COMMISSIONER'S DECISION

Obviousness: The claims fail to disclose a patentable advance in the art.

The invention relates to a machine for stacking thin sheets of paper such as, the print-out from computers at high speeds.

FINAL ACTION: Affirmed. The Board indicated subject matter it considered would be patentable.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated October 15, 1973, on application 067,761 (Class 270-78). The application was filed on November 18, 1969, in the name of Paul A. Stephenson and is entitled "Document Stacking Apparatus." The Patent Appeal Board conducted a Hearing on May 28, 1975, at which Mr. W. Mace represented the applicant.

The application relates to a machine for stacking thin sheets of paper such as the print-out from computers at high speeds. The documents are transported to a stacking bin by a system wherein they are continuously in contact with a transporting belt. A guiding means slopes the belt at a predetermined angle relative to the stack of documents. As a new document approaches the stacking bin, a second guiding means forces its trailing edge downward onto the stack, thereby preventing the trailing edge from interfering with the leading edge of a succeeding document.

In the Final Action the examiner refused all nine claims for failing to define any invention over a reference. In his view any improvement came within the normal skill of experts in the art. Claims 6 and 9 were also refused as being indefinite. The reference was:

United States Patent		
3,051,332	Aug. 28, 1962	Richert

In that action the examiner stated (in part):

> This patent (Richert) shows feed belts 1b, 2b feeding individual sheets at an angle to the top surface of a pile of sheets 4, with belt 5 having a portion thereof parallel to and adjacent the top sheet in the pile. Roller 9 (fig. 2) or roller 8 (fig. 1) is adjacent a mid portion of the top of the pile. There is a stop at 6. Note column 2, lines 23 - 25 "any incoming letter will no longer be able to abut the trailing edge of the preceding letter".
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> Claims 1 - 9 in this application stand rejected for failure to define an inventive difference over Richert in view of expected skill. To provide height sensors so that when one bin is filled documents can then be directed to a second bin and to provide means to invert documents for stacking are held to be but expected skill.
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> Claims 6 and 9 stand rejected since they set forth no structure capable of inverting documents nor is the device in claims 5 or 1 capable of inverting documents. These claims merely recite a desired result.
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> See Canadian Patent 668,012, Cl. 270-39 for bin switching devices.
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> In connection with applicant's remarks in the September 7, 1973 letter the following is presented. Applicant notes that his sheet is under continuous and positive control whereas the sheet in Richert is not. Consideration of applicant's drawings and Richert's drawings reveals that applicant's sheet is in contact with the feeding belts somewhat more surface-wise than that of Richert but each feeds the sheet when it contacts the pile equally continuously and positively. The inventive significance of such a difference is not apparent to the examiner, the difference is held to be in the realm of choice and expected skill. Richert it should be noted handles letters, which are somewhat stiffer than single paper sheets. Thus it can be seen why there is a larger space or gap between roller 2a and 9. However should it be desired to handle less rigid sheets then to modify the spacing is held to be but expected skill. The main and important teaching of applicant is identical to that of Richert, namely to avoid interference between the trailing edge of a preceding document and the leading edge of a following one. Applicant states that because of the position of Richert's roller 9 interference will occur. The examiner maintains that just the opposite is the case, and agrees with Richert that interference will be avoided. In connection with roller spacing and the handling of letters it would appear reasonable that in handling letters one would only need to bend them around a rather gentle bend to effect a snap down of the trailing edge whereas when handling sheets one would have to effect a rather sharp bending to effect a snap down due to the limp quality of the sheets. However such an alteration to the construction and arrangement of Richert is held to be but expected skill.

The applicant in his response dated March 14, 1974, to the Final Action stated (in part):

> ...
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> The Examiner's rejection of claims 1 through 9 as failing to define an inventive difference over the applied reference to Richert et al, U.S. Patent 3,051,332 in view of expected skill

is most strenuously traversed for the reasons set forth hereunder.

