OFFICE OF
INNOVATION &
COMMERCIALIZATION

UNIVERSITY of HAWAI'I SYSTEM

OVERVIEW OF INTELLECTUAL PROPERTY (IP) AND PATENTS

ME 481/482 SENIOR DESIGN PROJECT I/II

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November 1, 2021

Types of Intellectual Property (IP)

(from Easiest to Most Difficult to Obtain)

- Trade Secrets
- Copyrights
- Trademarks
- Plant Variety Protection Certificates/ Plant Breeders Rights
- Patents

Trade Secrets

What is a Trade Secret?

Under the Uniform Trade Secrets Act (“UTSA”), which has been enacted by most states, a Trade Secret is information that derives independent economic value because it is not generally known or readily ascertainable, and it is the subject of efforts to maintain secrecy.

Though Trade Secrets are not registered with any government agencies, Trade Secrets can represent a company’s most valuable IP assets.

Examples of Trade Secrets

- Lists - NY Times Bestseller List, customer lists
- Software Algorithms - Google search algorithm, Kayak search algorithm
- Chemical Formulas for Products - Dawn, Listerine, WD-40
- Recipes for Food Products – Coca Cola, KFC, McDonald's Big Mac Special Sauce
- Manufacturing Methods and Processes
- Devices

Trade Secrets

- Not Registered, but Protected by State and Federal Laws
- The **Uniform Trade Secrets Act** (**UTSA**) - published by the Uniform Law Commission (ULC) in 1979 & amended in 1985
  - goal to make state trade secret laws uniform (critical for companies operating in different states
  - adopted by 48 states (except NY & NC), WADC, Puerto Rico & US Virgin Islands (however, some states have modified the language in their version of the statute
- The **Defend Trade Secrets Act of 2016 (DTSA**) - Public Law 114–153, 130 Stat. 376, enacted May 11, 2016, codified at 18 U.S.C. § 1836, et seq.)
  - allows a trade secret owner to sue in federal court over misappropriation of trade secrets
- <u>The owners of Trade Secrets must maintain the Secrecy of their Trade Secrets</u>

Copyrights

- The U.S. Copyright Law is intended to encourage the creation of art and culture by rewarding authors and artists with the exclusive right, generally for the life of the author plus 70 years, to:
  - make and sell copies of their works
  - publicly perform or display their works
  - create derivative works from their works
- The US Copyright Act of 1976 protects “original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.” 17 USC. § 102(a)
- The creator of the work owns the copyright, unless the work is a Work Made for Hire/Work for Hire (WFH)

Copyrights WFH

Work Made for Hire / Work for Hire (WFH)

- a work prepared by an employee within the scope of his or her employment
- a work ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire. (17 U.S.C. § 101)

Examples of Copyrights

U.S. Copyright law protects published and unpublished "original works of authorship, fixed in a tangible medium" such as:

- Software, Websites, Blogs
- Videos, Movies, Audio-visual works
- Theses, Manuscripts, Posters, Term papers
- Pantomimes, Choreographic works
- Books, Poems
- Plays, Operas, Musicals
- Song, Sound Recordings
- Pictures, Photographs
- Drawings, Paintings, Sculptures
- Architectural works

Copyrights

- Protection begins as soon as the work is fixed in a tangible medium.
- Protects the expression of the author's original work, and elements of that expression, but does not protect the author's underlying ideas (for example, a thesis or publication that describes an invention is protected is by copyright, but the invention itself is not protected)
- Though you are not required to register a copyright, there are advantages to registering
- Registering a copyright with the U.S. Copyright Office (USCO), part of the Library of Congress, provides additional protection in case of copyright infringement, such as being able to claim attorney's fees and statutory damages
- Statutory damages can sometimes be much higher than actual damages
    - compensation per work of $750 to $30,000 instead of compensation for actual losses, loss of profit or damages for each infringing copy
    - up to $150,000 in the case of willful infringement
- **Put copyright notices at the beginning of your work, for example:**

    Copyright © 2019 Maria Chin, All rights reserved

    Copyright © 2013-2018 XYZ Inc.

Trademarks

(What is a Trademark?)

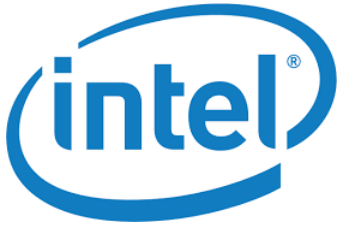
- Brand for Goods and Services
- Any color, design, logo, slogan, scent, sound, symbol, word, or combination thereof that:
  - Identifies the source of your goods & services, AND
  - Distinguishes your goods & services from the goods & services of another party

Examples of Trademarks

UNIVERSITY of HAWAI'I®

Microsoft

Google



TOYOTA

HONDA

The Power of Dreams

Coca-Cola

Examples of Trademarks

- **Business Name** – ABC Stores, IBM, OfficeMax
- **Colors** – red soles on Christian Louboutin shoes, brown on UPS trucks
- **Domain Names** – asme.org, ebay.com, uspto.gov
- **Slogans/Phrases** –
  - "What's in your Wallet" by Capital One Financial Corp.
  - "Hasta la Vista Baby" from the movie "The Terminator"
  - "This is CNN" by CNN
- **Scents** –
  - Flowery Musk smell in Verizon stores
  - Piña Colada smell on ukuleles from the Eddy Finn Ukulele Co.
  - Poo-Pourri smells in toilet fragrances from Scentsibles, LLC
- **Sounds** – AAMCO "Double A" two car horn honks "M-C-O", Aflac duck quack, MGM lion roar, NBC 3-note (G, E, & C) chime

Trademarks

- Protection can last forever
- Register with your state agency (the Hawai'i Department of Commerce and Consumer Affairs (DCCA)) and the USPTO
  - Establish a place in time for your Trademark Claim
  - Get enhanced protections in case of infringement disputes
  - Registering with the USPTO Is necessary for interstate commerce
  - Registering with USPTO grants you more protection in federal courts than not registering
- To notify others that you intend to use a trademark as an identifier, use the symbol ***TM***
- To notify others that you fully registered your trademark, use the symbol ®

Plant Variety Protection Certificates/ Plant Breeder Rights

- Plant breeders' rights (PBR), also known as plant variety rights (PVR), & USDA Plant Variety Protection (PVP) Certificates grant plant breeders of new varieties of plants, trees or vines the exclusive control over the propagating materials (cuttings, divisions, seed & tissue culture) and harvested materials (flowers, fruits, & foliage) of new varieties for a specified number of years
- 20 years for a plant in the U.S.
- 25 years for a tree or vine in the U.S.

Patents

- Patent Law is designed to encourage inventors to disclose their new inventions to the world in exchange for a time-limited period of monopoly to **exclude others** from making, using, selling, offering for sale, importing, inducing others to infringe, and/or offering a product specially adapted for practicing the patented invention
- A Patent is not automatic, unlike a copyright which is
- Inventors or owners have to file a patent application for their invention with the USPTO in order to obtain a patent
- For the USPTO to grant a patent on an invention, the invention must be:
    - Useful
    - Novel
    - Non-obvious to a person of “ordinary skill” in the relevant technology or art

Types of Patents

- Design Patent
- Plant Patent
- Utility Patent

Design Patents

- Whoever invents a novel, useful & non-obvious ornamental design of a functional object can obtain a patent, subject to 35 U.S. Code §171, for an ornamental design, such as a/an:
  - Bottle
  - Emoji
  - Jewelry piece
  - Lamp shade
- Protect the object's appearance only
- Do not protect the object's functionality or structure
- Expire 14 years from the filing date

Plant Patents

- Whoever invents a new & distinctive plant can obtain a patent, subject to 35 U.S.C. §161 on such a plant that is:
  - Not a tuber propagated plant (such as potatoes or yams)
  - Invented or discovered in a cultivated state
  - Asexually reproduced (without seeds, such as by budding, cutting, grafting or spores)
- Plant patent requires asexual reproduction to prove that the patent application can reproduce the plant
- Expires 20 years from the filing date

Utility Patents

- Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof may obtain a patent on that invention, subject to 35 U.S.C. §101.
- To be patentable, the Invention must meet 4 Criteria:
  1) Inventor(s) can obtain only ONE patent on the invention
  2) Inventor(s) must all be identified in the application
  3) Invention must be eligible for patenting by:
     - Being a Process, Machine, Manufacture, or Composition of Matter
     - Not being directed to a judicial exception - an Abstract Idea, Law of Nature or Natural Phenomena (including products of nature)
  4) must be useful or have a utility that is specific, substantial and credible
- Expires 20 to 21 years from the filing date, but could be longer

Examples of Inventions that are Not Eligible for Patent Protection

- Abstract Ideas – such as mathematical equations and scientific principles
- Laws of Nature – such as gravity and electromagnetism
- Natural Phenomena (including products of nature) – such as:
  - Isolated DNA
  - Cloned farm animals such as cattle, goats & sheep
  - Correlations, such as a correlation that is the consequence of how a certain compound is metabolized by the body (Mayo Collaborative Servs v. Prometheus Labs)
- Nuclear Weapons and other weapons of mass destruction
- Anything about human beings
- **Anything that has been previously publicly disclosed**

Patent Eligibility
1. Utility Requirement

- 35 U.S.C. §101
- Invention must be a Process, Machine, Manufacture, or Composition of Matter that is useful or has a utility that is specific, substantial and credible

- "The invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society" – Associate Justice of the U.S. Supreme Court Justice Joseph Story (1808-1809)

Patent Eligibility
2. Novelty Requirement

- 35 U.S.C. §102
- Invention must be clearly different from the Prior Art
- Prior Art (state of the art or background art) is all information (including any information of the inventor(s)) that has been made available to the public in any form before a given date that might be relevant to a patent's claims of originality.
- A patent examiner can deny an application for a patent if an invention has been described in the Prior Art or would have been obvious over what has been described in the Prior Art

Patent Eligibility

3. Non-Obviousness Requirement

- 35 U.S.C. §103
- Invention cannot be obvious to a person having ordinary skill in the art
- Teaching-Suggestion-Motivation (TSM) test
  - A patent examiner can deny an application for a patent if the answer is “Yes” to any of the following questions:
    - Is the invention taught by the Prior Art?
    - Is the invention suggested by the Prior Art?
    - Is the invention motivated by the prior art?

