The Ledger

Federal Reserve Bank of Boston's Economic Education Newsletter Fall 2000

In this issue

This issue of The Ledger focuses on intellectual property – how the concept evolved and how it affects our lives.

The Loud Noise Over "Free" Music

Robert Jabaily

Associate Editor, Federal Reserve Bank of Boston

A teacher walks into a classroom and says, "Today we're going to discuss intellectual property rights." Students react by:

a) yawning

b) tilting back their heads

c) stretching out their legs

d) all of the above.

The correct answer is all of the above. (And that's on a good day!)

Of course, there are days when no matter what a teacher does, students don't feel like talking. No one is to blame. It's just a fact of life.

But when a topic captures their imagination — AND they are in the mood to talk — students will open up. And when that happens, there's a sense that something very special is taking place in the classroom.

Can that happen even when the subject is economics and the topic is intellectual property? Yes! And the challenge isn't as tough as it seems.

Just mention the word "Napster" to a classroom full of middle school or high school students, and you're likely to trigger a passionate exchange of ideas, or at least a passionate expression of opinions. And from there, it's not much of a stretch to get everyone talking about intellectual property, enforcement of property rights, incentives, and all the other economic issues embedded in the current controversy over sharing copyrighted music via the Internet.

What Is Napster?

Napster, MP3, P2P — it's hard to keep them all straight. So, let's review some of the basics.

Napster is both the name of a software program and the name of the company that developed it. The software is free. Once you download it, you can browse the Napster database to see if other users have the music file (song) you're looking for. Then you can store the file on your computer's hard disk and listen to the song whenever you like. Some people store dozens, or even hundreds, of music files on their computer's hard disk.

The files are known as MP3s, which is shorthand for MPEG audio Layer-3. MP3 technology makes it possible to compress all the digital information on a music CD into a file that's relatively quick to download — with little loss of sound quality.

MP3 files have been around since the early 1990s. What Napster did was to make it easier for individual users (or peers) to share files via the Internet. That's where the term P2P comes into play. P2P is shorthand for peer-to-peer sharing.

Napster users aren't downloading music files from the company's server. They are sharing files directly with one another and using Napster software to simplify the process.

Eighteen Months That Shook the Music Biz

In just over 18 months, the marriage of MP3 technology and Napster software dramatically changed the relationship between music listeners and the recording industry.

January 1999: Shawn Fanning, a 19-year-old college freshman, decides not to go back for second semester. He'll spend the next few months finishing up a software program called Napster. When he's done, even technically challenged Internet users will be able to swap MP3 files and listen to music — much of it copyrighted

The Ledger

Bob Jabaily, Editor

Public and Community Affairs Department
Federal Reserve Bank of Boston
P.O. Box 2076
Boston, MA 02106-2076
Or phone: (617) 973-3452

This newsletter is published three times a year as a public service by the Federal Reserve Bank of Boston. The reporting of news about economic education programs and the materials contained herein do not necessarily reflect the views of the Federal Reserve Bank of Boston or the Board of Governors.

Copies of this newsletter and a catalog of other educational materials and research publications may be obtained free of charge by writing:

Publications
Public and Community Affairs Department
Federal Reserve Bank of Boston
P.O. Box 2076
Boston, MA 02106-2076

internet:
www.bos.frb.org

e-mail:
robert.jabaily@bos.frb.org

— without paying a cent to anyone. It's a music lover's dream — a cross between the ultimate record collection and a magic radio that will play almost any song you want, whenever YOU want to hear it.

January 2000: Unless you're a college student, the name "Napster" still doesn't mean much to you. Is it a mattress? A recliner? A slacker? Who knows? Who cares? But things are about to change.

August 2000: Napster has become a full-fledged phenomenon, and Shawn Fanning's picture is showing up on the cover of *Business Week* and *Time*. Anywhere from 15 to 30 million people are sharing music with one another via the Net.

Napster users consider it a technological marvel. But record companies and some very high-profile recording artists consider it piracy, and their lawyers are suing Napster for copyright infringement. In late July, a federal judge rules that Napster is encouraging widespread copyright infringment and issues an injunction to stop the company from aiding in the exchange of copyrighted music. Within two days, another federal court lifts the injunction, but the lawsuit against Napster continues to move through the courts on a relatively fast track. The company's long-term survival may well depend on how a panel of three federal judges decides to interpret copyright laws.

Elvis, 1956
Back then, anyone who wanted to hear "The King" had only two real choics: buy his records or turn on the radio and wait.

Credit: Prints and Photographs Division, Library of Congress

Piracy or Peer-to-Peer Sharing?

Copyright battles are nothing new. Copyright protection is a well-established legal principle. Here's how a circular from the United States Copyright Office describes it:

"Copyright" literally means the right to copy. . . . The owner of copyright has the exclusive right to reproduce, distribute, and, in the case of certain works, publicly perform or display the work; to prepare derivative works; or to li-

cense others to engage in the same acts under specific terms and conditions.

Sounds fairly straightforward: You can use someone else's work only if they give you permission. And if you are going to profit from using it, you have to cut them in on the action. But like most things that sound straightforward, copyright law is open to more than one interpretation.

