



Preliminaries

The Basic Framework and Initial Questions

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Konomark
Most rights sharable

Roadmap:

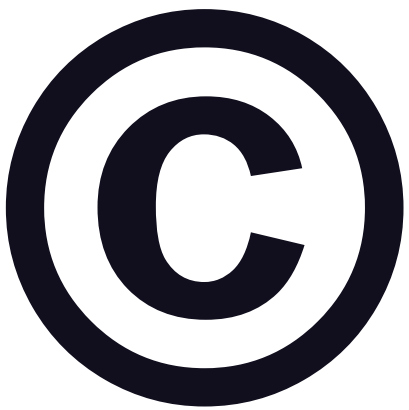
- What is intellectual property?
 - The kinds of IP
 - Comparisons
 - The label
- Why is IP law necessary?
- How did IP law come to be?

What is
intellectual
property?

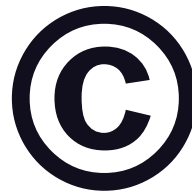
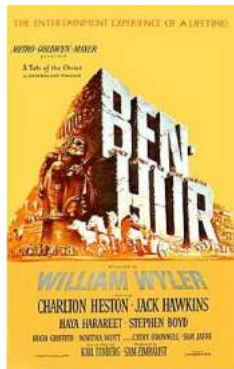
the kinds
of IP

What is
“intellectual property”?

Copyrights
Trademarks
Patents
Trade Secrets
Rights of Publicity



Copyright



Copyright



Copyright

- Books
- Poems
- Movies
- Computer software
- Photographs
- Paintings
- Sculptures

Copyright

- original works of authorship fixed in any tangible medium of expression from which they can be perceived, either directly or with the aid of a machine


Copyright ©

Protects	expression (text, images, recordings)
Requires	a mere modicum of creativity
Vests	automatically upon creation
Sustained by	<i>[nothing]</i>
Lasts	lifetime + 70 years; or 95 years
Theory	incentive to create; public goods problem

PAT.

Patent





US 6,302,230 B1

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

(10) Patent No. **US 6,302,230 B1**
(21) Date of Patent: **Oct. 16, 2001**

(54) **PERSONAL MOBILITY VEHICLES AND METHODS**

(75) Inventors: **Dean L. Kamen, Bedford, Robert R. Ambrogio, Massachusetts, Robert J. Duggan, Northwood, J. Douglas Ford, Bedford, Richard Kent Holzman, Foxborough, et al. (US); Ralf Amsharov, Cambridge, MA (US); Christopher C. Langstaff, Nashua, NH (US)**

(73) Assignee: **DEKA Products Limited Partnership, Massachusetts, NH (US)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) to 6 days.

(21) Appl. No. **09325,978**

(22) Filed **Jan. 4, 1999**

(51) Int. Cl. **B60K 31/00; B60K 26/06; B60D 33/00; B60G 1/00**

(52) U.S. Cl. **188/373; 188/376; 188/371; 188/21; 340/434**

(58) Field of Search **188/373, 371, 376, 377, 21, 41, 440, 340/434, 441, 442, 435, 380, 381, 310/465, 467, 708, 188/383 C; 280/455.1; 280/173, 2, 20 R**

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Primary Examiner—Brian T. Johnson
Assistant Examiner—Matthew Lutz
(74) Attorney, Agent, or Firm—Brinberg & Sennitt LLP

(57) **ABSTRACT**
An automatically balancing vehicle having a headrest member. The headrest member determines the difference between the measured velocity of the vehicle and the preset velocity of the vehicle. An alarm receives a signal from the headrest member and produces a warning when the headrest falls below a specified limit.

7 Claims, 15 Drawing Sheets



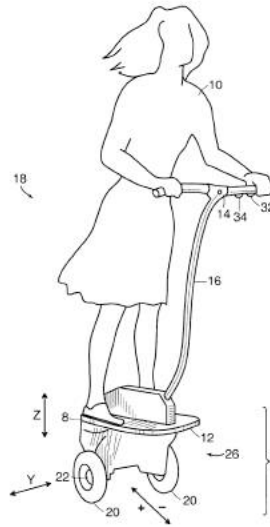


FIG. 1

PERSONAL MOBILITY VEHICLES AND METHODS

TECHNICAL FIELD

The present invention pertains to vehicles and methods for transporting individuals, and more particularly to balancing vehicles and methods for transporting individuals over ground having a surface that may be irregular.