Two Things Necessary to have an Invention

1) Conception –

- "formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice…" MPEP 2138.04, citing *Townsend v. Smith*, 36 F.2d 292, 295, (CCPA 1929)

2) Reduction to Practice -

- Actual - reduction of an idea to a tangible thing that actually works for its intended purpose. See *Corona Cord Tire Co. v. Dovan Chem. Corp*., 276 U.S. 358, 382-83 (1928) & *Cooper v. Goldfarb*, 154 F.3d 1321, 1327 (Fed. Cir. 1998)
- Constructive - description of the conceived invention in a patent application that satisfies the "how to use" and "how to make" requirements of 35 U.S.C. 112(a)

Some Things to Consider Before Filing a Patent Application

- Why should we try to patent our invention?
  - To benefit human-kind or animal-kind?
  - To start a company and get rich?
  - To block (prevent) competitors from using our invention?
- What is the market potential for our invention?
  - 95% of the over 2 million active U.S. patents, including over 50,000 university patents) are unlicensed or uncommercialized (Forbes, June 18, 2014)
- How much money do we have to prosecute the patent?
  - Obtaining a U.S. patent may cost $10,000 to $30,000 or more
  - Obtaining a foreign patent may cost $100,000 or more

Some Things to Consider Before Filing a Patent Application

- How strong is our patent?
  - American Invents Act of 2011 made it faster and cheaper to challenge weak patents
  - Innovation Act of 2013 made it harder to enforce patents and easier to infringe patents
- Which countries should we file in?
  - 85% of all of the world's patents were granted in China, Japan, South Korea, the E.U. and the U.S.
- What type of patent application should we file?
  - Provisional (U.S. Only)
  - Non-Provisional
  - Patent Cooperation Treaty (PCT)

Common Types of Patent Applications

- Provisional (U.S. Only)
  - Very inexpensive - it costs UH less than $200 to file
  - Establishes an early priority date (filing date of 1st application)
  - Does not mature into an issued patent unless the applicant files a regular non-provisional patent application within one year
- Non-Provisional
  - Contains all of the necessary parts (a written description and claims) that are required by the USPTO to grant a patent.
  - The USPTO will examine the application and determine whether or not to grant a patent.
- Patent Cooperation Treaty (PCT)
  - Filed with the World Intellectual Property Organization (WIPO)
  - Allows a single application in over 153 contracting states
  - Extends the priority date by about 30 months

Preserving Your IP with Contracts

- Give enhanced protections in case of disputes
- Set the rights and obligations of all parties
- Set restrictions on how your IP, proprietary research materials and other assets will be used by all parties
- Usually require negotiation to conclude and sign
- Material Transfer Agreements (MTAs)
  - for transferring proprietary information, data or materials (biological materials, cell lines, chemicals, nanomaterials, plant materials, etc.)
- Confidentiality Agreements (CAs), also known as, Confidential Disclosure Agreements (CDAs) or Non-Disclosure Agreements (NDAs)
  - for protecting any information and/or data that is Proprietary and/or Confidential

Preserving Patent Rights for your Invention

- **Do Not** make a Public Enabling Disclosure before filing a patent application:
  - Enabling Disclosure – a disclosure that contains sufficient information and detail to enable someone skilled in the art to make or practice the invention
  - You will lose the ability to obtain a patent in nearly every country, except the U.S.
  - You will have to file a patent application within one year of the enabling disclosure to preserve U.S. patent rights
- **Do Not** publicly use your invention or offer to sell your invention before filing a patent application
- Execute CAs, CDAs, or NDAs before disclosing details of your invention to others, including family, friends and colleagues
- Contact the UH Office of Technology Transfer before making a Public Enabling Disclosure

Examples of Public Enabling Disclosures

- Publishing an article or manuscript describing your invention
- Demonstrating, presenting or discussing your invention at a trade show, conference, classroom (including ME 481/482) or other public venue
- Posting a description of your invention on the internet
- Displaying a poster describing your invention
- Describing your invention in a government grant application that gets awarded
- Defending a thesis that describes your invention
- Discussing your invention with anyone, including family, friends and colleagues, who has not executed a CA, CDA, or NDA with you

What Do I Do If I Develop IP in this Class?

- Maintain the Confidentiality of the IP

- Contact the UH Office of Technology Transfer (OTT) within the UH Office of Innovation and Commercialization (OIC)
  - https://research.hawaii.edu/oic/

- Submit an Invention Disclosure Form (IDF) or Copyright Disclosure Form (CDF) to OTT
  - https://research.hawaii.edu/disclosing-an-invention/

What Do I Do If I Develop IP in this Class?

- An OTT Technology Licensing Associate will review the IDF or CDF to first determine what ownership interest UH has in the IP
- If UH has no ownership interest, OTT will inform you in writing that UH has no ownership in the IP and will not protect or commercialize the IP
- If UH has an ownership interest, the Technology Licensing Associate will meet with you to discuss the IP, preliminary IP protection (including patentability - novelty, usefulness, none obviousness), potential uses, possible markets, licensing the IP to companies, and starting a company.

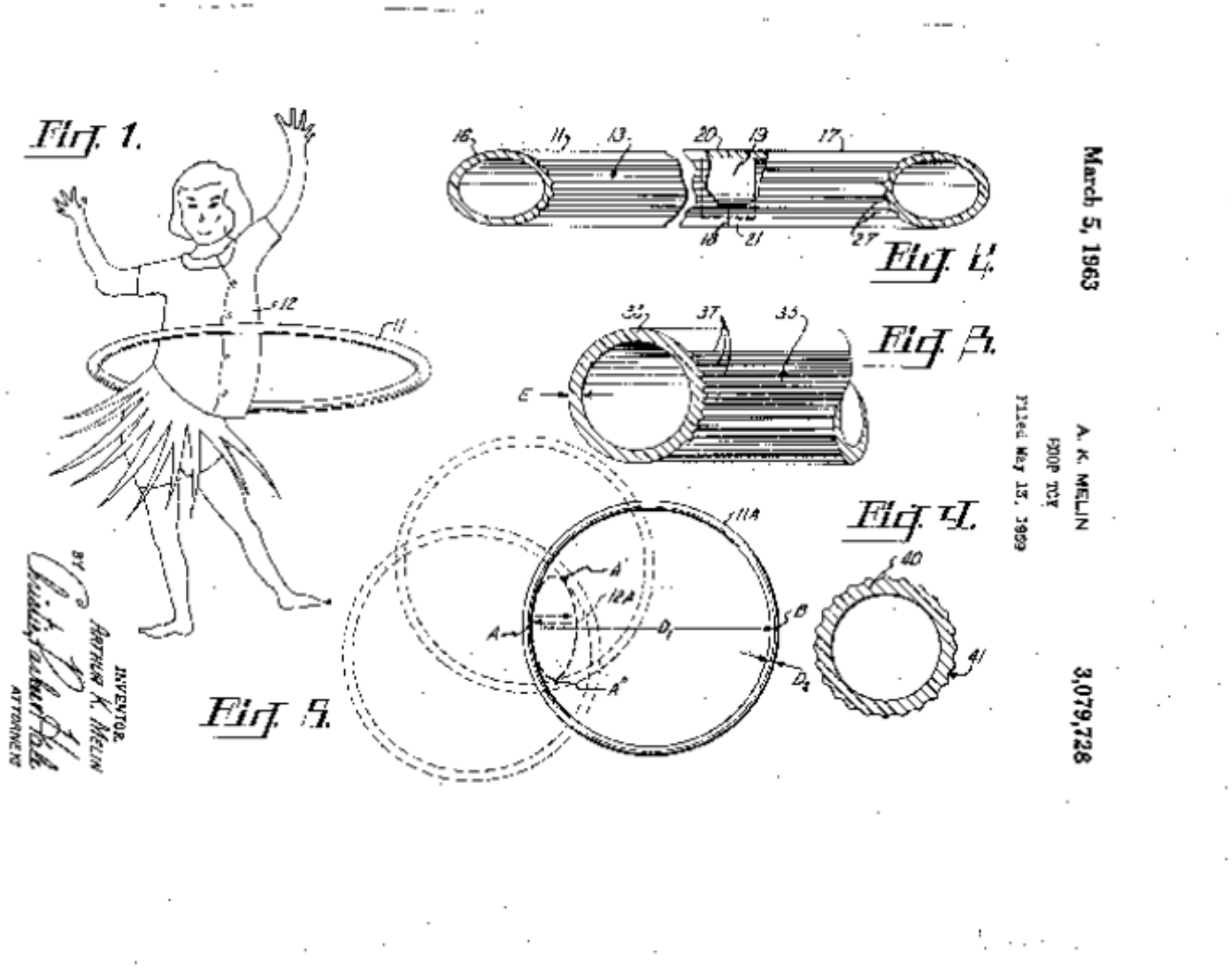
Case Study 1:
Easy Patent, Easy Money

- US 3,079,728
- HOOP TOY
- Inventor: Arthur K. Melin of Pasadena, CA
- Filing Date: May 13, 1959
- Issue Date: March 5, 1963
- 3 pages

