U.S. DEPARTMENT OF COMMERCE
Patent Office

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Washington, D.C. 20231

In re application of LYMAN L. BLACKWELL

Serial No. 720,745

Filed September 7, 1976

For CHARGED-PARTICLE APPARATUS AND PROCEDURES

Examiner V. Sunderdick

Group Art Unit 252

THE COMMISSIONER OF PATENTS
Washington, D.C. 20231

Sir:

Transmitted herewith is an amendment in the above-identified application.

☐ No additional fee is enclosed because this application was filed prior to October 25, 1965 (effective date of Public Law 89-83.)

☒ No additional fee is required.

The fee has been calculated as shown below.

CLAIMS AS AMENDED						
(1)	(2) CLAIMS REMAINING AFTER AMENDMENT	(3)	(4) HIGHEST NO. PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	(6) RATE	(7) ADDITIONAL FEE
TOTAL CLAIMS	* 46	MINUS	** 46	x 0	x $2	x -0-
INDEP. CLAIMS	* 6	MINUS	6	x 0	x $10	x -0-
			TOTAL ADDITIONAL FEE FOR THIS AMENDMENT →			-0-

*If the entry in Column 2 is less than the entry in Column 4, write "0" in Column 5.
**If the "Highest Number Previously Paid For" IN THIS SPACE is less than 10, write "10" in this space.

☐ A check in the amount of $ is attached.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of)
)
LYMAN L. BLACKWELL)
) Examiner V. Sunderdick
Serial No. 720,745)
) Group Art Unit 252
Filed: September 7, 1976)
)
For: CHARGED-PARTICLE APPARATUS)
AND PROCEDURES)

February 26, 1977

Ft. Collins, Colorado

Hon. Commissioner of Patents
and Trademarks

Washington, D. C. 20231

Sir:

AMENDMENT

In response to the Office Action of February 10, 1977, please amend the above-entitled application as follows:

IN THE SPECIFICATION

Page 6

Line 10: Correct the spelling of "numerous".

IN THE CLAIMS

Claim 1

Line 2: After "a" insert -- free-space --.

Claim 10

Line 4: After "a" insert -- free-space --.

Claim 43

Line 4: After "a" insert -- free-space --.

Claim 44

Line 2: After "a" insert -- free-space --.

Claim 45

Line 3: After "a" insert -- free-space --.

Claim 46

Line 2: After "a" insert -- free-space --.

REMARKS

A formal error has been corrected in the specification. A similar amendment has been made to each of several of the claims in order better to distinguish, as a matter of mere language, from U. S. Patent 3,895,367-Visser; although it was recognized that Visser teaches nothing at all pertinent to the present invention, it was also recognized that such a non-analogous solid-state device should better be differentiated.

Reconsideration of the application and the allowance of Claims 1-46 are respectfully requested.

Prior to the filing of the present application, applicant's assignee had a thorough search conducted of the prior art. Initially, the professionally-qualified searcher fell into the semantic trap of thinking that the electrons emitted in vacuum gauges did the same thing as proposed by applicant. In relying upon 3,149,279-Guild and 3,356,937-Watters, it is submitted that the Examiner has fallen into that same trap. In fact, low-pressure detectors of the kind disclosed in those references were mentioned in the introduction to the present application, after which they were dismissed as by not being applicable.

So far as applicant is aware, after extensive searching and additionally in view of the references cited by the Examiner, a new phenomenon has been discovered together with correspondingly new ways of taking advantage of it.

Guild so biases an electrode 7 as to accelerate electron emitted from a filament 4. Ionization which occurs is a result of bombardment of molecules by those accelerated electrons. Similarly, Watters so biases anode 6 as to accelerate electrons emitted by a cathode 3. Ions are produced by impact and are thereafter, as in Guild, retrieved by an ion collector. Hees and McGowan similarly use highly accelerated electrons to ionize particles. Again, this is the typical vacuum-gage approach referred to in the introduction to the application and entirely distinguished from in the specification. Scheidweiler et al simply has nothing to do with electron ionization, while Hill et al is absolutely of no pertinence in that it involves a corona-type discharge device.

In distinct contrast, applicant emits electrons into a region at a velocity <u>insufficient</u> to ionize air therein. Most distinctively, that region, into which the electrons are emitted, is subjected to a field of sufficient strength and poled in a direction to repel the electrons <u>back toward</u> their source of emission. In the prior-art vacuum gages, the field is always in exactly the reverse direction. Moreover, the electrons emitted in those devices have to be accelerated to a velocity sufficient to ionize air, or else they wouldn't work as a vacuum gage. It is clear, therefore, that the principal claims, including Claim 1, distinguish absolutely over anything disclosed by either Guild or Watters. The basic parameters in applicant's system, and as claimed, are simply the reverse of anything disclosed in those references.

What has just been said based upon Claim 1 is equally applicable to Claim 10. The references do not create a field between the heated element and the collecting member that is poled as therein defined. In fact, the references establish a field that is exactly the opposite. The same comments apply to Claim 43. Certainly, there is nothing in the references teaching the procedure, as defined in Claim 44, of heating introduced particles to a temperature sufficient to create an electrical charge and then collecting those charged particles in the manner defined. Similarly, the references fail to teach the heating of a conglomerate to a temperature sufficient to break apart the same into individually charged particles and thereafter collecting the same as defined in Claim 45. Finally, there is absolutely no recognition in the references of the subjecting of the particles to an oxidation catalyst and the attendant result as defined in Claim 46.

The discussion herein has limited itself to the independent claims. Because they so clearly distinguish the features of applicant's invention from the cited prior art, it is not believed necessary to become involved in further discussion of the dependent claims.

In summary, it is pointed out that, while applicant has a heated filament that can boil-off electrons, the biasing in the system is such as to repel those electrons. This is exactly the opposite as the condition which obtains in prior devices such as vacuum gages. Departing, then, from that environment, and having claims which distinguish clearly thereover, applicant teaches the availability of numerous new results which proceed from his different combinations. For certain, many of the claims are so couched as to appear to

be in extremely broad format. It is submitted that applicant is entitled to such claims, because his invention or discovery is not only novel but also is of substantial breadth in terms of its ultimate scope of application.

With this amendment, the application is believed to be in condition for allowance, and such action at an early date is earnestly solicited.

Respectfully submitted,

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