Preliminaries

The Basic Framework and Initial Questions

Eric E. Johnson

ericejohnson.com

Roadmap:

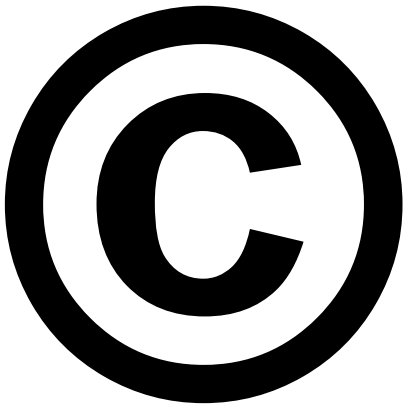
- What is intellectual property?
  - The kinds of IP
  - Comparisons
  - The label "intellectual property"
- Why is IP law necessary?
- How did IP law come to be?

What is intellectual property?

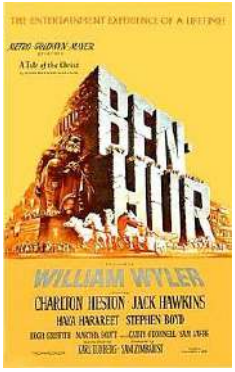
the kinds of IP

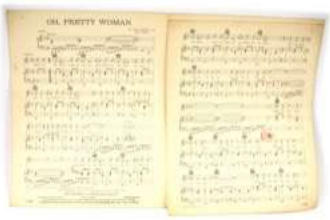
What is
“intellectual property”?

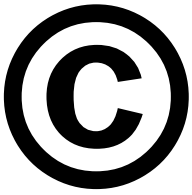
Copyrights
Trademarks
Patents
Trade Secrets
Rights of Publicity



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

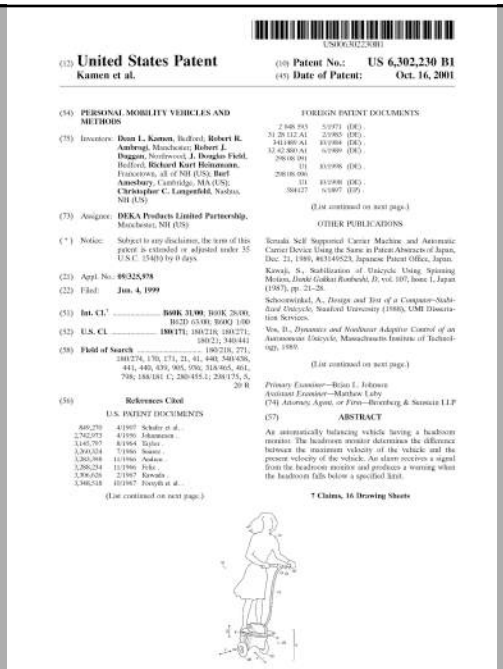
Copyright ©

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

PAT.

Patent

Patent



US006302230B1

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

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

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

(75) Inventors: **Dean L. Kamen**, Bedford; **Robert R. Ambrogi**, Manchester; **Robert J. Duggan**, Northwood; **J. Douglas Field**, Bedford; **Richard Kurt Heinzmann**, Francestown, all of NH (US); **Bael Amesbury**, Cambridge, MA (US); **Christopher C. Langenfeld**, Nashua, NH (US)

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

(*) 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.: **09/325,978**

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(51) **Int. Cl.**[7] **B60K 31/00**; B60K 28/00; B62D 63/00; B60Q 1/00

(52) **U.S. Cl.** **180/171**; 180/218; 180/271; 180/21; 340/441

(58) **Field of Search** ..... 180/218, 271, 180/274, 170, 171, 21, 41, 440, 340/438, 441, 440, 439, 905, 930; 318/565, 461, 708; 188/181 C; 280/455.1; 238/175, 5, 20 R

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Primary Examiner—Brian L. Johnson
Assistant Examiner—Matthew Luby
(74) *Attorney, Agent, or Firm*—Bromberg & Sunstein LLP

(57) **ABSTRACT**

An automatically balancing vehicle having a headroom monitor. The headroom monitor determines the difference between the maximum velocity of the vehicle and the present velocity of the vehicle. An alarm receives a signal from the headroom monitor and produces a warning when the headroom falls below a specified limit.