BACKGROUND ART

A wide range of vehicles and methods are known for transporting human beings. Typically, such vehicles rely upon static stability, being designed so as to be stable under all known conditions of placement of their ground-contacting members. Thus, for example, the gravity vector acting on the center of gravity of an automobile passes between the pairs of ground contact of the automobile's wheels, the suspension keeping all wheels on the ground at all times, and the automobile is thus stable. Another example of a statically stable vehicle is the stand-still robot vehicle described in U.S. Pat. No. 5,795,558 (Shackel et al.).

SUMMARY OF THE INVENTION

In one embodiment there is provided a vehicle for carrying a user. In this case, the user is a standing person. The vehicle of this embodiment includes:

- a. a ground-contacting mobile which supports a platform including the standing person, the ground-contacting mobile contacting an underlying surface substantially at a single region of contact; and
- b. a rotational drive arrangement, coupled to the ground-contacting mobile, the drive arrangement, ground-contacting mobile and platform constituting a system, the rotational drive arrangement causing, when powered, automatically balanced operation of the system.

In a second embodiment, the ground-contacting mobile includes a wheel.

In another embodiment there is provided a vehicle for carrying a platform including a user. The vehicle of this embodiment includes:

- a. a ground-contacting mobile including two substantially equal wheels;
- b. a platform supporting the user in a standing position substantially over both wheels; and
- c. a rotational drive arrangement, coupled to the ground-contacting mobile, the drive arrangement, ground-contacting mobile and platform constituting a system, the rotational drive arrangement causing, when powered, automatically balanced operation of the system.

In another embodiment, there is provided a vehicle for carrying a platform including a user, and the vehicle of this embodiment includes:

- a. a platform which supports the user;
- b. a ground-contacting mobile, to which the platform is mounted, which precesses the user induced motion over an underlying surface;
- c. a proximity sensor for determining the presence of the user on the device; and
- d. a safety switch, coupled to the proximity detector, for inhibiting operation of the ground-contacting mobile unless the proximity sensor has determined the presence of the user on the device.

The proximity sensor may be a magnetic, mechanically coupled to the safety switch, having an operating position and a non-operating position, whereas the member is in the operating position in the absence of the user from the device and the member is movable to the operating position when the user is on the device. The member may include a plate, disposed on the device, for receiving a line of the user, whereby placement of the foot on the plate causes it to move into the operating position.

Alternatively, the proximity detector may be electronic and may include a non-contact device. For further-related embodiments, the device may include a rotational drive arrangement, coupled to the ground-contacting mobile, the rotational drive arrangement causing, when powered, automatically balanced and automatic operation of the device unless the proximity sensor has determined the presence of the user on the device.

In another embodiment, there is provided a vehicle for carrying a platform including a user. The vehicle of this embodiment includes:

- a. a platform which supports the user;
- b. a ground-contacting mobile, to which the platform is mounted, which precesses the user induced motion over an underlying surface;
- c. a rotational drive arrangement, coupled to the ground-contacting mobile, the drive arrangement, ground-contacting mobile and platform constituting a system, the rotational drive arrangement causing, when powered, automatically balanced operation of the system, whereas the rotational drive arrangement has a power source output and a specified maximum power output and, in operation, the balancing margin determined by the difference between the maximum power output and the present power output of the drive arrangement;
- d. a balancing margin sensor, coupled to the rotational drive arrangement, for generating a signal characterizing the balancing margin; and
- e. an alarm, coupled to the balancing margin sensor, for causing the signal characterizing the balancing margin and for sounding when the balancing margin falls below a specified limit.

The alarm may include light modulation of the power output of the rotational drive arrangement, and, alternatively, or in addition, may be audible.

