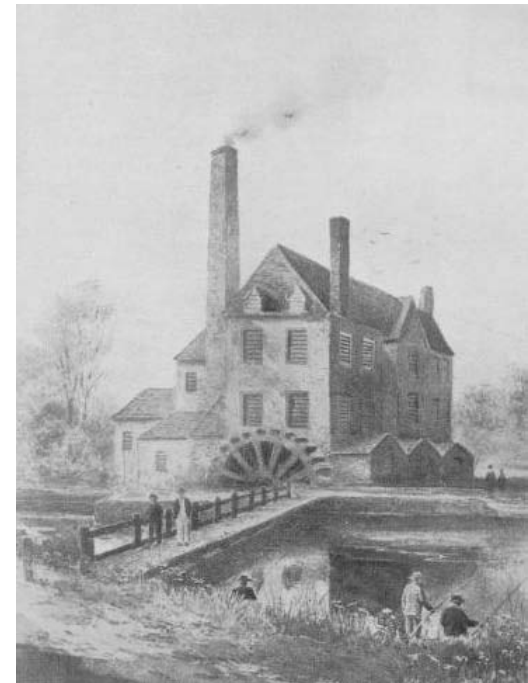


NDIA International Small Arms Symposium, Exhibition & Firing Demo - 2011

# “Hidden Histories”

## American Small Arms-Making (1798-1830)



**By Stephen C. Small, PhD**

As of 18 May 11

# Agenda

- The United States – 1789
- Classical Liberal Economics
- Report on the Subject of Manufactures
- American War and Warfare
- Public and Private Arms-Making
- The National Armories
- Postscript



# The United States - 1789

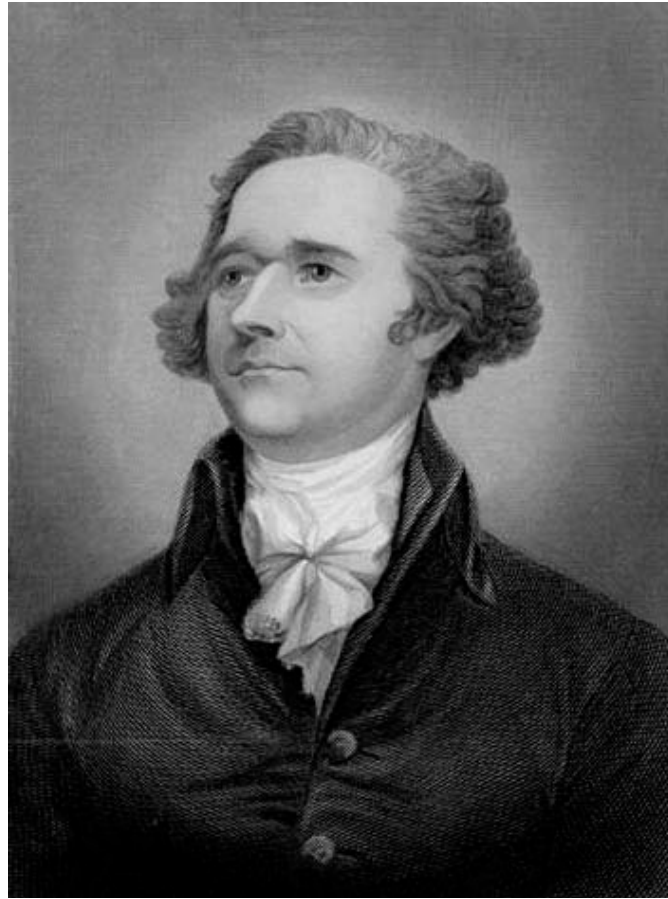


# Classical Liberal Economics

## Adam Smith



# Alexander Hamilton



# Domestically Produced Armaments



# English and French Tariffs

## 1820 – 1910

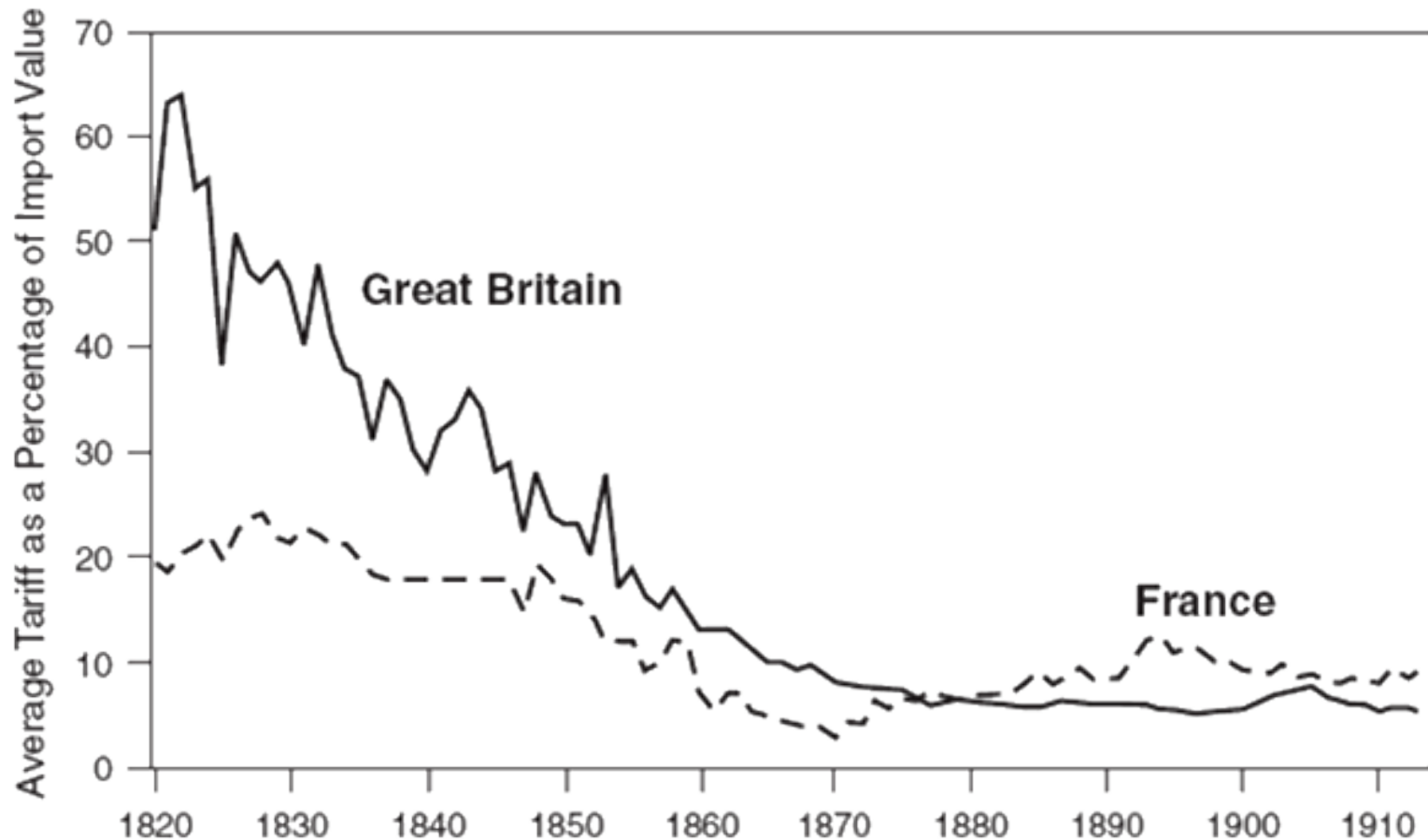
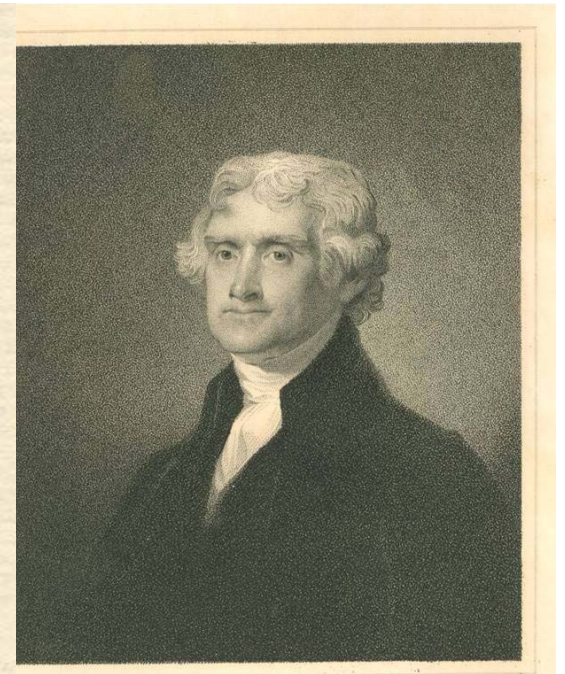


