

COMMISSIONER'S DECISION

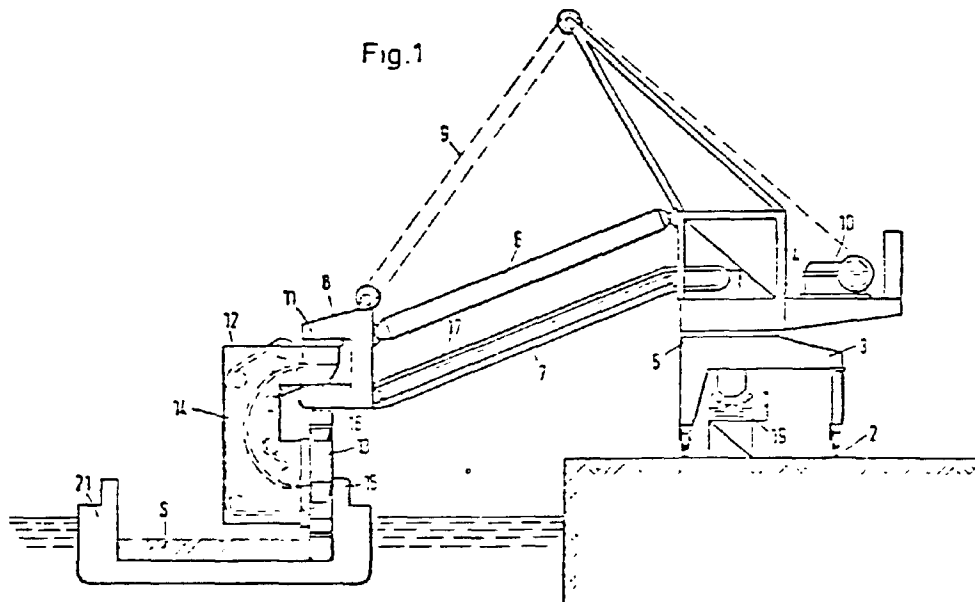
OBVIOUSNESS: UNLOADING UNIT FOR SHIPS

Applicant's arrangement utilizing an inwardly discharging bucket wheel and C-shaped conveyor mounted on a floating C-shaped support frame carried by a gantry represents a patentable advance over the cited art.

Final Action: Reversed

Patent application 324,205 (Class 201-4), was filed on March 23, 1979 for an invention entitled BULK-MATERIAL UNLOADING UNIT FOR SHIPS OR LIKE CARRIERS. The inventor is Rudiger Franke, assignor to Mannesmann Demag AG. The Examiner in charge of the application took a Final Action on May 7, 1982 refusing to allow it to proceed to patent. By letter of March 18, 1983, Applicant withdrew his request for a Hearing.

The subject matter of this application relates to apparatus for unloading bulk materials such as ore or crushed stone from ships. It consists of a discharge bucket wheel and a number of conveyor belts mounted on a pivotal boom carried by a gantry. Figure 1 of the application is shown below.