In still further embodiment there is provided a device for carrying a user, and the device includes:

- a. a platform which supports a platform including the user;
- b. a ground-contacting mobile, mounted to the platform, including at least one ground-contacting member and a driving drive shaft;
- c. a rotational drive arrangement, coupled to the ground-contacting mobile, the drive arrangement, ground-contacting mobile and platform constituting a system, the rotational drive arrangement causing, when powered, automatically balanced operation of the system in an operating position that is unstable with respect to tipping in at least a forward plane when the rotational drive arrangement is not powered; and
- d. a user input control that supplies an indication from the user of a specified precess of the device under conditions of motion at uniform velocity.

The user input control may include a thrust-wheel disposed upon a handle that is part of the device. A related drawback

Patent ^{PAT.}

Protects	machines, inventions
Requires	some level of cleverness (nonobviousness, inventive step)
Vests	after application, upon issuance by government
Sustained by	escalating maintenance fees
Lasts	up to 20 years
Theory	incentive to invent and disclose; public goods problem

Trade Secrets

Trade Secret



Trade Secret

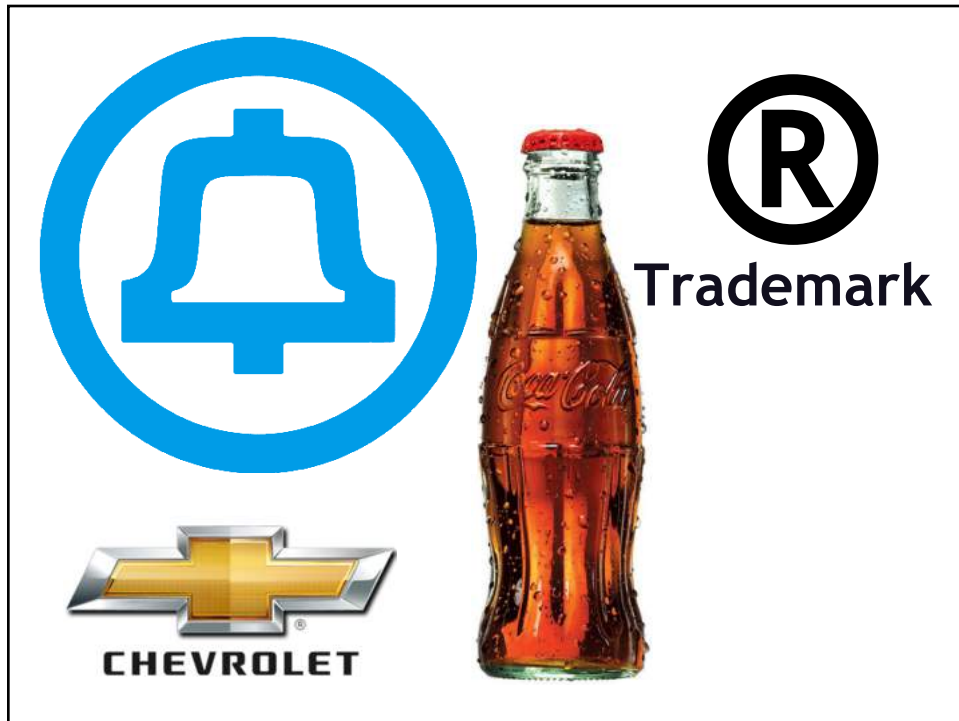
Protects	formulas, recipes, manufacturing techniques, and other intangibles with independent economic value
Requires	secrecy and reasonable efforts to keep secret
Vests	automatically
Sustained by	continuing secrecy and efforts to keep secret
Lasts	potentially forever
Theory	????