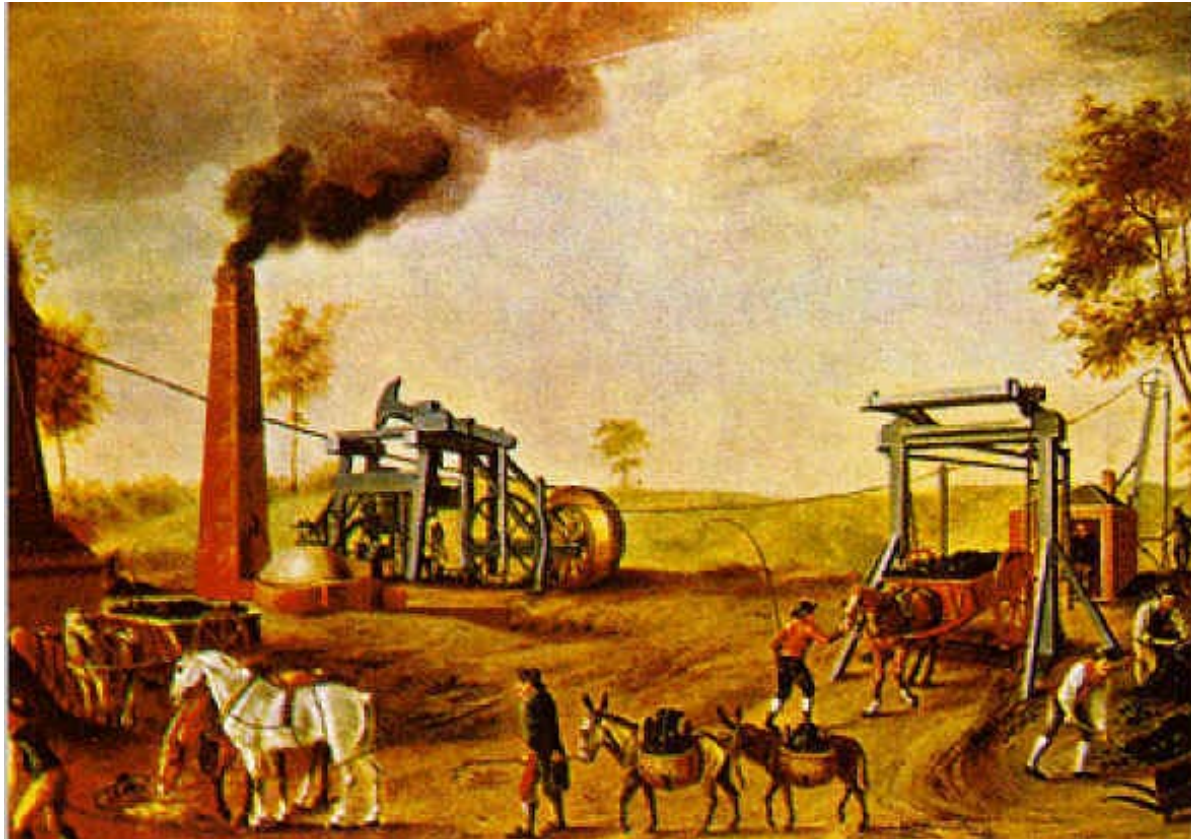
Figure 1.1. Average Tariff Rates: Tariff Revenue as a Fraction of All Imports (Imlah, 1958; Lévy-Leboyer and Bourguignon, 1985).

# Thomas Jefferson



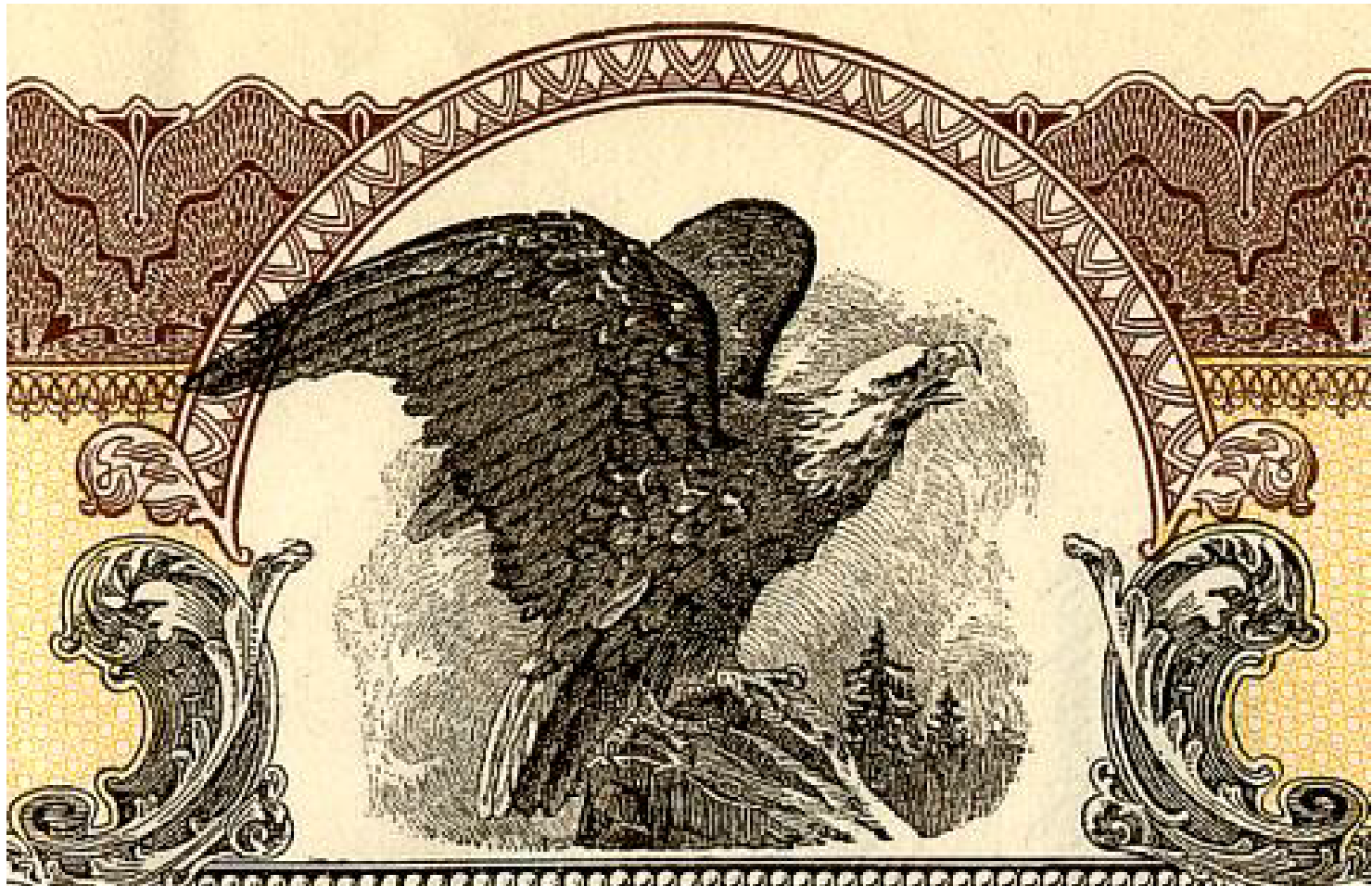


# America's developing industries



# ***REPORT ON THE SUBJECT OF MANUFACTURES***

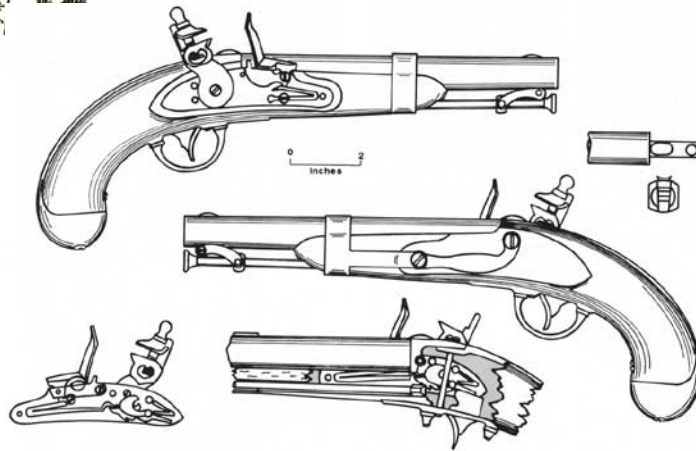
*by Alexander Hamilton, December 5, 1791*



# American "Infant industries"



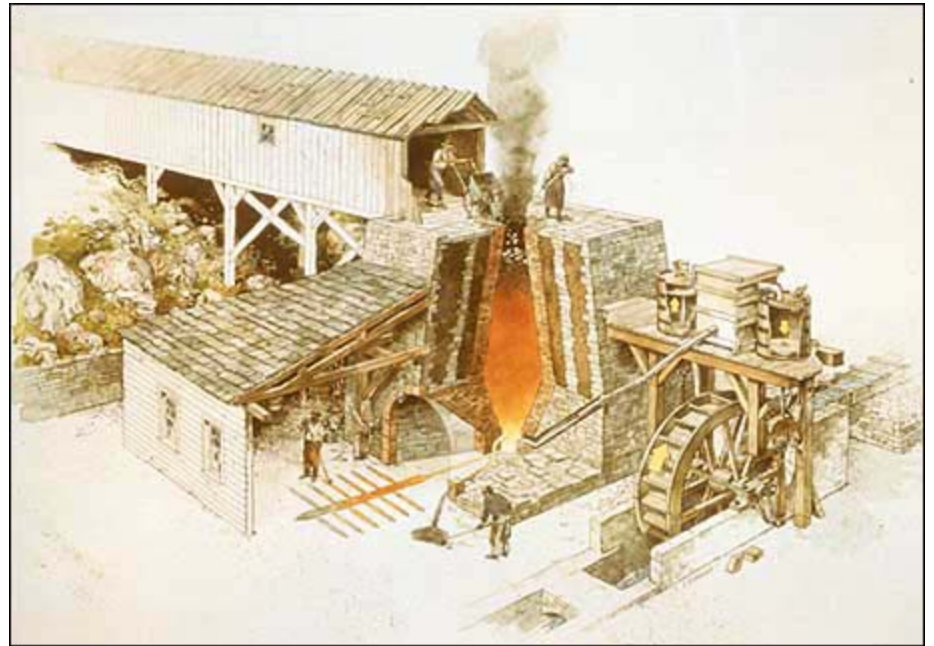
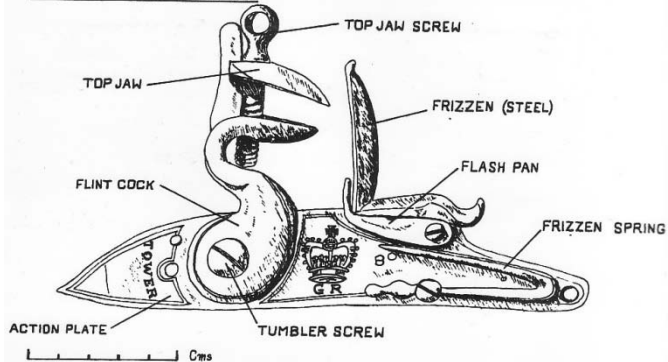
Fig. 13.—Flaker at Work. Boy knapping in background.  
(From a Photograph.)



