

Patents and Copyrights for Scientists and Engineers

Peter D. Keefe

Keefe & Associates

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- *Processes*
- *Machines,*
- *Manufactures, and*
- *Compositions of matter.*

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UTILITY PATENTS

- Protect an invention as represented by at least one structural/functional example.

- Claims define the invention as one or both of:

Apparatus (structure/function);

Method (process to make/use).

- Lifetime is 20 years from date of original filing – cannot be renewed.

(12) **United States Patent**
Scully et al.

(10) Patent No.: US 6,795,777 B1
(45) Date of Patent: Sep. 21, 2004

(54) **IDENTIFYING MOLECULES OF A SAMPLE**

(56) **References Cited**

(75) **Inventors:** Marlan O. Scully, Bryan, TX (US); George W. Kattawar, College Station, TX (US); Robert P. Licht, West Lafayette, IN (US); Tomas Opatrný, College Station, TX (US); Herschel S. Pilloff, Longmont, CO (US); Alexei V. Sokolov, College Station, TX (US); M. Shahid Zubairy, College Station, TX (US)

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(73) **Assignee:** The Texas A&M University System, College Station, TX (US)

Primary Examiner—Bryan Bui
(74) **Attorney, Agent, or Firm**—Baker Botts L.L.P.

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(57) **ABSTRACT**

According to one embodiment of the present invention, identifying a molecule of a sample includes illuminating the sample with a preparation light beam, where the preparation light beam can initiate a substantially maximized coherence of a target molecule to yield a molecular signature corresponding to the target molecule. The sample is illuminated with a probe light beam, where the probe light beam can scatter radiation from the sample. Radiation scattered from the sample is detected, and whether the radiation exhibits the molecular signature is determined. The target molecule is identified in accordance with the determination of whether the radiation exhibits the molecular signature.

(21) **Appl. No.:** 10/379,519

(22) **Filed:** Mar. 4, 2003

Related U.S. Application Data

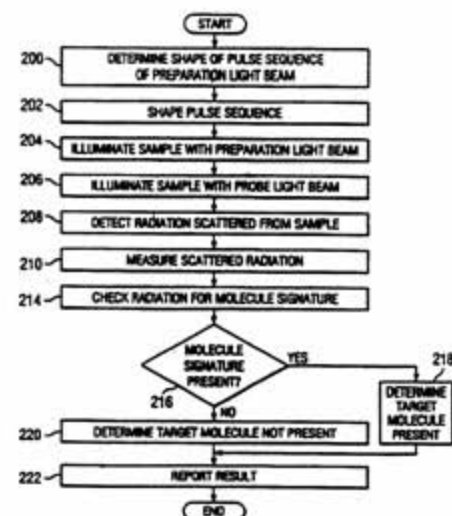
(60) **Provisional application No.** 60/361,399, filed on Mar. 4, 2002.

(51) **Int. Cl.**⁷ G01N 31/00; G01J 3/44

(52) **U.S. Cl.** 702/28; 702/27; 250/251; 250/493.1; 356/301; 356/302

(58) **Field of Search** 702/27, 28, 75, 702/79; 250/251, 339.06, 339.11, 493.1; 356/301–302, 336–338

20 Claims, 3 Drawing Sheets



DESIGN PATENTS

- Protect the ornamental appearance of an article of manufacture.
- A single claim defines the surface features unique to the invention.
- Lifetime is 14 years from date of issuance – cannot be renewed.

United States Patent [19]
Herren

[11] Patent Number: Des. 305,788
[45] Date of Patent: Jan. 30, 1990

[54] TOY BALL

[76] Inventor: Gerald R. Herren, Rte. 4, Box 146,
Baxter, Tenn. 38544

[**] Term: 14 Years

[21] Appl. No.: 33,597

[22] Filed: Apr. 3, 1987

[52] U.S. Cl. D21/204; D21/39

[58] Field of Search D20/31; D21/39, 62,
D21/203, 204, 205, 207; 273/58 R-58 K, 26 E,
95 A, 68 R, 68 E, 68 EA, 69, 428

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Primary Examiner—Charles A. Rademaker
Assistant Examiner—Alicia A. Farrell
Attorney, Agent, or Firm—King and Schickli

CLAIM

[57] The ornamental design for a toy ball, as shown and
described.

DESCRIPTION

FIG. 1 is a front elevational view of a toy ball showing
my new design;
FIG. 2 is a side elevational view thereof; all sides being
similar in general overall appearance, and
FIG. 3 is a top plan view thereof.



WHY SEEK A PATENT?

- The holder has a monopolistic right to exclude others from making, using and selling the invention.
- A patent is a published disclosure of the invention.
- Issuance by a patent office is evidence that the named inventor is the true, first inventor of the invention.
- A patent application provides priority as of its filing date.
- Either a patent application or a patent may serve as the basis for licensing of the invention.

