COMMISSIONER'S DECISION

Obviousness: Building Construction

Construction of multi storey buildings in which a pair of beams are arranged in close collateral relation to form a space of room height and width was rejected. The prior art used beams of room height with slabs between adjacent beams to form the room.

Rejection: Reversed

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated November 12, 1974, on application 059,591 (Class 20-1). The application was filed on August 15, 1969, in the name of Frank Cico and is entitled "Building Construction". A Hearing was held on November 12, 1975, at which Mr. Trachimovisky and the inventor were present.

This application relates to the construction of multi-storey buildings in which massive elongated beams are used. A pair of beams are arranged in close collateral relation to each other to form a space of practical room height and width.

In the Final Action the examiner refused the application for lack of patentable subject matter in view of the following references:

German Patent		
R 10914	March 15, 1956	Rhode
U.S. Patents		
2,691,291	Oct. 12, 1955	Henderson
3,287,865	Nov. 29, 1966	Lockman

In that action the examiner stated (in part):

> "It is held that the features of difference in claims 2, 4 and 6 to 16 are minor only and not patentable over Rhode. For example interconnecting Rhode's flanges directly, to obtain a building as in claim 2, may be done by merely deleting Rhode's slabs (3, 4 or 5) to place Rhode's beams closer together, or by making Rhode's flanges relatively larger; any of these steps is expected skill for an ordinary workman in the art. Merely re-arranging the beams, to obtain a structure as defined by claim 4, is a matter of choice and expected skill only. In reply to applicant's arguments, the mere deletion, enlargement or rearrangement of elements, in order to perform the same function as was performed by the original structure, does not constitute invention.

> Lockman discloses a building as defined by claims 1, 2, 3, 5 6, 15 and 16. In the letter of response dated 22 May 1974 applicant argues that Lockman's flanges are "not cantilevered". In reply to this, Lockman's flanges are cantilevered extensions of the webbing, as defined in lines 10 and 11 of applicant's extensions of the webbing, such as by having posts within Lockman's rooms, then it would be obvious to remove these posts in order to make Lockman's flanges into cantilevered extensions of the webbing, as recited by claim 1.
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> It is held that the features of difference in claims 7 to 14 are minor only and not patentable, for the same reasons as aforementioned with respect to the Rhode patent. In the letter of 22 May 1974 applicant argues that the relatively widely spaced columns which are defined by claim 8, are patentable over Lockman; in reply to this it is obvious, for one skilled in the art, to have columns for beams.
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> Henderson discloses a building as defined by claims 1, 2, 3, 5 and 6, except that Henderson's building is not "multi-story". It is maintained that it is obvious to merely duplicate an existing building to obtain a multi-story building. In the letter of response dated May 22, 1974, applicant argues that Henderson's structure "would have to be modified" to obtain the structure recited by claim 1; applicant has not, however, pointed out which structural feature of claim 1 corresponds to this modification.
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> It is held that the features of difference in claims 4 and 7 to 16 are minor only and not patentable. Applicant has made no response to this specific rejection.
>
> It is also maintained that claim 1 is indefinite. The expression "in close collateral adjacency" does not clearly and explicitly define the relationship of the flanges, one to the other. It is unclear as to whether the flanges are directly or indirectly interconnected. In the letter of 22 May 1974 applicant argues that the meaning of this term may be found in the disclosure, which describes the flanges as "abutting". In reply to this, a reading of the disclosure <u>also</u> shows the term "close collateral adjacency" to mean that the flanges are not abutting, as shown in figure 6 on page 6, lines 15 to 26. The term "close collateral adjacency" either standing alone or as described by the disclosure, has more than one meaning and is vague.

In his response dated January 24, 1975 to the Final Action the applicant stated (in part):

> In this case, it would be clear to a man skilled in the art that the flanges of the beams are in close adjacency when the width of the flanges is substantially greater than any separation between them, see for example, Figure 4 of this application. It is abundantly clear that Rhode's flanges are not in close adjacency as alleged by the Examiner, since the Rhode structure has slabs between the flanges which are many times the width of the flanges. Further, the term "close adjacency" is clearly not functional, since it defines a structural limitation.
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> It is therefore respectfully submitted that the term "close adjacency " is as precise as the subject matter admits of, that it is in fact a structural limitation and not functional, and that Rhode's flanges are not in close adjacency.