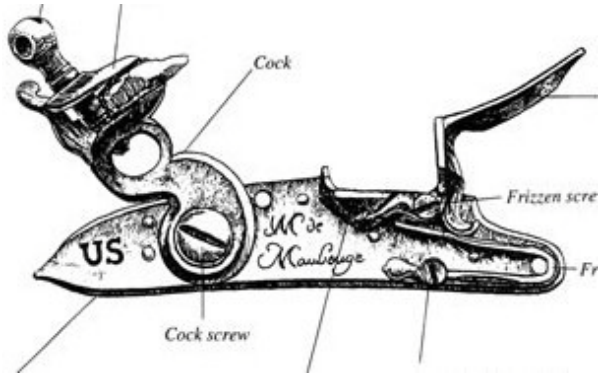
# Tariff Act of 1789



THE FLINT LOCK CIRCA 1805



# 1791 - Congress Forbids Export of Arms and Ammunition



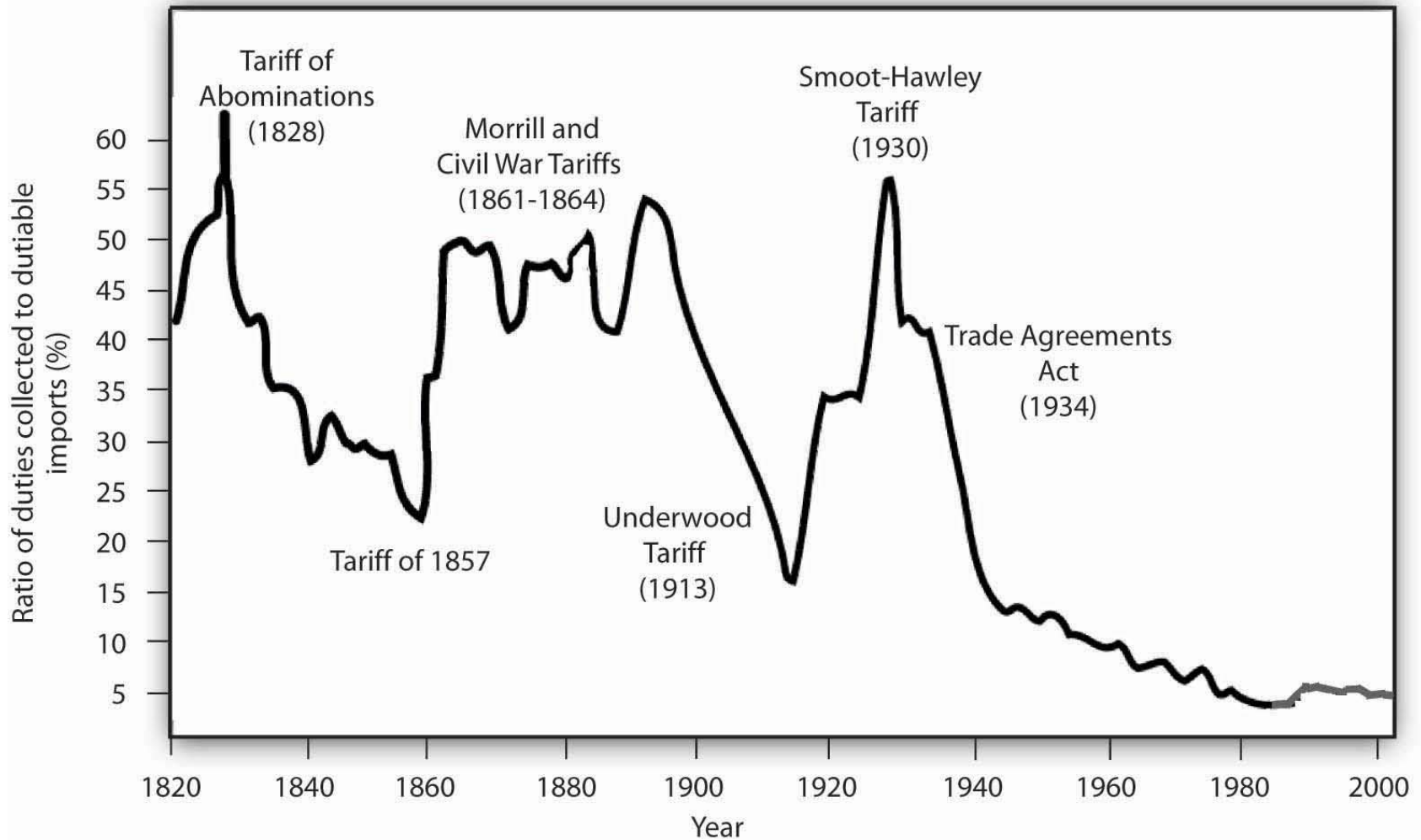
Congress Hall, seat of the U.S. Congress (1790 – 1800)

# Burr–Hamilton Duel

1804



# US tariff history 1820 - 2000



# American War and Warfare



CAPTURE AND BURNING OF WASHINGTON BY THE BRITISH, IN 1814.



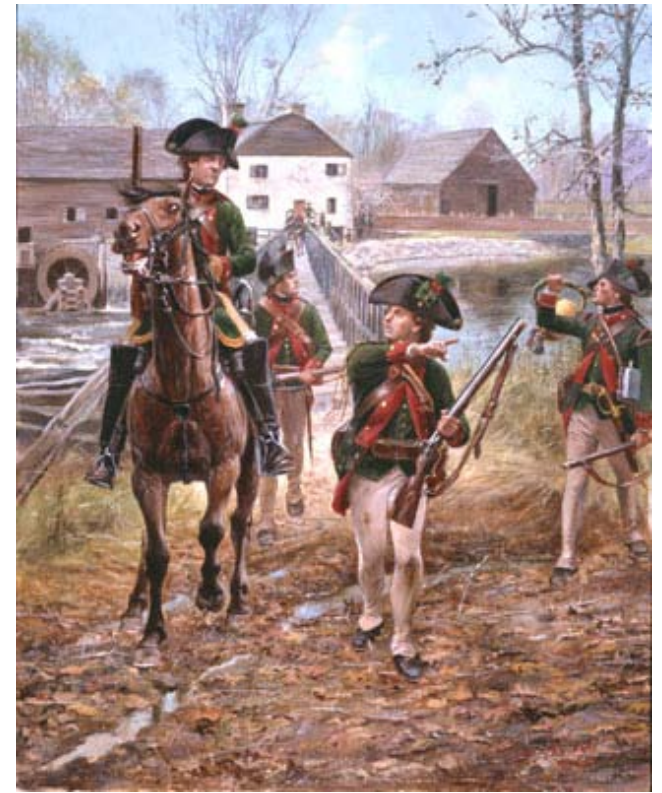




# Public and Private Arms-Making



# Foreign Small Arms Purchases



# Preindustrial Gun-making

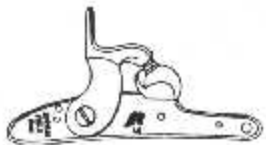


# Sample Contract

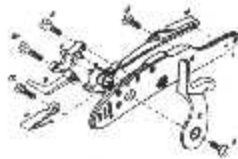
- 2 ½ years
- No cash advances
- Arms conforming to pattern musket
- Proof and Inspection by Government
- Fixed price per stand of arms



# The System of Inspection



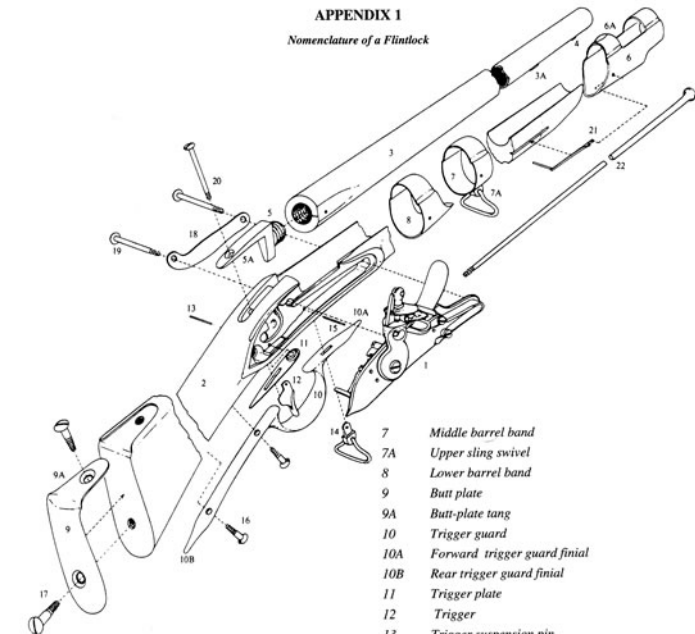
LOCK



LOCK EXPLODED VIEW

- 1 - LOCKPLATE
- 2 - HAMMER
- 3 - MAIN SPRING
- 4 - MAIN SPRING SCREW
- 5 - TRIGGER
- 6 - PIVOT
- 7 - REAR S. SCREW
- 8 - SCREW
- 9 - REAR SPRING
- 10 - REAR SPRING SCREW