The music industry and Napster ended up in federal court because of a disagreement over what actually constitutes copyright infringement. The case is extremely complicated, but at the risk of oversimplifying, here are the two opposing positions:

• The way the music industry sees it, musicians and record companies are not being paid for the works they created. Are they saying that Napster is directly violating copyright? No. Rather, they're contending that Napster is making it possible for millions of Internet users to violate copyright. It's called "tributary" or "contributory" copyright infringement.

• Napster takes the position that its users are engaging in noncommercial sharing of music, an activity they say is permitted under the "fair use" provisions of copyright law.

Then there are other parties, who don't necessarily even care about music, but are concerned that a successful attempt to shut down Napster could slow the adoption of new technology and perhaps lead to greater restrictions on sharing information via the Internet.

Hilary Rosen, president and CEO of the Recording Industry Association of America, says the case "has never been about technology. Rather it is about Napster's abuse of peer-to-peer technology for its own commercial benefit."

Napster counters that it would be willing to charge users a subscription fee and provide up to 80 percent of the revenue to record companies. The initial amount mentioned – $4.95 a month – failed to generate much enthusiasm from major record labels.

But the question of subscription fees also raises another issue at stake in the Napster controversy: ultimate control over the online distribution of digital music. Will the recording industry maintain sole control, or will record companies share control with companies such as Napster?

continued

Technology and the Protection of Intellectual Property

Technology has made it possible for singers and songwriters to reach a much wider audience, but it has also made it harder for them to control access to the work they've created. And the pace of technological change is raising new issues that are forcing everyone to re-examine established ways of doing business.

1850 **Jenny Lind, "The Swedish Nightingale," captivates American audiences. With P. T. Barnum as her promoter, Ms. Lind performs 150 concerts in 19 U. S. cities. The tour is an artistic triumph and a financial success. Anyone who wants to enjoy Jenny Lind's beautiful voice has only one option: buy a ticket.**

1878 **Thomas Edison patents the phonograph. The invention will ultimately make it possible to hear the world's most talented and popular singers without ever leaving home. But recording artists and promoters still control access to their product because consumers must pay to buy records.**

1920 **The first American commercial radio station – KDKA in Pittsburgh – goes on the air. Music comes to listeners' homes via the airwaves. And it's free! But there's a catch: You have no direct control over what you hear. You can listen to the radio all day and still not hear your favorite song.**

1975-1985 **Cassette players and VCRs give consumers the capability to copy their favorite music and movies. Not only that, but they can also share the copies with their friends. But the sharing takes place on a fairly limited scale. Most people are sharing the tapes only with family and friends.**

1999 **Napster makes it possible for consumers to swap free music on a massive scale. Users are downloading free music files off the computers of complete strangers.**

2000 **According to the Pew Internet & American Life Project's Online Music Report:**

- **"78% of Internet users who download music don't think it's stealing to save music files to their computer hard drives."**
- **"21% of online music consumers say they have ended up buying the music on a CD or cassette 'most of the time.'"**
- **"26% of music downloaders say they have 'never' bought a CD or cassette of the music they have captured online."**
- **"The number of files per user library on Napster has been steadily increasing since our June 2000 report. At that time there were approximately 100 songs per user library. The current average [September 2000] is 140 songs per user library."**

Things to Think About

• Here's a question that everyone seems to be asking in one form or another: Why is it that people who would never dream of stealing a CD from a record store seem so untroubled by downloading copyrighted music?

• What impact has Internet/digital technology had on the enforceability of copyright laws?

• If copyright laws become tougher to enforce, some singers and songwriters could end up making less money. What effect would that have on their willingness to create new works or to continue applying their talents?

• A 37-year-old Napster user told *The New York Times* that he downloads digital files of songs that he bought in the 1970s but can't listen to because he no longer owns a turntable: "I bought the right to listen to King Crimson 15 years ago. I'm just making a digital copy of what I have in my closet."

What do you think?

Resources

1. *How Stuff Works* is a web site that delivers just what its title promises: clear explanations of how things work. Napster, MP3 – it's all there.
www.howstuffworks.com

2. It's almost impossible to look at a magazine or newspaper without seeing an article about the online music controversy. For those who want more detail, *The New York Times* web site carries an extensive collection of articles.
http://forums.nytimes.com/comment/index-tech.html

3. The Pew Internet & American Life Project's Online Music Report
www.pewinternet.org

4. United States Copyright Office
http://lcweb.loc.gov/copyright/

5. United States Copyright Office
A Brief History and Overview
www.loc.gov/copyright/docs/circ1a.html

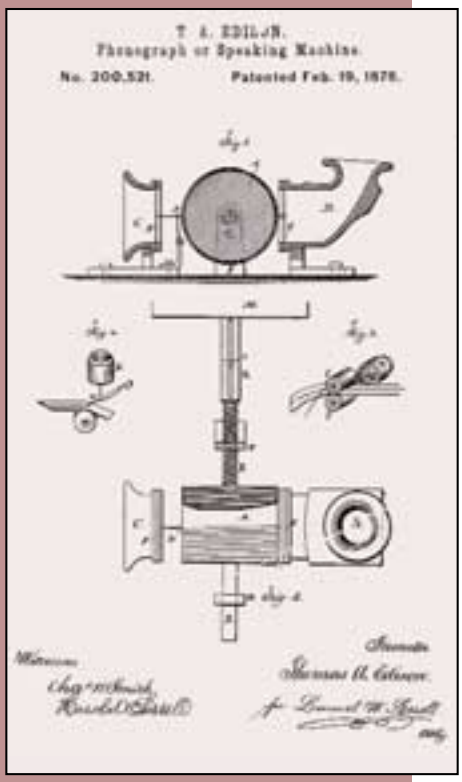
6. U.S. Patent and Trademark Office Museum
www.uspto.gov/web/offices/ac/ahrpa/opa/museum/