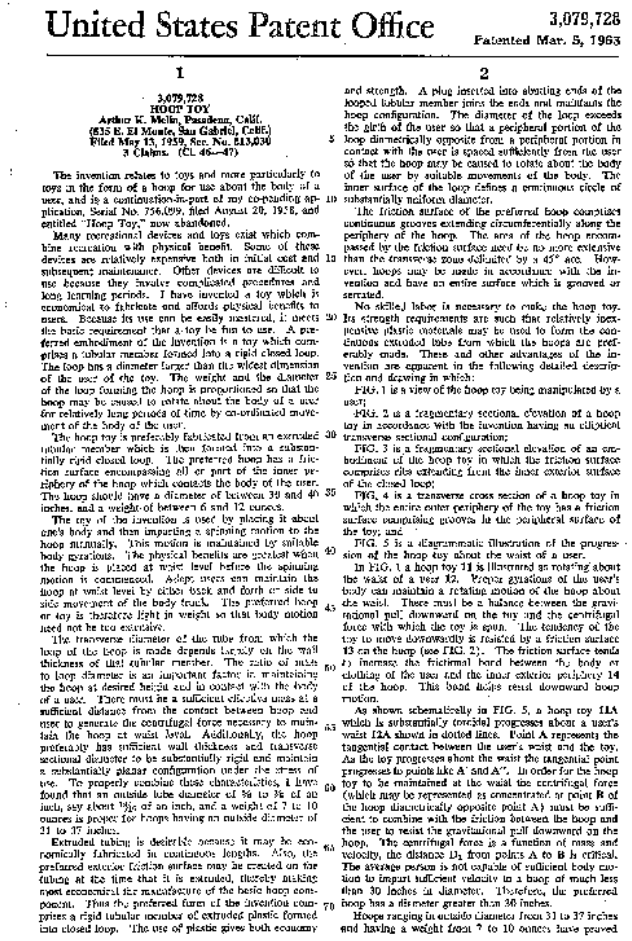
Background Before the Patent Issued:

- 1948 - Arthur “Spud” Melin and his friend Richard Knerr founded a toy company in the Knerr family garage and named it Wham-O Inc.
- 1957 - Their first big hit was a flying plastic disc called the Frisbee.
- 1957 – Joan Anderson brought back a bamboo exercise hoop from Australia and called it a Hula Hoop. Her husband showed it to Spud and made a “gentlemen’s agreement” to share any profits.
- Unfortunately for the Anderson’s, Wham-O weaseled out of the agreement, and they got nothing.
- July 1958 – Wham-O started selling the Hula Hoop for $1.98.
- 25 million sold in less than 4 months
- 100 million sold in 2 years

Case Study 1:
Easy Patent, Easy Money



Case Study 1:
Easy Patent, Easy Money



United States Patent Office 3,079,726 Patented Mar. 5, 1963

3,079,726
HOOP TOY
Arthur K. Melin, Pasadena, Calif.
(835 E. El Monte, San Gabriel, Calif.)
Filed May 13, 1959, Ser. No. 813,030
3 Claims. (Cl. 46—37)

The invention relates to toys and more particularly to toys in the form of a hoop for use about the body of a user, and is a continuation-in-part of my co-pending application, Serial No. 756,059, filed August 20, 1958, and entitled "Hoop Toy," now abandoned.

Many recreational devices and toys exist which combine recreation with physical benefit. Some of these devices are relatively expensive both in initial cost and subsequent maintenance. Other devices are difficult to use because they involve complicated procedures and long learning periods. I have invented a toy which is economical to fabricate and affords physical benefits to users. Because its use can be easily mastered, it meets the basic requirement that a toy be fun to use. A preferred embodiment of the invention is a toy which comprises a tubular member formed into a rigid closed loop. The loop has a diameter larger than the widest dimension of the user of the toy. The weight and the diameter of the loop forming the hoop is proportioned so that the hoop may be caused to rotate about the body of a user for relatively long periods of time by co-ordinated movement of the body of the user.

The hoop toy is preferably fabricated from an extruded tubular member which is then formed into a substantially rigid closed loop. The preferred hoop has a friction surface encompassing all or part of the inner periphery of the hoop which contacts the body of the user. The hoop should have a diameter of between 30 and 40 inches, and a weight of between 6 and 12 ounces.

The toy of the invention is used by placing it about one's body and then imparting a spinning motion to the hoop manually. This motion is maintained by suitable body gyrations. The physical benefits are greatest when the hoop is placed at waist level before the spinning motion is commenced. A user moves and maintains the hoop at waist level by either back and forth or side to side movement of the body trunk. The preferred hoop or toy is therefore light in weight so that body motion need not be too extensive.

The transverse diameter of the tube from which the loop of the hoop is made depends largely on the wall thickness of that tubular member. The ratio of tube to hoop diameter is an important factor in maintaining the hoop at desired height and in contact with the body of a user. There must be a sufficient effective mass at a sufficient distance from the contact between hoop and user to generate the centrifugal force necessary to maintain the hoop at waist level. Additionally, the hoop preferably has sufficient wall thickness and tubular cross-sectional diameter to be substantially rigid and maintain a substantially planar configuration under the stress of use. To properly combine these characteristics, I have found that an outside tube diameter of ⅜ to ⅝ of an inch, say about ½ of an inch, and a weight of 7 to 10 ounces is proper for hoops having an outside diameter of 31 to 37 inches.

Extruded tubing is desirable because it may be economically fabricated in continuous lengths. Also, the preferred exterior friction surface may be created on the tubing at the time that it is extruded, thereby making most economical the manufacture of the basic hoop component. Thus the preferred form of the invention comprises a rigid tubular member of extruded plastic formed into closed loop. The use of plastic gives both economy and strength. A plug inserted into abutting ends of the looped tubular member joins the ends and maintains the hoop configuration. The diameter of the loop exceeds the girth of the user so that a peripheral portion of the loop diametrically opposite from a peripheral portion in contact with the user is spaced sufficiently from the user so that the hoop may be caused to rotate about the body of the user by suitable movements of the body. The inner surface of the loop defines a continuous circle of substantially uniform diameter.

The friction surface of the preferred hoop comprises continuous grooves extending circumferentially along the periphery of the hoop. The area of the hoop encompassed by the friction surface need be no more extensive than the transverse zone delimited by a 45° arc. However, hoops may be made in accordance with the invention and have an entire surface which is grooved or serrated.

No skilled labor is necessary to make the hoop toy. Its strength requirements are such that relatively inexpensive plastic materials may be used to form the continuous extruded tube from which the hoops are preferably made. These and other advantages of the invention are apparent in the following detailed description and drawing in which:

FIG. 1 is a view of the hoop toy being manipulated by a user;

FIG. 2 is a fragmentary sectional elevation of a hoop toy in accordance with the invention having an elliptical transverse sectional configuration;

FIG. 3 is a fragmentary sectional elevation of an embodiment of the hoop toy in which the friction surface comprises ribs extending from the inner exterior surface of the closed loop;

FIG. 4 is a transverse cross section of a hoop toy in which the entire outer periphery of the toy has a friction surface comprising grooves in the peripheral surface of the toy; and

FIG. 5 is a diagrammatic illustration of the progression of the hoop toy about the waist of a user.

In FIG. 1 a hoop toy 11 is illustrated as rotating about the waist of a user 12. Proper gyrations of the user's body can maintain a rotating motion of the hoop about the waist. There must be a balance between the gravitational pull downward on the toy and the centrifugal force with which the toy is spun. The tendency of the toy to move downwardly is resisted by a friction surface 13 on the hoop (see FIG. 2). The friction surface tends to increase the frictional bond between the body or clothing of the user and the inner exterior periphery 14 of the hoop. This bond helps resist downward hoop motion.