PATENT RULES

- A patent application must be timely filed and favorably reviewed by the U.S. Patent & Trademark Office (USPTO) before a Patent will be issued.
- Must file in each country protection is desired. There are international treaties to facilitate:
 - *Paris Convention;*
 - *Patent Cooperative Treaty.*
- **In U.S. must file within 1 year of public disclosure or offer for sale.**
- **In most other countries must file prior to any public disclosure.**

WHAT IS PATENTABLE?

- The invention disclosure **must** describe a “**best mode**” and be “**enabling to a person of ordinary skill in the art**” to make and use the invention.
- The invention **must** be:
novel; unobvious; and useful.

Test for unobviousness:

- *The invention is not evident to a person of ordinary skill in the art (an artisan).*
- *The disclosure in one or more published references, in combination with the ordinary skill of an artisan, does not place the artisan in possession of the invention.*

Regular Patent Application

Is examined and contains:

- Specification
- Formal Drawings
- Claims
- Abstract

Provisional Patent Application

Is not examined and contains:

- Specification
- Informal Drawings
- Claims not required
- Abstract

Has limited life of 1 year.



US006431187B1

(12) **United States Patent**
Painter

(10) **Patent No.:** **US 6,431,187 B1**
(45) **Date of Patent:** **Aug. 13, 2002**

(54) **EPICYCLOIDIC INDUSTRIAL CLEANING SYSTEM**

(76) **Inventor:** **Paul W. Painter**, 38850 Town Hall, Mt. Clemens, MI (US) 48045

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/672,243**

(22) **Filed:** **Sep. 28, 2000**

Related U.S. Application Data

(62) Division of application No. 09/249,285, filed on Feb. 10, 1999, now Pat. No. 6,158,450.

(51) **Int. Cl.:** **B08B 3/02; B08B 3/04**

(52) **U.S. Cl.:** **134/25.4; 134/30; 134/32**

(58) **Field of Search:** **134/95.2, 95.3, 134/142, 144, 145, 161, 104.1, 25.2, 25.4, 30, 32**

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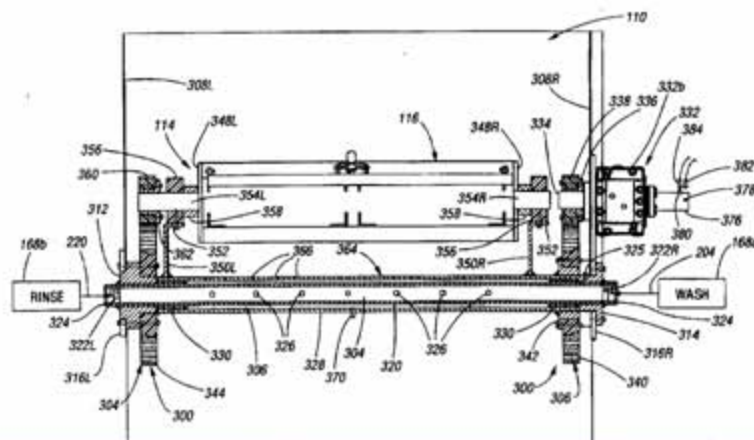
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Primary Examiner—Philip Coe
(74) **Attorney, Agent, or Firm**—Peter D. Keefe

(57) **ABSTRACT**

An industrial parts cleaning system including immersion and spraying which provides epicyclic parts movement (a plurality of revolutions per rotation, wherein the revolution is superposed the rotation), rotating spray which synchronously follows the parts rotation, and a purge system for evacuating from the common plumbing the respective wash or rinse solution of a current cycle before commencement of the next cycle. The cleaning system includes, a housing, a rinse tank for holding rinse solution, a wash tank for holding wash solution, a process tank, a parts carrier including at least one support frame for supportably receiving parts to be cleaned, an epicyclic drive mechanism for providing a plurality of revolutions per rotation of each support frame, a central spray system for providing rotatively synchronous spray onto each respective support frame, plumbing for selectively interconnecting the rinse tank, wash tank, process tank and the central spray system, a source of heating for the wash solution and the rinse solution, an air dry nozzle array, a source of pressurized air for the nozzle array, and a purge system for purging the common plumbing between cycles.

3 Claims, 11 Drawing Sheets



PATENT APPLICATION

THE SPECIFICATION

- **Background**
- Summary
- Description of Drawings
- Detailed Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to cleaning systems used in industrial settings for, typically, the cleaning of parts after manufacturing processes have been completed.

2. Description of the Prior Art

Cleaning of parts is an essential step in the manufacturing process. For example, during the manufacture and machining of parts, surfaces of the parts may retain coatings of industrial chemicals, and/or the parts may have geometries which harbor chips or other solid debris. In order to clean parts of coatings and debris, cleaning systems are utilized. In a typical cleaning machine, a wash, rinse and dry cycle are provided. During the wash cycle a pressurized wash solution is sprayed forcefully onto the parts, and the parts are also passed periodically through a bath of the wash solution. During the rinse cycle, the parts are sprayed with a rinse solution and passed through a bath of the rinse solution. During the drying cycle, the parts are subjected to blowing of air. Some prior art cleaning systems are known to incorporate filtration for the wash and rinse cycles and to have programmable controller (referred to most of ten, and referred to herein, as "CPU", and sometimes as "PLC") control of the cycling. These cleaning systems are also known to provide parts basket rotation.