7 Claims, 16 Drawing Sheets

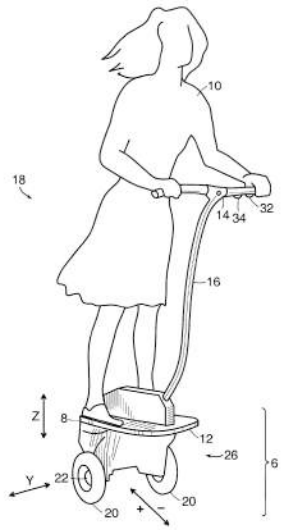


FIG. 1

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 subjects. Typically, such vehicles rely upon static stability, being designed so as to be stable under all foreseen 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 points 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 stair-climbing vehicle described in U.S. Pat. No. 4,790,548 (Decelles 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 module which supports a payload including the standing person, the ground-contacting module contacting an underlying surface substantially at a single region of contact; and

b. a motorized drive arrangement, coupled to the ground-contacting module, the drive arrangement, ground-contacting module and payload constituting a system, the motorized drive arrangement causing, when powered, automatically balanced operation of the system.

In a related embodiment, the ground-contacting module includes a uniball.

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

a. a ground-contacting module including two substantially coaxial wheels;

b. a platform supporting the user in a standing position substantially astride both wheels; and

c. a motorized drive arrangement, coupled to the ground-contacting module, the drive arrangement, ground-contacting module and payload constituting a system, the motorized drive arrangement causing, when powered, automatically balanced operation of the system.

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

a. a platform which supports the user;

b. a ground-contacting module, to which the platform is mounted, which propels the user in desired 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 module unless the proximity sensor has determined the presence of the user on the device.

The proximity sensor may be a member, mechanically coupled to the safety switch, having an operating position and a non-operating position, wherein the member is in the non-operating position in the absence of the user from the device and the member is moveable to the operating position when the user is on the device. The member may include a plate, disposed on the device, for receiving a foot of the user, wherein 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 semiconductive device. In a further related embodiment, the device may include a motorized drive arrangement, coupled to the ground-contacting module, the motorized drive arrangement causing, when powered, automatically balanced and stationary 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 payload including a user. The vehicle of this embodiment includes:

a. a platform which supports the user;

b. a ground-contacting module, to which the platform is mounted, which propels the user in desired motion over an underlying surface;

c. a motorized drive arrangement, coupled to the ground-contacting module, the drive arrangement, ground-contacting module and payload constituting a system, the motorized drive arrangement causing, when powered, automatically balanced operation of the system wherein the motorized drive arrangement has a present power output and a specified maximum power output and, in operation, has balancing margin determined by the difference between the maximum power output and the present power output of the drive arrangement;

d. a balancing margin monitor, coupled to the motorized drive arrangement, for generating a signal characterizing the balancing margin; and

e. an alarm, coupled to the balancing margin monitor, for receiving the signal characterizing the balancing margin and for warning when the balancing margin falls below a specified limit.

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

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

a. a platform which supports a payload including the user,

b. a ground-contacting module, mounted to the platform, including at least one ground-contacting member and defining a fore-aft plane;

c. a motorized drive arrangement, coupled to the ground-contacting module, the drive arrangement, ground-contacting module and payload constituting a system, the motorized 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 fore-aft plane when the motorized drive arrangement is not powered; and

d. a user input control that receives an indication from the user of a specified pitch of the device under conditions of motion at uniform velocity.

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

Patent PAT.

