

COMMISSIONER'S DECISION

Obviousness: Method of Mixing Liquids

Claims 1, 2, 7 and 8 were refused as being obvious in view of cited art.

Rejection: Affirmed.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated June 26, 1974, on application 055,435 (259-51). The application was filed on June 26, 1969, in the name of Jan-Erik Ostberg et al, and is entitled "Method And Apparatus For Moving Of Liquid Phases In Industrial Processes."

The application relates to a method of producing movement in a predetermined path of liquid, particularly liquids at high temperature such as metallic melts. The reason for selecting a particular flow path may be to achieve a desired effect, such as mixing or homogenizing of a liquid or melts.

In the Final Action the examiner refused claims 1, 2, 7 and 8 as failing to define patentable subject matter over the following citations:

Canadian Patents

90,425	Dec. 13, 1904	King
53,249	Aug. 13, 1896	Powe

In that action the examiner stated (in part):

The rejection of claims 1, 2, 7 and 8 is maintained and the reasons for such rejections are:

These claims specify substantially the same system as that disclosed in the primary reference. The applicant has merely abstracted this system and emphasized the circulatory features thereof by detailing the construction of the pounder element. These claims, however do not patentably differentiate from King's system. King's device, from the drawings, is suspected of having

a concave lower surface to enhance the uniflow-type of circulation. Little is said about this element in the King disclosure. Nevertheless, it is considered an obvious step to replace the King pounder 34 (if it is in fact solid) with a hollow funnel shaped pounder to improve the uniflow efficiency of the device when such is desired as for washing rigid materials such as gum-rubbers etc. Such a replacement is not only shown to be obvious by the Secondary reference which uses such an element "M" but is suggested to be unnecessary by the terminology "of the usual funnel type" used by Powe to indicate that convex-concave type liquid circulators and pounders are conventional in the agitating and mixing art of this nature.

In the case, then, where Kings' system does use a funnel type pounder, these claims are anticipated by the King disclosure.

In the improbable, but alternative case where the King pounder 34 is solid, the mere use of a funnel type pounder M as used by Powe is obvious to those skilled in the art as no inventive step is necessary to make the substitution.

The applicants argument that the references merely accomplish a small degree of uniflow liquid motion through the meshes of the fabric is not cogent for two reasons. The first reason is that a clothes washer does not normally operate on one cloth at a time but a plurality thereof. Hence the flow pattern will not likely predominately permeate the cloths but will circumvent such. The second reason is that washers function to mix soap, bleach, water and other reagents even before and after the clothes have been added or removed from the machine respectively. In these modes of operation (preventing localized bleaching of clothes or cleansing the receptacle) there is no doubt that the uniflow pattern claimed by the applicant will be produced by the same means defined by the cited primary reference and involving the same method steps. Improvement on the primary reference is manifest in the Secondary reference.

In his second response dated October 31, 1974 to the Final Action the applicant presented new claims and stated (in part):

With reference to the proposed new method claim 1, it will be noted that it is directed to a method for producing "a substantially rectilinear and unidirectional flow within a body of liquid in a container". The claim goes on to recite that a liquid propelling member immersed in the body of the liquid is reciprocated in substantially rectilinear coincident paths in both directions with the liquid propelling member being disposed at a distance from the walls of the container. The method claim also calls for the member to have a concave face with walls substantially parallel to the direction of reciprocation at their free edges "in one direction of movement and a non-concave face facing in the other direction of movement". All of the above noted limitations were contained in previous method claim 1. However, the newly proposed method claim 1 recites

more clearly and distinctly the manner in which the liquid propelling member interacts with the liquid to provide the substantially rectilinear and unidirectional flow recited in the first portion of the claim. The new claim recited, in part, that "upon the movement of the member in such one direction it produces a substantially larger resistance to said movement, and thereby exerts a larger force on the liquid in said body of liquid, than upon the movement thereof in the opposite direction, thereby to produce flow of the liquid in said one direction." The claim further recites that "upon the movement in said opposite direction the liquid flowing in said one direction with respect to said member adjacent the periphery thereof moves inwardly into the concavity of the concave face".

...

As noted in the reply of December 23, 1974, both King and Powe deal with the production of what is essentially a turbulent or churning motion. It is not believed that the structures shown in these patents are capable of producing rectilinear and unidirectional flow within a body of liquid nor is there any suggestion in either patent that it would be desirable to do so. The operators of the King and Powe devices will operate the devices in such a manner as to obtain as much turbulence and agitation as possible in order to effect cleaning of the fabrics or clothing being washed. Neither of these devices are designed for or devoted to performance of the method set forth in claims 1 and 7 and accordingly favourable consideration thereof by the Board is respectfully requested.