PATENT APPLICATION

THE SPECIFICATION

- Background
- **Summary**
- Description of Drawings
- Detailed Description

SUMMARY OF THE INVENTION

The present invention is an industrial parts cleaning system including immersion and spraying which provides epicycloidic parts movement (a plurality of revolutions per rotation), rotating spray which synchronously follows the parts rotation, and a purge system for evacuating from the common plumbing the respective wash or rinse solution of a current cycle before commencement of the next cycle.

The cleaning system according to the present invention includes, generally, a housing, a rinse tank for holding rinse solution, a wash tank for holding wash solution, a process tank, a parts carrier including at least one support frame for supportably receiving parts to be cleaned, an epicycloidic drive mechanism for providing a plurality of revolutions per rotation of each support frame, a central spray system for providing rotatively synchronous spray onto each respective support frame, plumbing for selectively interconnecting the rinse tank, wash tank, process tank and the central spray system, a source of heating for the wash solution and the rinse solution, an air dry nozzle array, a source of pressurized air for the nozzle array, and a purge system for purging the common plumbing between cycles.

PATENT APPLICATION

THE SPECIFICATION

- Background
- Summary
- **Description of Drawings**
- Detailed Description

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective elevational view of the epicycloidic cleaning system according to the present invention, wherein the portal door is shown closed.

FIG. 2 is a front elevational view of the epicycloidic cleaning system according to the present invention, wherein the portal door is shown open.

FIG. 3 is a partly sectional end view of the portal door and its associated mounting hardware.

FIG. 4 is a partly broken-away top plan view of the epicycloidic cleaning system according to the present invention, showing in particular the solution heating and air dry systems.

FIG. 5 is a right side view of the epicycloidic cleaning system according to the present invention, showing in particular a portion of the wash plumbing.

FIG. 6 is a left side view of the epicycloidic cleaning system according to the present invention, showing in particular a portion of the rinse plumbing.

PATENT APPLICATION

THE SPECIFICATION

- Background
- Summary
- Description of Drawings
- **Detailed Description**

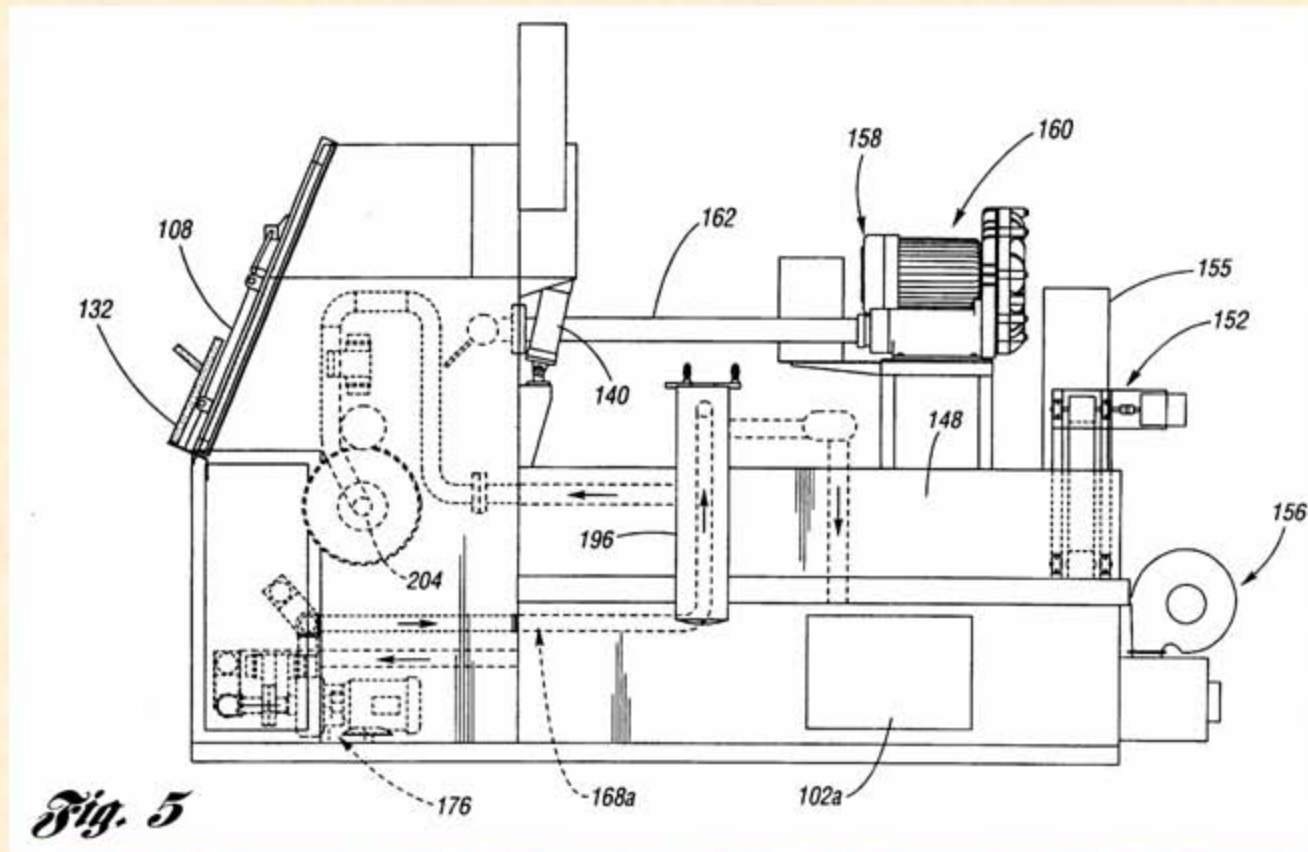
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the Drawing, FIGS. 1 and 2 show elevational views of the epicycloidic cleaning system **100** according to the present invention. The epicycloidic cleaning system **100** includes a housing **102** which is preferably composed of stainless steel. The housing **102** provides structural mounting and placement, as well as protection, for the various components, mechanisms, and systems of the epicycloidic cleaning system **100**. A plurality of access covers **102a** are provided in the housing **102** for accessing selected components having potential for periodic inspection and/or service, such as for example, valves, electronics, filters, etc.