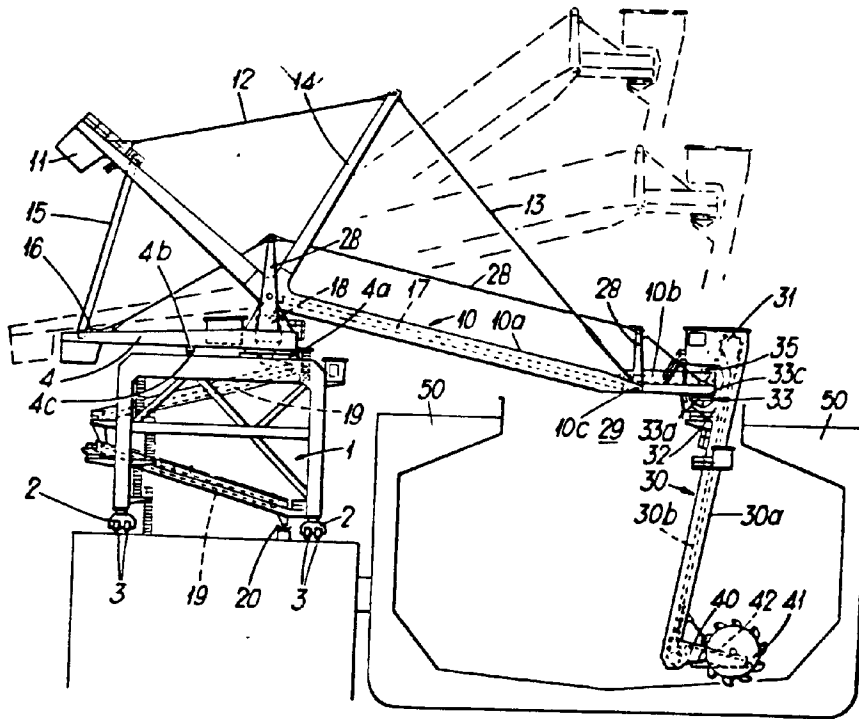


Gantry 3 has a boom system hinged to upper part 4. This boom system carries the conveyers 17, 14, 15 and bucket wheel 13.

In the Final Action the application was refused in view of the following patents.

United States	3,828,915	Aug. 13, 1974	Cox
	1,421,787	July 4, 1922	Kininmonth
	2,425,342	Aug. 12, 1947	Palmer
Germany	2,519,447	Nov. 11, 1976	

Cox shows material handling equipment having an elevator unit depending from a conveyor boom. Figure 1 of the patent is shown here.

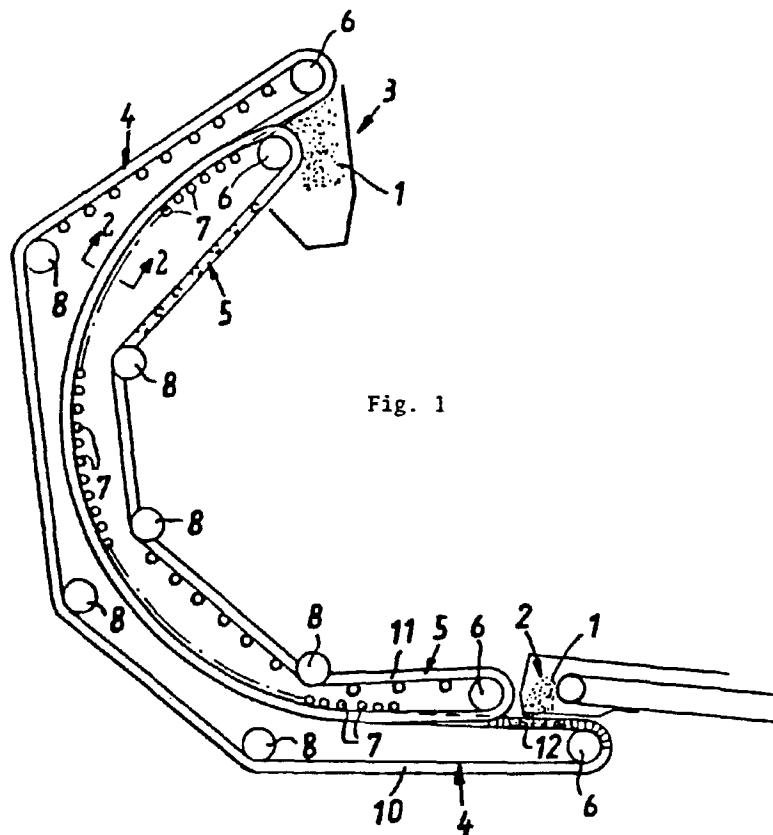


Twin bucket wheels 41 load material on conveyor 42 from which it is transferred to bucket elevator 30b and eventually reaches lowering conveyor 19.