Insofar as apparatus claims 2 and 8 are concerned, applicant will rely on the remarks made in the response of December 23, 1974. Neither King nor Powe in any way suggest apparatus incorporating a liquid propelling member having a concave face with the free edges of the face being substantially parallel to the rectilinear path of movement of such liquid propelling member thereby to achieve the unidirectional flow as set forth in claim 2.

The same considerations would also apply to the De Coster, Jackson and Owens references. None of these devices are designed for or devoted to the production of a rectilinear and unidirectional flow within a body of liquid. Indeed it is quite likely that a person skilled in the art and observing these structures and the agitating and turbulent motion of the liquid which they produce would be led away from the concept of the present invention entirely.

The King citation discloses a clothes washing machine which operates by forcing wash water through the clothes. The forcing or circulating device, called a pounder in this citation, is constructed for substantial coincident rectilinear movement, but which also has a facility allowing it to be pivoted to any position in the wash receptacle. The pounder has a convex conical upper surface, and a lower surface which, although not adequately described, is clearly of a concave or funnel shaped configuration. Claim 1 of that citation reads:

The combination of a hinged foldable support provided with a vertical pivot extending longitudinally of the support and projecting therefrom, a horizontally-swinging frame mounted on the pivot and arranged to fold transversely of the support, a pounder, and longitudinal bars connected at their inner ends to the horizontally-swinging frame and at their outer ends to the pounder and arranged to swing both vertically and horizontally independently of the said swinging frame, said bars being also arranged to fold the pounder substantially longitudinally of the support, substantially as described.

The Powe citation relates to a clothes washing machine. The forcing or circulating device, called a plunger in this citation, is described as being of the usual funnel-type shaped configuration.

This application relates to a situation where a body of molten or liquid material within a container is caused to move in a predetermined direction or path by moving back and forth in the container a member which is out of contact with the walls of the container and which has such a shape and motion that it impels the fluid material vigorously when moved in one direction and less vigorously when moved in the other direction so as to produce movement substantially in the first direction. The device preferably has two opposed faces, one concave and the other convex with the concave face pointing in the direction of the desired movement. The body has the free edges substantially parallel to the direction of movement of the body, and is moved back and forth in coincident rectilinear paths.

The question to be considered is whether proposed amended claims 1, 2, 7 and 8 are directed to a patentable advance in the art.

It is of interest to note that in the United States the Board of Appeals reversed the examiner, but then the Board made a further search and rejected the claims on the teachings of the newly discovered references. That decision was subsequently reversed by the Court of Customs and Patent Appeals. The remarks of that Court are worthy of note. They read (in part):

The rejection of appellants' method claims must be reversed. Nothing in the references cited by the Examiner or the board clearly suggests a method for producing a "rectilinear and unidirectional flow within a body of a liquid". On the contrary, all of the prior art of record deals with the production of what is essentially a turbulent or churning motion. Accordingly, the method set forth in claims 12 and 13 would not have been obvious from the presence in the art of structural elements of different devices, none of which devices was designed for or devoted to performance of that method.

Of concern to us of course is whether the citations used by the Canadian Patent Office clearly suggests a method for producing a "rectilinear and unidirectional flow within a body of a liquid." That according to the applicant is the essence of his invention. It is observed, however, that the primary reference (King) cited in the Final Action was not of record in the decision of the Court of Customs and Patent Appeals. It is clear, for example, that the references, DeCoster, Jackson and Owens, which were considered by the U.S. Court, do not show the same control linkage as that disclosed by King.

We turn now to a consideration of the proposed amended claims. Claim 1 reads:

A method for producing a substantially rectilinear and unidirectional flow within a body of liquid in a container, which comprises substantially rectilinearly reciprocating in coincident paths in both directions a liquid propelling member which is immersed in said body of liquid and disposed at a distance from the walls of said container and having a concave face with walls substantially parallel to the direction of reciprocation at their free edges in one direction of movement and a non-concave face facing in the other direction of movement whereby upon the movement of the member in such one direction it produces a substantially larger resistance to said movement, and thereby exerts a larger force on the liquid in said body of liquid, than upon the movement thereof in the opposite direction thereby to produce flow of the liquid in said one direction and that upon the movement in said opposite direction the liquid flowing in said one direction with respect to said member adjacent the periphery thereof moves inwardly into the concavity of the concave face.

The applicant argues that he believed that the structure shown in the King and Powe citations "are not capable of producing rectilinear and unidirectional flow within a body of fluid...." This of course is a point in dispute which we will attempt to resolve.