## APPENDIX 1 Nomenclature of a Flintlock



- 1 Lock
- 2 Stock
- 3 Barrel
- 3A Barrel lug
- 4 Bayonet lug (positioned either on top or bottom)
- 5 Breech plug (a.k.a. "breech pin" or "breech screw")
- 5A Barrel tang (integral with breech plug)
- 6 Upper barrel band
- 6A Front sight
- 7 Middle barrel band
- 7A Upper sling swivel
- 8 Lower barrel band
- 9 Butt plate
- 9A Butt-plate tang
- 10 Trigger guard
- 10A Forward trigger guard finial
- 10B Rear trigger guard finial
- 11 Trigger plate
- 12 Trigger
- 13 Trigger suspension pin
- 14 Lower sling swivel and lug
- 15 Sling swivel retaining pin
- 16 Trigger guard screws (2)
- 17 Butt-plate screws (2)
- 18 Side plate
- 19 Side screws (a.k.a. "side nails" or "side pins")
- 20 Breech tang screw (a.k.a. "breech screw" or "pin")
- 21 Barrel band springs
- 22 Ramrod

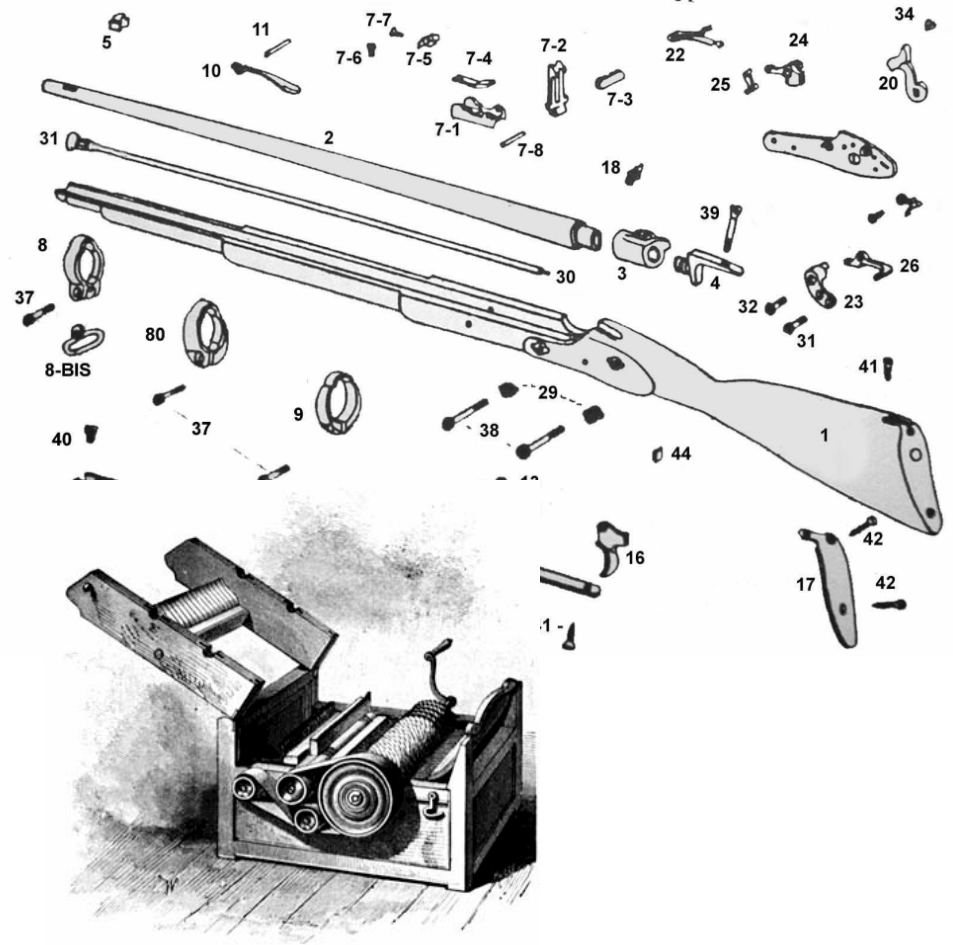
(The musket diagram is by Robert Reilly and is reproduced here by his permission.)

# Lack of Standardization

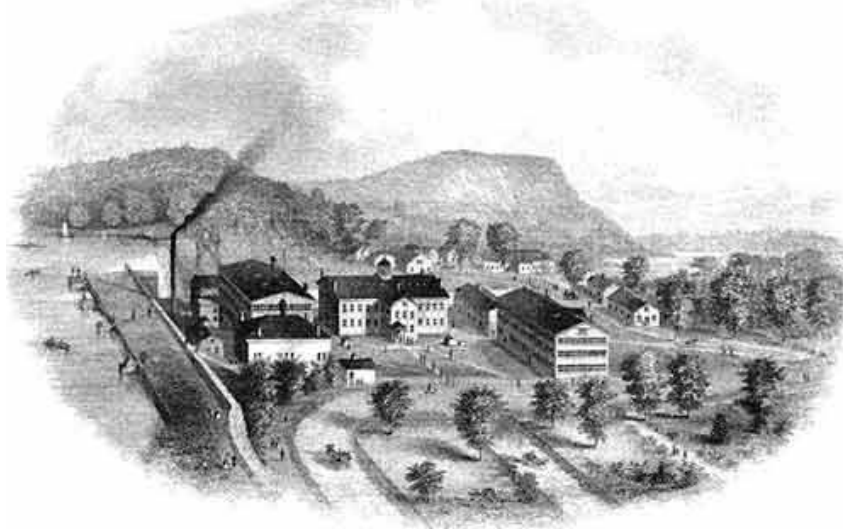
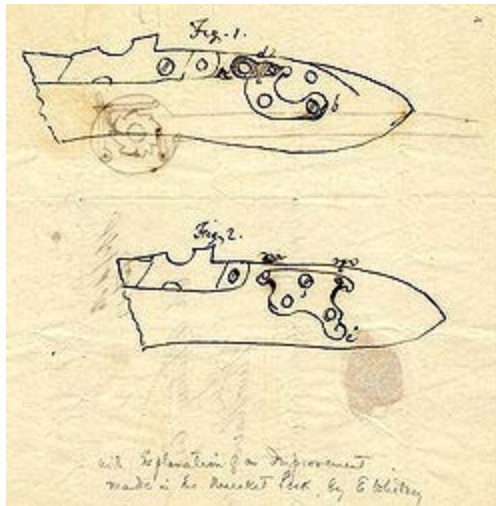
- Overall length
- Barrel Length
- Caliber
- 55" to 58"
- 40" to 42"
- .69 to .70



# Eli Whitney



# Eli Whitney's first Government Contract as an Arms-Maker



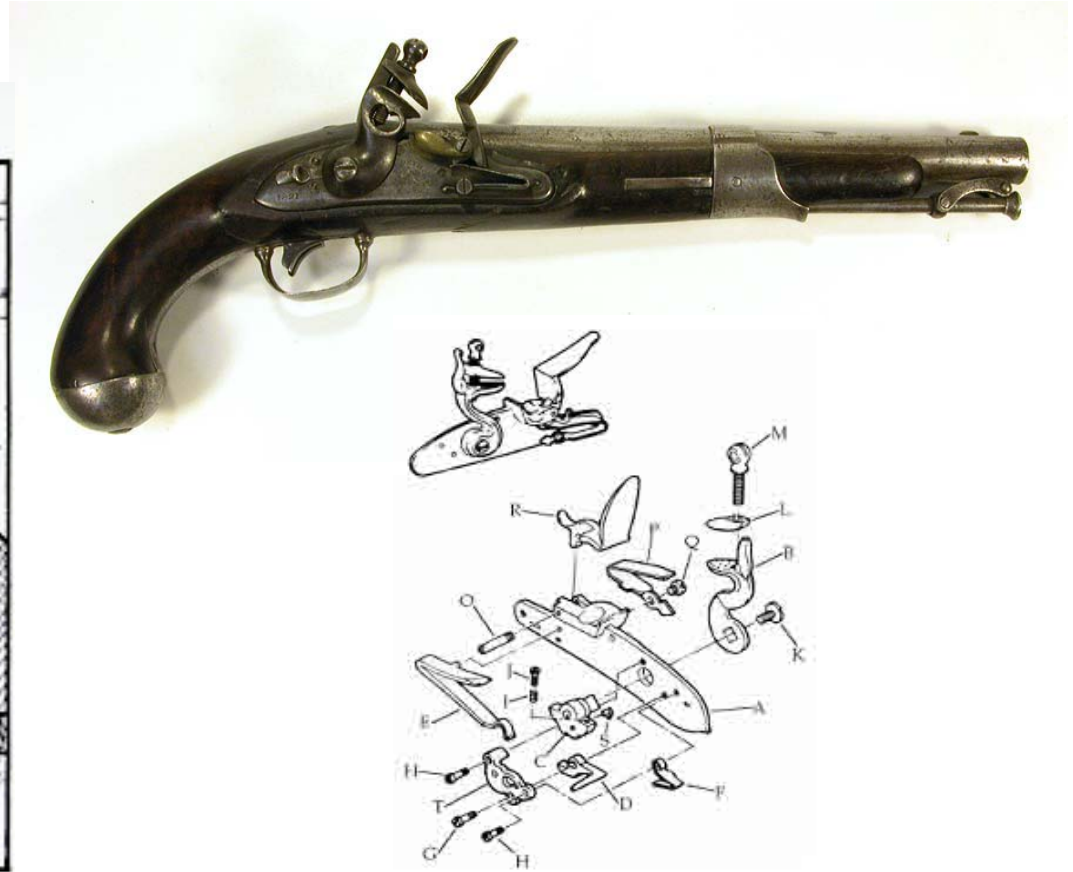
Articles of Agreement made on  
the twenty eighth day of June One thousand seven  
hundred and Ninety Eight. — Between Oliver  
Revelt Esquire Secretary of the Treasury for and on  
behalf of the United States of America of the  
one Part and the Honorable Robert B. Taylor of the  
other Part and content of the other Part.