The front end **104** of the housing **102** is characterized by a main portal **106** which is selectively coverable by a see-through portal door **108**. When open, as shown at FIG. 2, the main portal **106** provides a service entry into a process tank **110** whereat parts **112** to be cleaned are retained on a parts carrier **14** via at least one support frame **116**. In this regard, it is preferred for selectively openable enclosures in the form of open-wire baskets **118** to collectively restrain the parts **112**, and for the baskets to be securely received in a removable manner with respect to the support frame **116**. It is preferred for each of three support frames **116** to retain two baskets **118**, but the number of support frames **116** and number of baskets **118** supported on each support frame may be otherwise.

PATENT APPLICATION

THE DRAWINGS



PATENT APPLICATION

THE CLAIMS

What is claimed is:

1. An epicycloidic cleaning system comprising:
a housing;

a process tank located within said housing for holding a bath of at least one predetermined solution;

parts carrier means rotatably mounted within said process tank having a plurality of support frames for holding parts to be cleaned;

an epicycloidic drive mechanism for providing said plurality of support frames with a continuous epicycloidic movement comprising a rotational movement about a rotation axis and a revolutionary movement superposed upon the rotational movement;

a spray system comprising a plurality of rows of spray sources for spraying the at least one predetermined solution, said plurality of rows being arranged parallel to the rotation axis and disposed substantially adjacent thereto, each row moving synchronously with said rotational movement so as to provide a spray radially onto a respective support frame; and

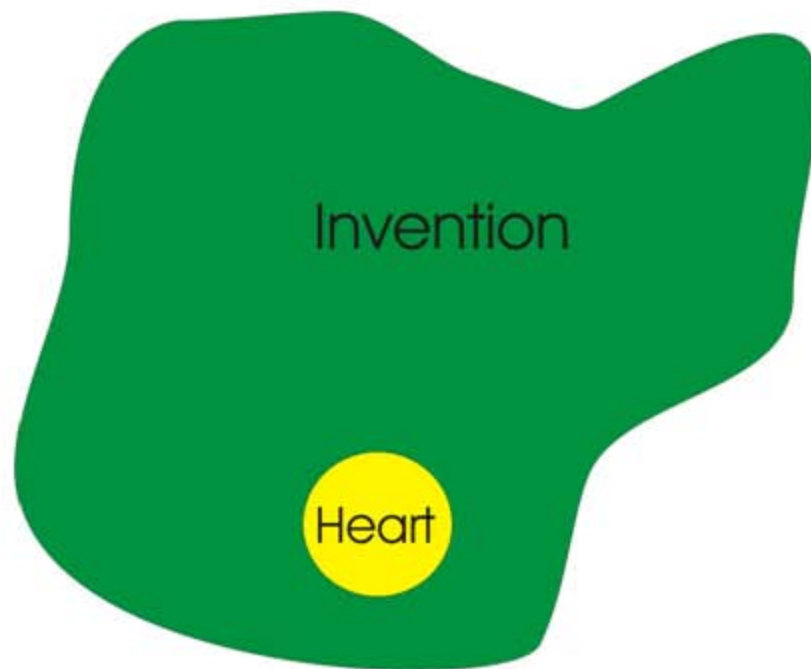
means for selectively filling said process tank with the bath;

wherein during the epicycloidic movement, the at least one support frame is passable epicycloidically through the bath.