As shown schematically in FIG. 5, a hoop toy 11A which is substantially toroidal progresses about a user's waist 12A shown in dotted lines. Point A represents the tangential contact between the user's waist and the toy. As the toy progresses about the waist the tangential point progresses to points like A' and A". In order for the hoop toy to be maintained at the waist the centrifugal force (which may be represented as concentrated at point B of the hoop diametrically opposite point A) must be sufficient to combine with the friction between the hoop and the user to resist the gravitational pull downward on the hoop. The centrifugal force is a function of mass and velocity, the distance D_1 from points A to B is critical. The average person is not capable of sufficient body motion to impart sufficient velocity to a hoop of much less than 30 inches in diameter. Therefore, the preferred hoop has a diameter greater than 30 inches.

Hoops ranging in outside diameter from 31 to 37 inches and having a weight from 7 to 10 ounces have proved to be better suited to the intended use than hoops of other diameters and weights.

The extruded plastic tubing from which the loop toy preferably is made achieves the desired mass when it has an outside diameter of approximately ⅝ of an inch and a wall thickness of approximately 1/16 of an inch.

In FIG. 2 hoop toy 11, which is made from an extruded tube 16, is formed into a closed loop 17 and joined at 18 by a plug 19 inserted into the interior hores of closed loop ends 20 and 21. Friction surface 13 is made continuous when the two ends of the closed loops are joined. The plug may be fixed within the loop ends by a suitable adhesive or fasteners like staples.

The friction surface of the embodiment illustrated in FIG. 2 comprises a series of continuous parallel grooves 27 impressed in a salient arc of the outer exterior of the hoop. As described with respect to FIG. 1, the friction surface defined by the continuous grooves tends to maintain the hoop toy about the body of the user.

The transverse cross-sectional configuration of the hoop toy may be elliptical as in FIG. 2. The loop thus has a greater cross-sectional depth in the direction which bears the major strain of hoop rotation. A hoop toy of elliptical transverse cross section still preferably has the relationship between hoop diameter and loop mass as set forth with respect to the description of FIG. 5. The relationship between mass and diameter is important to all of the hoop toys regardless of their transverse cross-sectional configuration, the type of friction surface employed, or whether or not a friction surface is used.

In the embodiment illustrated in FIG. 3 the transverse sectional configuration of the hoop is substantially circular. A hoop toy 33 has a friction surface 35 comprising a multiplicity of raised ribs 37. Like the embodiments of FIGS. 1 and 2, the hoop toy of FIG. 3 is made from a tubular extrusion. The ribs are therefore continuous. A segment of the tubular extrusion may be forged into a closed loop and joined as described with respect to FIG. 2.

In contrast to the grooves of the embodiment of FIG. 2, the friction surface of the embodiment of FIG. 3 comprises ribs projecting beyond the normal surface of the tubing. These ribs, like the grooves, may still be formed by extrusion techniques and be economically practiced.

Unlike the embodiments of FIGS. 2 and 3, the hoop toy 40 illustrated in fragmentary cross section of FIG. 4 has a friction surface 41 which covers substantially the entire area of the hoop. While a friction surface of this extent is not essential to maintaining the hoop toy about the body of a user, such a friction surface wherever practicable, grooves impressed into the body of the hoop as illustrated in FIG. 4 or complementary ribs raised from the surface as in FIG. 3, obviates the necessity of care in forming the closed loop to insure that the friction surface is oriented throughout its entire length on the inner exterior periphery of the closed loop. The same advantage accrues to hoop toys having an friction surface.

Only three of the many possible friction surfaces have been illustrated and described. Whereas it is preferable that the friction surface comprise continuous grooves or ribs so that the economy inherent in extruded tubing may be taken advantage of, the friction surface may comprise a roughened area of serrations such as achieved by a knurling process, for instance. However, knurling and similar processes are not compatible with the more economical extruding process.

The toy of the invention is economical to manufacture, interesting and fun to use, and if properly used, may result in physical benefits. Its use is not restricted to use about the body of a user, but maximum benefit is derived from such usage.

I claim:

1. A hoop toy especially suited for rotation about a human body in response to the user's body gyrations, comprising a member formed into a closed circular hoop, the member being of rigid tubular plastic and having an outside diameter of about ⅝ of an inch so that the hoop as a whole is substantially rigid, the hoop having an outside diameter of approximately 31 to 37 inches and having a total weight of approximately 7 to 10 ounces, so that a portion of the hoop diametrically opposite from a hoop portion in contact with the user's body is spaced from the user's body a sufficient distance to co-act with the weight of the hoop to cause the hoop by virtue of its being substantially rigid to rotate about the user in response to the user's body movements.

2. Apparatus of claim 1 wherein the tubular member forming the hoop has a wall thickness of approximately 1/16 inch.

3. A hoop toy especially suited for rotation about a human body in response to the user's body gyrations, comprising a member formed into a closed circular hoop, the member being of rigid tubular plastic and having an outside diameter of about ⅝ of an inch so that the hoop as a whole is substantially rigid, the hoop having an outside diameter of approximately 30 to 40 inches and having a total weight of approximately 6 to 12 ounces, so that a portion of the hoop diametrically opposite from a hoop portion in contact with the user's body is spaced from the user's body a sufficient distance to co-act with the weight of the hoop to cause the hoop by virtue of its being substantially rigid to rotate about the user in response to the user's body movements.

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2,946,152	Robin	July 26, 1960

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"Popular Science" Magazine, January 1959, page 165.

Case Study 1:
Easy Patent, Easy Money

"I Claim

1. A hoop toy especially suited for rotation about a human body in response to the user's body gyrations, comprising a member formed into a closed circular hoop, the member being of rigid tubular plastic and having an outside diameter of about of an inch so that the hoop as a whole is substantially rigid, the hoop having an outside diameter of approximately 31 to 37 inches and having a total weight of approximately 7 to 10 ounces, so that a portion of the hoop diametrically opposite from a hoop portion in contact with the users body is spaced from the users body a sufficient distance to co-act with the weight of the hoop to cause the hoop by virtue of its being substantially rigid to rotate about the user in response to the users body movements.

2. Apparatus of claim 1 wherein the tubular member forming the hoop has a wall thickness of approximately 62/1000 inch.

Case Study 1:
Easy Patent, Easy Money

"I Claim

3. A hoop toy especially suited for rotation about a human body in response to the users body gyrations, comprising a member formed into a closed circular hoop, the member being of rigid tubular plastic and having an outside diameter of about of an inch so that the hoop as a whole is substantially rigid, the hoop having an outside diameter of approximately 30 to 40 inches and having a total weight of approximately 6 to 12 ounces, so that a portion of the hoop diametrically opposite from a hoop portion in contact with the users body is spaced from the users body a sufficient distance to co-act with the weight of the hoop to cause the hoop by virtue of its being substantially rigid to rotate about the user in response to the users body movements."

Case Study 2:
Blocked by Michael Jackson

- US 5255452A
- METHOD AND MEANS FOR CREATING ANTI-GRAVITY ILLUSION
- Inventors: Michael J. Jackson, Michael L Bush, Dennis Tompkins
- Filing Date: June 29, 1992
- Issue Date: Oct. 26, 1993
- 8 pages

“**Abstract**

A system for allowing a shoe wearer to lean forwardly beyond his center of gravity by virtue of wearing a specially designed pair of shoes which will engage with a hitch member movably projectable through a stage surface. The shoes have a specially designed heel slot which can be detachably engaged with the hitch member by simply sliding the shoe wearer's foot forward, thereby engaging with the hitch member.”

Case Study 2:
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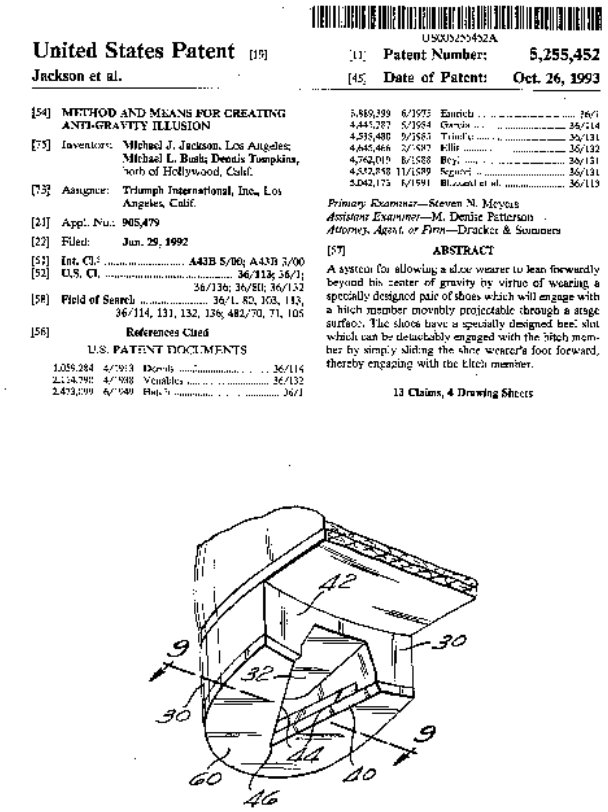

US005255452A

United States Patent [19]
Jackson et al.

