

COMMISSIONER'S DECISION

OBVIOUSNESS: Tang and Slot Means for Securing Cranes to Flat beds.

The application relates to superstructure for large material handling apparatus which is removably mounted on a bed of a mobile crane and securing means therefor. Certain claims were refused for failing to define a patentable advance in the art.

Final Action: Affirmed

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated September 10, 1975, on application 144,173 (Class 212-39). The application was filed on June 8, 1972, in the name of Ralph H. Short, and is entitled "System And Method For Removable Installation Of Swing Circle For Large Crane." The Patent Appeal Board conducted a Hearing on November 24, 1976, at which Mr. R.D. McKenzie represented the applicant.

The application relates to superstructure for large material handling apparatus which is removably mounted on a bed of a mobile crane. Tangs (protruding lips) of the superstructure are placed through slots in the flat bed of the apparatus. Wedges are then forced into the slots of the tangs to secure them beneath the lower surface of the bed. Figures 2 and 3, shown below, are illustrative of the alleged invention.

FIG. 2

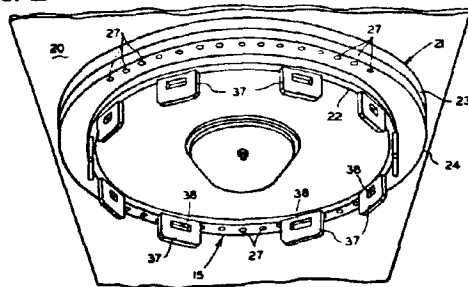
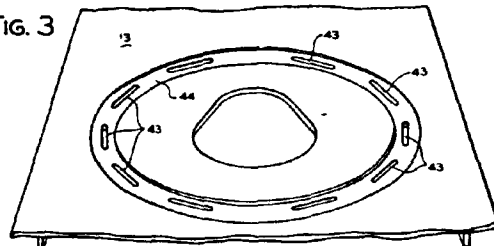


FIG. 3



In the Final Action the examiner refused claims 1, 7, 8 and 12 for failing to define any invention over the following patents:

United States

2,965,245

Dec. 20, 1960

Zeilman

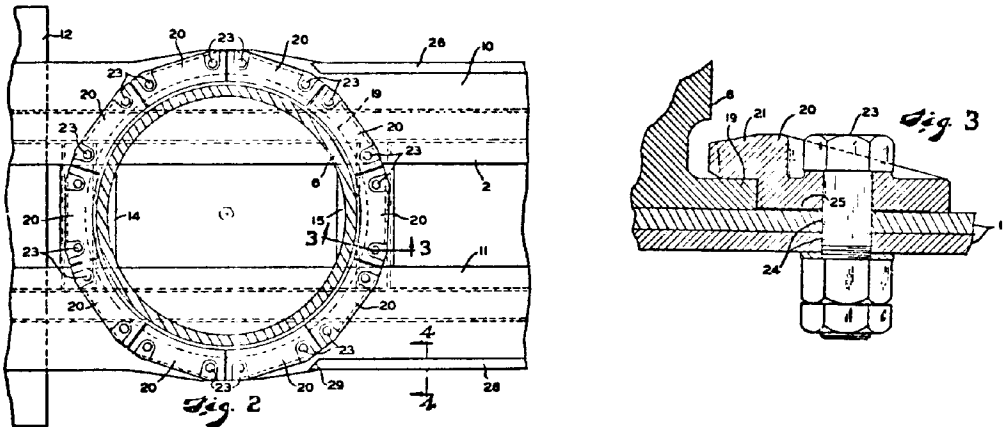
Canadian Patent

642,236

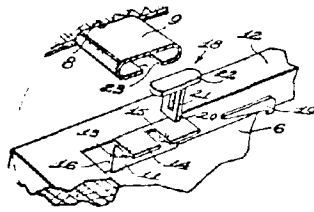
June 5, 1962

Bernath

Zeilman shows a demountable structure for large cranes. The superstructure of the crane is mounted on a flat bed. The superstructure is secured to the flat bed by the well known means of a bolt and nut-clamp arrangement. Figures 2 and 3, shown below, are illustrative of that invention:



Bernath shows a fastening means for removably attaching two pieces of an assembly together using a "tang like member" 20 with a slot 21. A wedge 19 is fitted into slot 21 beneath a bearing member 14. This arrangement is clearly depicted in Figure 3, shown below, of that patent:



In that action the examiner stated (in part):

It is pointed out that Zeilman at column 2, lines 19-26 discusses inner and outer races. Thus Zeilman does secure one of these races to the turntable and the other to the superstructure. Applicant does this but employs different securement means. In view of Bernath this use of a different securement means is held to be but expected skill. The difference in size between the table of Bernath and the crane environment of applicant is held to be simply a mere matter of degree. There is nothing inherent in the large size applicant is involved with that would lead one to believe that the fastener arrangement of Bernath would not work.