CLAIM WRITING

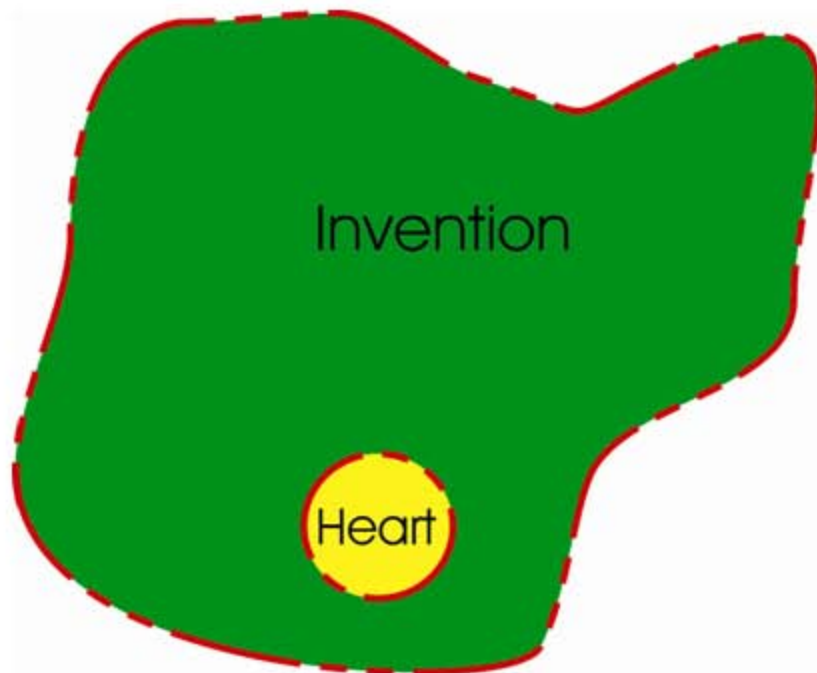
**The invention has
a metes and
bounds in
“Intellectual
Property Space”.**