The said Robert B. Taylor Contracted and engaged to  
manufacture within the United States and deliver  
to such person or persons as shall be appointed by  
the Secretary of the Treasury, or the Secretary of War,  
for the best living Ten thousand stands of Arms  
& Muskets with Bayonets and Cartridges complete  
fit for service Ten thousand stands of which arms  
shall be delivered in or before the last day of Sep-  
tember One thousand seven hundred and Ninety  
Eight, and Six thousand additional stands, or  
before the last day of September One thousand  
eight hundred.

The said Arms shall be delivered at New Haven  
in the State of Connecticut, and shall be made after  
the Charleville model. The Barrels shall be proved and  
the Muskets inspected according to the Rules now  
in practice and required by the United States. The  
Locks shall be not touched. The Cartridges and  
Bayonets shall be tempered, and the Manufacture shall  
and every other particular shall be finished in the  
best manner in all parts precisely as  
near as possible conformably to the patterns which  
have been made and sent to the contracting parties  
in this instrument: And if either party shall have removed  
the said patterns shall be proved and the Muskets in



# Simeon North



# A partial listing of New England Arms-makers (1770-1870)

222

- Allen, Brown & Luther, Worcester, Mass., 1852.  
Allen, C. B., Springfield, Mass., 1836-1841. Includes Allen & Falls.  
\*Allen & Thurber, Grafton, Mass., 1832-1842; Norwich, Conn., 1842-47; Worcester, Mass., 1847-1856; Allen & Wheelock, Worcester, 1856-1865; continued in Worcester after Ethan Allen's death as Forehand & Wadsworth, 1871-1890; total business 1832-1890.  
Alsop, C. R., Middletown, Conn., 1859-1866.  
\*American Arms Co., Chicopee Falls, Mass., in Civil War.  
\*American Arms Co., Boston, Mass., about 1870-1893.  
\*American Nut & Arms Co., Boston, Mass., 1868-1870.  
Ames, David, Bridgewater, Mass., 1790.  
Ames, John, Bridgewater, Mass., 1798.  
Ames, Nathaniel, Boston, Mass., 1800.  
\*Ames Manufacturing Co., Chicopee, Mass., 1832-1880's.  
Andrus & Osborn, Canton, Conn., in Civil War.  
\*Aston, Henry, Middletown, Conn., about 1843-1852.  
Aston, William, Middletown, Mass., about 1854.  
Austin, Thomas, Charlton, Mass., Committee of Safety, (i.e., Revolution).  
Babcock, Moses, Charlton, Mass., 1777-1781.  
\*Bacon Arms Co., Norwich, Conn., 1852-1888.  
Baggett, Elijah, Attleboro, Mass., contractor of 1798.  
Bailey, Nathan, New London, Conn., 1776-1779.  
Baldwin, Elihu, Branford, Conn., Committee of Safety.  
\*Ballard Arms Co., Worcester, Mass., Civil War.  
\*Ballard & Fairbanks, Worcester, Mass., 1870.  
\*Ball & Williams, Worcester, Mass., 1861-1866.  
Barnes, Thomas, North Brookfield, Mass., active to 1800.  
Barret, Samuel, Concord, Mass., 1775 and later.  
Bartstow, J. and C. C. Exeter, N. H. Contractors of 1808.  
Bartlett, Asher and Pliny, Springfield, Mass. Contractors of 1808.  
\*Bay State Arms Co., Uxbridge, Mass., about 1870-1875.  
Beckley, Elias, near Berlin, Conn., flintlock period, died 1816; son, Elias Jr. carried on business, died 1828.  
Bell, Josiah, Walpole, N. H., 1799-1801.  
Bemis, Edmund, Boston, Mass., active 1746-1785.  
\*Beutter Bros., New Haven, later Meriden, Conn., before and after 1850.  
Bidwell, Oliver, Hartford, active 1756-1810.  
Bisbee, D. H., Norway, Me., 1835-1860.  
Bishop, Henry, Boston, Mass., before and after 1847.  
Bishop, William, Boston, Mass., 1818-1860.  
Blackman, Elijah, Middletown, Conn., Committee of Safety.  
Blaisdel, Jonathan, Amesbury, Mass., Committee of Safety.  
Bliss, New Haven, about 1856-1863; probably the same as Bliss & Goodyear.  
Boardlear, Samuel, Boston, Mass., 1796.  
\*Boyd Breech-loading Arms Co., Boston, Mass., 1870-1872.  
\*Brand Arms Co., Norwich, Conn., 1866-1875.  
\*Bristol Fire Arms Co., Bristol, Conn., 1855-1859.  
Brown, Elisha, Providence, R. I., active 1799-1801.  
\*Brown Manufacturing Co., Newburyport, Mass., 1869-1873. Took over Merrimac Arms & Manufacturing Co.  
\*Buckland, E. S. & Co., Springfield, Mass., 1866-1868.  
Buell, Elisha, Hebron, Conn., 1776; probably the same Elisha Buell of Marlborough Conn., 1797 to 1808 at least.  
Buell, Enos, son of Elisha, succeeded father about 1825-1850.  
Burnham, Elisha, Hartford, cleaned and repaired guns for Connecticut, 1777, accounts rendered 1781.  
\*Burnside Rifle Co., Providence, R. I., organized 1860 by creditors of Bristol Fire Arms Co., made government arms up to 1865.

223

- Chase, Anson, Enfield, Mass., before 1830; Hartford, 1830-1834; later New London, Conn.  
Chipman, Darius, Rutland, Vt., active 1798-1801; Contractor associated with Royal Crofts, Thomas Hooker and John Smith.  
Chipman, Samuel, Vergennes, Vt., associated with Thomas Towsey in contract of 1798.  
Clark, Carlos, Windsor, Vt., 1856-1868.  
Clark, Ezra, Hartford, Conn., 1850.  
Clark, Joseph, Danbury, Conn., contractor of 1798.  
Clement, W. T., associated with W. S. Norris in Springfield in Civil War.  
Cobb, Nathan and Henry, Norwich, Conn., contractors of 1798.  
Coleman, H., Boston, Mass., before and after 1847.  
Collier, Elisha, Boston, Mass., 1807-1812.  
\*Colt Patent Fire Arms Manufacturing Co., Hartford, Conn., 1848 to present.  
\*Connecticut Arms Co., Norfolk, Conn., about 1864.  
\*Continental Arms Co., Norwich, Conn., 1866-1867.  
Copeland, T., Worcester, Mass., about 1860.  
Cowles & Smith, Chicopee, Mass.; 1868, W. L. Cowles, Chicopee, 1870.  
Cummings, Charles, A., Worcester, Mass., 1866-1869, later Cummings & Lane, Worcester, 1869-1871.  
Curtis, Jesse, Waterbury, Conn., associated with Thomas Fancher in work for Committee of Safety.  
Darlington, Barton and Benjamin, Bellingham, Mass., and Woonsocket, R.I., 1836.  
\*Davenport, W. H., Firearms Co., Norwich, Conn., about 1855-1910.  
Davis, N. R., & Sons, Assonet, Mass., established 1853.  
Denslow & Chase, Hartford, Conn., about 1847.  
Dewarson, R., Boston, Mass., before and after 1847.  
Dewey, Samuel, Hcbron, Conn., 1775-1776.  
Dickenson, E. L., Springfield, Mass., 1870.  
Dike, Bridgewater, Mass., 1775.  
Dwight, H. D., Belchertown, Mass., before and after 1847.  
\*Eagle Manufacturing Co., Mansfield, Conn., Civil War.  
Earl, Thomas, Leicester, Mass., 1770-1776.  
Eaton, J., Boston, Mass., before and after 1847.  
Eggers, Samuel, New Bedford, about 1840-1865.  
Elliot, Matthew and Nathan, Kent, Conn., contractors of 1798.  
Eli, Martin, Springfield, Mass., about 1770-1775.  
Emmes, Nathaniel, Boston, Mass., 1796-1825.  
Fairbanks, A. B., Boston, Mass., before 1841. Died 1841.  
Falley, Richard, Montgomery and Westfield, Mass., active 1774-1801 and later.  
\*Flagg, B. & Co., Millbury, Mass., 1849.  
\*Fogerty Repeating Rifle Co., Boston, Mass., about 1867; changed to American Repeating Rifle Co.; sold to Winchester 1869.  
French, Blake and Kingsley, Canton, Mass., contractors of 1808.  
\*Gibbs, Tiffany & Co., Sturbridge, Mass., about 1820-1850.  
Gilbert, Daniel, North Brookfield, Mass., 1798-1808.  
Goodwin, Jonathan, Lebanon, Conn., Committee of Safety.  
Greene Rifle Works, Worcester, Mass., 1864.  
Groot, Henry, Pittsfield, Mass., 1866-1868.  
Hall, John, Yarmoth, Me., until 1816; later at Harper's Ferry, Va.  
Hall, Samuel, East Haddam, Conn., Committee of Safety.  
Hall, Thomas, Carlotta, Vt., Committee of Safety.  
Hanks, Uriah, Mansfield, Conn., Committee of Safety.  
Harrington, Luke, Sutton, Mass., before and after 1832.  
Harris, Luke, Sutton, Mass., 1832.  
Harwood, Nathaniel, Brookfield, Mass., about 1825-1840.  
Hill, Thomas, Carlotta, Vt., 1790-1810.  
Hilliard, D. H., Cornish, N. H., about 1860-1880.  
Holden, C. B., Worcester, Mass., about 1864-1868 and later.