[11] **Patent Number: 5,255,452**
[45] **Date of Patent: Oct. 26, 1993**

[54] **METHOD AND MEANS FOR CREATING ANTI-GRAVITY ILLUSION**

[75] Inventors: Michael J. Jackson, Los Angeles; Michael L. Bunk; Dennis Tompkins, both of Hollywood, Calif.

[73] Assignee: Triumph International, Inc., Los Angeles, Calif.

[21] Appl. No.: 905,479

[22] Filed: Jun. 29, 1992

[51] Int. Cl.[5] A43B 5/00; A43B 3/00
[52] U.S. Cl. 36/113; 36/1; 36/136; 36/88; 36/132
[58] Field of Search 36/1, 80, 103, 113, 36/114, 131, 132, 136; 482/70, 71, 105

[56] **References Cited**
U.S. PATENT DOCUMENTS

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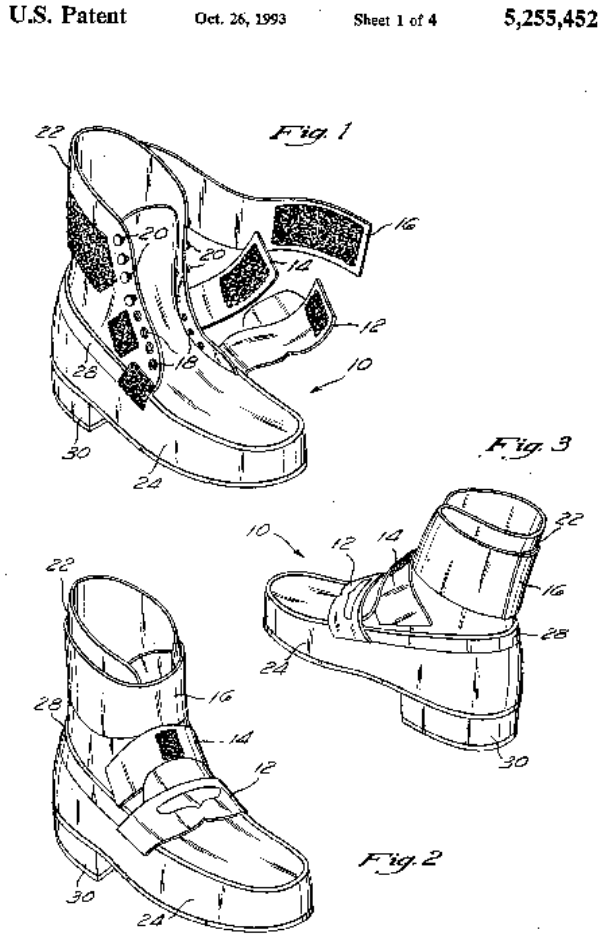
4,445,287	5/1984	Garcia	36/114
4,535,480	9/1985	Trinel'e	36/131
4,645,466	2/1987	Ellis	36/132
4,762,019	8/1988	Bey	36/131
4,822,048	11/1989	Sgroi	36/131
5,042,175	8/1991	Blessed et al.	36/113

Primary Examiner—Steven N. Meyers
Assistant Examiner—M. Denise Patterson
Attorney, Agent, or Firm—Drucker & Sommers

[57] **ABSTRACT**

A system for allowing a shoe wearer to lean forwardly beyond his center of gravity by virtue of wearing a specially designed pair of shoes which will engage with a hitch member movably projectable through a stage surface. The shoes have a specially designed heel slot which can be detachably engaged with the hitch member by simply sliding the shoe wearer's foot forward, thereby engaging with the hitch member.

13 Claims, 4 Drawing Sheets



Case Study 2:
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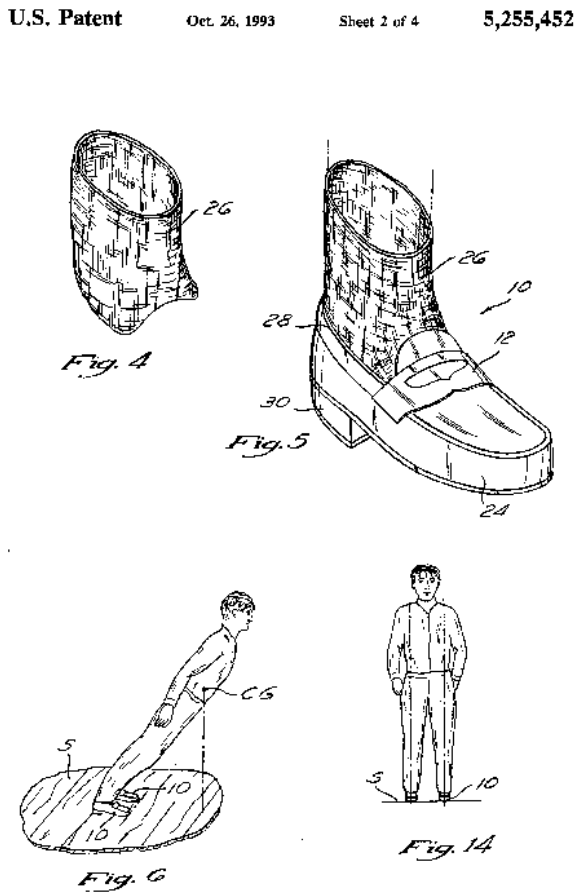

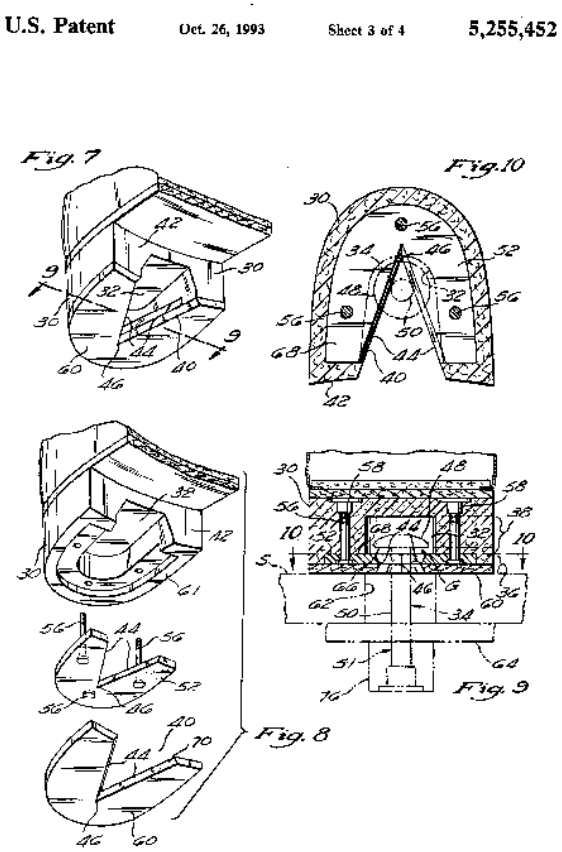

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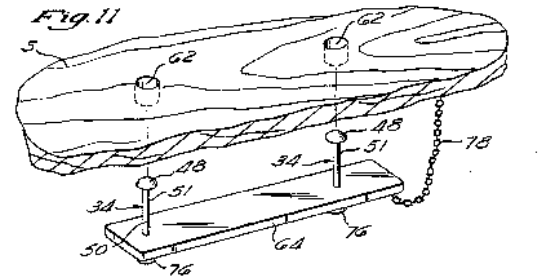

Fig. 11

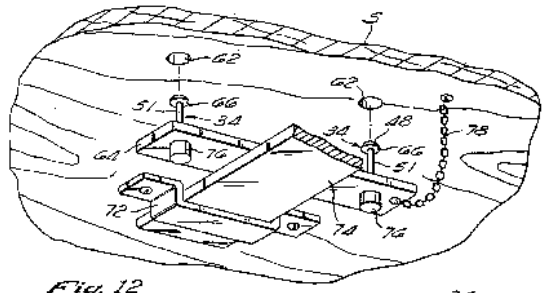

Fig. 12

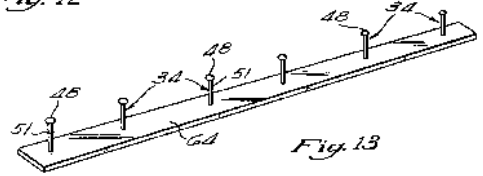

Fig. 13

1

METHOD AND MEANS FOR CREATING ANTI-GRAVITY ILLUSION

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a method and means for creating an anti-gravity illusion effects for entertainment purposes.

This invention relates more particularly to the creation of such illusion by means of specialized footwear and accessories therefor. The specialized footwear is provided with means for engagement with a movably protrudable hitch or post which allows the entertainer to lean forward on a stage at a very acute angle relative to the stage floor to achieve the illusion of defying gravity.