It is admitted that Bernath is concerned with a connection in a piece of furniture. The question of crucial importance in this Final Action is whether a skilled workman in the crane field could reasonably be expected to be aware of connectors generally and particularly those in the heavy equipment and heavy machinery field with which he is associated. It is held that he should be aware of this field generally and the state of the art in this field is evidenced by Canadian Patent 313,869 August 4, 1931 showing in Figure 3 a wedge and slot connector for securing automobiles in freight cars, Canadian Patent 34,202 of 1890 showing a wedge and slot connector for a bolster in a wagon, Canadian Patent 159,993 of 1914 showing a wedge and slot connector for a freight car log retaining upright or bolster, and Canadian Patent 250,625 of June 9, 1925 showing a tongue and slot connector for an upright in a freight car. All these are in the heavy load field and should be of common knowledge to any workman dealing with heavy equipment including cranes.

In response to the Final Action the applicant was concerned "as to the status of the Canadian patents listed [see above] in the second paragraph of the final action...." It is clear that they have been made of record to show the state of the art and what the examiner has previously argued was common knowledge that a skilled workman "could reasonably be expected to be aware of connectors generally and particularly those in the heavy equipment and heavy machinery field...." In his response the applicant also stated (in part):

...

However, it is the applicant's position that these additional patents referred to by the Examiner do not alter the issue involved nor do they detract from the allowability of the rejected claims. The primary reference is U.S. Patent 2,965,245 to Zeilman et al which shows a demountable structure for cranes using nuts and bolts. This reference which is relevant was cited in the corresponding U.S. application and overcome by the present claims to issue to U.S. Patent 3,726,418 (a copy of which is attached). However, the Examiner has combined the relevant Zeilman et al reference with Canadian Patent 642,236 to Bernath (and perhaps the other patents referred to above) to hold the rejected claims obvious. These patents other than Zeilman et al are in fields of art entirely unrelated to cranes and it is with respect that the applicant points out that it does not claim to have invented slot and wedge type clamps. These have been known for, perhaps, thousands of years, but in recent times have been surpassed by more sophisticated clamping arrangements which require more complex tools to operate but which generally have been thought to be more suitable for modern advanced equipment, particularly that of gigantic proportions such as in the present application. This point is supported by the fact that other than Bernath, (which relates to the long established furniture field) the most recent of the new patents located by the Examiner showing slot and wedge type clamps is dated 1931. At that time a load of a few tons was probably considered a heavy load, while in the present case the gross vehicle weight for a standard machine of the type using the present invention is in the range of 395,000 pounds. This machine is used with a boom assembly which could be as much as 400 feet long. Further, the machine has a rated maximum load carrying capacity of 300 tons. Two specifications relating to 300 ton cranes which utilize the present invention are attached for information. The Examiner has stated that the difference in size is "simply a mere matter of degree". It is respectfully submitted that this is not the case. If one were to accept this type of reasoning, one would expect that the load having been multiplied approximately 100 times, it would be necessary to multiply the size of the clamps by approximately 100 as well. The fact of the matter is that no one has previously conceived that good old slot and wedge type clamps could be used effectively for an application of this proportion. The proof of this is in the fact that the problem of more simply mounting a crane superstructure on a bed (referred to in the introductory portion of the disclosure) has existed for some time without anyone else proposing this solution.

...

It is submitted that in return for developing and disclosing this invention, the applicant is entitled to Canadian patent protection for the complete scope of the invention made. The rejected claims are not unreasonable in breadth in that they are restricted to specific structure for mounting a crane super-structure to a bed. Accordingly, the applicant respectfully requests the Commissioner to favourably review and reverse the Examiner's action in refusing claims 1, 7, 8 and 12 of the present application.