7. *Thomas A. Edison Papers*, a web site hosted by Rutgers University, offers an interesting look at an inventor who knew a thing or two about protecting his intellectual property rights.
http://edison.rutgers.edu/taep.htm

Patents, Trademarks, Trade Secrets, and Copyright

Article I, Section 8 of the United States Constitution gives Congress the power to ". . . promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

Those "Writings and Discoveries" are what we now refer to as intellectual property, and federal law provides four ways to protect various forms of intellectual property:


T. A. EDISON.
Phonograph or Speaking Machine.
No. 200,521. Patented Feb. 19, 1878.

• Patents grant exclusive rights for up to 20 years on inventions, useful processes, certain agricultural innovations, and certain types of ornamental or distinctive designs.

• Trademarks protect words, names, symbols, sounds, or colors that distinguish a product or service. Registered trademarks can be renewed forever.

• Trade secrets protect information that gives companies an advantage over competitors. (The formula for a certain well-known soft drink is an example of a trade secret.)

• Copyright protects "original works of authorship," including the works of writers, composers, filmmakers, dramatists, sculptors, and photographers. (Even pantomime can be protected by copyright!) Copyright protection lasts for the life of the author plus 50 years.

(Excerpted from *What Is Intellectual Property?*, United States Office of Patents and Trademarks, www.uspto.gov)

Whose Words Are They?

Internet Churns Up Copyright Waters

Scott Guild
Director of Economic and Museum Education
Federal Reserve Bank of Boston

Visit the Internet today, and you'll find a multitude of sites offering students information, essays, and term papers they can submit unaltered and uncited as their own work. The proliferation of these sites draws new attention to the age-old problem of taking personal credit for the work of others.

Arguably the worst scholarly infraction that can be committed, plagiarism is simple to define:

1. The act of plagiarizing or appropriating the ideas, writings or inventions of another without due acknowledgement; specif. the stealing of passages either word for word or in substance, from the writings of another and publishing them as one's own.

2. A writing, utterance, or invention stolen from another. [1]

Getting away with plagiarism used to be more difficult because resources available for student research were somewhat restricted. Students based their research on the writings of a limited number of experts in a particular field or discipline. Teachers were generally quite familiar with the work of these experts. Either they had read the works cover-to-cover themselves, or they were at least familiar with the major ideas and concepts contained in these materials. This familiarity made it difficult for students to pass off others' intellectual work as their own.

Today, with the Internet, sources of information have grown exponentially. The resulting free exchange of ideas, instant access to information, and lower barriers between disciplines have created a research world not only of almost unlimited sources but also of tempting opportunities for shortcuts in completing assignments. In researching this article, I came across a web page that identified 30 separate sites whose sole purpose was to make essays and term papers available on-line to students. The individual web sites had as few as one hit per day to as many as 437. As of August 1, 2000, the total number of hits for these 30 sites ranged from 101 hits to 180, 267.

Copyright and Fair Use

One of the most alluring aspects of the Internet is its capability to promote the free exchange of ideas. No less a person than Thomas Jefferson has expounded eloquently on the merits of a free exchange of ideas. Imagine if he could have foreseen the Internet!

Interestingly, copyright laws both rein in the Internet's free exchange of ideas and facilitate it.

> *He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property.*
>
> *— Thomas Jefferson*

Copyright laws offer protections to authors so authors are willing to make their materials available and to let others use them — up to a point.

When Thomas Jefferson and other creators of the Enlightenment designed the system that became American copyright law, their objective was to assure a widespread distribution of thought. Being able to profit from the sale of one's book was seen as the fuel that would carry ideas into the minds, libraries, and bookstores of the Republic.

Copyright laws exist for three basic reasons:

(1) to reward authors for their creative work;

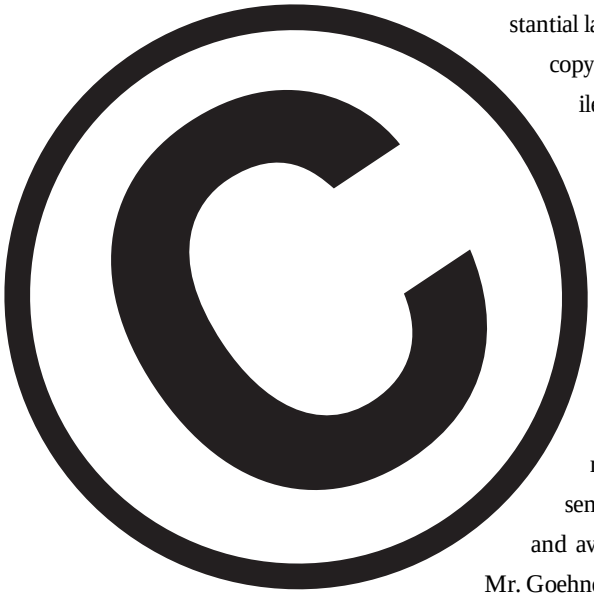
(2) to encourage the availability of the work to the general public; and

(3) to facilitate access to, and use of, the work in

[1] Funk and Wagnalls New Standard Dictionary (1921).

appropriate public situations.

