

COMMISSIONER'S DECISION

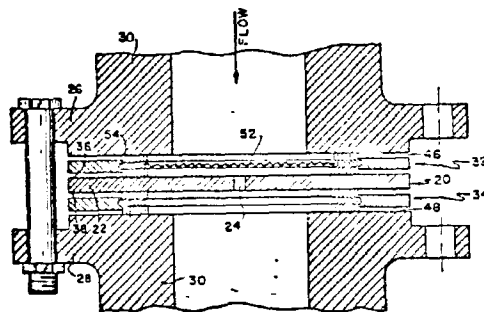
OBVIOUSNESS; NON-SUPPORT: ORIFICE STEAM TRAP

Condensate drained at line pressure via a drain line containing a disc with a small orifice is inventive over the cited art. Amendment to the drawings will clarify the location of the disc.

Final Action: Reversed.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated April 7, 1976, on application 163,371 (Class 137-8). The application was filed on February 9, 1973, in the name of Lawrence L. Guzik, and is entitled "Automatically Controlled Discharge Trap." The Patent Appeal Board conducted a Hearing on March 1, 1978, at which the applicant was represented by Messrs. H. O'Gorman, R. Page, R.E. Beatty and Prof. J. Murdock.

This application relates to a plate member containing a restrictive orifice to be used in pipe lines carrying vapor under pressure to control the condensate drainage from the pipe line. Figure 1, shown below, represents the applicants arrangement.

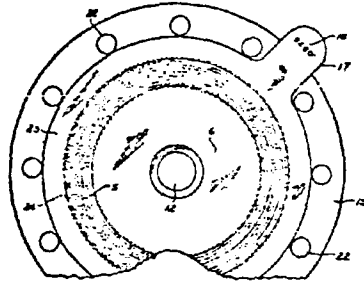


In the Final Action the examiner rejected the application for insufficiency of disclosure and for failing to define patentable subject matter over the following patents:

Canadian	221,531	Aug. 1, 1922	Doulton et al
	507,426	Nov. 16, 1954	Freeman
	530,918	Sept. 25, 1956	Boerner et al

United States	2,520,089	Aug. 22, 1950	Lippincott
	2,803,347	Aug. 20, 1957	Whitlock

Lippincott is for a metering orifice plate, and means for mounting it in pipe flange junctures. A spirally wound strip metal gasket serves as a compressible seal. Figure 1 of Lippincott shows:



Whitlock describes a mixed-bed dionizing apparatus which utilizes screens and gaskets in conjunction with a plate having flow openings therein.

Doulton relates to the prevention of noise caused by water flowing through a pipe in which a disc of metallic gauze is inserted in the pipe along with a plug having a restricted orifice.

Boerner is for a fire extinguishing foam chamber which uses a plate member with a restricted orifice therein for controlling the flow.

Freeman's patent is for a liquid proportioning system in which a foam liquid supply flowing through a fixed orifice means is used.

In the Final Action the examiner stated (in part):

The device disclosed and claimed by applicant in the instant application is not materially different, from that in the cited references, and also the device in the cited references can perform the same function as that disclosed and claimed by applicant.

In view of the teaching of the cited patents as discussed above, it is held that this application does not contain matter of patentable significance, hence the allowance of this application to patent is refused.

Furthermore the device as disclosed by the disclosure of this application, is so broadly and inexplicitly set forth that it can be interpreted to be directed to a device which will not perform its intended functions.

The disclosure does not include the conditions under which the device disclosed can perform its function so as to obtain the desired results.

The device disclosed and claimed may perform its intended function under certain conditions, however no such conditions are set forth in the disclosure of this application.

To all intents and purposes, the disclosure discloses a screen and an orifice plate, and nothing more; - such are well known in the art of fluid material handling as shown on the cited patents.

Further the disclosure states that the device is an improvement to fluid separating traps as included in pipelines of ship-board steam powered equipment. This then suggests that the device is to be used on pipelines carrying large volumes at high pressure steam.