Kininmonth relates to a bucket elevator for discharging ore or other cargoes from ships and barges.

Palmer shows apparatus for removing bulk materials from bins, pits, containers or cargo holds of barges and ships.

The German patent shows the use of a C-shaped conveyor section for overhead conveying with the conveyor belts. Figure 1 of that patent is shown below.



Material 1 is placed on belt 4 at 12 and is moved between belts 4 and 5 to be discharged in overhead hopper 3.

In that Final Action the Examiner stated (in part):

...

It is pointed out that United States patent No. 3,828,915 to Cox clearly describes and shows a bulk-material unloading system for ships comprising a gantry 1 movable alongside the ship, a boom system 10a, 10b mounted on the gantry for pivotal movement in a vertical plane, and rotational movement about the vertical axis of a slewing ring 4a, a removing-conveyor belt 17 associated with the boom system, an elevator unit 30 including an upper C-shaped support portion arranged at the tree end of the boom system to pivot about a vertical axis 33c. A bucket wheel 41 rotatably mounted on the lower end of said elevator unit, and a vertical conveyor 30b arranged within said elevator unit and extending between said bucket wheel and the removing-conveyor belt in a manner such that the unloading location of the vertical conveyor is situated at the removing-conveyor belt in the vicinity of the vertical pivot axis 33c of the C-shaped support portion of the elevator unit, substantially as defined by applicant in claim 1.

There is no patentable merit in merely specifying that the vertical conveyor is a C-conveyor as opposed to a bucket conveyor shown by Cox. German Patent No. 2,519,447 clearly shows vertical conveyors of the type utilized by applicant to be old and known.

The above cited United States patents to Cox, Kininmonth and Palmer clearly describe and show the expediency of inter-connecting a ship-unloading elevator unit to a boom system by means of a parallelogram drive linkage so that the pivot axis of the elevator unit is maintained in a vertical position when the boom is pivoted in a vertical plane, precisely as defined by applicant in claim 2.

...

In response to the Final Action the Applicant stated (in part):

...

Applicant maintains that the Examiner's rejection of claim 1 is improper for the following reasons:

- 1) Even considered together, the cited references do not disclose all the essential features of applicant's claimed structure.
- 2) The Examiner's suggestion that it would be obvious to substitute some of the elements shown in one reference for elements shown in the other reference has no basis in the teachings of the prior art. In making the suggestion the Examiner is relying on applicant's teachings.
- 3) Above all, applicant is claiming a new and useful combination having advantages which are not remotely suggested in the prior art.

...

As compared with Cox, the present invention also contains design differences. For example, the conveyor described in the Cox patent is not C-shaped, but is S- or Z-shaped, which makes it necessary to deflect it in two different planes or to provide an intermediate conveyor. In order to be fully functional, the conveyor must be inclined at a specific angle, to ensure that the centre of gravity of the pivotable part is located in the vicinity of the pivot axis.

These problems can be solved with considerably less structural expense by the C-shaped conveyor which, in addition to this, has a much more satisfactory conveying capacity. The endless conveyor belt of a C-shaped conveyor of this kind has a substantially higher discharge output, and this may be increased still further by operating it at a higher speed. Furthermore, a belt of this kind runs more quietly and this reduces not only noise, but also vibration, and reduced vibration in turn reduces the amount of material scattered.

Finally, the applicant would again draw attention to the inwardly unloading bucket wheel, especially to the conveyor extending into it, as a feature which is distinguished from the invention disclosed in Cox.

Since the type of transfer according to the present invention eliminates the intermediate conveyor disclosed in the Cox patent, and the very unsatisfactory overhead according to the prior art which is discussed in the present application with reference to German Patent No. 21 00 956, it is submitted that the inwardly unloading bucket wheel, and especially the conveyor extending into it, is a feature distinguished from the prior art and therefore patentable. According to the present invention, the shorter path of transfer has a favourable effect on the performance of the conveyor and additionally the pivotability and the location of the centre of gravity are also favourable.