With the advent of copy machines, faxes, and computers, educators would seem to be putting themselves into a compromising situation when simply seeking to provide their students with current and accurate information. Teachers and professors regularly copy pages and segments of books in an attempt to provide their students with timely resources for study.



Fortunately, educators have substantial latitude with the limits of copyright. The "fair use privilege" covers most photocopying that educators do. An authority in this area is Duane Goehner, a Seattle-based consultant in computer technology, web design, and anti-piracy/copyright. In a paper presented at a 1997 conference and available on his web site, Mr. Goehner observes, "Without the 'fair use' privilege, copyright would not serve its constitutional purpose 'to promote the Progress of Science and useful Arts.'" [2]

To determine fair use, four factors are considered:

(1) the purpose and character of the use, including whether such use is of a commercial nature or is for non-profit educational purposes;

(2) the nature of the copyrighted work;

(3) the amount and sustainability of the portion used in relation to the copyrighted work as a whole; and

(4) the effect of the use upon the potential market for, or value of, the copyrighted work.

All four factors are considered when trying to determine if a use of copyrighted material is fair. According to Mr. Goehner, as long as the intent of teachers and professors is for "productive" or "intrinsic" purposes (such as for criticism or scholarship), then their copying of the material is protected and legal. What is not protected is use of the material by the teacher for commercial or financial purposes.

Help from the Cause

Copyright and fair use rules do not begin to address all the problems regarding appropriate use of digitized property.

Ironically, the very tool that has enabled such "piracy" of others' ideas is also beginning to provide the means for combating such activity. There are now web sites that can assist teachers and professors in identifying papers from Internet term paper mills. Similarly, there are useful web sites to assist students in avoiding plagiarism and any potential academic impropriety. Here are some of these web sites:

- *Plagiarized.com: The Instructors Guide to Internet Plagiarism* at www.plagiarized.com provides online training, research advice, and examples of "dead giveaway" cheating. It was developed by Gregory Senechal.
- The University of California at Davis has a web site, *Avoiding Plagiarism*, http://sja.ucdavis.edu/sja/plagiarism.html, designed to help with just that. It is dedicated to assisting students in "mastering the art of scholarship." It provides citation methods and guidelines for avoiding plagiarism. It states that ignorance of what plagiarism is does not excuse a violation.
- *The Columbia Guide to Online Style*, developed by Janice R. Walker and available at http://www.columbia.edu/cu/cup/cgos/idx_basic.html, provides a guide to citation of online documents in both humanities and scientific formats. Her work in this area has been cited in *Internet News*, *USA Today*, and the *Chronicle of Higher Education*.

The above list is far from exhaustive. It is, however, representative of the type and quality of web assistance available to help teachers and students make wise academic use of the web.

Whose Words Are They?

[2] "An Ethical Edge in Education: Cognizance of Copyrights and Copy Wrongs." Duane Goehner. Paper presented at international conference, Seattle, Washington, October 1997. Available at http://goehner.com/copyright.htm.

Paradigm Shift: New Resource from FRB

In many ways, the Internet allows for the disintermediation of — replacement of — the traditional role of the teacher/professor. The student is able to access information without going through the screen of the instructor. Though efficient, this immediate and ubiquitous access to information may not be as effective as the traditional route, since it requires students to do the screening process previously performed by the teacher or professor.

There are two potential challenges and one significant drawback to this approach:

- The first challenge is for students to become more critical readers and to be more selective in the information they use.
- The second challenge is for teachers to spend more time nurturing critical thinking rather than information transfer.
- The drawback is that, if these challenges are not both met, the result could be role confusion and weak scholarship.

The best of all possible worlds would be to use technology to shift the paradigm and change the existing ratio of one teacher to a classroom of students to one student to a network of experts.

Such a paradigm shift is currently under development at the Federal Reserve Bank of Boston. Through our ResearchNet, which is in the early stages of development, students doing primary economic research will be supported by a network of experts and other resources brought together for this specific purpose. Using guidelines similar to those for the National History Day competition, students will research their community's economic history. They will then choose from a variety of formats — videotape, audiotape, a poster exhibit, a publication, a web site — to produce a final project.

For more information on ResearchNet, please contact Scott Guild, director of economic and museum education at the Boston Fed, at 617/973-3639.

High School Students May Enter Two Fed-Sponsored Competitions

Rob Wedge
Economic Education Specialist
Federal Reserve Bank of Boston

For the sixth consecutive year, the Federal Reserve Bank of Boston will offer the Fed Challenge to high school students. This competition asks students to simulate the roles of Federal Reserve monetary policymakers. It encourages the development of important skills such as research, decision-making, argument formulation, and effective communication.

For the second year in a row, the Boston Fed will offer the Economics Challenge. Broader in scope than the Fed Challenge, this competition asks students to draw on their knowledge and understanding of all aspects of economics.

Fed Challenge

Each five-member Fed Challenge team makes a 15-minute presentation before a panel of judges at a mock, modified meeting of the Federal Open Market Committee, the Federal Reserve's monetary policy arm. Presentations include, but are not limited to, the following:

1. Analysis of current economic conditions as of the day of the competition;

2. Predictions about economic, financial, and international conditions in the near term that would be of special significance for the development of monetary policy, such as inflation, unemployment, real GDP growth, and other economic policy indicators;

3. Explanation of issues that should receive special attention in formulating current monetary policy;

4. Recommendations to the Federal Reserve to maintain or alter (and to what degree) the current course of monetary policy.