# Government Subsidy?

1822

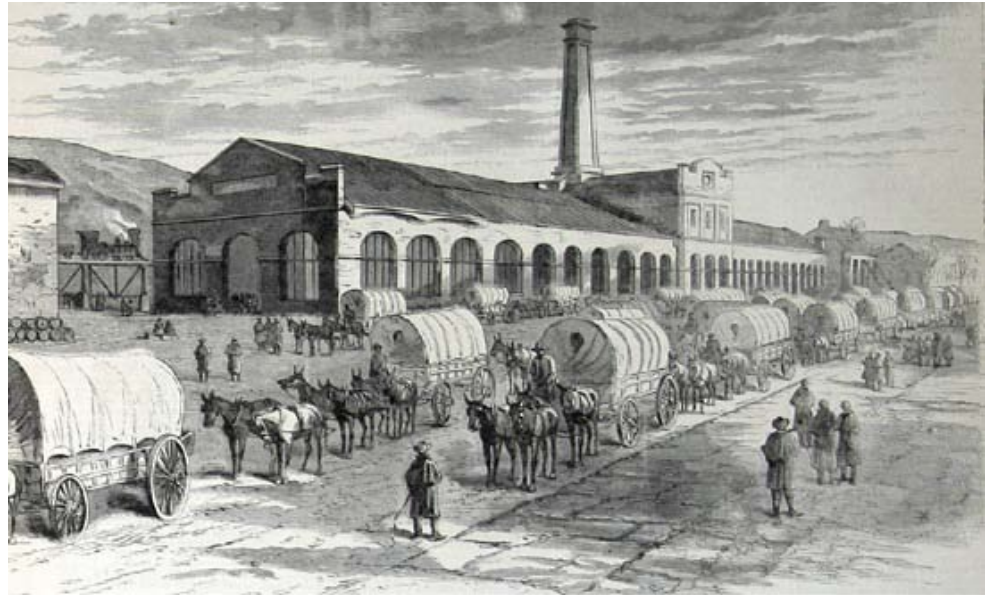
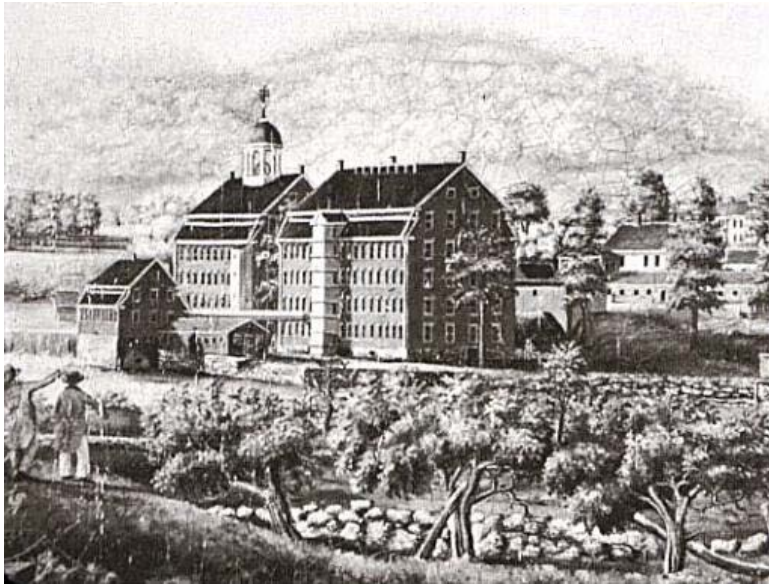


- **20,000 Pistols**
- **17,000 Long-Arms**
- **15,000 Swords**



# The National Armories

## State Owned Enterprises



# David Ames

## Springfield Armory Superintendent

1794 - 1802



# Flyer for Work at Springfield Armory

## Armoury Department,

*Springfield, August 13, 1798.*

**T**HOSE persons that have engaged to work at the fire at the Public Factory in this place, are desired to come on immediately, and those that have engaged to work at filing, in ten or twelve days.

An opportunity still presents for good hands that are in want of cash, to engage at the fire, the bench and the other different parts of the business; a monthly payment for encouragement is promised by the Secretary of War.

The best encouragement is still offered for a number of likely boys as apprentices to the Gun Smiths Business.

**DAVID AMES, Superintendent.**

**P S.** The Printers of public papers who are willing to insert the above advertisement without reward, are requested to do it.

# User Need and Technological Push



**U.S. Model 1816 Flintlock Musket**



**Militia Act - U.S. Model 1817 "Common Rifle"**

# Lt. Col. Roswell Lee

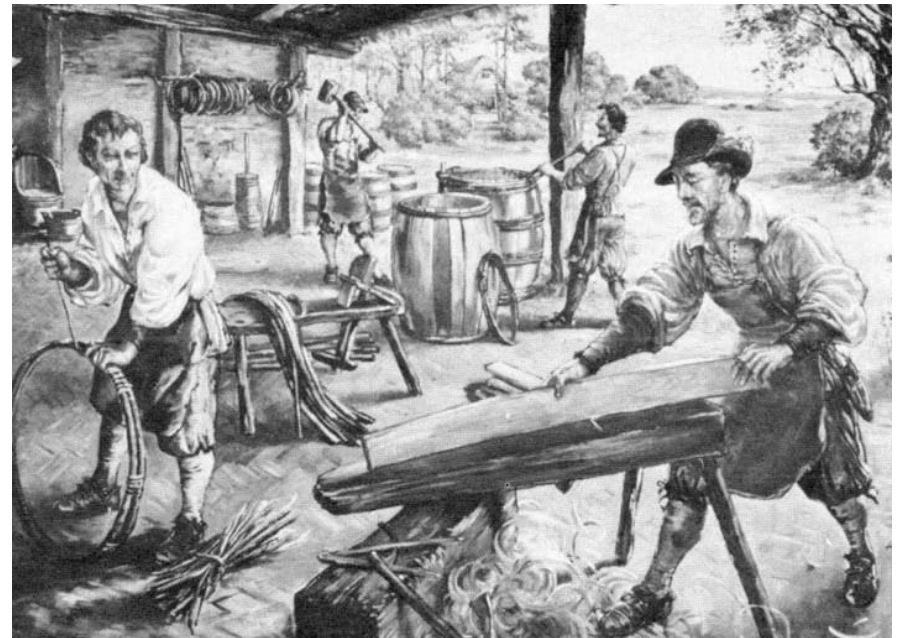
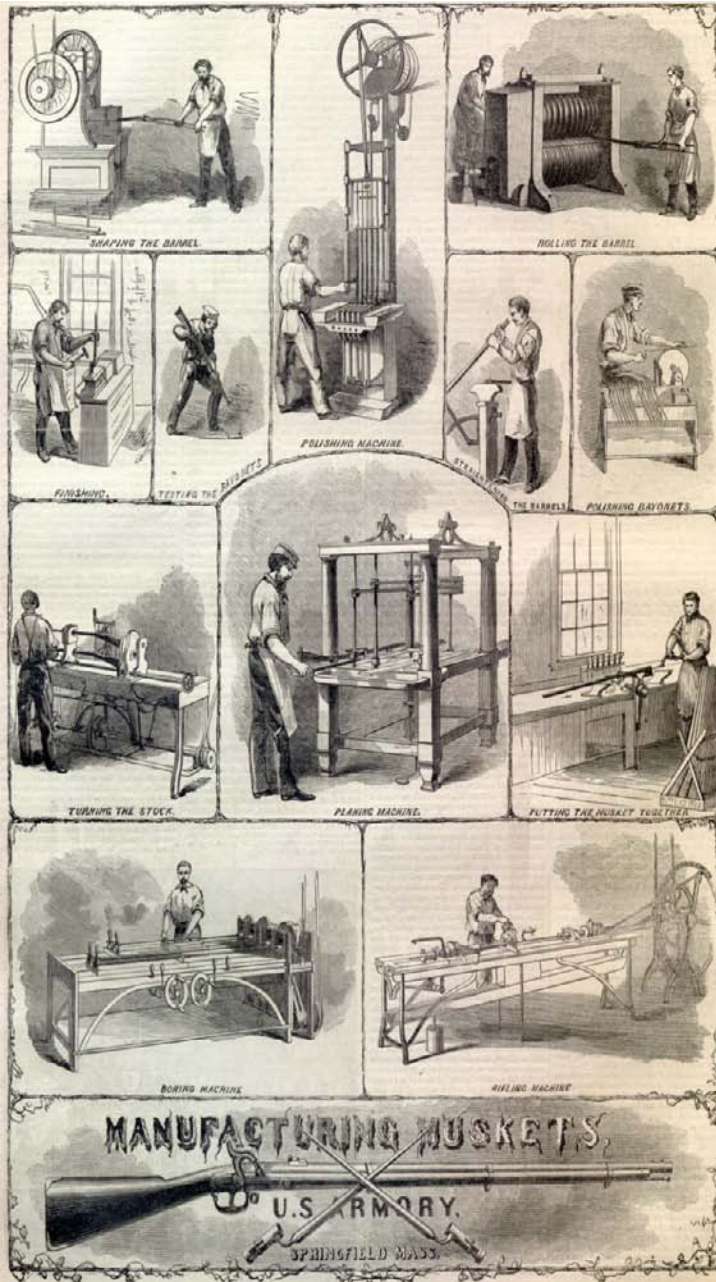
Springfield Armory Superintendent 1815 - 1833