Protects	machines, inventions
Requires	novelty, some level of cleverness (nonobviousness, inventive step), and some other things
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

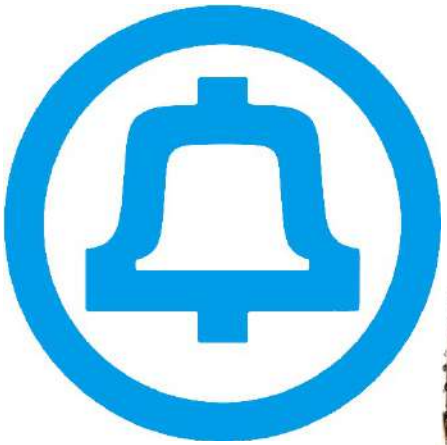
Trade Secret

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



®

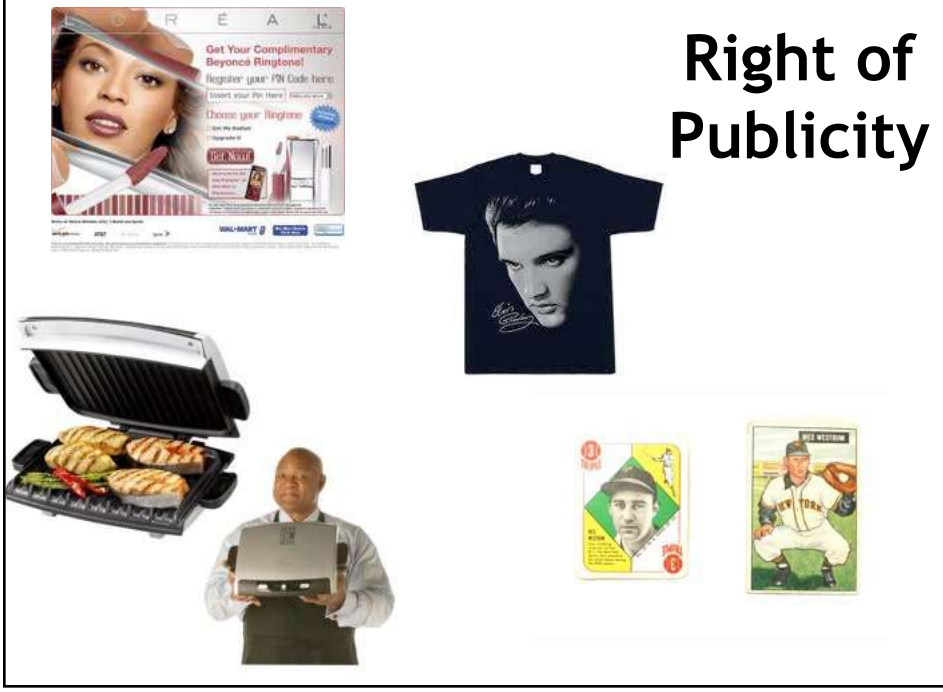
Trademark

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	provides information to consumers, which helps the market function better, increasing economic efficiency

Right of Publicity



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	*[nothing]*
Lasts	lifetime; post-mortem in some states
Theory	? ? ? ?

You

own intellectual property

Comparisons

What is protected?

©	Expression (text, images, recordings)
Pat.	Inventions
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	*Nothing*
Right of Publicity	*Nothing* (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 (it stays secret and there are continued efforts to keep it secret)
Right of Publicity	Nothing

How long does it last?

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

How is it lost?