**There is a most
commercially
valuable “Heart”
of the intellectual
property.**



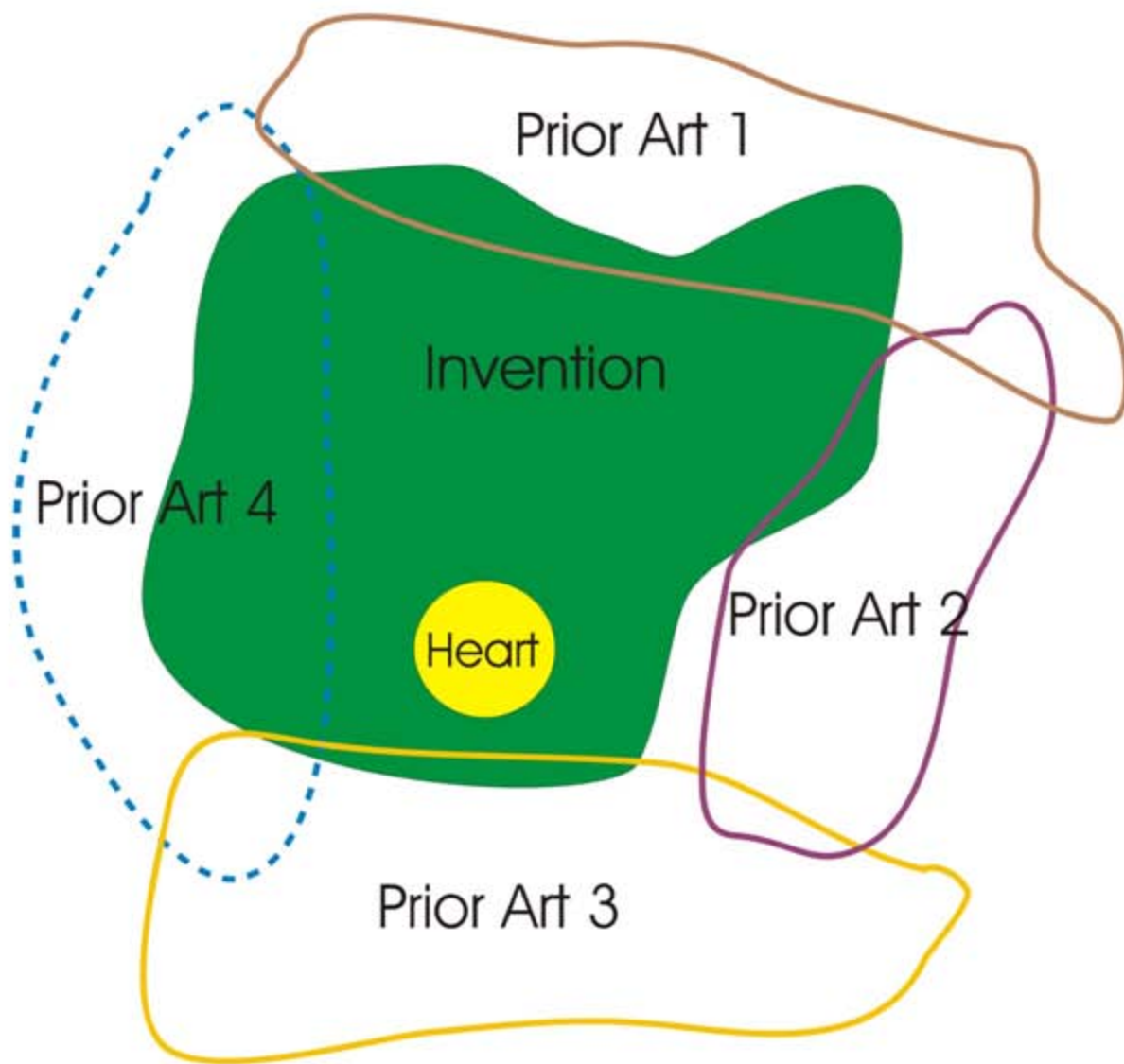
CLAIM WRITING

Ideally, an “Independent Claim” describes a fence along the outer property boundary of the Invention, and also a “Dependent Claim” further describes an inner fence along the boundary of the Heart of the invention.



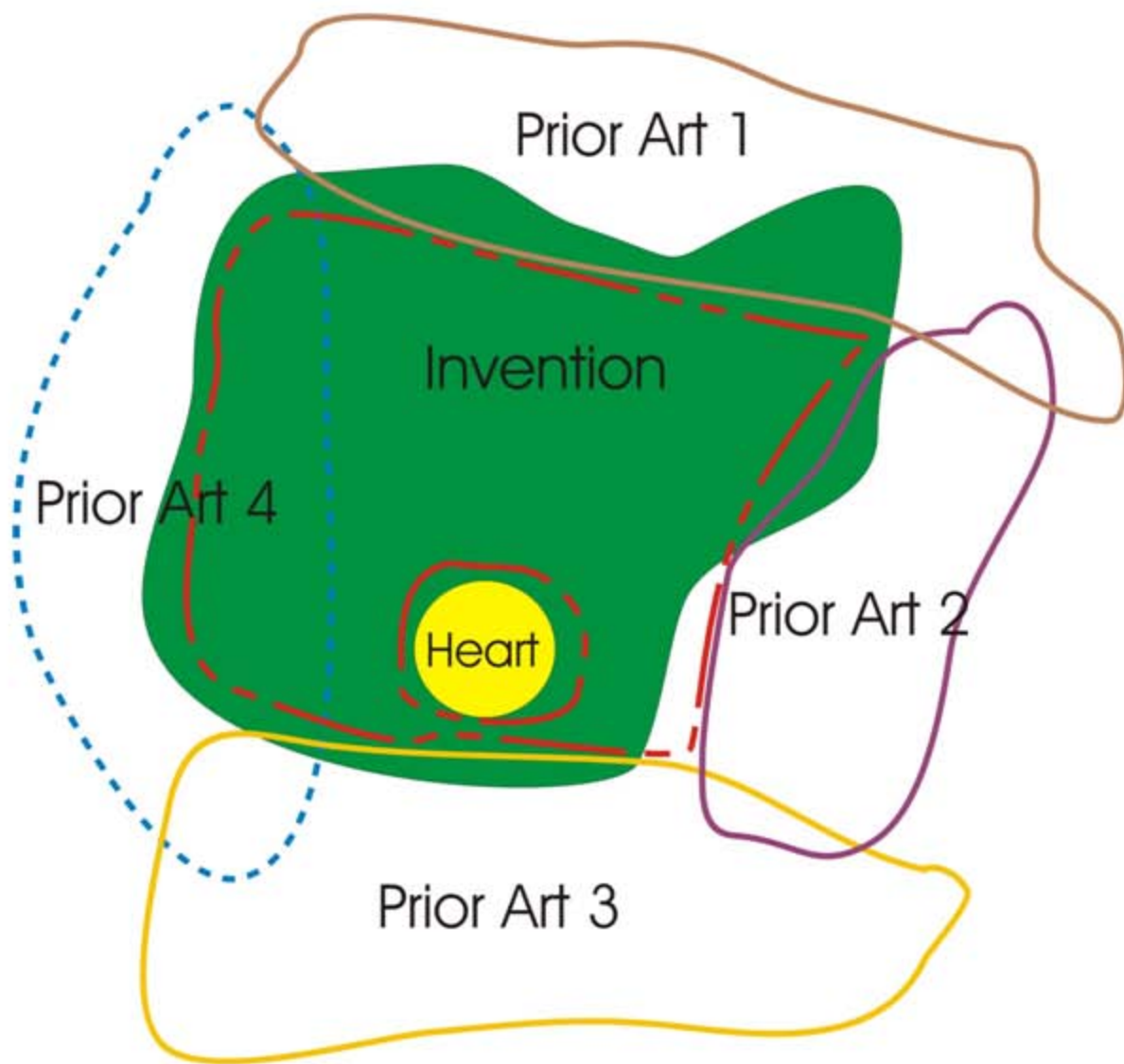
CLAIM WRITING

There are other pre-existing intellectual properties which surround and overlap the intellectual property of the Invention. Properties 1, 2 and 3 are known, Property 4 is unknown.