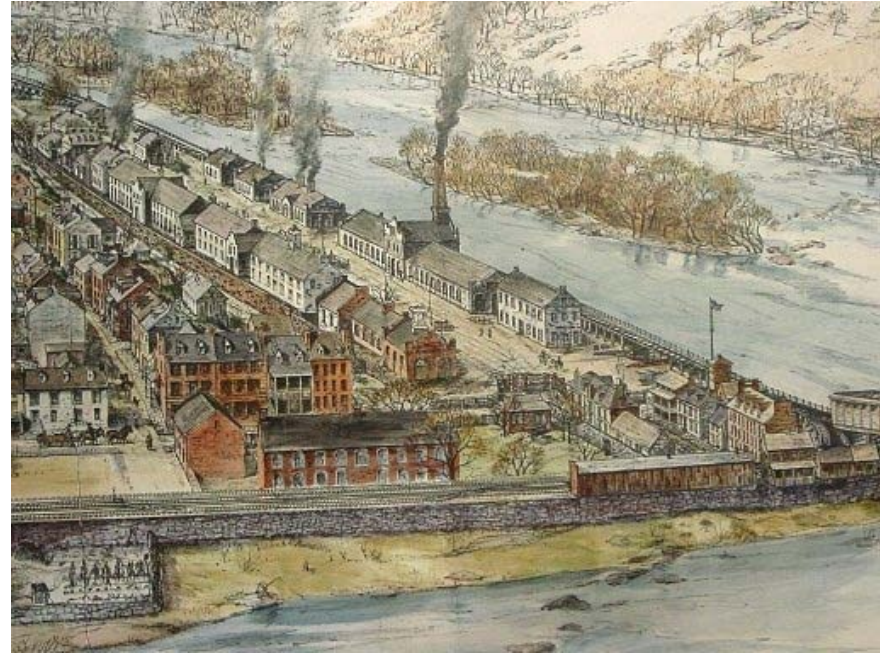


# Armory Monthly Pay 1802

Superintendent.....	\$70.00
Master Armorer.....	50.00
Master Blacksmith .....	34.00
Artificer .....	17.00
Laborer .....	15.00

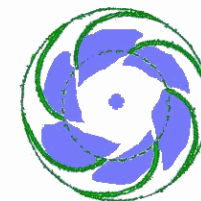
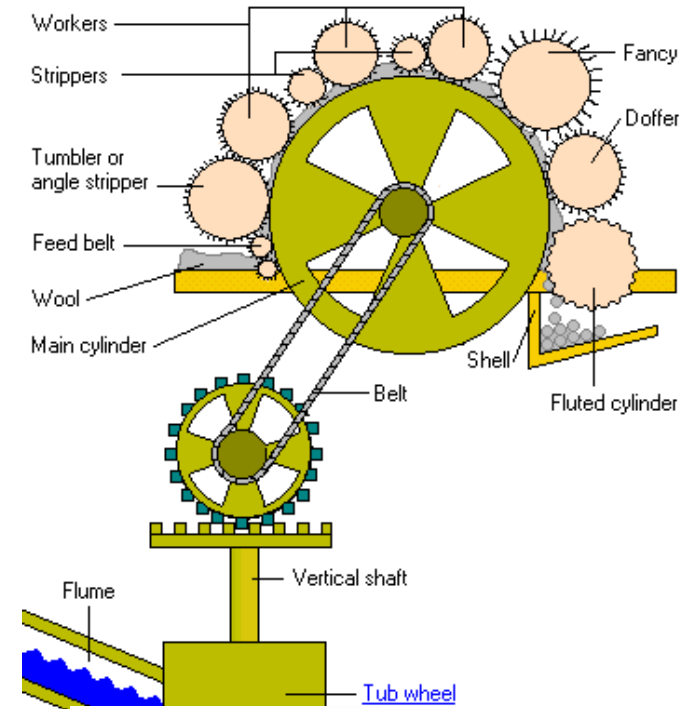


# Harpers Ferry



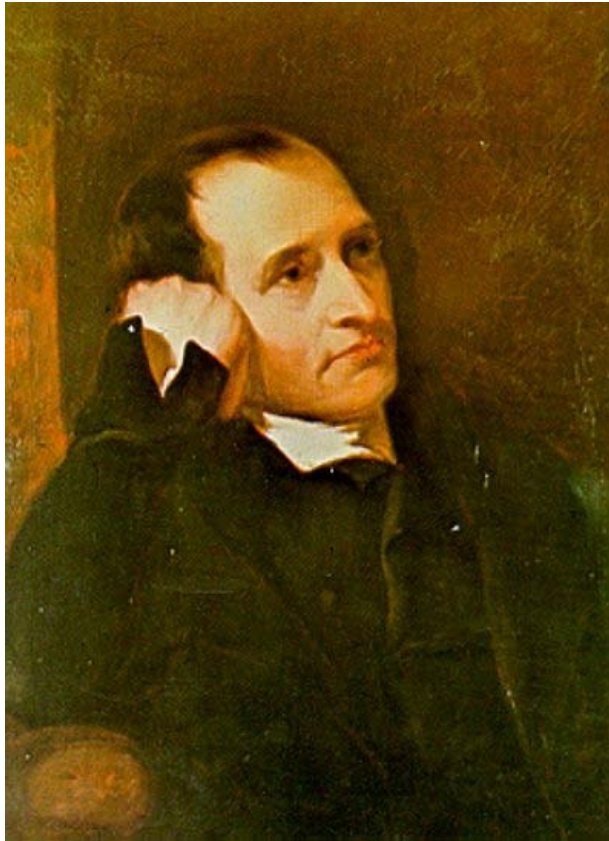
The Hall Breech-Loading Rifle

# Machine Age Technology

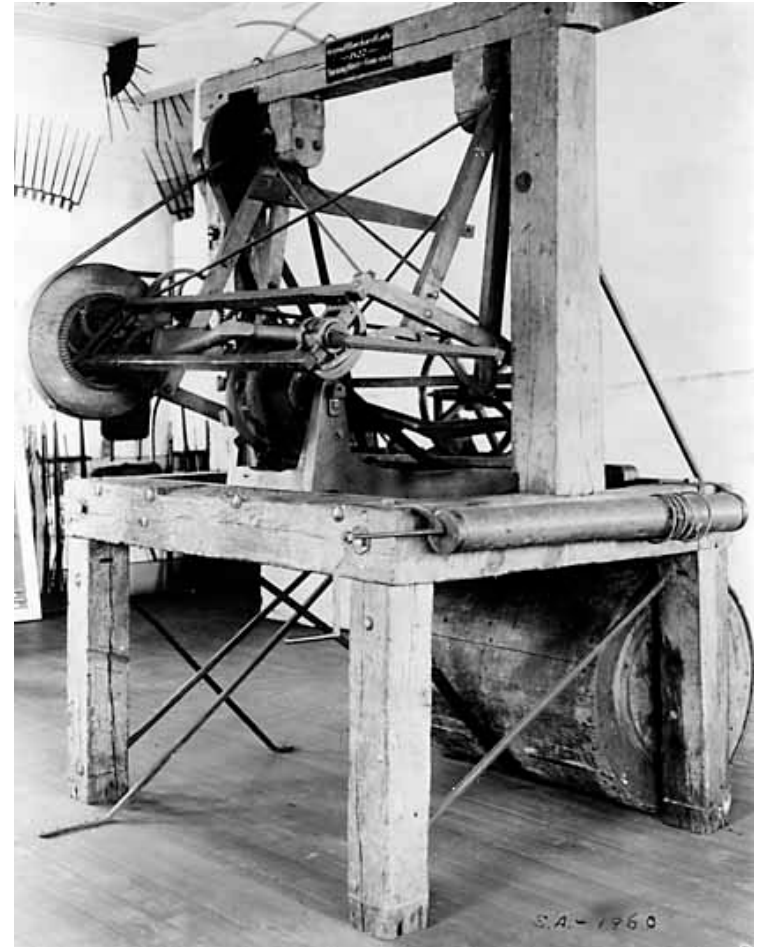


# Blanchard lathe

## Gunstock Production



[Thomas Blanchard](#)  
(1788-1864)