Following a team's presentation, the judges lead the team through a 15-minute question-and-answer session. The judges' questions range from issues raised in the team's presentation to requests for clarification of data to student interpretation of recent economic events.

The competition consists of three rounds: a preliminary round held at several locations in New England; a New England district final held at the Boston Fed; and a national final at the Board of Governors in Washington, DC. A box accompanying this article provides more information on dates and locations for the various rounds.

A Fed Challenge orientation session for teachers in the First District will be held on Friday, January 26, 2001, at the Federal Reserve Bank of Boston, from 8:00 a.m. to 2:00 p.m.

Since the first competition in 1996, the Fed Challenge has caught the attention of the business world. It has received various corporate recognitions:

• Citibank has established the Citibank Scholarships and Grants for the Fed Challenge. As a result, the team that wins the National Championship will be awarded $40,000, composed of $25,000 in scholarships ($5,000 per team member), a $5,000 achievement award (for the teacher), and a $10,000 grant to set up an in-school economics laboratory.

Each of the three other national finalist teams will take home a total of $15,000, composed of $10,000 in scholarship money ($2,000 per student), a $2,000 achievement award (for the teacher), and a $3,000 grant to set up an in-school economics laboratory.

• *The New York Times* Newspaper-in-Education Program will provide newspapers to Fed challenge participants in areas served by *The New York Times* delivery services and a special gift to the teacher and members of each Federal Reserve District champion team.

• The McGraw-Hill Companies will sponsor a recognition dinner in Washington, DC, for all students and teachers of Federal Reserve District champions.

• The Fed Challenge has been endorsed by the

Wharton School at the University of Pennsylvania, the National Academy Foundation, and The Conference Board.

If you are in the First District and have questions about the Fed Challenge, please contact the Boston Fed at the following toll free number:

1-800-409-1FED (or 1333)

Within the 617 area code, call (617) 973-3639. Or check out our Fed Challenge web address: http://www.bos.frb.org/educate/fedchal/fedchal.htm.

If you are outside the First District and would like more information, please contact the Federal Reserve Bank in your District.

Economics Challenge

Each Economics Challenge team consists of three to five members. Each team member answers a 20-minute, written test consisting of 15 multiple-choice questions. The sum of the top three individual scores on each team represents the team score. The test covers the following six areas: microeconomics, macroeconomics, international economics, current events, financial literacy, and economic history.

Schools are divided into two groups: (1) college preparatory and honors classes, and (2) advanced placement or college-in-the-schools program. The top three teams from each group advance to the team final. The top three individual scorers from each group move on to the individual final.

The individual and team finals are college-bowl style competitions, with the first to the buzzer having the opportunity to answer the question. Contestants in each final are asked 30 open-response questions picked randomly from the six areas. A maximum of 15 minutes is allowed for each final.

Following the finals, there is an awards ceremony at which individual and team prizes are awarded.

Because of the tremendous response to the 2000 pilot competition, the Boston Fed will conduct the 2001 Economics Challenge in two rounds. State competitions will take place in each state during the week of April 23. The winners in the two groups, AP and non-AP, will advance to District finals at the Federal Reserve Bank of Boston on May 3.

For more information about the Economics Challenge for the First District, please contact the Boston Fed at the following toll free number:

1-800-409-1FED (or 1333)

Within the 617 area code, call (617) 973-3639. Or go to our Economics Challenge web address: http://www.bos.frb.org/educate/html/econcha.htm. (And if you are interested in taking last year's multiple-choice section, check the same location.)

If you are outside the First District and would like more information, please contact the Federal Reserve Bank in your District.

2001 Fed Challenge Schedule

Teachers Orientation
Friday, January 26 — FRB Boston
8:00 a.m. to 2:00 p.m.

Preliminary Rounds
March 8 — FRB Boston
March 22 — FRB Boston
March 23 — northern New England (site to be determined)
March 27 — FRB Boston
March 28 — FRB Boston
March 30 — University of Connecticut, West Hartford

New England District Final
April 3 — FRB Boston

National Final
April 28-30 — Board of Governors, Washington, DC

2001 Economics Challenge Schedule

Preliminary Rounds in Each State
April 23-27 — locations to be announced

First District Finals
May 3 — FRB Boston

Previous First District Fed Challenge Winners

2000: Gorham High School — Gorham, New Hampshire
1999: Choate Rosemary Hall — Wallingford, Connecticut
1998: Choate Rosemary Hall — Wallingford, Connecticut
1997: Gorham High School — Gorham, New Hampshire
1996: Hyde Park High School — Boston, Massachusetts

2000 Economics Challenge Winners

Team Winners
1st Place: Mississquoi Valley Union High School — Swanton, VT
2nd Place: Boston Latin School — Boston, MA
3rd Place: The Bromfield School — Harvard, MA

Individual Winners
1st Place: Michael Sharrow — Mississquoi Valley Union High School
2nd Place: John Abrashkin — Northampton High School, Northampton, MA
3rd Place: Brook Wilson — Mississquoi Valley Union High School

Patents in America: Over 350 Years of Ingenuity

Michael Stewart
Economic Education Specialist
Federal Reserve Bank of Boston

Patents are one of many ways to protect intellectual property. Today, anyone who "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." Patents grant the holder the right to "exclude others from making, using, offering for sale, selling or importing the invention."[1]

What does all this mean? It means that a person who comes up with a design for a new invention or a new way of doing something, so long as it is original and useful (useful meaning that your invention or process actually works), can, in fact, exclude all others from making, using, selling, or importing that design or process. Economically speaking, patents grant their holders a monopoly.