CLAIM WRITING

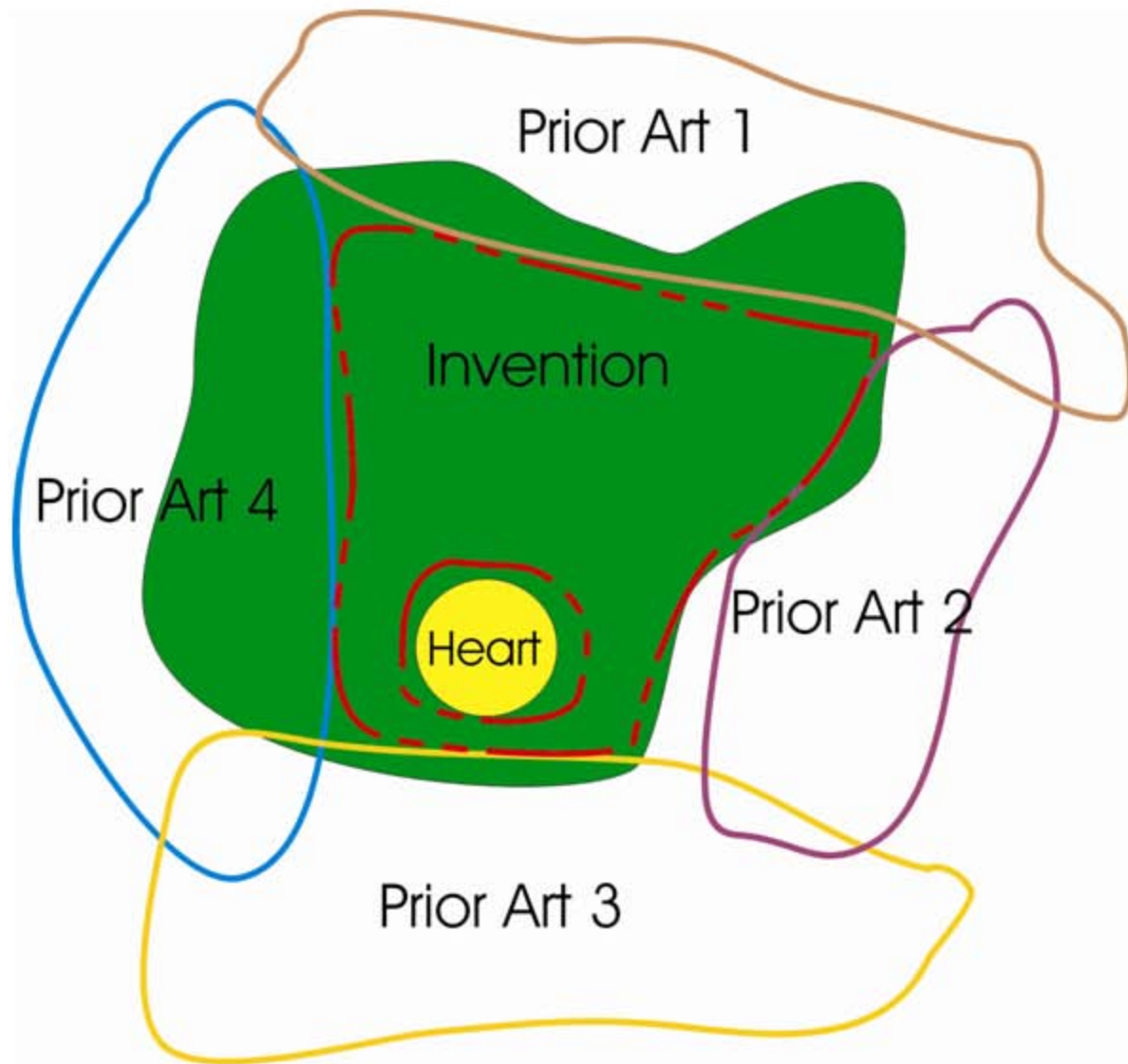
An Independent Claim is drafted to outer fence the intellectual property of the invention without encroaching on other properties. A dependent Claim is drafted to inner fence the Heart of the Invention.



CLAIM WRITING

The Patent Office uncovers Property 4, and requires the claims be re-drafted to:

- 1. re-fence to avoid Property 4; and**
- 2. re-fence to keep all fencing within the Intellectual Property of the Invention.**