2. Description of the Prior Art:

Music entertainers and dancers are constantly searching for new and interesting elements which can be incorporated into their musical and dance performances. Interesting stage design, lighting, fog generators, laser light shows, and large video screens all enhance the appealability of live and recorded performances. Many popular music and dance entertainers expend great efforts in enhancing and choreographing their performances and dancing.

In the past, a professional entertainer, one of the inventors herein, has incorporated dance steps in his recorded video performances, wherein he and other dancers would lean forward beyond their center of gravity, thereby creating an impressive visual effect. This effect was accomplished by the use of cables connecting a harness around the dancer's waist with hooks on a stage, thereby allowing the dancer to lean forward at the required degree. However, since this requires stagehands to connect and then disconnect the cables, it has not been possible to use this system in live performances. Moreover, the cables obviously restricted arm and body movements.

There is disclosed in the prior art footwear which allow the wearer to engage his or her shoes with a stationary object. U.S. Pat. No. 5,042,171 to Blizzard, et al. discloses footwear which can be worn by astronauts and which can be detachably engaged with a rail fixed to a surface to aid astronauts in working in a zero gravity environment. U.S. Pat. No. 5,165,812 to Stanley discloses a rubber overshoe which has a hook on its sole which can be engaged with a plate fixed to a surface to assist in removing the overshoe without having to bend-ing down and touching the overshoes.

However, to the best of our knowledge and belief the prior art does not disclose or suggest the specialized footwear permitting an entertainer to freely move about a stage, while at the same time, enabling engagement with a movable hitch or post, projectable through the stage floor, to enable the illusion to be performed.

SUMMARY OF THE INVENTION

The present invention overcomes the above noted deficiencies of the previously employed cable system by providing specialized footwear and a moveable hitch or post to which the specialized footwear can be detachably engaged to allow the footwear wearer to lean forward on the stage, with his or her center of gravity well beyond the front of the shoes, thereby creating the desired visual effect.

2

The invention provides a new design for shoes which will allow his or her performing artist, by engaging the shoes onto an upstanding post positioned to project upwardly from a stage at a predetermined time, to lean forwardly to put his or her center of gravity beyond the front or rear of his shoes, thereby creating the desired gravity defying interesting visual effect.

The invention provides a system for engaging footwear with a hitch or post means, comprising:

shoes having a first engagement means; and

a second engagement means being movably protrudable through a stable surface (usually a stage platform) between a first stable protruding position raised above the stable surface and a second retracted position lowered below, or flush with, the stable surface. The first engagement means is engageable with the said second engagement means when said second engagement means is in the first stable protruding position. The second retracted position is preferably flush with the stable surface so as not to impede the performer in any way in his movements and dance before and after the feet or post is exposed in the first protruding position.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is described below in greater detail with reference to the drawing:

FIG. 1 is a front perspective view of specialized footwear, viz. a shoe of the invention with its fastening straps opened;

FIG. 2 is a front perspective view of the shoe of FIG. 1. shown with its fastening straps closed;

FIG. 3 is rear perspective view of the shoe of FIG. 1 with its straps closed;

FIG. 4 is perspective front view of a sock covering section;

FIG. 5 is a perspective front view of the shoe with the sock covering section of FIG. 4 in place;

FIG. 6 is a side perspective view of a dancer wearing the shoes, shown leaning forward beyond his center of gravity;

FIG. 7 is a bottom perspective view of the heel of the shoe;

FIG. 8 is an exploded bottom view of the heel of the shoe;

FIG. 9 is a partial front cross-sectional view of the heel of the shoe and the hitch, taken along lines 9—9 of FIG. 7;

FIG. 10 is a transverse sectional view along lines 10—10 of FIG. 9;

FIG. 11 is a perspective view, in partial cross-section of the hitches or posts attached to a plate, shown in alignment with holes in a stage surface;

FIG. 12 is a perspective view of the hitch carrying plate of FIG. 11 and a stage engagement mechanism to secure the plate against the underside of the stage surface;

FIG. 13 is a perspective view of a hitch carrying plate with three pairs of hitches or posts affixed thereto; and

FIG. 14 is a front elevational view of a performing artist wearing the shoes of this invention, showing the optimum spacing of the pair of hitches relative to the shoulders of the performing artist.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, there is illustrated, in FIG. 1, a front perspective view of the shoe 10 utilized

Case Study 2:
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in this invention, with fastening straps 12, 14, and 16 (not fastened) to reveal lacing eyelets 18 and lacing hooks 20. The shoe 10 rides relatively high on the wearer's ankles, as shown in FIG. 2 and 3, and can be snugly secured around the wearer's ankles by use of the straps 12, 14 and 16 and/or shoe laces (not shown) which can be tightly laced through the eyelets 18 and lacing hooks 20. The use of shoe laces provides for a snugger fit than by the straps 12, 14 and 16 straps, but the use of straps 12, 14 and 16 allows the shoes 10 to be put on and removed more quickly as timing, for this particular "move," may be extremely critical and of short duration. In order to conceal the nature of the shoes 10, the front of strap 12 can be made to appear as the tongue and strap of a penny loafer. Spats (not shown) or pant legs can be used to cover the upper part 22 of the shoes 10, as best shown in FIG. 6, and the lower part 24 of the shoe 10 will thus be made to appear as a normal walking or dancer shoe. Also, as shown in FIGS. 4 and 5, an upper sock section 26 can be used to conceal the upper part 22 of the shoe 10, the sock section 26 fitting around a peripheral edge 28 of the shoe 10.

Referring to FIGS. 7–10, the heels 30 of the shoes 10 have a recess 32 formed therein adapted to detachably receive a hitch or pin 34, thereby locking the heels 30 of the shoes 10 in place relative to the stage surface S through which the hitch 34 protrudes. A V-shaped guide 40 is located below recess 32, with the mouth of the V located at the leading edge 42 of the heel 30. The guide 40 forms the entrance to the recess 32. The front of the V-shaped guide 40 lies flush with the leading edge 42 of the heel 30. Edges 44, forming the V-shaped guide 40 terminate rearwardly of leading edge 42 at a terminal end point 46.

The V-shaped slot 40 is formed in the lower region 36 of the heel, preferably by two layers of materials, an outer or exposed layer 50, preferably made of leather, and an inner overlying layer, preferably consisting of a metal plate 52. The upper region 38 of the heel, above the metal plate layer 52 has the hitch-post receiving recess 32 formed therein. The metal plate 52 is affixed to the heel portion of the shoe, as described hereafter.

Referring to FIGS. 9–13 the shoe hitch 34 preferably comprises a pair of steel bolts, each bolt 51 having an enlarged preferably rounded head 48 relative to its shank 50. Enlarged bolt head 48 has a diameter less than the width of the recess 32. The bolt shank 50 is of somewhat less diameter than the mouth of the V-shaped guide 40. The head 48 is wider than the terminal end point 46 of the V-shaped guide 40. The recess 32 is formed so that it is wider than the head 48 of the hitch 34.

As shown in FIGS. 9 and 10, when the heel 30 of the shoe is placed over the bolt head 48 so that the mouth of the V-shaped slot 40 overlies the head 48, the heel 30 may then be lowered and slid forwardly until the shank 50 of the hitch 34 contacts both edges 44 of the V-shaped guide 40. The bolt head 48 will lie in recess 32 above said V-shaped slot guide 40, and the shoe will be stably positioned relative to the stage floors. Three countersunk bolts 56 and threaded inserts 58 can be used to assure reliable affixation of the metal plate 52 of the heel 30 to the rest of the shoe 10. The exposed outer layer 60 of the heel is affixed to the perimeter 61 of the heel (overlying the metal plate 52) by suitable conventional adhesive and/or tacking means (not shown).

Referring to FIGS. 9, 11 and 12, the bolts 51 of the hitch 34 are made to be movably protrudable through

holes or openings 62 formed through the stage surface S. The holes 62 are oversized so as to allow the bolt heads 48 to freely pass therethrough. The bolts 51 are permanently affixed to a metal plate 64, and the length of the bolt shank 50 of the bolts is such that when the metal plate 64 carrying the bolts is stably placed against the underside of the stage surface S, the head 48 will be spaced sufficiently high off the stage surface S so that the bottom edge 66 of the head 48 will clear the top edge 68 of the metal plate 52, leaving a slight gap G. This slight gap G will allow the entertainer to slide his or her shoes 10 forward to engage the head 48 of the hitch 34 with the V-shaped slot 40. It has been found that a gap G of approximately one-eighth of an inch is ideal for lighter dancers, while slightly deeper gaps are required for heavier dancers. Also, referring again to FIG. 9, the metal plate 60 is formed so that its V-shaped slot edges and the V-shaped edges 70 of the heel covering material 60 form flush V-shaped edges 44. The V-shaped guide 40, so formed, is preferred, as it minimizes the chances of the hitch 34 inadvertently becoming jammed in the V-shaped guide, and thereby preventing the shoe 10 from being disengaged from the hitch 34 after the "anti-gravity" move is completed.