Further the disclosure states in paragraph 2 on page 3, that the present invention provides an orifice plate means in a steam line from which it is desired to separate condensate; the invention also provides an inline strainer; this suggests that the device disclosed can be placed anywhere within the steam line system, for example a line preceding power equipment to be driven by the steam in the line. But here a problem arises; the orifice restricts the volume of steam (saturated steam) approaching the power equipment; hence sufficient quantity of steam does not reach such equipment to effectively operate it.

Also in such a case, the said device inserted in a horizontal line carrying steam, where does the resulting condensate go? does it merely trickle along the line on the downstream side of the said device? The disclosure does not clarify this important point.

Two affidavits accompanied the applicants response to the Final Action. In that response he stated (in part):

The Examiner has commented that the disclosure can be interpreted so broadly as to be directed to a device that will not perform its intended function. An answer to this is that the disclosure is to be read with the eye of a person of reasonable skill in the art, who wants to design an operable device and who has within his capabilities and within the teachings of the art, the capability of producing an operable and efficient condensate draining device. That he can do so, on the basis of this disclosure and the knowledge available to him at the time it was filed, renders the disclosure sufficient. It is submitted that a patent applicant does not have to write his specification so that it cannot be distorted by a bizarre reading.

The assembly disclosed performs its intended function over a wide range of pressures -- from a few psi to over 1200 psi -- and over a wide range of condensate flows. A proper orifice size can be readily calculated by a designer to suit the particular conditions that are expected within the system. If the first approximation does not yield optimum results in a given situation, by normal, routine field testing involving use of a slightly larger or slightly smaller orifice, conditions can be optimized. It is submitted that a patent applicant is not required to perform the field engineering for potential users in order to be entitled to a patent. If such were the state of the law, the number of disclosures filed would dwindle to a trickle and with it, the flow of information that is in patent disclosures.

With respect to the statements in the last Action concerning the suggestion of placing the disclosed device in a main steam line, Applicant submits that a fair reading of this disclosure does not lead the reader to this conclusion. It is clear that what is disclosed is a condensate draining device that is a substitute for conventional steam traps and such traps are never placed in a position to block a high volume flow of steam to downstream equipment. One of ordinary skill in the art (and even a first year mechanical engineering student) would recognize that placing an orifice plate in a main steam line would incapacitate any equipment downstream of the plate that was dependent on high volume flow and would not be misled to place an orifice plate in a steam main. See paragraph 16 of Professor Murdock's Affidavit.

...

Applicant submits that to fill disclosures with the kinds of details that the Examiner in this application would require, would be counterproductive from the standpoint of disseminating technical information via patent disclosure. Adding unnecessary details raises the cost of preparing the application in the first instance needlessly, and wastes the time of those who are reading the patent document for pertinent information. Patent specifications are to be addressed to those of ordinary skill in the art, and are to be read in the light of the background knowledge of such persons. By analogy to an invention involving complex electronic circuitry, the Examiner would apparently require that all circuit parameters and component parameters be specified in the disclosure, as theoretically it would be possible to include a component whose value would render the circuit unusable for its intended purpose. Clearly, this is not the state of the law. An inventor and his counsel are entitled to rely on the knowledge and judgement of the persons working in the art and do not have to teach what persons in the art already know or would, as a matter of course, be expected to do.

The portion of the specification on page 7 concerning the suggestion to use the devices as disclosed in compressed air systems, while admittedly brief, is sufficient to enable one of ordinary skill in the art to understand the application being suggested. Any mechanic who has worked with compressed air systems knows that such systems routinely employ devices for removing condensed water and excess oil from the high pressure air lines. The disclosed drain orifice assembly would be used in substantially the same manner to provide for a continuous draining of liquid components from the system.

There are two issues that we must determine, (1) is the application directed to a patentable advance in the art, and (2) is the disclosure sufficient.