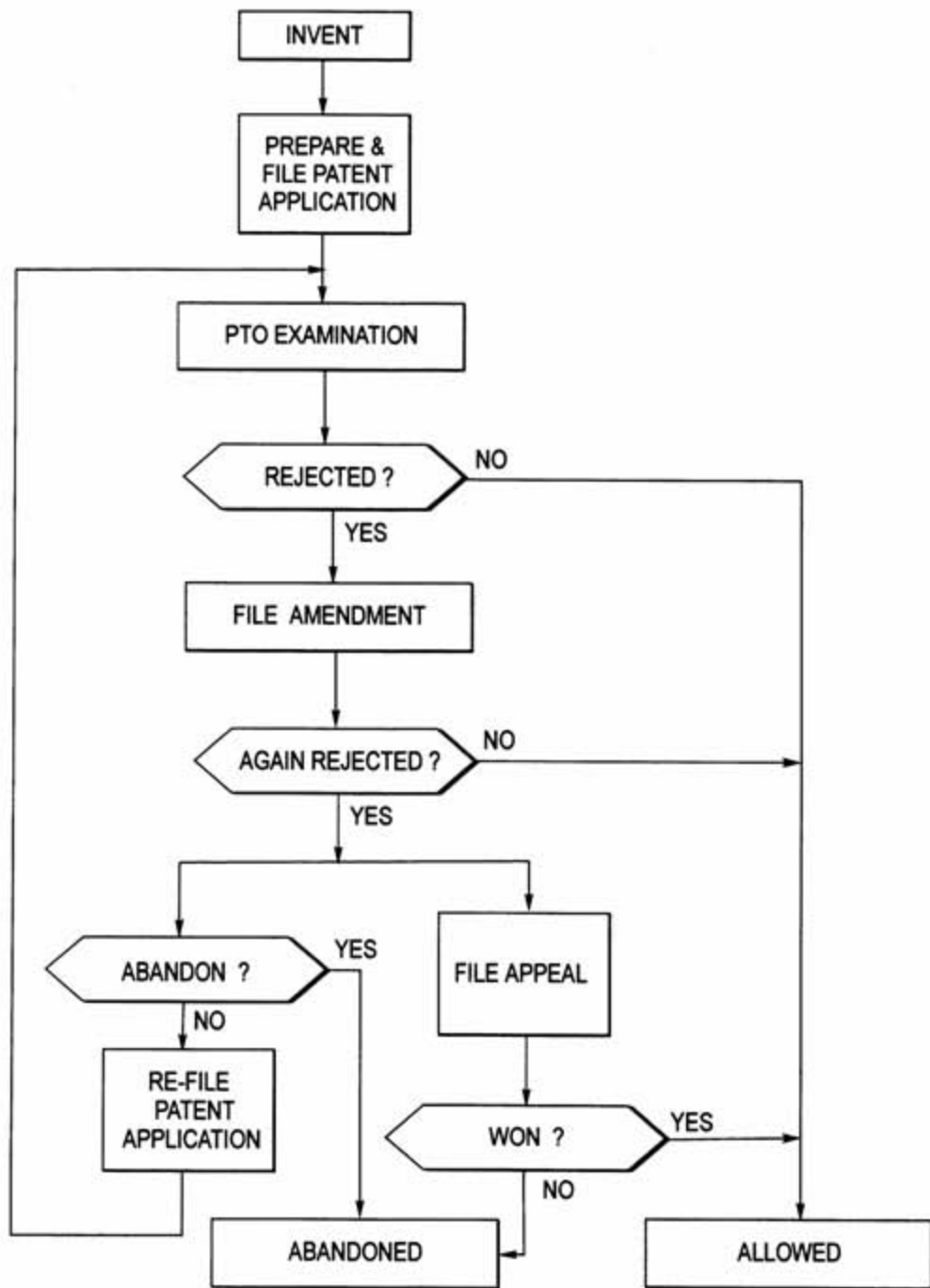
PATENT APPLICATION

THE ABSTRACT

ABSTRACT

An industrial parts cleaning system including immersion and spraying which provides epicyclic parts movement (a plurality of revolutions per rotation, wherein the revolution is supersposed the rotation), rotating spray which synchronously follows the parts rotation, and a purge system for evacuating from the common plumbing the respective wash or rinse solution of a current cycle before commencement of the next cycle. The cleaning system includes, a housing, a rinse tank for holding rinse solution, a wash tank for hiding wash solution, a process tank, a parts carrier including at least one support frame for supportably receiving parts to be cleaned, an epicycloidic drive mechanism for providing a plurality of revolutions per rotation of each support frame, a central spray system for providing rotatively synchronous spray onto each respective support frame, plumbing for selectively interconnecting the rinse tank, wash tank, process tank and the central spray system, a source of heating for the wash solution and the rinse solution, an air dry nozzle array, a source of pressurized air for the nozzle array, and a purge system for purging the common plumbing between cycles.

PROCEDURE



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- The creative expression may be captured in words, numbers, sounds, pictures, or any other graphic or symbolic media.
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- Copyright protection is available to both published and unpublished works, created at the moment of fixation.

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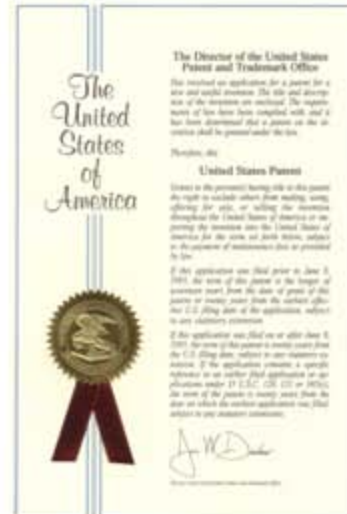
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