Turning again to FIGS. 11 and 12, a simple mechanical means can be used to stabilize the metal plate 64 with its bolts 51 relative to the stage surface S. For this purpose, slide brackets 72 are affixed on the underside of the stage surface S. After the metal plate 64 is positioned and bolts 51 aligned with openings 62, one or more metal support bars 74 can be slid into the sliding brackets 72, and under the metal plate 64, to hold the plate 64 tightly against the underside of the stage surface S. Also, as is shown in FIGS. 9, 11 and 12, if it is desired to plug the holes 62 in the stage surface S when the hitches 34 are withdrawn, plug protrusions 76 can be provided on another side of the metal plate 64. When the metal plate 64 is oriented with the plug protrusions 76 directed upwardly, the metal plate 64 can be immobilized relative to the stage surface. The plug protrusions 76 will be just long enough so that they lie essentially flush with or the stage surface S. A chair 78 or other means may be used to retain the metal plate 64 to the underside of the stage surface S, if desired.

Referring to FIG. 13, multiple pairs of hitches 34 can be provided on a single metal plate 64, if desired.

In lieu of the mechanical means, alternate mechanisms can be provided to raise and lower the hitches by pneumatic, electromagnetic, hydraulic, other mechanical means, or by any other known means. As presently contemplated, the hitch 34 will be raised and lowered by stage personnel stationed under the stage surface S. The inventors also contemplate that the hitch 34 could also be raised by the entertainer himself or herself by remote control means, such as by radio control, when automated means is used to raise and lower the hitches 34.

When the hitch 34 is locked in its raised position, the performer can engage his or her heels 30 with the hitch 34, and he or she can then safely lean forward as far as he or she desires and is capable of, so that his or her center of gravity CG lies in front of the shoes 10, as shown in FIG. 6. After returning to a normal standing position, the dancer can slide his or her shoes 10 rearwardly, thus readily disengaging from the hitches 34. Thereafter, the hitches 34 can be pulled out of the holes 62 in the stage and plugged, if desired.

Referring to FIG. 14, it has been found that the pair of hitches 34 should ideally be spaced between the shoulder blades of a dancer, a width of approximately 14–20" apart. Such a spacing provides maximum stability during the leaning.

The drawings and the foregoing description are not intended to represent the only form of the invention in regard to the details of this construction and manner of operation. In fact, it will be evident to one skilled in the art that modifications and variations may be made without departing from the spirit and scope of the invention. Although specific terms have been employed, they are intended in a generic and descriptive sense only and not for the purpose of limitation, the scope of the invention being delineated in the following claims:

I claim:

1. A system for engaging shoes with a hitch means to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity, comprising:

at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe covered with a heel slot plate located at a bottom region of said heel, said heel slot plate having a slot formed therein with a relatively wide opening at a leading edge of said rec. and a narrower terminal end rearward of said leading edge, said recess being larger in size above said terminal end of said slot than is said terminal end of said slot; and

a second engagement means, detachably engageable with said first engagement means, comprising a hitch member having an enlarged head portion connected by a narrower shank portion to a means for raising and lowering said head of said hitch member above and substantially level with or below said stage surface, said head portion being larger in size than said terminal end of said slot and said shank portion being narrower than said terminal end of said slot, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said head portion of said hitch member is raised above said stage surface, said first engagement means can be detachably engaged with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region of said shoes, and maintain said forward lean.

2. The system of claim 1, wherein said slot in said heel slot plate is V-shaped, with the mouth of the V at the leading edge of said heel.

3. The system of 1, wherein said shoe has strapping means to secure the shoe to the wearer's feet.

4. The system of claim 1, wherein said shoe has lace means to secure the shoe to the wearer's feet.

5. The system of claim 1, wherein said shoe has extension means overlying the wearer's ankle, and is provided with covering means to conceal the said extension means of said shoe.

6. The system of claim 5, wherein said covering means comprises a sock-like covering.

7. A system for engaging shoes with a hitch means to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity in a stable manner, comprising:

at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe, said recess having a relatively wide opening at a leading edge of said heel and a narrower terminal end rearward of said leading edge; and

a second engagement means, detachably engagable with said first engagement means, comprising a hitch member having an enlarged head portion, connected to a means for raising and lowering said hitch member above and substantially level with or below said stage surface, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said hitch member is raised above said stage surface, said first engagement means is detachably engagable with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region of said shoes, and maintain said forward lean.

8. The system of claim 7, wherein said recess is covered with a heel slot plate located at a bottom region of said heel, said heel slot plate having a slot formed therein.

9. The system of claim 8, wherein said slot in said heel slot plate is V-shaped, with the mouth of the V at the leading edge of said heel.

10. The system of claim 7, wherein said shoe has strapping means to secure the shoe to the wearer's feet.

11. The system of claim 7, wherein said shoe has lace means to secure the shoe to the wearer's feet.

12. The system of claim 7, wherein said shoe has extension means overlying the wearer's ankle, and is provided with covering means to conceal the said extension means of said shoe.

13. The system of claim 12, wherein said covering means comprises a sock-like covering.

* * * * *

Case Study 2:
Blocked by Michael Jackson

“I Claim

1. A system for engaging shoes with a hitch mans to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity, comprising: at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe covered with a heel slot plane located at a bottom region of said heel, said heel slot plate having a slot formed therein with a relatively wide opening at a leading edge of said heel and a narrower terminal end rearward of said leading edge, said recess being larger in size above said terminal end of said slot than is said terminal end of said slot; and

a second engagement means, detachably engageable with said first engagement means, comprising a hitch member having an enlarged head portion connected by a narrower shank portion to a means for raising and lowering said head of said hitch member above and substantially level with or below said stage surface, said head portion being larger in size than said terminal end of said slot and said shank portion being narrower than said terminal end of said slot, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said head portion of said hitch member is raised above said stage surface, said first engagement means can be detachably engaged with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region of said shoes, and maintain said forward lean.

Case Study 2:
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“2. The system of claim 1, wherein said slot in said heel slot plate is V-shaped, with the mouth of the V at the leading edge of said heel.”

3. The system of 1, wherein said shoe has strapping means to secure the shoe to the wearer's feet.

4. The system of claim 1, wherein said shoe has lace means to secure the shoe to the wearer's feet.

5. The system of claim 1, wherein said shoe has extension means overlying the wearer's ankle, and is provided with covering means to conceal the said extension means of said shoe.

6. The system of claim 5, wherein said covering means comprises a sock-like covering.”

Case Study 2:
Blocked by Michael Jackson

“7. A system for engaging shoes with a hitch means to permit a person standing on a stage surface to lean forwardly beyond his or her center of gravity in a stable manner, comprising:

at least one shoe having a heel with a first engagement means, said first engagement means comprising a recess formed in a heel of said shoe, said recess having a relatively wide opening at a leading edge of said heel and a narrower terminal end rearward of said leading edge; and

a second engagement means, detachably engagable with said first engagement means, comprising a hitch member having an enlarged head portion, connected to a means for raising and lowering said hitch member above and substantially level with or below said stage surface, wherein said hitch member can be moved through apertures in said stage surface between a projecting position raised above said stage surface and a retracted position at or below the stage surface, and when said hitch member is raised above said stage surface, said first engagement means is detachably engagable with said projecting hitch member, thereby allowing a person wearing the shoes to lean forwardly with his or her normal center of gravity beyond a front region or said shoes, and maintain said forward lean.”

Case Study 2:
Blocked by Michael Jackson

“8. The system of claim 7, wherein said recess is covered with a heel slot plate located at a bottom region of said heel, said heel slot plate having a slot formed therein.

9. The system of claim 8, wherein said slot in said heel slot plate is V-shaped, with the mouth of the V at the leading edge of said heel.

10. The system of claim 7, wherein said shoe has strapping means to secure the shoe to the wearer's feet.

11. The system of claim 7, wherein said shoe has lace means to secure the shoe to the wearer's feet.

12. The system of claim 7, wherein said shoe has extension means overlying the wearer's ankle, and is provided with covering means to conceal the said extension means of said shoe.

13. The system of claim 12, wherein said covering means comprises a sock-like covering.”

Case Study 3:
Sunk by Donald Duck's Prior Art

- It was September of 1964 when a freighter carrying 5,500 sheep docked at Kuwait's harbor. Only 500 sheep were unloaded when something went wrong and the freighter capsized with the remaining 5,000 sheep on board.

- The dying sheep started contaminating the water around the harbor, which was a threat to the city's water supply. The freighter needed to be raised right away. Using cranes was not a good idea as it was time-consuming and could have broken the hull into pieces.

- Karl Kroyer, a Danish inventor, came up with a brilliant idea of filling the freighter with plastic balls. In the month of December, he filled the capsized freighter with approx. 27 million plastic balls and hit the nail on the head.