...

Applicant had requested a hearing. However, a subsequent letter withdrew the request.

Claim 1 of the application reads:

A bulk-material unloading unit for ships or like carriers, comprising a gantry which is adapted to travel alongside the said carrier, a vertically-pivotable boom system arranged upon the gantry and adapted to rotate about a vertical axis, a removing-conveyor belt associated with the boom system, a C-shaped support frame arranged at the free end of the said boom system to pivot about a vertical axis, a vertically-rotating inwardly-discharging bucket wheel mounted floatingly on the lower member of said C-shaped support frame, and a vertical C-conveyor being arranged between the said bucket-wheel and the removing-conveyor belt and being mounted so that the ejection location thereof is situated at the removing-conveyor belt in the vicinity of the vertical pivot axis of the said support frame.

The consideration before the Board is whether or not the application is directed to a patentable advance over the art.

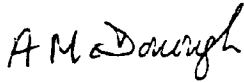
We note that the Final Action details the Cox structure by numerals to show some of the components utilized in this application. Further it adds that the use of a C-conveyor is shown in the German patent and the parallelogram drive linkage is found in Cox, Kinenmonth and Palmer. On the other hand the applicant argues that the cited references fail to disclose the essential features of his claimed structure which represents a useful combination having advantages not remotely suggested by these references.

Looking at the Cox reference we find that twin bucket wheels are arranged for rotation about the outer end of the gathering feeder conveyor support. This feeder conveyor moves the material to a bucket conveyor for vertical movement out of the ship's hold to discharge it onto a belt conveyor and eventually move it to the dock area. The Final Action states that Cox has an "upper C-shaped support portion arranged at the free end of the boom system to pivot about a vertical axis 33C". We agree when viewing the upper portion of the boom end configuration in Cox it is the form of a "C". However, when viewing the complete structure at the end of the boom we see that it includes the vertical bucket conveyor with the bucket wheels attached at the bottom. This configuration resembles a "Z" type of structure rather than a "C" type used by the applicant.

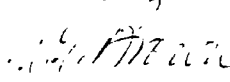
The applicant maintains that he has a particular combination of structure having a particular utility and argues that any assessment of patentability must take into account his combination as such. Further, he adds that the inward unloading bucket, especially the conveyor extending into it, is a feature which distinguishes from the invention disclosed in Cox. We find that the applicant's arrangement utilizing an inwardly discharging bucket wheel and C-shaped conveyor mounted on a floating C-shaped support frame represents a patentable advance over the cited art.

Having concluded that the applicant has a patentable combination we would like to make the following comments with respect to claim 1. This claim uses the term "floatingly" to describe the wheel mounting. We do not think that this term accurately describes the manner in which the wheel is attached to the C frame member. It would appear that the wheel is mounted on a "floating" support frame. Further, the applicant argues that his C-shaped frame carrying a C-shaped conveyor extending into the unloading bucket wheel distinguishes it from the prior art. This feature is not recited in the claim and, since it is a distinguishing feature the Board is of the opinion that it should appear in the broad claim.

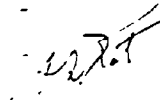
In summary, we recommend that the decision in the Final Action to reject the application on the basis of the art of record be withdrawn.



A. McDonough
Chairman
Patent Appeal Board




M.G. Brown
Assistant Chairman



S.D. Kot
Member

I concur with the findings and the recommendation of the Patent Appeal Board. Accordingly, I withdraw the Final Action and remand the application to the Examiner.



J.H.A. Gariépy
Commissioner of Patents

Dated at Hull, Quebec

this 29th. day of August, 1984

Agent for Applicant

Ridout & Maybee,
101 Richmond St. W.
Toronto, Ontario,
M5H 2J7