We will consider first the objection that "this application does not contain matter of patentable significance in view of the teaching of the cited patents."

According to the examiner the variation in the type of filter is mere substitution, since many types of filters are manufactured, one of which has been selected by the applicant for use in the invention. To make that selection is in his view but expected skill for one in this art. Orifice plates having a spiral seal mounted in pipe flange junctures were used by Lippincott for metering fluid flow. Freeman discloses a liquid proportioning system in which pressurized liquid foam flows through a fixed orifice plate in each foam line. Doulton utilizes a restricted orifice for the purpose of preventing water hammer in pipes. Boerner discloses a fire extinguishing foam chamber having different size orifice plates, and the de-ionizing apparatus of Whitlock utilizes a screen assembly having a sufficiently small mesh opening "to prevent the passage of exchange material therethrough."

At the Hearing Mr. Beatty indicated that even potential users of the invention did not believe it would work. It is also clear that the concept of using the orifice plate arrangement in a separating trap is both novel and a practical application of the plate.

It is a well-established principle of patent law that the patentable merit in an invention may reside in the idea behind the invention. Once having conceived that idea the way to implement it may be both simple and apparent, but that will not nullify the patentability of such an invention. The invention may be in recognizing the existence of a problem, or in clearly perceiving some particular useful end to be obtained.

A leading case dealing with "recognition of the idea or concept" is Hickton's Patent Syndicate v. Patents and Machine Improvements Company Ltd. (1909)

26 R.P.C. 339. At page 347, Fletcher Moulton L.J. set forth the applicable law as follows:

The learned Judge says: 'An idea may be new and original and very meritorious, but unless there is some invention necessary for putting the idea into practice it is not patentable.' With the greatest respect for the learned Judge, that, in my opinion, is quite contrary to the principles of patent law, and would deprive of their reward a very large number of meritorious inventions that have been made. I may say that this dictum is to the best of my knowledge supported by no case, and no case has been quoted to us which would justify it.... To say that the conception may be meritorious and may involve invention and may be new and

original, and simply because when you have once got the idea it is easy to carry it out, that that deprives it of the title of being a new invention according to our patent law, is, I think, an extremely dangerous principle and justified neither by reason, nor authority.

...

In my opinion, invention may lie in the idea, and it may lie in the way in which it is carried out, and it may lie in the combination of the two.

This doctrine forms part of Canadian jurisprudence. Mr. Justice Rinfret put it this way in Electrolier Manufacturing Co. Ltd. v. Dominion Manufacturers Ltd. (1934) S.C.R. 436 at 442:

The merit of Pahlow's patent is not so much in the means of carrying out the idea as in conceiving the idea itself (Fawcett v. Homan), supra....

None of the references cited against the present application relate to the specific problem overcome here. The effectiveness of the orifice plate in reducing steam loss while effecting condensate discharge was completely unexpected. In this instance the important commercial success of the invention is a factor which may properly be considered in assessing whether invention is present. We are consequently satisfied that there is patentable subject matter present, and recommend that the rejection on the ground that there is none be withdrawn.

Next we turn to the objection that..."the disclosure and drawings of this application are not sufficient in detail such that the device disclosed and claimed will, in all instances, perform its intended task as set forth in the objectives of this application...."

The Final Action states that the "disclosure does not include the conditions under which the device disclosed can perform its function so as to obtain the desired results." Commenting on the reference in the disclosure to the device being an improvement to fluid-separating traps in pipelines of ship-board steam equipment, the examiner maintains that this "suggests the device is used on pipelines carrying large volumes "of steam at high pressure." He argues that since the purpose of the orifice plate in a steam line is to separate condensate, then the device can be placed anywhere within the steam line system, even in a line preceding power equipment to be driven by the steam in the line.

Two affidavits were submitted by the applicant to support his position that the disclosure is adequate. He maintains that a person of ordinary skill in the art involved at the time of filing the application, after a reasonable study of the disclosure, and in the light of knowledge readily available in his field existing at the filing date of the disclosure, would understand the invention, and be able to put it to use.

