switch assembly includes a photocell device having a lamp **110** directing light rays downwardly toward a photo diode **111**, the diode being capable of responding to presence and absence of the light. Presence and absence of light are in turn brought about by the shifting action of a shutter portion **90***a* of the sensing arm **90** as it responds to the surface pressure from the documents **14**. As the sensing arm **90** moves out toward the advancing documents (actually in a pivot fashion, as seen in FIG. **2**) by action of the spring **91** and due to decreased surface force exerted by the documents because of slower advancement by their upper portions, the shutter portion of the displaced arm **90** allows light to pass to the diode **111**, and a signal is sent through an amplifier **112** to a relay **113**, which activates the motor **79** through leads **114** and **115**. Upon energization of the motor **79**, the chain **75** is advanced clockwise, carrying the paddle **58** with it to further advance the documents up the incline. As they advance to the point where the surface pressure of the forward document presses against the arm **90** and forces it to retreat against the action of the spring **91**, the arm **90** cuts the path of light from the lamp **110** to the diode **111**, and the circuit is interrupted, thus stopping the motor drive and the motion of the chain **75** and the paddle **58**.

The lower switch assembly operates in similar manner, with a lamp **120** directing light toward a diode **121**, the diode generating a signal through an amplifier **122** to a relay **123** to activate the motor **32** through leads **124** and **125**. When the lower portions of the documents lag behind the upper portions, the spring **96** extends the sensing arm **95** to allow the path of light from the lamp **120** to pass the sensing arm shutter portion **95***a* and hit the diode **121** and signal the motor **32** to start the turning of the pulleys to advance the belts **50** and thus carry the lower edges of the stack of documents up the incline. When increased surface pressure depresses the arm **95** to cause its shutter portion to cut the path of light between the lamp and the diode, the motor and the belts **50** are stopped. It is thus seen that the varying forces on the upper and lower portions of the documents against the sensing arms **90** and **95** perform to shutter the light path between the respective lamps and their diodes to control the advancement of the upper and lower portions of the documents and thus maintain the documents perpendicular to the table **12** and parallel to the plane of the pickup station. When the belts **50** are no longer effective to advance the stack of documents into the zone of pickup, which is approximately three-fourths of an inch to 1 inch in front of the document-engaging surface of the sensing arms **90** and **95**, the lower member **66** of the paddle take over the advancement of the documents and maintains them in the perpendicular fashion to enable them to be selectively picked from the stack. Since the upper member **62** of the paddle is capable of being driven the full length of the table to the pickup station, the lower member **66** likewise is carried forward by the upper member to advance the lower portions of the documents to the station.

Herein shown and described is an improved document feed mechanism which includes multiple drive and sensing means for accomplishing all the features and advantages mentioned above. While only one embodiment has been disclosed, slight variations on the above may occur to those skilled in the art, so it is contemplated that all such variations having these features are within the scope of the invention.

What I claim is:

1. Mechanism for feeding documents along an inclined table to a pickup station at one end thereof substantially perpendicular to the incline, said mechanism comprising

first feed means engageable with the lower edges of the documents for advancing the documents along the table to the station,

second feed means engageable with the upper portion of the documents and cooperable with the first feed means for advancing the documents along the table to maintain them substantially perpendicular to the table during the travel of the documents therealong, and

means for sensing the advancement of the documents and connected for controlling the driving of the first and second feed means.

2. Mechanism in accordance with claim **1** wherein the first feed means includes a plurality of belt members running in the direction of travel of the documents, and the second feed means includes a paddle member driven independently of the belt members.

3. Document-propelling mechanism for advancing documents to a pickup station where each successive document is selected to be transported thereupon, comprising a

feed table having a guide member for containing the documents in alignment along one edge,

first drive means engageable with the lower portions of the documents for advancement thereof along the table,

second drive means engageable with the upper portions of the documents for advancement thereof along the table, and

means at said pickup station for sensing the force of advancing the documents by said first and second drive means, said sensing means being actuated by pressure of the documents in their travel along the table for controlling individually the first and second drive means to maintain the documents substantially perpendicular to the feed table.

4. Mechanism in accordance with claim **3** wherein said first drive means comprises a plurality of belts spaced across the feed table.

5. Mechanism in accordance with claim **3** wherein the second drive means comprises a paddle exerting pressure on the upper portions of the documents and includes a member swingable therefrom and capable of engagement with and biased to exert pressure on the lower portions of the documents.

6. A feeding device for advancing a plurality of documents to a station where each successive document is selected to be driven therepast, said device including a sloping feed table carrying said documents,

first advancing means positioned to run substantially along the length of said table and engageable with the lower edges of the documents for movement thereof along the table,

second advancing means carried on the feeding device and positioned to engage with and advance the upper portions of said documents along the table, said first and second advancing means cooperating to maintain the documents substantially perpendicular to the table in their travel therealong, and

means for sensing the upper and lower portions of the documents for controlling the rate of advancement of said portions by their respective advancing means.

7. A feeding device in accordance with claim 6 wherein said first advancing means comprises a plurality of frictioned surfaced belts.

8. A feeding device in accordance with claim 6 wherein said second advancing means comprises a paddle member mounted for movement along the length of the table.