> Referring now to the objection raised in the first paragraph on page 2 of the Official Action, the term "close adjacency" is not supported by Figures 5 and 6 of this application as alleged by the Examiner. These embodiments are not within the scope of the invention as now claimed. It is true that these embodiments resemble the Rhode structure. However, they merely show that, once in possession of Applicant's invention as now claimed, it is possible to utilize the Rhode type of structure at certain locations. Even if the Examiner argues that Figures 5 and 6 were stated to be embodiments of the invention, this is not detrimental to allowance of the present claims, since it is not unusual for the claims of a patent application to be restricted during prosecution, in view of prior art, to exclude from their scope one or more of several embodiments described in a patent application.
> ...
> The whole teaching of the Rhode patent is the use of slabs between the flanges to provide a corridor of practical room width and height. As mentioned earlier, Rhode teaches the use of narrow flanges with wide slabs therebetween. This produces large dead loads, i.e., the weight of the slabs, on the joints between the slabs and the flanges. This is what Applicant's invention avoids. Since the whole teaching of the Rhode patent is the use of slabs between the flanges an allegation that Rhode suggests the omission of the slabs is just not true. To obtain Applicant's invention from Rhode, one not only has to operate contrary to his teaching, but also has to perform two steps, namely, the removal of the slabs, and the widening of the flanges to fill the gap left therebetween, in order to maintain a corridor of practical room width and height. Such two steps can only be clearly carried out when one has Applicant's invention in mind. Applicant's invention is not suggested by Rhode.
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> If these steps are expected skill for an ordinary workman in the art, as alleged by the Examiner, then why did Rhode not take these steps? As an inventor, Rhode was certainly as skilled as an ordinary man in the art, if not more skilled. Yet, when Rhode attempted to provide a multi-storey building with corridors of practical room width and height, he used standard I-beams, which have narrow flanges, and interconnected the flanges by slabs with a width several times greater than the width of the flanges to provide the required corridors, with resultant large dead loads on the interconnections between the flanges and the joints. Applicant's invention was certainly not obvious to Rhode.
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> The Examiner then alleges that the rearrangement of beams, as defined in Claim 4, is a matter of choice and expected skill only. Claim 4 specifies that the beams on two levels, at least, of the building run in directions transverse to each other. Again, there is no suggestion of this in Rhode.

The Rhodes reference relates to a multi-storey building made of I beams of room height with narrow flanges. These flanges are interconnected by slabs to form rooms of desired width.

Henderson relates to the building of structures using one piece of concrete casting which has concrete end walls added to complete the building shell.

The Lockman patent is for a tiered vault or crypt structure for a mausoleum. It comprises prefabricated sections of precast concrete which are assembled to form such a structure.

This application is for a multi-storey building having a plurality of massive beams disposed at spaced intervals in parallel planes horizontally and vertically spaced relative to each other. These may be I beams in which the web is of room height and the flange portions are of similar length. When two beams are assembled in collateral abutting and parallel relation to each other they form a unit of acceptable room height and width.

The question to be considered is whether the applicant has made a patentable advance in the art.

Claim 1 reads:

> In a multi-storey building, a plurality of massive elongated beams supported at spaced intervals in parallel planes horizontally and vertically spaced relative to each other to form the multiple storeys aforesaid; flanges constituting parts of said beams respectively extending towards and interconnected with the flanges of other beams providing upper and lower decks spaced approximately one story apart, and webbing also constituting a part of each said beam interconnecting said upper and lower decks and partitioning the space therebetween; said flanges being integral, cantilivered, and load-bearing extensions of said webbing and each having substantial breadth enabling a corridor of practical room width and height to be formed and bounded between the webbing and flanges of a pair of beams arranged in close collateral adjacency to each other.

At the hearing the applicant displayed a model of his beams to show the various structural arrangements that he was capable of attaining.