Intellectual property has been getting a lot of press lately, but the concept of intellectual property goes back hundreds of years. Great Britain holds the record for the longest continuous patent tradition. British patents date back to the fifteenth century, when Henry VI granted John of Utynam a 20-year monopoly on a process for making stained glass windows in 1449. This is the earliest known British patent.

The British patent system was in turn carried over to the North American colonies. The first industrial patent in America was granted over 350 years ago to a man named Joseph Jenks in what is now Saugus, Massachusetts.

At 16 years of age, Jenks, like other seventeenth century English artisans, was apprenticed to a master craftsman for a period of seven years. During that time, Jenks learned all the skills necessary to practice his chosen trade, sword-making. After practicing his trade for several years in England, Jenks left for a fresh start in the New World. By the mid 1640s, he had already set up a blacksmith shop in Maine and moved on to a new venture in Massachusetts.

On May 10, 1646, Joseph Jenks applied to the Massachusetts General Court for a patent to "Build a Mill for making of Sithes; and alsoe a new Invented Saw Mill, and

[1]U.S. Patent and Trademark Office. http://www.uspto.gov

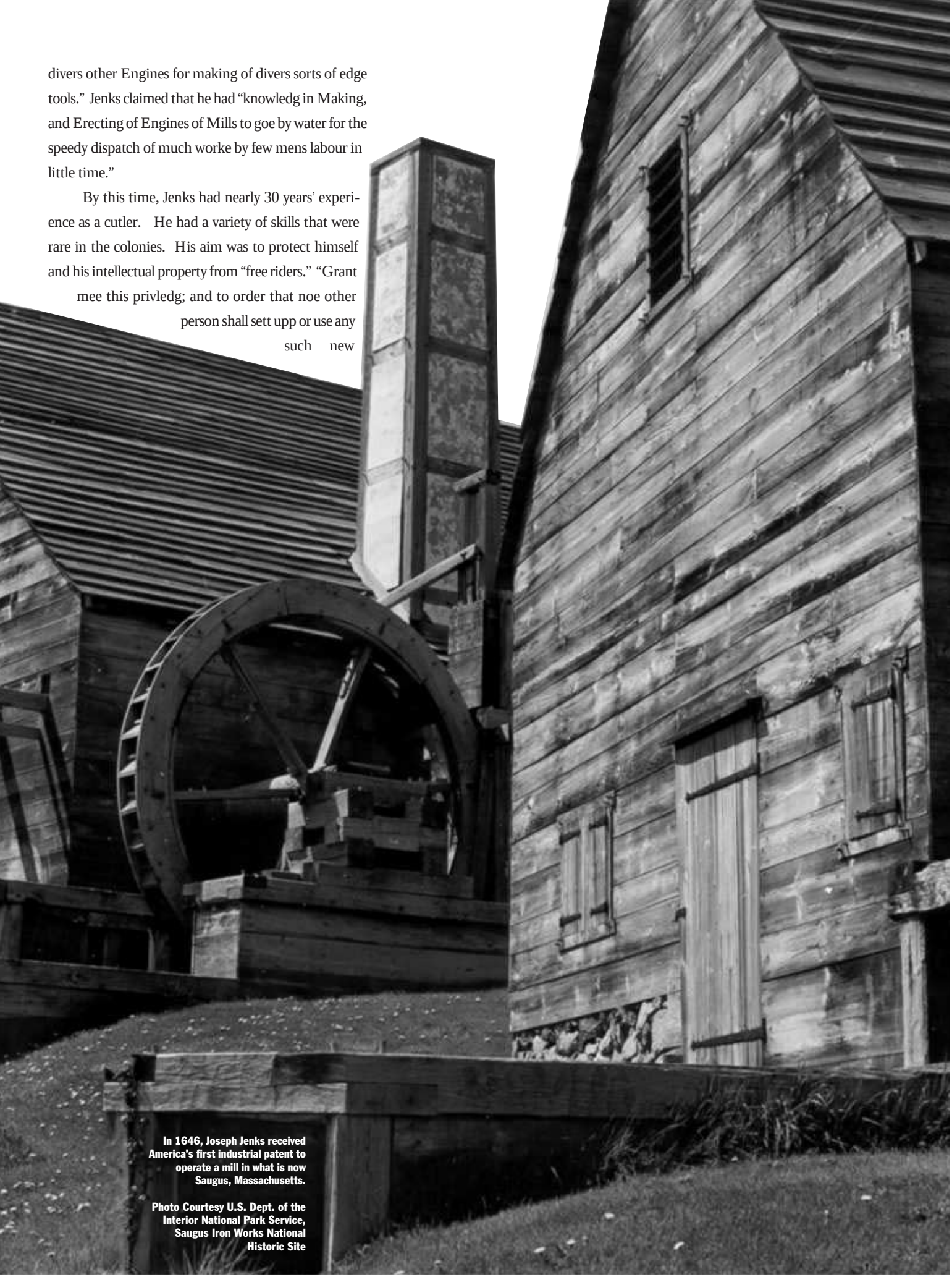
Something to Think About

1. In the history of the United States, only one President has been granted a patent. Which President was this, and what was the patent for? (answer on page 16)

2. Pick one idea you have had that you think is worth protecting from others and see if you think it meets the criteria for a U.S. patent. To find the criteria for design patents, go to the U.S. Patent and Trademark Office web site at www.uspto.gov and click on "A Guide to Filing a Design Patent Application."

divers other Engines for making of divers sorts of edge tools." Jenks claimed that he had "knowledg in Making, and Erecting of Engines of Mills to goe by water for the speedy dispatch of much worke by few mens labour in little time."