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

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

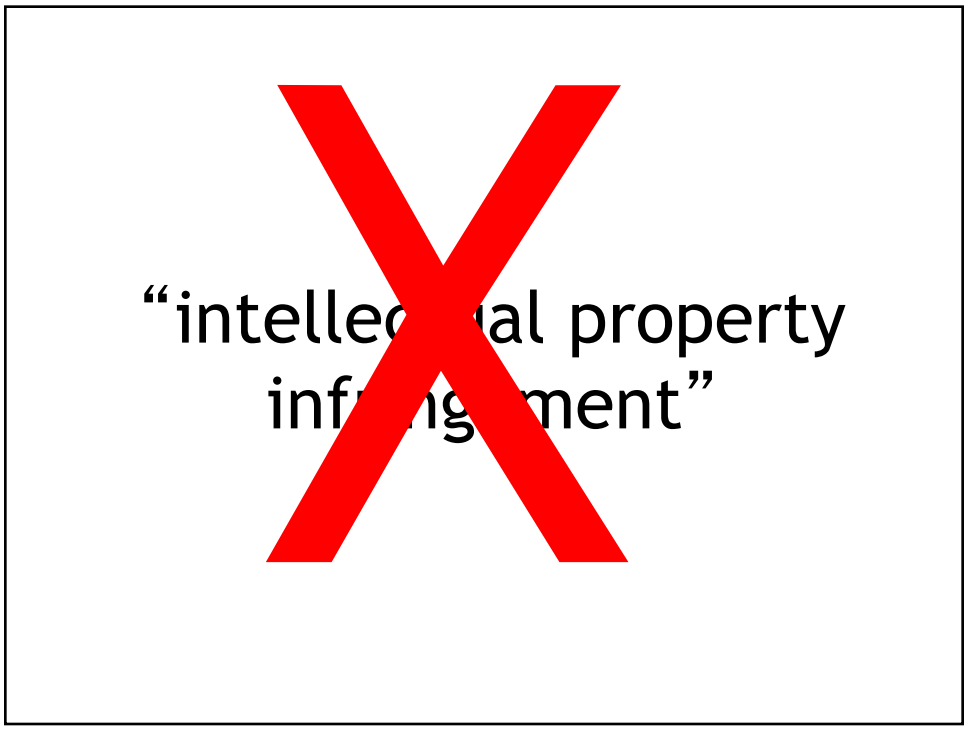
Remedies include ...

©	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”



What is
“intellectual property”?

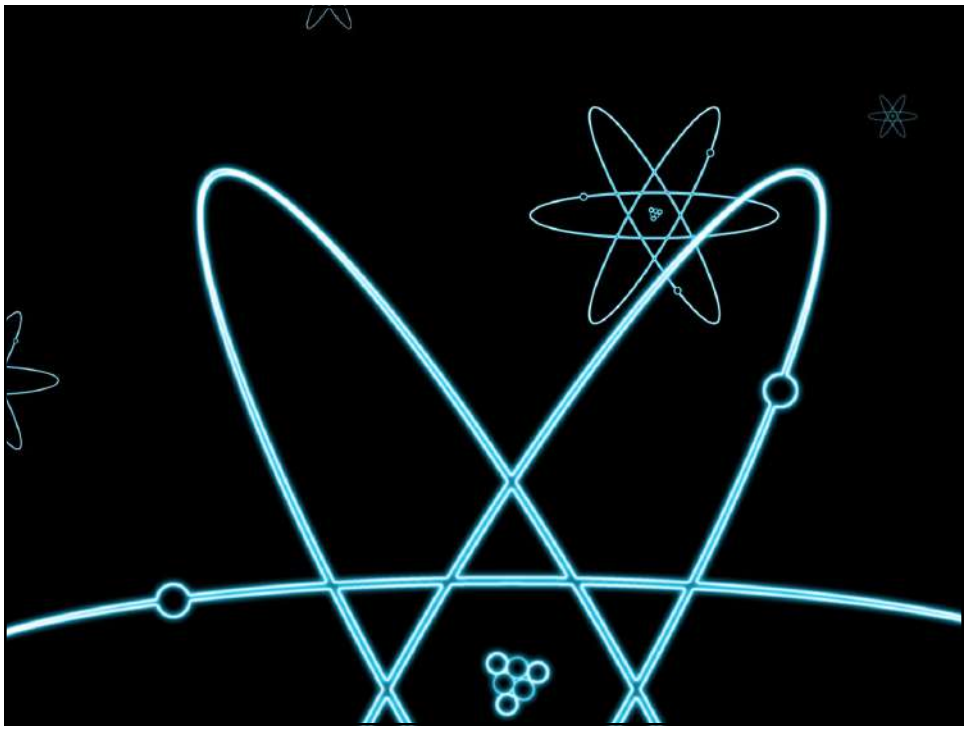
Is it
"property"?
It depends on who you ask.