The question to be considered is whether claims 1, 7, 8 and 12 are directed to a patentable advance in the art. We will now consider the alleged invention as set out in the disclosure and claims. Claim 1 reads as follows:

A system for removably mounting a crane superstructure to a bed comprising: an annular bearing having an inner race and an outer race; means for securing one of said inner and outer races to said superstructure, the other of said inner and outer races having a plurality of depending tangs; said bed defining a plurality of elongated slots adapted to receive said tangs, said tangs projecting beneath said bed when said bed and bearing are in assembled relation and each tang defining a slot extending beneath said bed; and a wedge adapted to be forced into the slot of each tang between the lower surface of an associated slot and the lower surface of said bed when said bearing is assembled to said bed.

At the Hearing Mr. McKenzie presented some interesting arguments which we shall consider with care. He also presented a brochure high-lighting in colour the alleged invention of the material handling apparatus.

The applicant "points out that it [he] does not claim to have invented slot and wedge type clamps. These have been known for, perhaps, thousands of years...." He goes on to say that "the critical question is whether it was obvious to a skilled workman in the crane field to combine tang and wedge assemblies with the known structure to arrive at the system claimed...." Such consideration, of course, is not without its difficulties.

The applicant maintains that his claims are directed to a novel arrangement. The specific issue, then, is whether that arrangement involves 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, ingenuity in the invention, and novelty in the combination

(see Merco Nordstrom Valve Co. v. Comer (1942) Ex. C.R. 138 at 155). It is also 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 (see Almanna Svenska Elektriska A/B v. Burntisland Shipbuilding Co. Ltd. (1952), 69 R.P.C. 63 at 69).

In order to determine whether or not an invention is present the prior art will now be reviewed and its cumulative effect considered (see De Frees and Betts Machine Co. v D.A. Acc. Ltd. 25 Fox Pat. C. 58 at 59).

On considering the "heavy load" with which the instant application is concerned, the applicant stated that: "The fact of the matter is that no one has previously conceived that good old slot and wedge type clamps could be used effectively for an application of this proportion." It is clear however, that the same basic assembly procedure was carried out by Zeilman. He did of course use a well known clamp bolt-nut assembly in lieu of the tang-and-wedge attaching system. In doing so he had to make sure the bolts were of a size and number to take the necessary strain.

Further the applicant states that: "Demountable cranes have been known for years.... Tang-and-wedge assemblies are also well known." The specific question then is whether using the well known tang-and-wedge assemblies in a different use situation is directed to a patentable advance in the art.

Of pertinence to this decision is the rationale of the court in Bergeon v De Kermor Electric Heating Co. Ltd. (1927) Ex. C.R. at 188, where Audette J. stated:

The adaptation of old contrivances or devices of a similar nature to a new or similar purpose, especially to the same class of article, performing an old well known function will not amount to or constitute invention.

...

In the present case the improvement claimed consists in a combination which, considering the state of the prior art, discloses no new function or discovery which could, to my mind, amount to invention. There is no sufficient invention in merely applying well known things, in a manner or to a purpose which is analogous to the manner or to the purpose in or to which it has been previously applied.

See also Pope Appliance Corp. v Spanish River Pulp and Paper Mills Ltd. (1927)

Ex. C.R. 28.

The applicant maintains that his system alleviates "the necessity of using large tools (torque wrenches) which are hard to handle." This statement appears to be academic when we consider page 3, line 1 ff., of this disclosure which reads: "The wedges may be forced into place by a hydraulic jack or simply by using a sledge hammer...."

At the Hearing the applicant stated that, "Bernath, on the other hand shows tang-and-wedge connections used in the furniture field and, it is difficult to transpose this to a 300 ton crane."

This transposition of course is not necessary, because the cited references in the Final Action referred to tang-and-wedge means for securing vehicles, freight car loads, etc. For example, Herron (Canadian patent 159993) relates to a tang-and-wedge attaching means for securing large loads of lumber on a flat-bed freight car. One object is "to facilitate the removal of such stakes [part of the load securing means]" Figure 5, shown below, is illustrative of that invention.

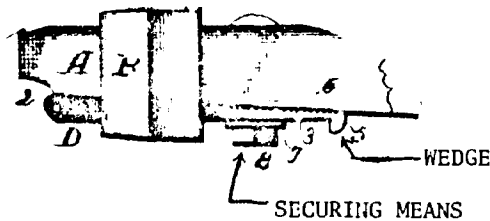


Claim 1 "recites a system of removably mounting a crane superstructure to a bed having a number of tang-and-wedge assemblies."