Trademark

TM

Trademark



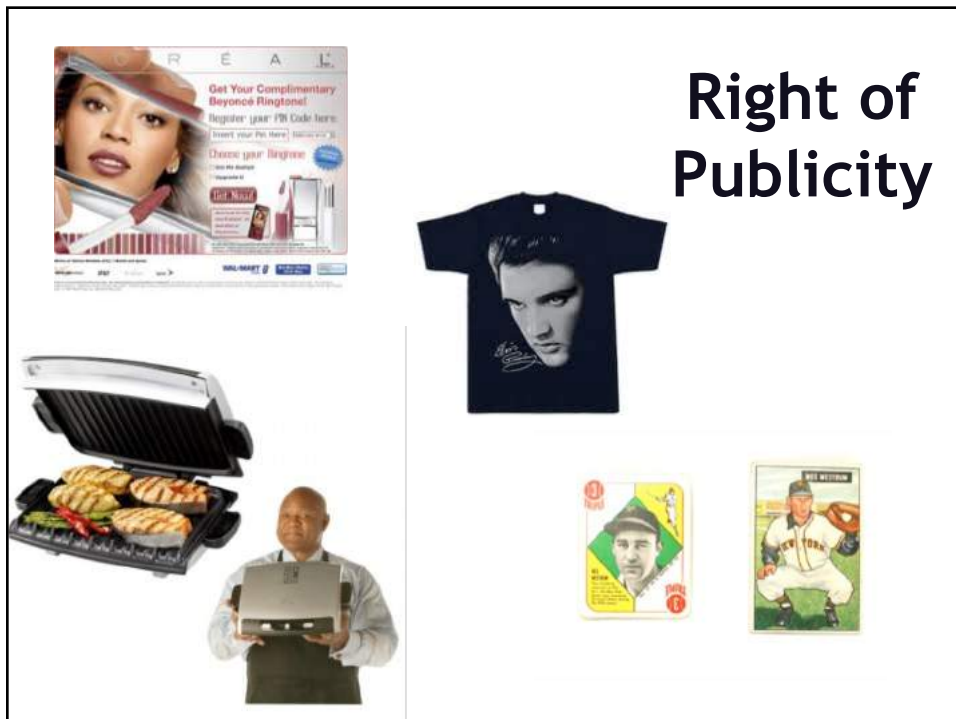
source

Trademark ® ™

Protects	names, logos, slogans, other indications of commercial source
Requires	distinctiveness (can identify a commercial source)
Vests	common law: upon use federal: after use, upon registration
Sustained by	continued use
Lasts	as long as used, potentially forever
Theory	provide information to consumers



Right of Publicity



Right of Publicity

Protects	name, voice, image, other indicia of identity
Requires	nothing; fame in a few jurisdictions
Vests	automatically
Sustained by	<i>[nothing]</i>
Lasts	lifetime; post-mortem in some states
Theory	????

You

own intellectual
property

Comparisons

What is protected?

©	Expression (text, images, recordings)
Pat.	Inventions (manmade)
TM	Indications of commercial source
Trade Secret	Transferrable commercial secrets
Right of Publicity	Indications of personal identity

What does it take to get it?

©	Fixation (immediate)
Pat.	Application, gov' t review
TM	Use in commerce, creating meaning
Trade Secret	<i>Nothing</i>
Right of Publicity	<i>Nothing</i> (fame, some places)

What does it take to keep it?

©	Nothing
Pat.	Payment of maintenance fees
TM	Continued use in business
Trade Secret	Keeping it secret
Right of Publicity	Nothing

How long does it last?

©	about 100 years
Pat.	about 20 years
TM	forever (if used)
Trade Secret	forever (if kept secret)
Right of Publicity	life + extra sometimes

How is it lost?

©	<i>Very difficult</i>
Pat.	Unpaid fees; successful challenge
TM	Failure to keep exclusive control
Trade Secret	The secret gets out
Right of Publicity	<i>Very difficult (?)</i>

Defenses include ...

©	Fair use, first-sale
Pat.	Invalidity, first-sale
TM	Non-trademark uses, fair uses, first-sale
Trade Secret	Reverse engineering
Right of Publicity	News, free speech, non-commercial

Remedies include ...

©	Injunctions; restitution (of D's wrongful gains); statutory damages up to \$150K per infringement
Pat.	Injunctions; royalties; treble damages
TM	Injunctions; punitive damages; treble damages
Trade Secret	Injunctions; restitution (of D's wrongful gains); punitive damages; royalties
Right of Publicity	Injunctions; punitive damages

the LABEL

What is
“intellectual property”?

“intellectual property
infringement”


“intellectual property
infringement”

What is
“intellectual property”?

Is it
“property”?