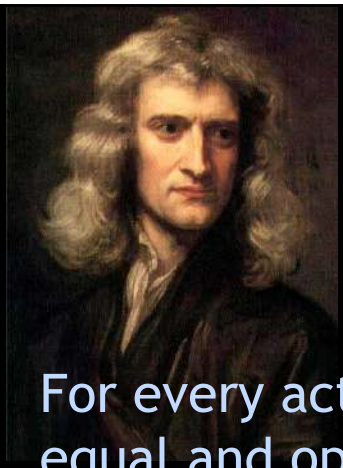
Is the right to receive government welfare property?

Is a professional license property?

Is a government pension property?

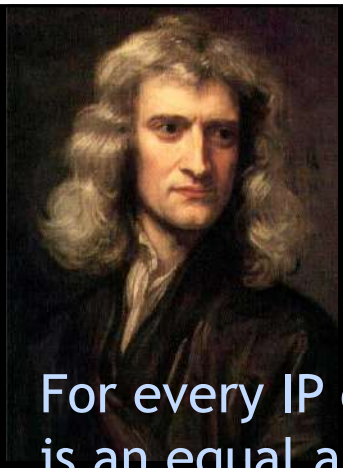
What's "intellectual" about it?





Newton's Third Law of Motion

For every action, there is an equal and opposite reaction

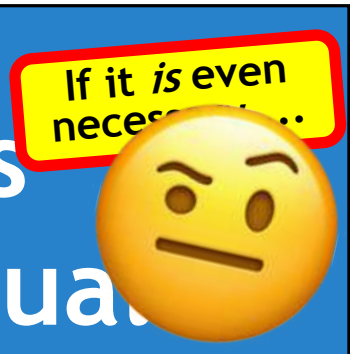


Newton's Third Law of IP

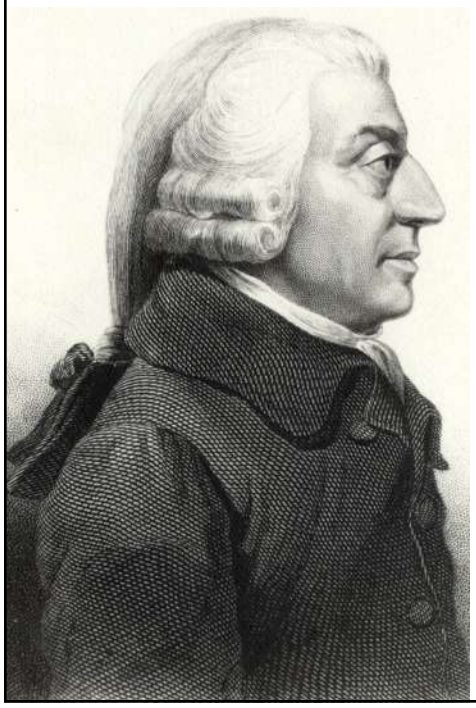
For every IP entitlement, there is an equal and opposite reduction in freedom.

Why is intellectual property law necessary?

Why is intellectual property law necessary?