By this time, Jenks had nearly 30 years' experience as a cutler. He had a variety of skills that were rare in the colonies. His aim was to protect himself and his intellectual property from "free riders." "Grant mee this privledg; and to order that noe other person shall sett upp or use any such new



In 1646, Joseph Jenks received America's first industrial patent to operate a mill in what is now Saugus, Massachusetts.

Photo Courtesy U.S. Dept. of the Interior National Park Service, Saugus Iron Works National Historic Site

Why are ticket prices **so** high?
Is anybody worth **that** much?
Why are owners and players **always** squabbling?

Peanuts & Crackerjacks

a **FREE web-based baseball game**,
answers these questions and more.

It's all on the web. Go to www.bos.frb.org. Click on Peanuts & Crackerjacks

Patents in America: Over 350 Years of Ingenuity

invention or trade for the space of fowerteene yeeres without my licence; . . . least after your petitioner have expended his estate, study, and labour, and have brought things to perfection; Another when hee seeth it, maketh the like; and soe I loose the benefitt of that I have studies for many yeeres before."

Jenks was granted this monopoly for a period of 14 years. This 14-year limit was in accordance with the Statute of Monopolies of 1624, which made unlawful all monopolies except those "for the term of 14 years or under hereafter to be made of the sole working or making of any manner of new manufactures within this Realm to the true and first inventor."

Jenks successfully set up his "new Invented . . . Mill" on property owned by the Company of Undertakers of the Iron Works in Lynn (today this location is part of Saugus Iron Works National Historic Site). Jenks used water diverted from the tailrace of one of the Company's seven or so water wheels to power three water wheels for his own operation. He operated a saw mill and produced edged tools, among other things.

Jenks went on to apply for other patents as well. In 1655, he was granted a seven-year monopoly for the production of an "engine . . . for the more speedy cutting of grasse." Historians are not sure whether this monopoly was for a new type of scythe or a new scythe-making process. In 1672, he petitioned the General Court for permission to mint coins, but the petition was denied. Jenks lived a long and relatively prosperous life. He died in 1683, just shy of his 84th birthday.

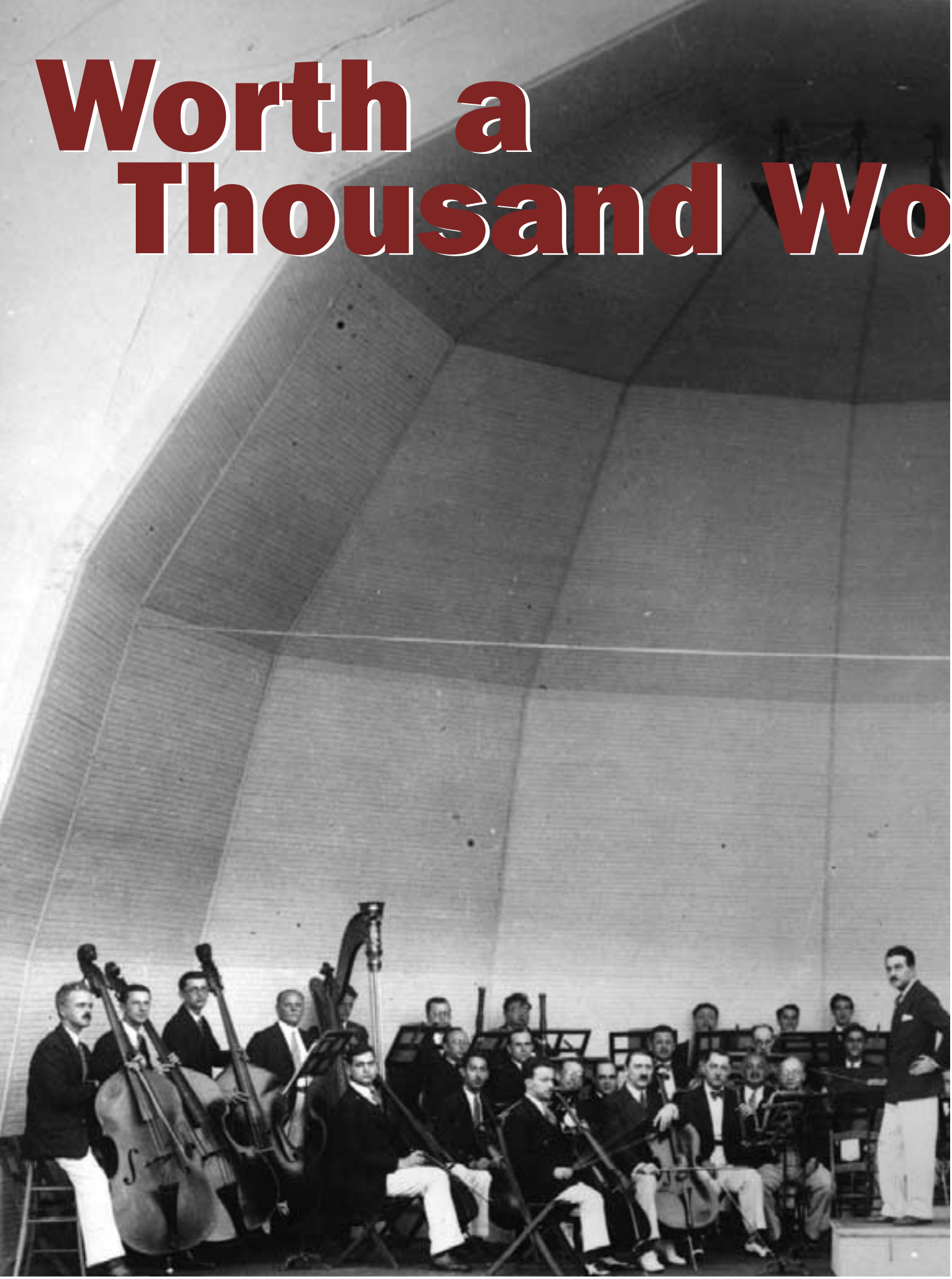
By granting exclusive intellectual property rights, patents protect and promote individual and corporate investment into research and development. In this way, patents have aided in the economic development of the United States.