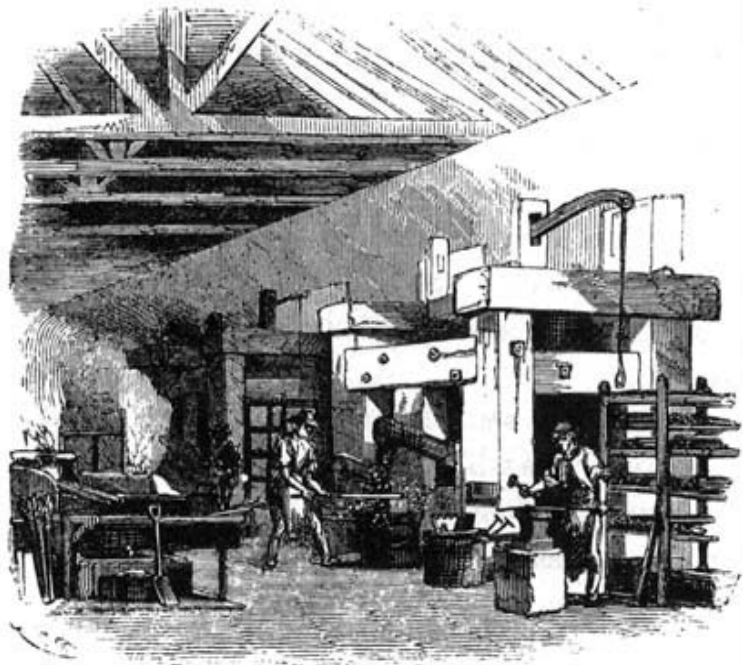
# Springfield Armory

## Annual production of Muskets, Rifles, and Carbines

Year	Weapons
• 1798	• 1,044
• 1804	• 3,566
• 1808	• 5,870
• 1811	• 12,140
• 1814	• 9,585
• 1822	• 13,200
• 1825	• 15,000
• 1832	• 13,600



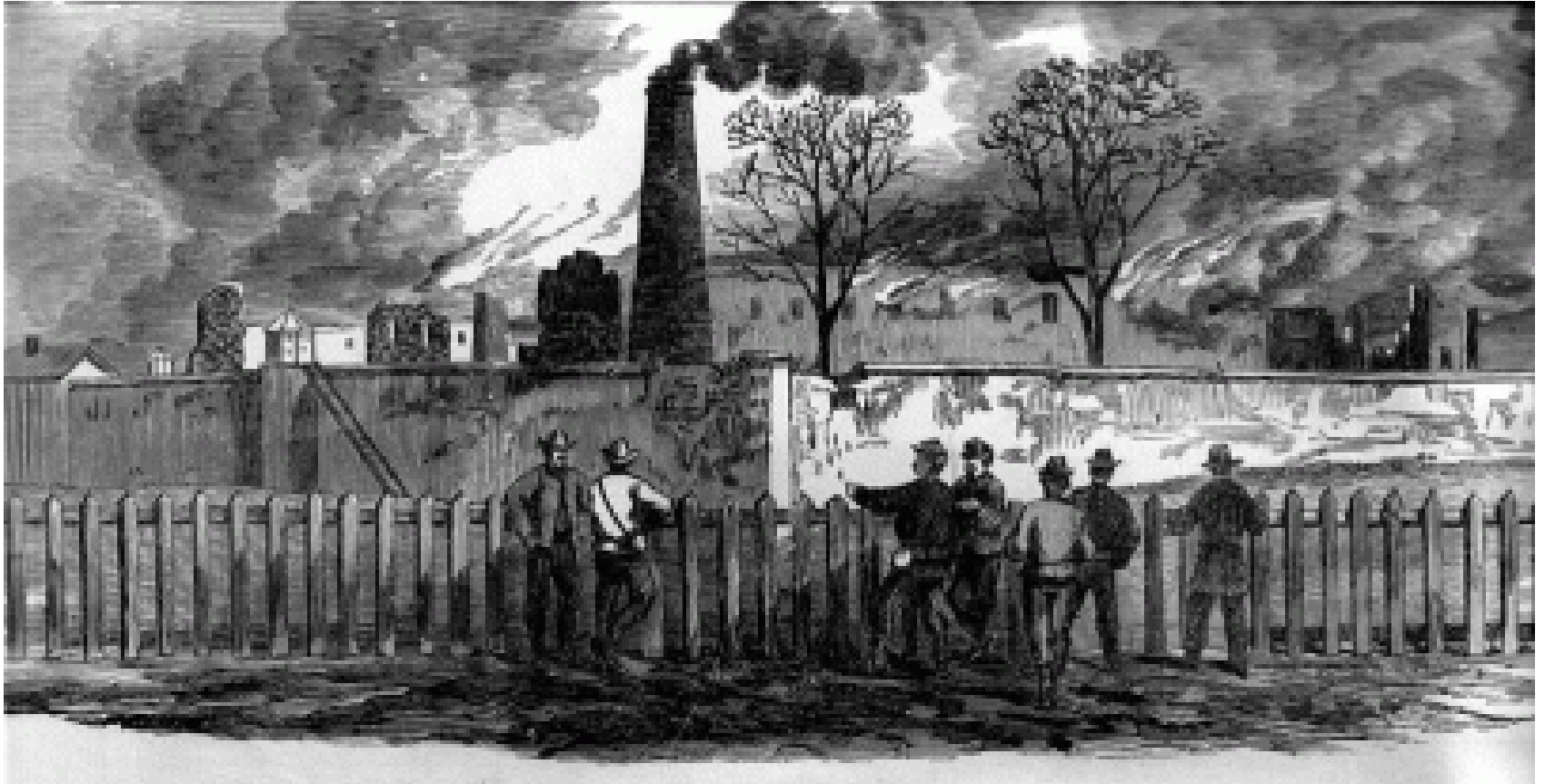
# Labor



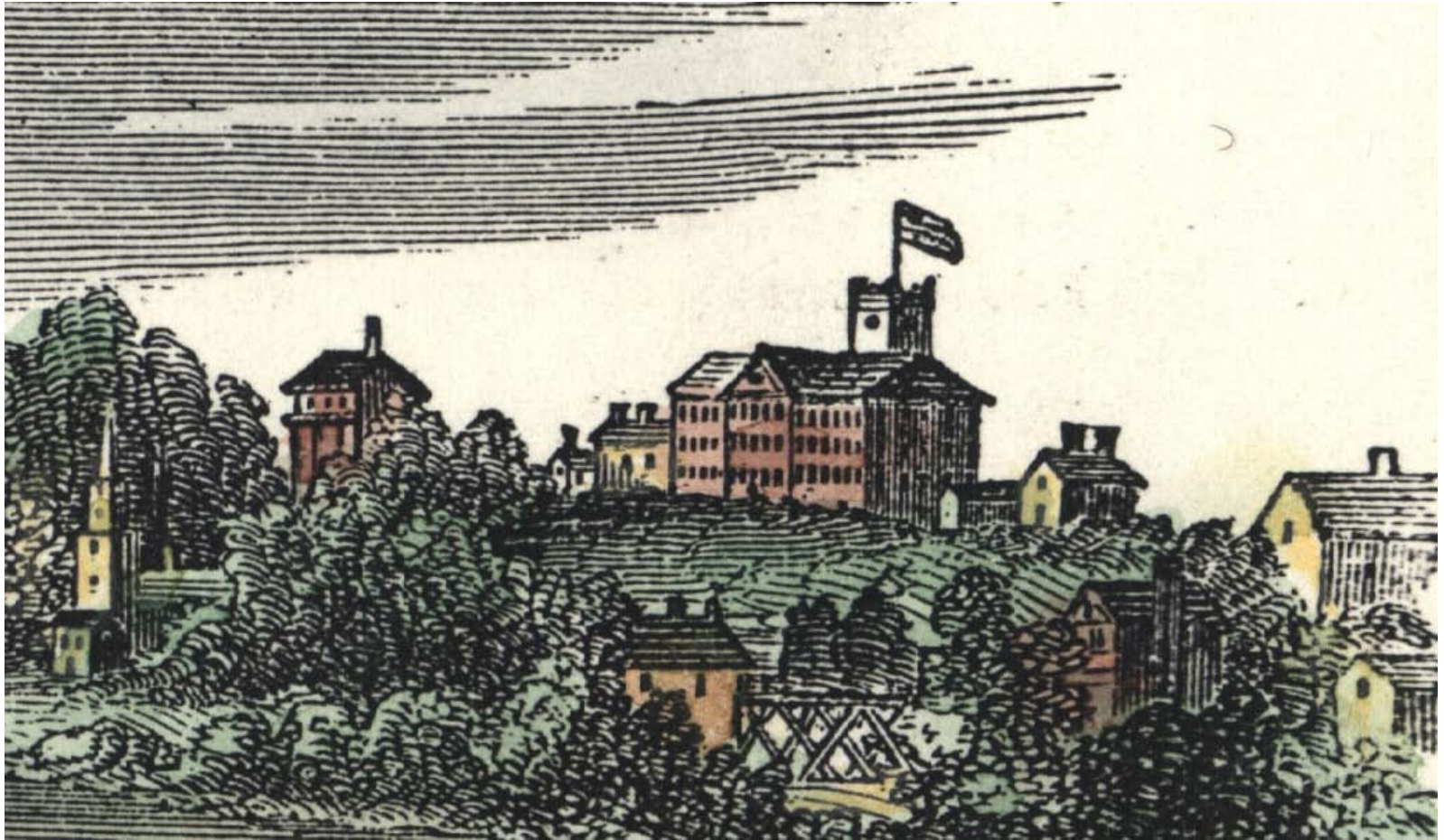
THE FORGING ROOM



# Business Ethics



# National Armories





# Postscript



# Questions?



THOMAS BLANCHARD.

FROM PHOTOGRAPH OWNED BY  
F. S. BLANCHARD, WORCESTER, MASS.