Classical Economics



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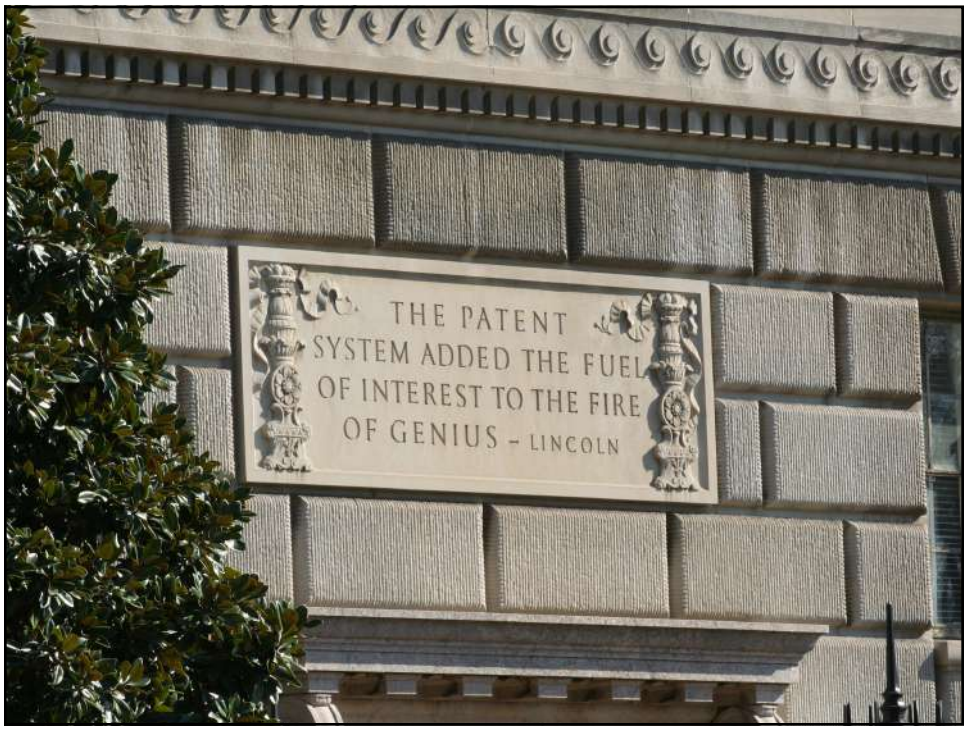
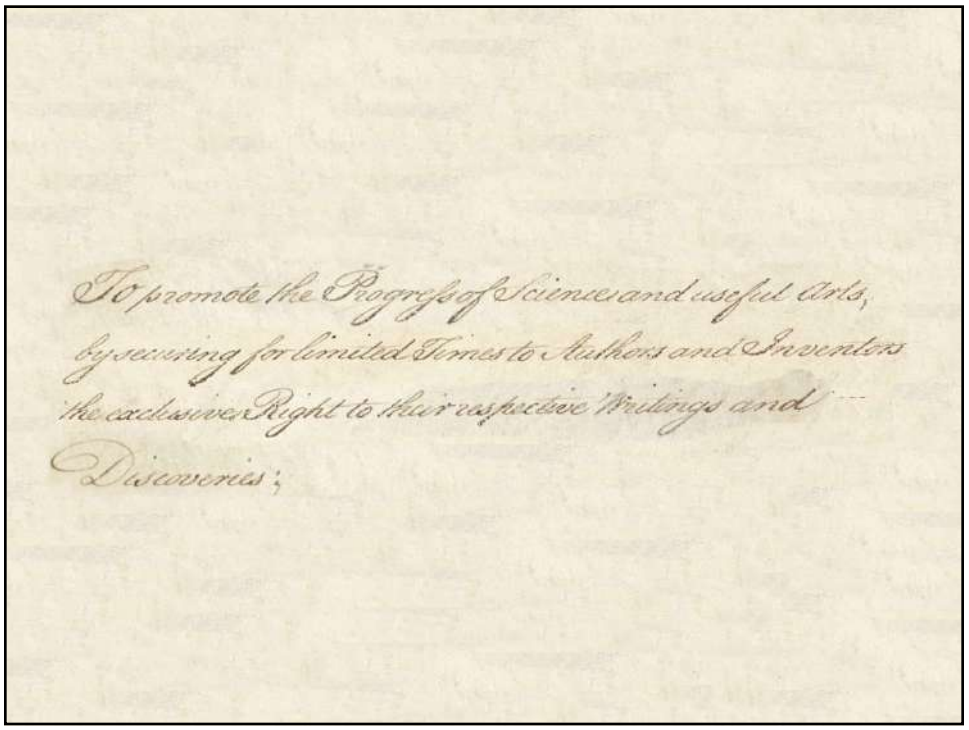
excludability
rivalrousness