One of the affiants is Professor J.W. Murdock, an expert in the field of thermodynamics since 1939. Professor Murdock is the author of many publications relating to this subject matter. Paragraphs 15 and 16 of Mr. Murdock's affidavit read as follows:

15. Persons having the level of skill necessary for the design and engineering of condensate removal devices, such as those found in steam-generation and power systems, at the time of the filing of this application on February 9, 1973, are licensed, professional mechanical engineers having several years of experience in the field of steam power plant and equipment design and operation.

16. The engineer described in paragraph 15, upon reading the disclosure in this application, would understand that the drain orifice devices described in this application are condensate removal devices that serve as substitutes for conventional pressure or temperature-operated steam traps and that they are located to control the flow of condensate to the drain system of a steam power plant or the like; such a person would understand that the drain orifice assembly described in the disclosure is placed in the same relative position in the system as the conventional traps; such a person certainly would not be led to place an orifice assembly as described in a conduit carrying large volumes of vapor under high pressure to a piece of equipment that must utilize the high pressure vapor.

A second affidavit, one taken by Mr. Robert A. Szczepanski also accompanied the applicants response to the Final Action. Mr. Szczepanski is employed by the Naval Ship Engineering Centre for the U.S. Government, and has been involved in the development, testing and evaluation of drain orifices disclosed in this application when used to replace conventional steam traps on steam-driven ships of the U.S. Navy. As a result of the tests conducted in 1969 and 1970 the U.S. fleet has approved the drain orifice assembly for installation in all their fossil fuel fired ships.

At the Hearing Mr. O'Gorman took considerable time to identify the level of skill of the average man in the art, and what the disclosure teaches that person. Both Mr. Beatty and Professor Murdock addressed the Board on this topic, and suggested that on a reasonable and fair reading of pages 2 to 5 of the disclosure it is abundantly clear that the invention described is intended as a replacement for conventional mechanical, pressure or temperature-activated steam traps, whose location and workings are well known to persons of ordinary skill in the art. They also stated that it has been common and conventional practice in steam system design to provide drip legs and drain lines for condensate and position steam traps to receive condensate from such drip legs.

Section 36 of the Patent Act sets out as a requirement of the specification that it "...correctly and fully describe the invention and its operation as contemplated by the inventor..." Paragraph 1 on page 2 of the disclosure, entitled Background of Invention states:

The present invention relates broadly to fluid handling devices and more particularly to improvements in fluid separating traps as included in the pipelines of ship-board steam powered equipment.

A summary of invention paragraph is found on page 3 of the disclosure and it reads as follows:

The general purpose of this invention is to provide an automatically discharging condensate device that has all of the advantages of similarly employed prior art devices and has none of the above described disadvantages. To attain this, the present invention provides an orifice plate means in a steam line from which it is desired to separate condensate. The invention also provides an inline strainer, formed integrally with a gasket material, and included to separate dirt, grease, and the like from the condensate to thereby avoid restricting or otherwise blocking the passage of the condensate through the orifice plate means.

It is established in the first paragraph of the specification that the invention relates to improvements in fluid separating traps found in pipelines of steam powered ships. In the summary of invention paragraph the use of an orifice plate means in a steam line from which it is desired to separate condensate is specified. Pulling together all this information given on the

disclosure we have come to the conclusion that there is sufficient information for a man skilled in the art to properly locate the device in steam systems.

It was suggested in the Final Action that the device might according to the disclosure be placed anywhere within the steam line system, for example in the line preceding the power equipment to be driven by the steam in the line. From that, the Examiner considered the disclosure to be inexplicit, and broader, than the real invention.