To learn more about Joseph Jenks and the first industrial patent in America, visit the "Birth Place of America's Iron Industry," Saugus Iron Works National Historic Site, 244 Central Street, Saugus, Massachusetts 01960, or visit the Saugus Iron Works web site, www.nps.gov/sair. The phone number is 781/941-2372. Saugus Iron Works NHS is open every day except Thanksgiving, December 25, and January 1.

Sources

1. Stephen P Carlson, *Joseph Jenks Colonial Tool Maker and Inventor*. Eastern National Parks and Monuments Association, 1985.
2. *Petition of Joseph Jenks*. Massachusetts Archives, vol. 59. Office of the Secretary of the Commonwealth. Boston, Massachusetts.
3. *Saugus Iron Works: Official Map and Guide*. National Park Service, U.S. Department of the Interior, 2000.
4. *Patents*. U.K. Patent Office. http://www.patent.gov.uk
5. *General Information Concerning Patents*. U.S. Patent and Trademark Office. http://www.uspto.gov

Worth a Thousand Wo



rds

Worth a Thousand Words *uses the camera's eye to revisit moments in New England's past when economics and history converged.*

Before Napster, There Was Fiedler

Free music is not a new concept. The Boston Pops Orchestra, which began in 1885 as an offshoot of the Boston Symphony, has been treating audiences to free outdoor concerts for generations.

Conductor Arthur Fiedler began the tradition on July 4, 1929. And nearly 50 years later, on July 4, 1976, he was at the podium when the Pops and more than 400,000 revelers celebrated America's 200th birthday with a memorable concert on the banks of Boston's Charles River.

Today, the free Independence Day performances continue to draw hundreds of thousands of listeners, many of whom start showing up at sunrise to stake out prime spots for the evening's festivities. The program always includes Sousa's "Stars and Stripes Forever" and Tchaikovsky's "1812 Overture." And everyone always goes home happy. It's truly a "people's concert," complete with spectacular fireworks, blazing howitzers, and lots of flag-waving.

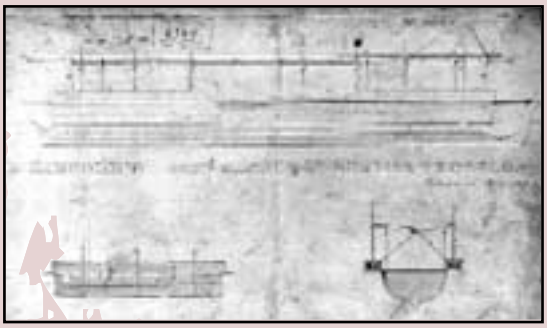
For more on the history of the Boston Pops, visit the orchestra's web site at www.bso.org, where, among other things, you will learn that the Pops was originally founded to provide summer employment for musicians of the Boston Symphony.

Arthur Fiedler and the Boston Pops in 1929, the orchestra's first season of free outdoor concerts.

Photo courtesy of the Boston Symphony Orchestra Archives

Which U.S. President Was It?
answer to question on page 10

Abraham Lincoln was granted a patent for a "new and improved manner of combining adjustable buoyant air chambers with a steamboat or other vessel for the purpose of enabling their draught of water to be readily lessened to enable them to pass over bars, or through shallow water, without discharging their cargoes."



In Our Next Issue...

The next issue of *The Ledger* will focus on the economics of sports:

- **Why the WWF became a smash success.**
- **The business of women's pro football.**
- **The life and times of Major Taylor, the 19th century bicycle racer who was one of America's first sports superstars.**
- **Preview of *Peanuts & Crackerjacks*, the Boston Fed's new Internet-based unit on the economics of pro team sports.**
- **And more.**

The Ledger

Public and Community Affairs
Federal Reserve Bank of Boston
600 Atlantic Avenue
P.O. Box 2076
Boston, MA 02106-2076

Change Service Requested

First Class
U.S. Postage Paid
Boston, MA
Permit No. 59702