nonexcludable
nonrival


The compensation / incentive problem

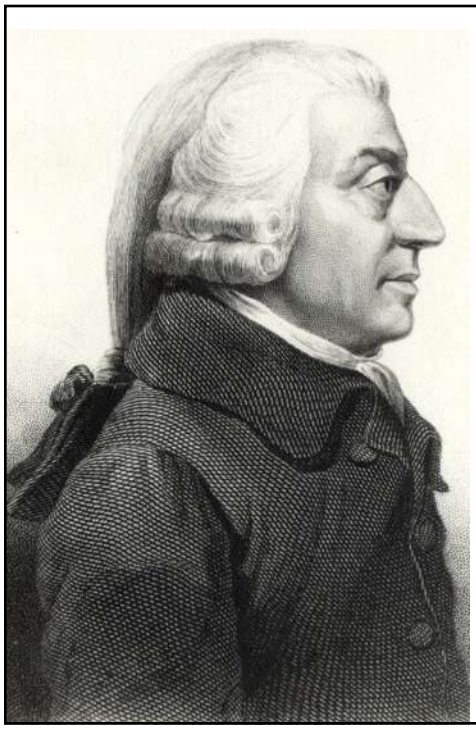

THE PATENT
SYSTEM ADDED THE FUEL
OF INTEREST TO THE FIRE
OF GENIUS – LINCOLN



How did intellectual property law come to be?


Queen Mary


Queen Elizabeth



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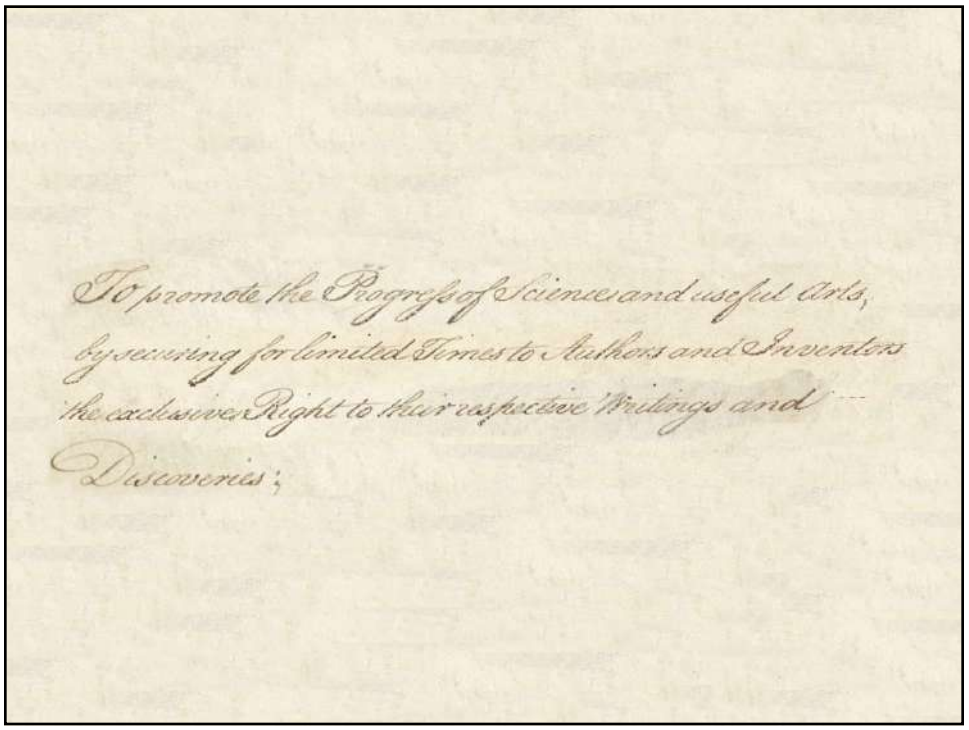

raison d'être

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