We think it is unlikely that a person skilled in the art would place the orifice in a supply line preceding power equipment since this would restrict the steam flow to such an extent that proper operation of the power equipment would not be possible. Granted the disclosure does not specifically detail location of the trap, but we believe what Mr. Justice Kellock said in Wandscheer et al v Sicard Ltd. 1948 S.C.R. 1 @16 is pertinent.

The Sicard specification is interesting also from another standpoint, namely, its particularity or rather its lack of particularity in the teachings as to the construction of the discharge conduit it claims. It is completely lacking in any details or measurements as to the bore of the conduit or the angle of the elbow at any state of its extension or retraction of the telescopic parts forming the elbow. The patentee relies and must rely on the ability of a competent workman to build a conduit of some utility from the general description to which the specification limits itself. It is further to be noted that the elbow depicted in the drawings accompanying the specification passes from almost the vertical through and beyond a right angle. In my opinion it is obvious that if the respondent's patent can be said to be unobjectionable on the ground that a skilled mechanic could, without invention build an operable machine of some utility, the same must also be said of the Curtis patent. In my opinion it is properly to be said of both.

That such a mechanic could produce such a machine from the Curtis patent is established by the evidence of the witness Ostrander. It is to be observed that it is not necessary that such a person should be able to do so without trial or experiments so long as the task involved does not require invention.

(underlining added)

We have concluded that the disclosure describes the invention sufficiently clear to enable a person skilled in the art to place the trap in the desired location, though some experimentation which does not require the exercise of inventive faculty may be necessary. The applicant submitted a design handbook in an earlier response to an examiners action. This book contains an operational drawing (5B)

which clearly shows the orifice plate location. Having concluded that the disclosure describes the invention sufficiently we believe that this operational drawing would constitute matter reasonably to be inferred and suggest that it may be included with the drawings of this application. We believe such an amendment would clarify some of the uncertainties objected to by the Examiner.

Turning now to the claims which were submitted in response to the Final Action, claim 1 reads as follows:

For use in a system carrying gas under pressure, which system has a drain line for removing condensate and other liquid components from said system, the drain line comprising an upstream section and a downstream section, each section having an end flange and means for securing said end flanges together, a condensate discharge device comprising a plate extending across the entire flow cross section of the line, the plate having a restrictive orifice therein providing a passage means for the flow of steam and condensate through the plate, the size of the orifice being such as to pass all of the condensate reaching the orifice and to minimize the loss of vapor from the line, the plate being positionable between the flange of the upstream section of the line and the flange of a downstream section of the line, a first gasket for creating a pressure seal between the upstream side of the orifice plate and the upstream flange, and a second gasket for creating a pressure seal between the downstream side of the plate and the flange of a downstream section of the line, a strainer carried by the first gasket and extending across the entire flow cross section of the line upstream of said orifice, the openings in the strainer being of a smaller size than the orifice.

We find the claim generally acceptable, but believe the following relatively minor alterations should be made to comply fully with Section 36. First insert the word "said" after "the" in line 3; in line 5 change "and" to read "an", and in line 12 the word "positionable" should read "positioned."

Dependent claims 2 to 4 are acceptable.

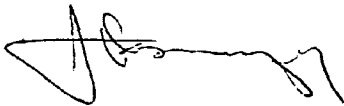
To summarize, we recommend that the rejections on the grounds that the application does not contain matter of patentable significance in view of the prior art, and that the specification is not sufficient be withdrawn.

We are satisfied that the original objections of the examiner have led to useful amendments of benefit both to the applicant and to the public. We are also satisfied that the latest claims proposed made in response to the Final Action, if altered as called for two paragraphs above, overcome the objections and should be accepted.



G.A. Asher
Chairman
Patent Appeal Board, Canada

Having considered the prosecution of this application and the recommendations of the Patent Appeal Board, it is my decision that the rejection of the application should be withdrawn. If the latest proposed claims are amended according to the findings of the Board, the application may proceed to allowance.



J.H.A. Gariepy
Commissioner of Patents

Dated at Hull, Quebec

this 12th.day of June, 1978

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