It is believed necessary only to consider claim 1 presently on file in view that the remaining claims are dependent therefrom. The Examiner has attempted to imply that providing a height sensor so that documents may be directed from one bin to another as being expected skill is noted, however it is noted that claim 1 does not provide any sensor means and such is not introduced until claim 5. The Examiner's remarks with respect to the height sensor is not understood as applicant is not relying on the presence of such control for patentability.

Applicant, in claim 1, has stated that the documents are under positive and continuous control of the transport belt. The Examiner in the Official Action has attempted to imply that Richert et al feeds the sheet when it contacts a pile under equally continuous and positive contact. This may be so, however, such control is only when the sheet contacts the pile as outlined by Richert, whereas applicant's transport belt 62, provides the positive and continuous control of the sheet. There is no positive or continuous control of the article 3 in Richert et al by the transport belts 1b and 2b as clearly shown in the drawings as the article 3 is merely carried to a point where it contacts the belt 5, and the first transport system releases the article 3 to more or less fend for itself. This is not the teachings of applicant's system, as the sheets 12, is under continuous and positive control of the transport belt and is fed in a manner such that it contacts the stack of documents at a predetermined angle. This predetermined angle is determined by the angle at which the transport belt comes into contact with the top of the stack as by the guiding means 70. There is no such system of continuous and positive control by Richert et al nor is the document presented to the top of the stack at a predetermined angle.

The Examiner has attempted to suggest that the inventive significance of the difference is not apparent to him and attempts to substantiate this by commenting that the prior art handles stiffer material and has attempted to imply that the space or gap between the rollers is but expected skill when it is desired to handle less rigid material. This implys that the only difference between applicant's concept and that of the prior art is the type of material which is being processed. In considering the Richert et al reference, to decrease the gap between roller 2a and 9 an attempt to process sheet material rather than more stiffer, rigid articles, it is readily seen that there is no provision for the sheet material to be under positive and continuous control of the belt system. It would be obvious that when the material left the control of belt 2b that it would automatically sag or drop in view of the angle between belts 1a and 8b. If the sheet was under the control of belt 1a, on a passing through the angle made by belt 8b, such would tend to curl or bend a less stiffer material thus would contact the top of the stack at a random angle and would tend to cause jamming. The Richert et al apparatus was designed only to handle stiff material and even if the space or gap was modified, such apparatus could not process less rigid sheet material for the reasons discussed above thus it cannot be seen how the teachings of Richert et al could be employed to render applicant's concept as expected skill.

The Richert citation discloses an arrangement for stacking flat articles using an arrangement by which flat articles, such as postal letters and cards, arriving in succession from a conveyor can be arranged in layers to form a stack or pile. Claim 1 of the Richert patent reads:

> An arrangement for stacking flat articles in an edgewise conveying system comprising an edgewise conveying means for conveying flat articles, a stacking belt having a sloped section which intercepts articles delivered from said edgewise conveying system at an obtuse angle which is less than 180° to impart a sideways as well as a forward motion to said articles, said stacking belt having a further section following said sloped section which is shorter than the shortest article to be stacked and substantially parallel to said edgewise conveying means, a stack supporting plate parallel to and urged towards said further section of said stacking belt to allow an arriving article to move therebetween, a stop member disposed at an acute angle to said supporting plate to stop an article between said stacking belt and said supporting plate so that a stack of such articles may be formed.

The first question which the Board must consider is whether the applicant has made a patentable advance in the art. The second question, to be determined later, is whether claims 6 and 9 are indefinite.

A point developed at the Hearing was whether the solution to the problem of "the trailing edge of a sheet interfering with the leading edge of the succeeding sheet causing bending or jamming of the stacking system," was solved in the same conceptual manner in both the prior art and the present application.

The applicant emphasized that "a critical problem associated with stacking flexible sheets or documents transported at high speeds is to prevent the trailing edge of a sheet from interfering with the leading edge of the succeeding sheet, thereby preventing the succeeding sheet from bending, being deformed or even jamming the stacking system". The solution of this appears on page 6 of the disclosure, starting at line 26, which reads: "The angle (theta) at which each document enters stack 13, such that the entering document strikes the stack away from the trailing edge thereof, is effective to prevent the trailing edge of the document on top of the stack from interfering with the leading edge of the entering document, thereby preventing a jam in the document transport system."