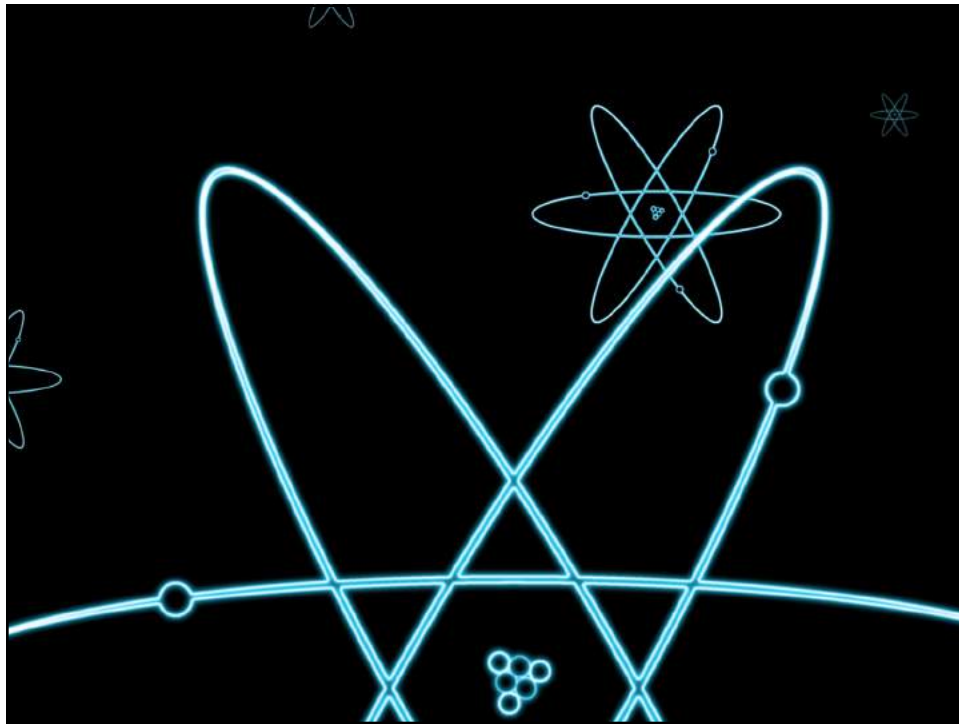
Is it
“property”?
It depends on who you ask.

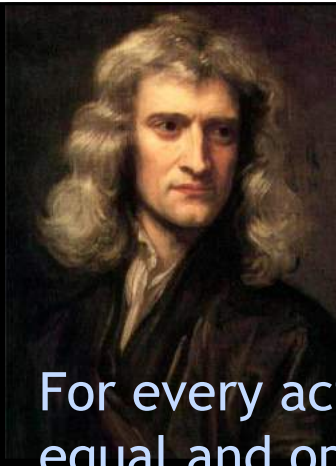
Is the right to receive
government welfare
property?

Is a professional license
property?

Is a government pension
property?

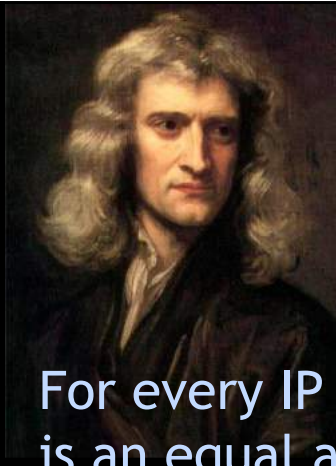
What's
“intellectual”
about it?





Newton's Third Law of Motion

For every action, there is an
equal and opposite reaction

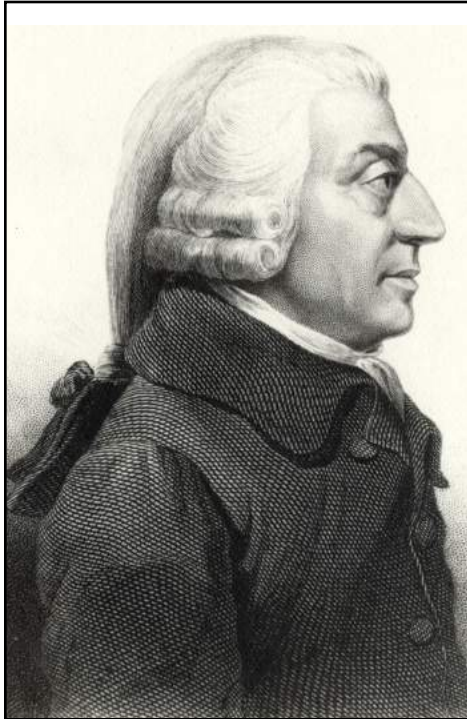


Newton's Third Law of IP

For every IP entitlement, there
is an equal and opposite
reduction in freedom.

