BLO/133/90

PATENTS ACT 1977

IN THE MATTER OF Patent Application
No 8709625 in the name of
Furuno Electric Company Limited

REASONS FOR DECISION

At a hearing before me on 29 October 1990, Mr N I Smith assisted by Mr G P O'Connor appeared as agent for the applicants and Mr D Midgley attended as the examiner in the case. At the close I decided to refuse to allow the application to proceed with the present Claim 4 but allowed the opportunity to amend subject to the filing of Patents Form 50/77. The following are my reasons for this decision.

The application was filed on 23 April 1987 claiming priority from two Japanese applications and was published on 2 December 1987 under the number GB 2191055 A. The unextended Rule 34 period expired on 23 October 1990.

The application is concerned with locating schools of fish to facilitate fishing operations. It is acknowledged in the specification that it is known that birds flying over the sea can indicate the presence of fish and that this knowledge has been used on fishing boats, binoculars being used to locate the birds. It is proposed that the use of binoculars be replaced by the use of radar.

The specification as filed described a number of different techniques by means of which the echo signals from birds can be made more readily identifiable. One technique involving the use of both X-band and S-band radars has been divided out and is now the subject matter of application 9001425. The remaining techniques use processing of the signals obtained from successive scans of an S-band radar to enhance the image in respect of echoes from birds.

As filed the claims were directed to fish school detecting methods and apparatus but recently had been amended in response to an examination report so that they are now directed to methods of fishing and fishing apparatus. At the hearing Mr Smith said that the applicants now considered that this wording was inappropriate and proposed that the claims should be amended so that they were again directed to the detection of the fish rather than to fishing. Since the applicants did not seek to maintain any of the claims in their present form and I considered that amendment along these lines removed a number of problems in respect of the construction and scope of the claims, I proceeded on the basis of the specification notionally amended in this way. Mr Smith also withdrew the broader apparatus claim, Claim 8.

The examiner had raised objections of lack of novelty against Claim 8, which has now been withdrawn, and lack of inventive step and of unpatentability under Section 1(2) in respect of all the independent claims. Claims 1 and 5 require the processing of the echo signals received during a plurality of rotations of the antenna to emphasise the echo signals received from birds. Although it is known that signals from successive scans may be integrated to reduce the effect of unwanted sea clutter no prior art has been produced to show that it is known to use similar methods to enhance the echo signals received from objects such as birds. I concluded that due to the presence of this apparently non-obvious technical feature the objections to these claims were not well founded.

Claim 4 remained the only claim in dispute and, as proposed to be amended, it reads:-

> 4. A method of detecting a school of fish by radiating search signals with their carrier frequency being in the S-band frequency range, successively in different azimuthal directions within a wide angular range, and receiving an echo signal reflected by a bird or birds and indicative of the location of a school of fish; and displaying the received echo signal representative of the location of said bird or birds on a screen of an indicator such that the display is indicative of the location of the school of fish, thereby locating the school of fish under the bird or birds.

Mr Smith argued that the invention was non-obvious since there was no prior art use of S-band radar to detect fish schools via birds and the deliberate detection of birds using radar was not common knowledge since echoes from birds were considered to be unwanted "clutter" which detracted from the intended purpose. Moreover the person skilled in the art was a fisherman who was not a radar expert and would have been unaware of the relatively large echoes produced by birds in the S-band. The applicants had also obtained considerable commercial success in the sale of suitable equipment and that although the production of radar echoes by birds had been known for at least twenty years before the priority date the absence of use of the method claimed indicated that it was inventive.

I agree that no prior art has been produced to demonstrate that the method of detecting fish claimed has in fact been previously used or proposed and consequently must be considered to be novel. However, I cannot accept the proposition that it was not well known to deliberately detect birds using radar. During examination attention was drawn to

page 509 of the second edition (1980) of the book 'Introduction to Radar Systems' by Skolnik as indicating that birds produce radar echoes. Although this comes in a section concerned with so called "Angel Echoes", ie echoes resulting from regions where no apparent reflecting surfaces seem to exist, which are usually unwanted, reference is made to the use of measurements to determine the size of a bird and at the top of page 510 it is indicated that certain parameters are useful for determining the identity of a bird. It is clear therefore that the use of radar for the specific purposes of detecting, determining the size and identifying birds was known before the priority date of the present application.

I do not see why the person skilled in the art should be considered to be restricted to fishermen. Presumably some larger fishing boats carry navigators who have experience in the identification of radar images and any such person observing the use of binoculars to locate birds which were taken to be indicative of the presence of fish could recognize the possibility of using radar to perform this task and would not have to exercise any inventive ingenuity to propose the use of S-band apparatus since it is well known that birds produce larger echoes at this wavelength than in adjacent bands. In addition other groups of people have an interest in locating fish. For example scientists investigating the behaviour of marine animals and birds are likely to be aware of both the relationship between the presence of birds and fish and of the use of radar to track birds in flight. I consider that the invention claimed would be obvious to such a person.

As to commercial success, Mr Smith acknowledged that it was his understanding that this was in respect of radar systems with means for enhancing the images of birds rather than for a standard S-band radar and consequently I can place no weight on it when considering a claim to a method that does not necessarily involve the use of such technically improved

equipment. Similarly the fact that the claimed method was not in use before the priority date of this application even though detection of birds by radar had been known for a considerable period is not decisive since other factors such as the difficulty of interpreting the display, unreliability of the inference as to the presence of fish in waters containing other food sources for birds, the bulk or weight of the equipment or the availability of other suitable methods such as sonar might result in lack of use even though the method itself were obvious.

Taking all the points raised at the hearing into account I came to the conclusion that the method as defined by Claim 4 lacks an inventive step contrary to section 1(1)(b).

Turning to the question of patentability Mr Smith pointed out that S-band radar was technical apparatus and that the use of this in a novel way did not constitute something which was excluded by Section 1(2). I consider that the wording of the claim introduces certain problems in determining its proper construction mainly because there is no direct detection of the presence of fish, merely the inference that if birds are flying over the sea there is the possibility of fish being located below them.

I concluded that Claim 4 should be construed as requiring the following steps:-

a) operation of an S-band radar to display echo signals;

b) interpreting the display to identify echoes from birds;

c) inferring the possibility of the presence of fish at the corresponding location.

Clearly both the identification of the bird echoes and the inference drawn are mental steps which could be applied to any S-band radar display and the overall result of the method is the deduction by the observer that there is the possibility of

fish being found at a particular location. In my opinion this result is of a non-technical nature and on its true construction Claim 4 defines the steps of a mental act as such which is excluded from patentability by the provisions of Section 1(2)(c).

For these reasons I concluded that the examiners objection that Claim 4 was both obvious and unpatentable was well founded and I refused to allow the application to proceed with this claim. If the application is to proceed it will require to be amended but this will only be possible if Patents Form 50/77 is filed to extend the Rule 34 period. The form and amendments should be filed as soon as possible to enable the examiner to consider the amended claims before the end of the extended period.

Having informed Mr Smith of my decision to refuse to allow the application to proceed in its present form at the hearing, the applicants have a period of 6 weeks from the date of the hearing to enter an appeal if they so wish.

Dated this 6th day of November 1990

M F Pilgrim
Principal Examiner, acting for the Comptroller.

THE PATENT OFFICE