In view of the above considerations, we are not persuaded that the applicant is entitled to the broad concept of securing heavy equipment to a base with well known tang-and-wedge attaching means. Claim 1 merely covers a known securing means in what may be termed a different use situation. We should not grant a monopoly which could prevent artisans in this field from securing two members together in a well known manner. In our view claim 1 fails to meet the test of a novel combination involving a degree of ingenuity. Claim 1 should be refused. The rationale of the court in Bergeon v DeKermor, supra, also applies.

Claims 7 and 8, which depend on claim 1, are directed to specific locations of the tangs. This addition to claim 1 does not make a new and patentable combination over refused claim 1. These claims should also be refused.

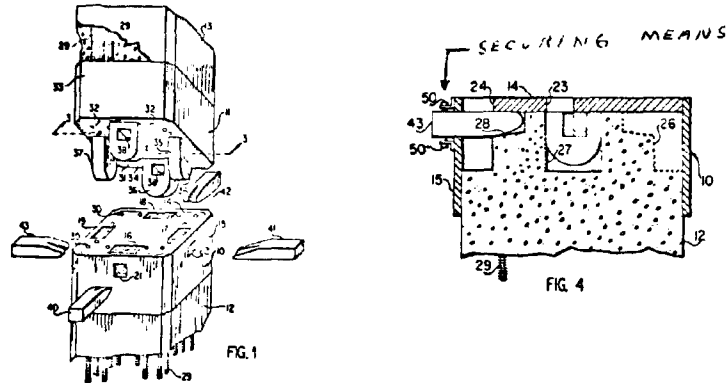
Claim 12 covers substantially the same scope of monopoly as is covered in claim 1. The only difference is a reference to "a wedge securing means." Means for securing a wedge in a tang-and-wedge assembly is known in the art. See Figure 1, shown below, of the cited patent to Graham (34,202).



The arguments for refusing claim 1 apply equally to claim 12.

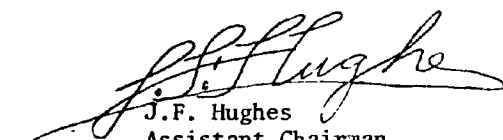
Having found claims 1, 7, 8 and 12 unallowable over the references cited by the examiner we should make a further comment. Even if we had found to the contrary we would still have felt constrained to return the application to the examiner to consider how Canadian Patent 749631- Klohn, January 3, 1967, would effect the patentability of the claims in question. Because of the conclusions we reached above, however, there is no need to do so, and we

merely put it on the record as of interest only. Figures 1 and 4, shown below, are illustrative of the Klohn invention:

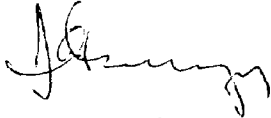


In summary, we are satisfied that claims 1, 7, 8 and 12 are not directed to a patentable advance in the art over the references cited by the examiner. There is, in our view, no result which could have flowed from an inventive step. We recommend that the decision in the Final Action to refuse these claims be affirmed.

An added comment is in order. We find it surprising that the examiner did not refuse claims 2 and 3. In claim 2, for instance, the only distinction from claim 1 is the fact that "each tang slot is tapered upwardly." Yet this is usually common to any tang-and-wedge assembly, and is shown, for example, in Figure 10 of the Mills (313,869) reference. Similarly the only new feature in claim 3 is the "means for locking each of said wedges." Such means are shown in the Graham patent mentioned above. We can hardly see that these distinctions would render claims 2 and 3 patentable if claim 1 were unpatentable. We believe, too, that claim 3 is for all practical purposes essentially the same as refused claim 12.


J.F. Hughes
Assistant Chairman
Patent Appeal Board

Having considered the prosecution of this application and the recommendations of the Patent Appeal Board, it is my decision that claims 1, 7, 8 and 12 be refused. The allowability of claims 2 and 3 should also be reconsidered. If any appeal is contemplated under Section 44 of the Patent Act, it must be commenced within six months of the date of this decision.



J.H.A. Gariépy
Commissioner of Patents

Dated at Hull, Quebec

this 15th day of December, 1976

Agent for Applicants

George H. Riches and Associates
Suite 812-820
67 Yonge Street
Toronto Ontario
M5E 1K1