Why is
intellectual
property law
necessary?

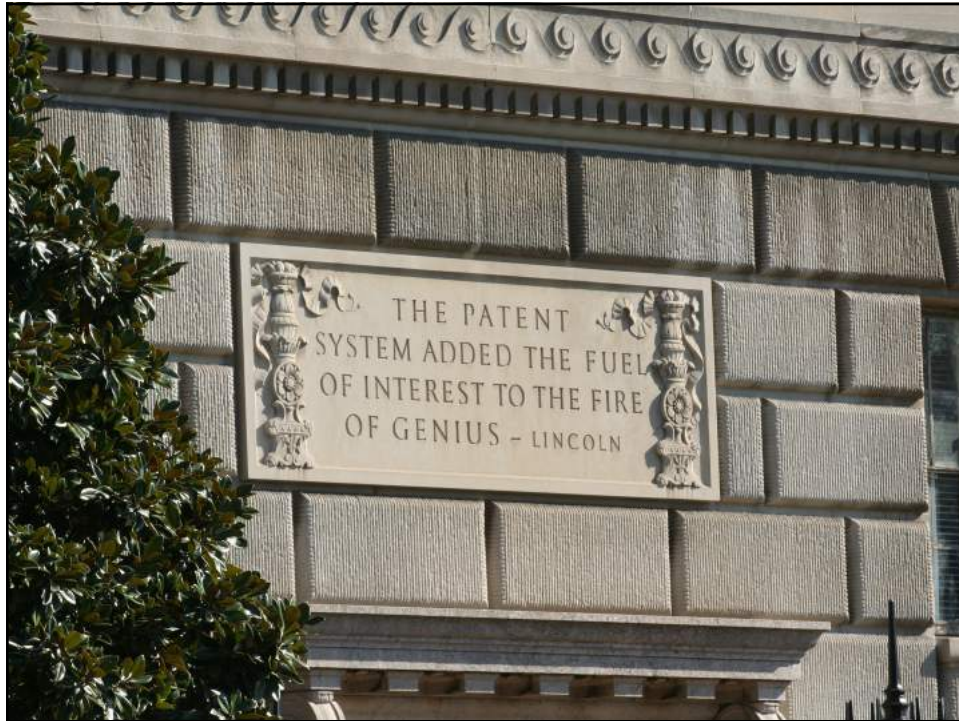
*Classical
Economics*



Adam Smith







*To promote the Progress of Sciences and useful Arts,
by securing for limited Times to Authors and Inventors
the exclusive Right to their respective Writings and
Discoveries;*

How did
intellectual
property law
come to be?

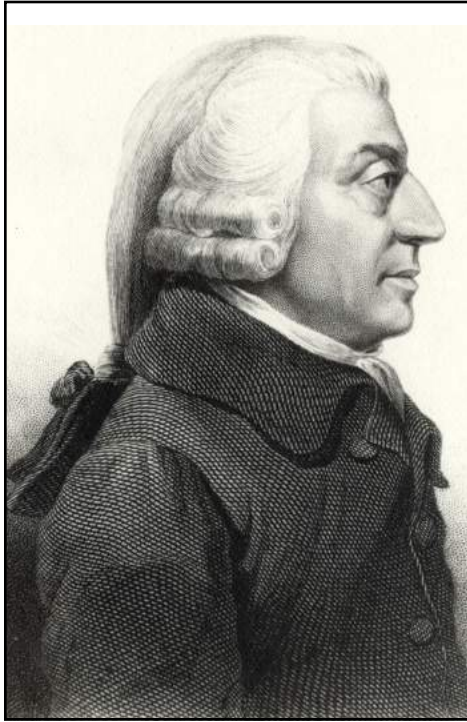




Queen Elizabeth



Queen Anne



Adam Smith

*To promote the Progress of Sciences and useful Arts,
by securing for limited Times to Authors and Inventors
the exclusive Right to their respective Writings and
Discoveries;*

raison d'être

d'être  **raison**