Claim 1 is the only independent claim in the application and in the Final Action it has been rejected as defining the structure as disclosed in each of Rhode, Lockman and Henderson.

In the Rhode patent it is observed that he uses I beams in which the web portion is of room height and has a relatively short flange portion. Slabs are used between the flange portions of the beams to bridge the gap which

results in a room of the desired width. Figure 3 of Rhode shows that he envisaged a multi-storey building using this arrangement. Claim 1 of this application require "flanges constituting parts of said beams respectively extending toward and interconnecting the flanges of other beams providing upper and lower decks...flanges of a pair of beams arranged in close collateral adjacency to each other." The significance of "close collateral adjacency" was argued in the Final Action, in the applicant's response, and at the Hearing as well. We will comment on that point later. In considering the characteristics and relationships specified in claim 1, the Rhode patent could not be regarded as showing flanges in "close collateral adjacency" to each other. There is no suggestion by Rhode to build his structure with the beam flanges assembled in collateral abutting relation to each other.

The Lockman reference is directed to a mausoleum involving a tiered vault structure made of an assembly of prefabricated sections of precast concrete. This patent covers an improvement over the method of the prior art, which was to pour concrete in place for each tier. That necessitated forms to be made, and a curing step between the fabricating of each tier. Lockman, however, is not concerned with a multi-storey building of practical room width and height. Another difference arises from the "cantilevered," limitation appearing in claim 1. Lockman uses an end wall integral with the web and flange, so that his flange is not "cantilevered" in the normal meaning of the word.

The Henderson reference shows a one storey concrete building segment made as a unit, or in two halves, and in which precast concrete end walls enclose the segment. Henderson's multi-storey arrangement uses an assembly of two oppositely disposed concrete segments to which end walls are added to enclose the structure. This reference would not produce the structure called for in claim 1 of the application without considerable modification.

The applicant has developed a way of building a multi-storey structure not envisaged by the prior art. By using his method, the applicant would be able to assemble his unitary members to make the structure quicker than by previous methods, since there would be no need of scaffolding to support the members. The Rhode reference would require considerable bracing or scaffolding to support the slab in position prior to attaching it to the adjacent beam flanges.

Another feature of the applicant's arrangement is the elimination of any "dead load" at the flange joints. This is due to his cantilever construction, in which the flange forces are carried by the beam web. In Rhode's arrangement, by contrast, the connecting slabs are held in position adjacent the flanges by retaining means. This results in stress at each joint to carry the "dead load".

We now turn to the limitation "close collateral adjacency" used in claim 1. At the Hearing the applicant contended that this term was as precise as the subject matter "admits of." According to Webster's dictionary 'close' may be defined as "narrow, confined or confining"; 'collateral' as "side by side, parallel," and 'adjacency' as "adjoining, near or close." It is observed that in the disclosure on page 6 at line 4, it is stated that "beams 2-2 of these dimensions are assembled in collateral abutting and parallel relation to each other as in figure 4," and further on page 9 line 2, "the grout which is filled in between abutting elements as flanges 6-6 of fig. 4." Since the word "abut" is used in the disclosure to convey the meaning intended in a clear and precise manner, we see no reason why it should not also be used in the claim. In our view the term "in close collateral adjacency to each other" should be replaced by "to abut collaterally to each other."

To conclude, the Board is satisfied that there is present sufficient ingenuity that the Commissioner ought not to refuse a patent (cf Crossley Radio Corporation v. Canadian General Electric, 1936 S.C.R. 551 at 556).

The Board therefore recommends that the rejection of the application be withdrawn, and that it should be allowed to proceed if claim 1 is amended as indicated above. Also, this application would require modification to some of the dependent claims to ensure that the requirement to "abut collaterally" is not misconstrued. For example, claim 2 would have to be deleted.

G. Asher
Chairman
Patent Appeal Board

I concur with the findings of the Patent Appeal Board and withdraw the Final Action. The application is returned to the examiner for resumption of prosecution.

J.A. Brown
Acting Commissioner of Patents

Dated at Hull, Quebec
this 24th. day of December, 1975