9. A feeding device in accordance with claim 8 wherein said paddle member includes a lower portion biasly swingable and capable of engagement to advance the lower portion of said documents.

10. A feeding device in accordance with claim 6 wherein said sensing means includes a lower and an upper switching device responsive to the advancing force of the documents and connected for individually controlling said first and second advancing means.

11. In a document sorter having means for selectively picking a single document from a plurality thereof, input mechanism including a

sloping feed table carrying said plurality of documents,

belt drive means running substantially along the length of the table in the direction of travel of the documents and engageable with the documents for the advancement thereof,

paddle drive mean movably carried along the length of the table and engageable with the upper portion of the documents and cooperating with the belt drive means for the advancement of the documents along the feed table in a plane substantially perpendicular to the table, the paddle drive means having an upper portion and a lower portion, the upper portion being fixed in predetermined attitude in relation to the table during its travel therealong, the lower portion being swingable to permit such cooperation of the belt and paddle drives in advancing the documents, said swingable portion becoming effective at a point short of the selective picking of a document whereat the belt drive means becomes ineffective to maintain the documents in said plane as each document is selected to be sorted, and

means for individually controlling the advancement of each of said belt and paddle drive means.

12. In a document sorter in accordance with claim 11 wherein the paddle drive means lower portion is pivotally connected to permit swinging in a direction opposite the direction of travel of the documents and is spring biased to align with the plane of the upper portion of the paddle drive means at the point where the lower portion becomes effective to drive the lower portions of the documents.

13. In a document sorter in accordance with claim 11 wherein the individual controlling means include upper and lower pressure-sensitive arms engageable by upper and lower portions of the documents for actuating the paddle and the belt drive means, respectively.

14. Input mechanism for feeding documents into a sorting machine having a sloping feed table and means for maintaining said documents on edge during their travel along the table to a pickup station, said means including a

guide rail positioned to contain the documents in alignment along one side of the table,

first drive means running along the sloping table and engageable with the lower edges of said documents for propelling them along the table in registration with the rail,

second drive means supported from the machine in position to be moved along the length of the table and engageable with said documents and cooperable with the first drive means for advancing the documents to the pickup station,

means for sensing the attitude of said documents prior to their presentation at the pickup station, and

means responsive to the sensing means for driving the first and second drive means whereby said first and second drive means are rate-of-travel controlled individually for maintaining said documents substantially perpendicular to said table.

15. Input mechanism in accordance with claim 14 wherein said first drive means includes a plurality of resilient belts for advancing the lower portions of the documents along the table.

16. Input mechanism in accordance with claim 14 wherein said second drive means includes a paddle having an upper portion fixed in planar relation to the traveling documents and a lower portion hinged to the upper portion, the upper portion being positioned to cooperate with said first drive means to maintain the plane of said documents in parallel fashion substantially along the length of the table, and the lower portion becoming effective for driving the lower portions of the documents as they approach the pickup station.

17. Input mechanism for a document sorter having an inclined feed table carrying a plurality of documents thereon, a pickup station at the upper end of the table to receive the documents in selective manner and to position each selected document for transport past the station, and means for independently advancing the upper and the lower portions of the documents along the table to the pickup station, said means comprising a

plurality of frictionally endowed belts running substantially along the length of the table and positioned to engage with the lower edges of the documents to advance them toward the station, a

multielement paddle supported from the sorter and movable along the length of the table, said paddle comprising an upper element in fixed plane perpendicular relationship to said table and adapted to engage the upper portion of the documents to advance them toward the station, and comprising a lower swingable elements, the lower element being free to swing in a direction opposite the direction of travel of the documents, but biased in the direction of document travel to actively advance the lower portion of the documents when they reach a position adjacent the station, the belts being trained so as to become ineffective to advance the lower portion of the documents beyond said position,

means for sensing the advancement of the lower and upper portions of the documents for individually controlling the rate of advancement of the belts and the paddle to maintain the documents substantially perpendicular to the feed table and to provide a parallel arrangement of the documents during their travel up the table to the pickup station, and

means on the sorter responsive to the sensing means for driving the belts and the paddle along the table.

18. Input mechanism in accordance with claim 17 wherein the lower element of the paddle automatically swings into the plane of the upper element to actively advance the lower portion of the documents as they approach said position adjacent the pickup station.

19. Input mechanism in accordance with claim 17 wherein said sorter includes a rail supported along one side of the table and rollers riding on the rail and adapted to carry the paddle along the length of the table.

20. Input mechanism in accordance with claim 17 wherein said sensing means comprises an upper and a lower switch pivotable in response to force exerted by the advancing portions of the documents and connected for individually controlling the belts and the paddle.

21. Input mechanism in accordance with claim 20 wherein said sensing means comprises individual light sources and light-receiving elements connected for actuating the driving means upon pivoting of the upper and lower switches in response to individual forces exerted by the document portions.

22. Input mechanism in accordance with claim 21 wherein the light path between each source and its receiver is intermittently shuttered to energize and deenergize the respective driving means for the belts and the paddle as the force exerted

by the advancing documents decreases and increases, respectively, in the travel of the documents toward the pickup station.

23. Input mechanism in accordance with claim 21 wherein the light-receiving elements are photoelectric cells.