Richert was dealing with the same problem as we see from page 1 beginning at line 44 of his disclosure where he states: "For example, it is possible that the leading edge of a letter will abut against the trailing edge of the preceding letter. The succeeding letter can thus be either bent up or bent inward, or can deform the preceding letter." See also line 20, column 2: "Owing to these provisions the leading edge of a letter running toward the stack will not be deflected until its leading edge has passed by the trailing edge of a preceding letter added to the stack. Accordingly any incoming letter will no longer be able to abut against the trailing edge of the preceding letter."

It appears then that the problem was known and discussed by Richert at least as it relates to relatively stiff documents. The specific question is whether the alleged invention consists in a new and improved mode of resolving that problem when it involves flexible paper of "extremely light weight" stacked at high speeds. That an improvement patent is possible is readily seen in Section 2 of the Patent Act which reads in part: "Invention means... or any new and useful improvement in any art, process, machine, manufacture or composition of matter."

We note that Richert was concerned with handling "post letters, cards, flat packages and similar objects." In contrast the applicant is concerned with stacking documents in the form of "flexible paper," or "extremely light-weight recording mediums." In some instances they are very short in length. The disclosure on page 9, starting at line 23, indicates the high speed at which they are stacked:

> The system as described hereinabove enables documents or sheets of paper of various lengths to be stacked uniformly in stacking bins at high speeds. Documents travelling at speeds greater than 45 inches per second have been successfully stacked. To illustrate the stacking speed capabilities of the present invention, documents three inches long traveling at 45 inches per second can be stacked at a rate greater than 50,000 documents per hour.

Claim 1 of the application relates to:

> A transport system for transporting document along a transport path to a first stacking bin to form a stack of documents therein, said transport system comprising:
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> a transport belt having a first section passing over first belt guiding means which slope the belt at a predetermined angle relative to a stack of documents in said first bin, said first belt section engaging documents delivered thereto and transporting said documents to said first bin at said predetermined angle, said transport belt further having a second section parallel to and in contact with the top of a stack of documents in said first bin for engaging documents entering said first bin, said documents being under the positive and continuous control of said transport belt;
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> a second belt guiding means cooperating with said first and second belt sections and positioned above said first bin for applying a force to each document entering said first stack to force the trailing edge of each document onto the top of any documents in said first bin; and
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> means for stopping each document at a predetermined point as it is transported into said first bin by said second belt section, said document being held against said stopping means by said second belt section until a succeeding document enters said first bin.

We now consider the differences between claim 1 and the prior art.

Claim 1 calls for a transport belt which initially passes over a first belt guiding means which slopes the belt at a predetermined angle relative to the stack of documents in the bin, and engages the documents to transport them to the bin. This in our view is indefinite, for in order to slope the belt at a predetermined angle he must use a first and second guiding means. It is also stated that the transport belt engages the documents. However, to be operative the belts 62 and 64 must engage the documents. While it is noted that Richert uses three belts, one of the belts does use guide means to slope the belt at a predetermined angle. This belt also aids in the transportation of the articles to the stacking bin.

Claim 1 also requires that the transport belt subsequently runs parallel to and in contact with the top of the stack of documents in the bin. Richert on the other hand, uses a separate belt to perform this function. The claim refers to the documents being under the positive and continuous control of said transport belt. This again is not distinct for the documents can only be under positive and continuous control, when guided by the transport belt and the guide means 72 and 76. Richert uses control means embodying his three belt system. In his arrangement the guide rollers are so positioned as to press the articles passing there through against a conveyor belt. A third belt aides in the removal and deflection of the article from the said conveyor belt to the bin. Richert also shows a guiding means for applying a pressure to a portion of the document to force the document onto the top of any document in the bin. In our view this claim does not recite a patentable advance in the art over the Richert citation, and furthermore this claim is not distinct nor explicit, but is indefinite.

Claims 2 to 9, which depend directly or indirectly on claim 1, will not be considered at this time as claim 1 is not allowable,and fails to comply with Section 36 of the Patent Act.