Source: **4 Cases Where Examiner Found Ridiculously Awesome Prior Art**
https://www.greyb.com/4-cases-examiner-found-ridiculously-awesome-prior-art/

Case Study 3:
Sunk by Donald Duck's Prior Art

Espacenet

Bibliographic data: NL6514306 (A) — 1966-05-05

Method of raising sunken or stranded vessels

Inventor(s):

Applicant(s): KROYER K K K

Classification: - **international:** ***B63C7/12***
- **cooperative:** **B63C7/12 (EP)**; B63C2007/125 (EP)

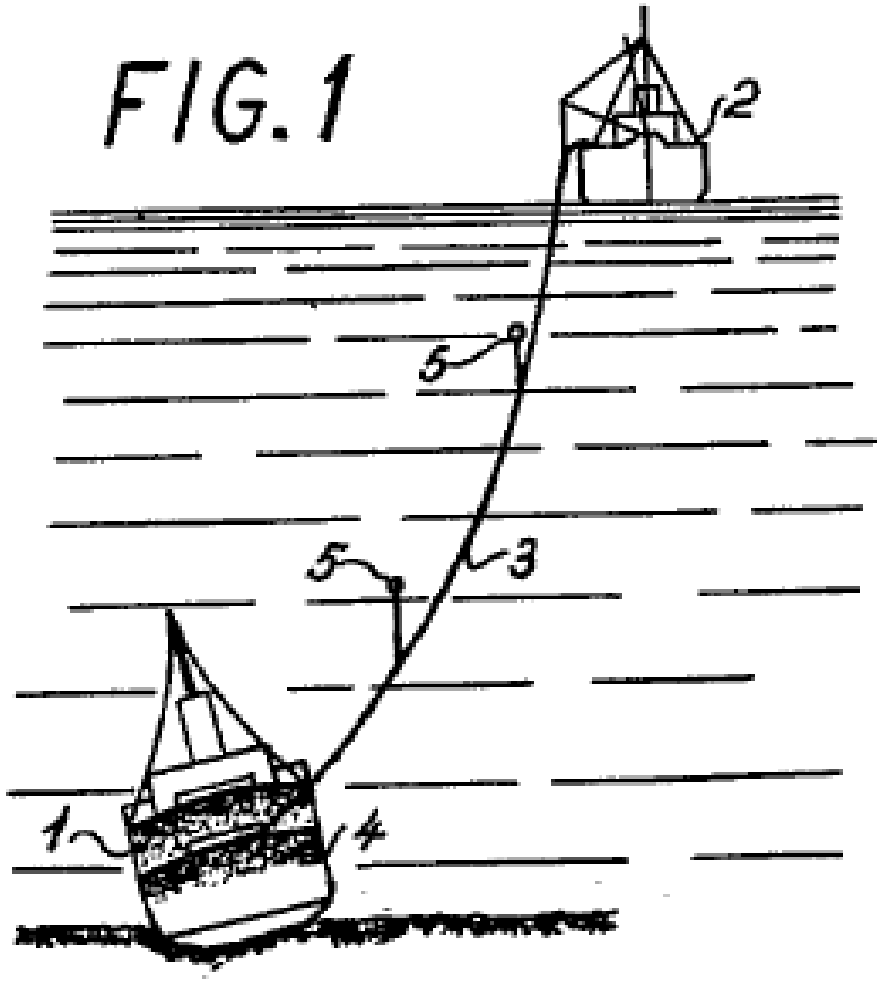
Application number: NL19650014306 19651104

Priority number(s): DK19640005428 19641104

Also published as: GB1070600 (A)

Abstract not available for NL6514306 (A)
Abstract of corresponding document: GB1070600 (A)

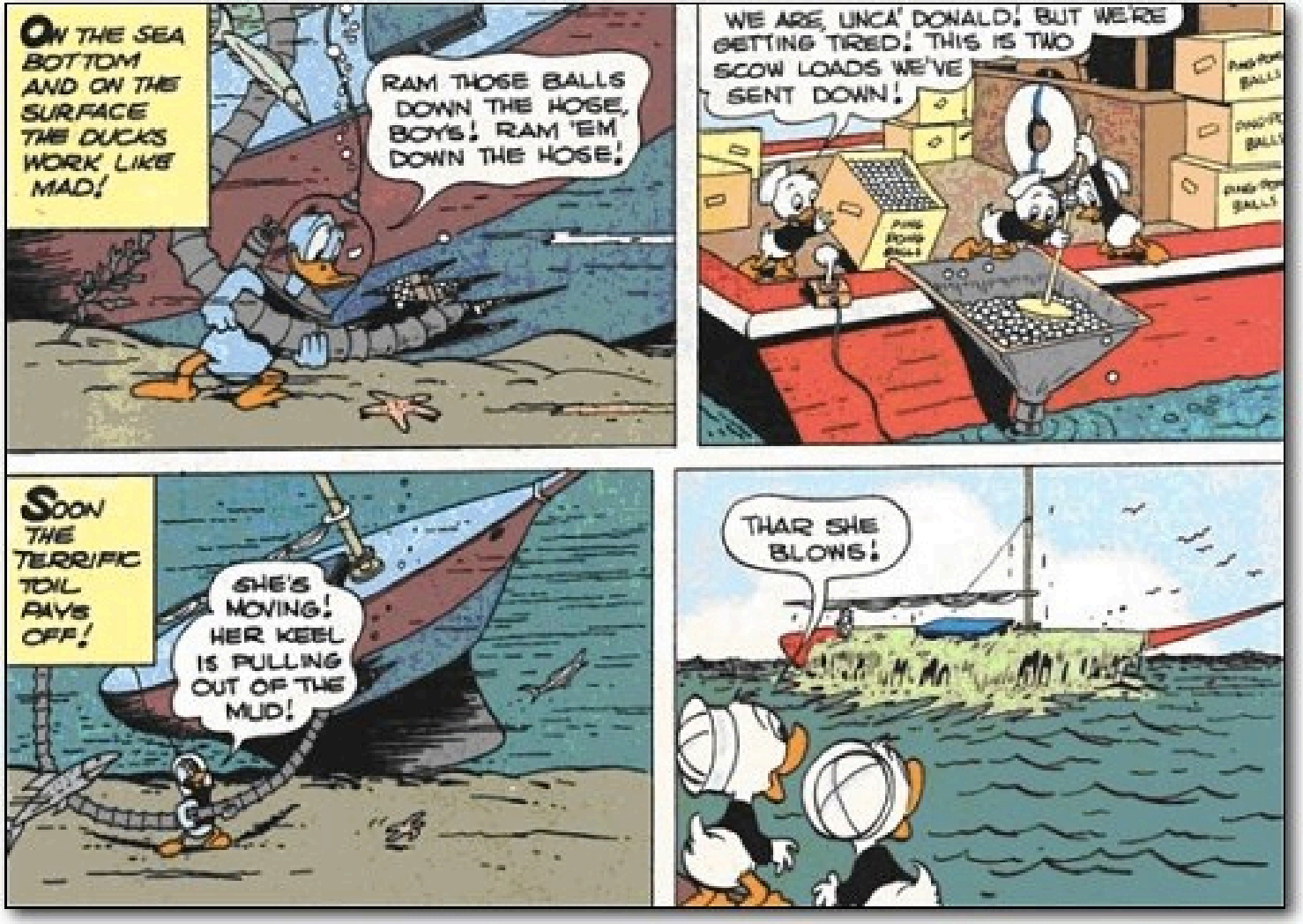
1,070,600. Raising sunken vessels. K. K. K. KROYER. Nov. 2, 1965 [Nov. 4, 1964], No. 46343/65. Heading B7S. An apparatus for raising a sunken vessel (1), Fig. 1 (not shown), by introducing buoyant bodies into the interior of the vessel comprises a water pump (6), Fig. 2 (not shown), which on the pressure side is connected to the inlet end of an ejector (7) having its suction pipe (8) connected to a slip (9) containing the buoyant bodies, the outlet end of the ejector (7) being connected to one end of a tube (3) the other end (10) of which can be introduced into the interior of the sunken vessel. An adhesive of asphalt supplied through tube (11) is applied to each buoyant body as it leaves nozzle (10) to enter the sunken vessel. The buoyant bodies may be gas-containing polystyrene balls or pieces of cellular plastics material.



Case Study 3:
Sunk by Donald Duck's Prior Art

- Karl later went ahead with filing a patent application (NL6514306) on his idea. And contrary to what you are thinking, his patent application got rejected.
- It is said that the examiners at Dutch PTO found a similar method of raising a ship in one of Donald Duck's stories.
- In late 1949, in a story of Donald Duck, he used ping pong balls (buoyant object) to raise a sunken yacht from a lake. Who might have thought that Mr. Donald Duck had already invented a solution for a non-existing problem?

Case Study 3:
Sunk by Donald Duck's Prior Art



Other Helpful Resources

- Association of University Technology Managers https://autm.net/
- Hawai'i Department of Commerce & Consumer Affairs https://cca.hawaii.gov/
- Hawai'i Technology Development Corporation https://www.htdc.org/
- Hawai'i Small Business Development Center https://www.hisbdc.org/
- Hawai'i State State Library https://www.librarieshawaii.org/
- U.S. Copyright Office https://www.copyright.gov/
- U.S. Small Business Administration https://www.sba.gov/
- U.S. Patent & Trademark Office https://www.uspto.gov/

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Questions?

Thank you!