We observed that the King citation discloses a device for forcing or circulating fluids with substantially the same rectilinear movement as that of the present application. That rectilinear movement in the reference is brought about by parallel bars elements 26 and 27. The slight skew motion is a function of the radii and the useful arcs generated of and by elements 26 and 27 would in our view definitely assist in maintaining coincident and substantially rectilinear motion. Any "tolerance" during a stationary agitation is embraced by the terminology used in the refused claims, which employ the description "substantially rectilinear"

We note, therefore, that the essential difference from the prior art resides in the shape of the plunger. The applicant argues that the particular shape of his plunger promotes the desired rectilinear and unidirectional flow of the fluid. The shape of a device, however, only has patentable merit when such shape results in some "unobvious" functional effect or result. We observe that in the King citation the structure or combination is claimed. In the present application claim 1, for example, is not only directed to the device, but is also directed to a technical assessment of flow patterns which occur when his device is in operation.

The uniflow patterns discussed by the applicant may, in our view, inherently exist whenever such apparatus, including that shown by King, are put into operation. The mere addition of such descriptive terms to the King disclosure is not of patentable significance, and as such merely represents "observation of an existing or an inherent phenomenon." That a uniform flow pattern may not exist under all modes of operation in the King-type device is not of importance.

The applicant also attempts to rely upon the phraseology, "free edges of a concave face ... substantially parallel to the rectilinear path of movement," to remove the rejected claims from the configuration of the Powe agitator. The term "edge" represents a line where two surfaces intersect. The edges

of the King or Powe agitators may be said to be substantially parallel to their rectilinear path of movement. That would apply even more so to the DeCoster citation of record in the proceedings of the prosecution in the United States.

The applicant's contention that unidirectional flow cannot be produced with a funnel type concavity is not well taken. In our view a funnel type plunger in a liquid bath would produce a pumping action patentably indistinguishable from that produced in shapes such as "hemispherical." Once the chamber, when in operation, is filled (part air-part liquid) the moving liquid will be propelled in "slug-like" fashion by a downward force. We are satisfied that substantial unidirectional flow then is achievable with a funnel type plunger. We will concede that the particular shape of the applicant's device might be somewhat more efficient. In our view, however, no unobvious functional result has been attained.

Claims 1 and 2, in our view, therefore, are not directed to patentable advance in the art. Claims 7 and 8, which refer to claims 1 and 2 respectively, merely add design features which do not make them allowable over refused claims 7 and 8.

We believe that the arguments used for the allowance of claims 1 and 2 would be more appropriate if a restriction was added to limit them to the structure of figure 3. Therefore, in our view, claims 1 and 2 could be accepted if amended to include "a pumping pipe-shaped body member"

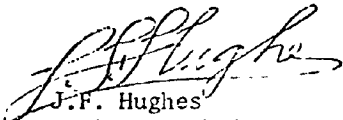
We think that the following quotation of Maclean J. in Niagara Wire Weaving v Johnson Wire Works Ltd (1939) Ex. C.R. at 273, is pertinent. "Small variations from, or slight modifications of, the current standards of construction, in an old art, rarely are indicative of invention; they are usually obvious improvements resulting from experience and the changing requirements of users," and at page 276, "No step is disclosed there which could be described as invention. There is not, in my opinion, that distinction between what was known before, and that disclosed by Lindsay, that called for that degree of

ingenuity requisite to support a patent. If those patents could be supported it would seriously impede all improvements in the practical application of common knowledge."

The comments of the court, in Lowe Martin Co. Ltd. v Office Specialty Manufacturing Co. Ltd. (1930) Ex. C.R. 181, are also of interest: "The mere carrying forward of the original thought, a change only in form, proportion or degree, doing the same thing in the same way, by substantially the same means, with better results is not such an invention as will sustain a patent" (page 18/ line 9), and "It is always necessary to consider the rights of the general public to avoid monopolies on such simple devices as would occur to anyone familiar with the art."

We are satisfied that claims 1, 2, 7 and 8 are not directed to a patentable advance in the art. The applicant has achieved a result with a change in form only, producing a result, by substantially the same means, as is taught or inherent in the prior art.

The Board recommends that the decision in the Final Action to refuse claims 1, 2, 7 and 8 be affirmed. Claims 1 and 2 could be accepted if amended to include the proposed amendment discussed above. Claims 7 and 8 would be also allowable if made dependent on amended claims 1 and 2.


J.F. Hughes
Assistant Chairman
Patent Appeal Board

I am in agreement with the recommendations of the Patent Appeal Board and refuse claims 1, 2, 7 and 8. I will, however, accept these claims if amended along the guide lines suggested. The applicant has six months within which to delete or amend claims 1, 2, 7 and 8, or to appeal this decision under the provisions of Section 44 of the Patent Act.


J.A. Brown
Acting Commissioner of Patents

Dated at Hull, Quebec
this 6th. day of January, 1976