It is noted that the examiner has refused only the claims of the application, therefore, the next question is whether the applicant has "disclosed" a patentable advance in the art.

The disclosure differs from the Richert citation in the use of a continuous closed-loop belt. The angle of slope is controllable to an

exact degree, which may be important with light documents. The first guide means also acts as both a transportation means and as a slope guide control means. There is also present a more definite arrangement for controlling the documents in a positive and continuous manner.

There is no doubt that the applicant has overcome a problem associated with stacking flexible documents at a rate in excess of 13 documents per second. The specific issue is whether his solution involved such an exercise of the creative faculties of the human mind as to merit the distinction of invention and a claim to monopoly. It has been authoritatively stated that the art of combining two or more parts into a new combination whether they be new or old, or partly new and partly old, so as to obtain a new result, or a known result in a better, cheaper, or more expeditious manner, is valid subject matter if there is sufficient evidence of thought, design, and ingenuity in the invention, and novelty in the combination. (See Merco Nordstrom Valve Co. v. Comer (1942) Ex. C.R. 138 at 155). And it is settled law that the matter of obviousness is to be judged by reference to the "state of the art" in the light of all that was previously known to persons versed in the art (Vide, Almanna Svenska Elektriska A/B v. Burntisland Shipbuilding Co. Ltd. (1952), 69 R.P.C. 63 at 69).

In Richert we find his invention described starting at line 32 on page 1: "... the arrangement according to the invention has two consecutive belt conveyors of which the first delivers the letters to the second or stacking conveyor. This acts to deflect the letters toward a guide roller which cooperates with one of the belt conveyors and then to shift the letters

toward a stop for them, the belt length by which this shifting is done running parallel to a movable supporting plate that may form part of a stacking carriage forced toward the stacking conveyor. These two conveyors are so positioned as to form on the stacking side an obtuse angle of less than 180°."

According to the present disclosure other prior arrangements for attempting to overcome the same problem included "techniques for providing positive control of both edges of each document by mechanically engaging both ends thereof, by utilizing vacuum forces to maintain the document in contact with a moving conveyor, and by electrostatically tacking the documents to a transport belt." United States patent 3,224,761, which is on the record, used a cushion of compressed air to separate overlapping sheets in a stacking device.

We are satisfied that the prior art does not teach the particular new means and mode of handling light flexible paper documents. In our view the applicant has made an advance in the art which is the result of a sufficient element of ingenuity to warrant allowance of the application (Vide, Merco v. Comer, supra). The problems with which he was concerned were different than those of the citation, and the means and specific arrangements he has used to overcome those problems differ from what went before.

Any proposed amended claim should include the following written in conjunction with claim 1: a closed-loop transport belt; the slope of the belt being at a predetermined angle defined by a first and second

guide means outside and inside the belt respectively; properly defined document engaging means for feeding the documents between the first guide means and the outside surface of the transport belt; and the means for controlling the documents in a positive and continuous manner.

The applicant's attention is also directed to the following patent:

Austria

196,789 March 25, 1958

This patent was of record in the prosecution of the Richert patent.

If an amended claim 1 was found acceptable under 46(3)c it would follow that if claims 2 to 9 were made dependent thereon, they could also avoid the prior art and would be allowable provided they define operable combinations. However, present claim 1 relates to the embodiment of figure 2 while, for example, claims 6 and 9, rejected as being indefinite, relate to structures only possible with the embodiment of figure 3. These will involve routine examination matters and may be left to the examiner. The proposed amended claims 6 and 9 are objectionable for the same reason as is present claims 6 and 9.

We recommend that the Final Action refusing the claims be affirmed.

J.F. Hughes,
Assistant Chairman,
Patent Appeal Board.

I concur with the findings of the Patent Appeal Board and refuse the claims on file, and the proposed amended claims 6 and 9. The applicant has six months within which to submit an amended claim or claims along the guidelines indicated, or to appeal this decision under the provision of Section 44 of the Patent Act.

Decision accordingly,

A.M. Laidlaw,
Commissioner of Patents

Dated at Hull, Quebec
this 7th. day of
July, 1975.

Agent for Applicant

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