

St. Louis Brick

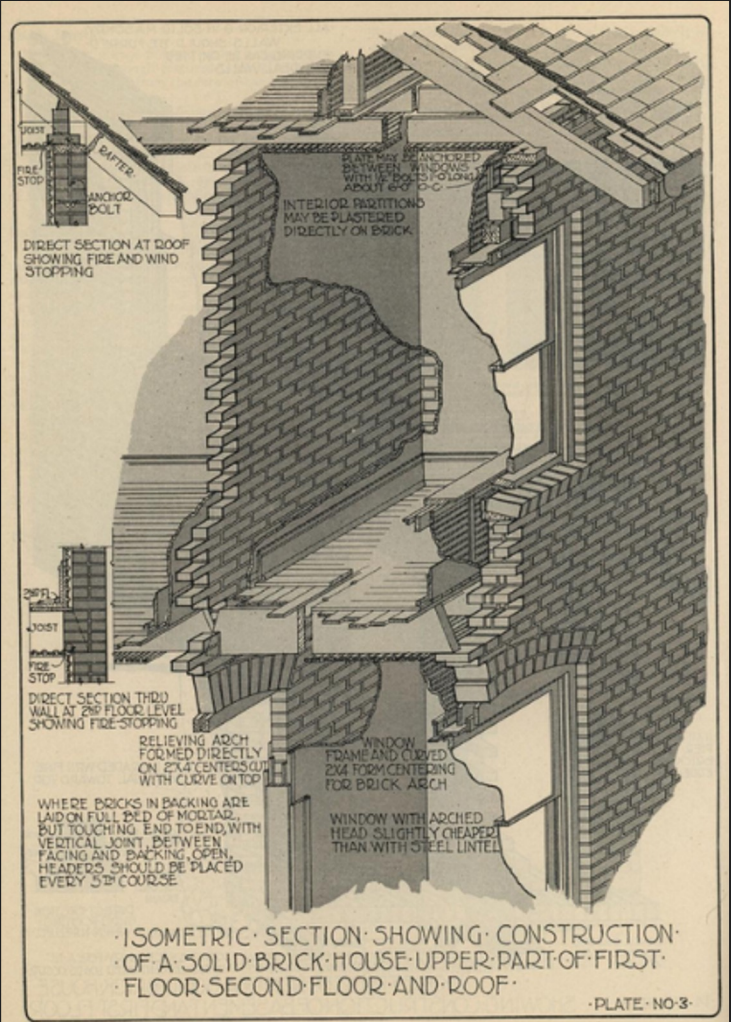
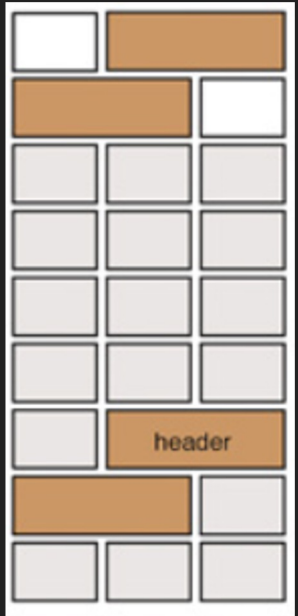
How did St. Louis become a brick city... the usual story



- There are around **10-20 billion** bricks currently in St. Louis City
- After 1849 fire, city construction is required to be masonry
- In 1821, we were already producing 22M bricks per year

Brick 101

“Bonding pattern”



Brick 101

Header

Mortar = binder + aggregate

Handmade Brick

Machine made / Pressed
Brick



Brick 201: finishing school

Face Brick

Butter Joint

Concealed ties

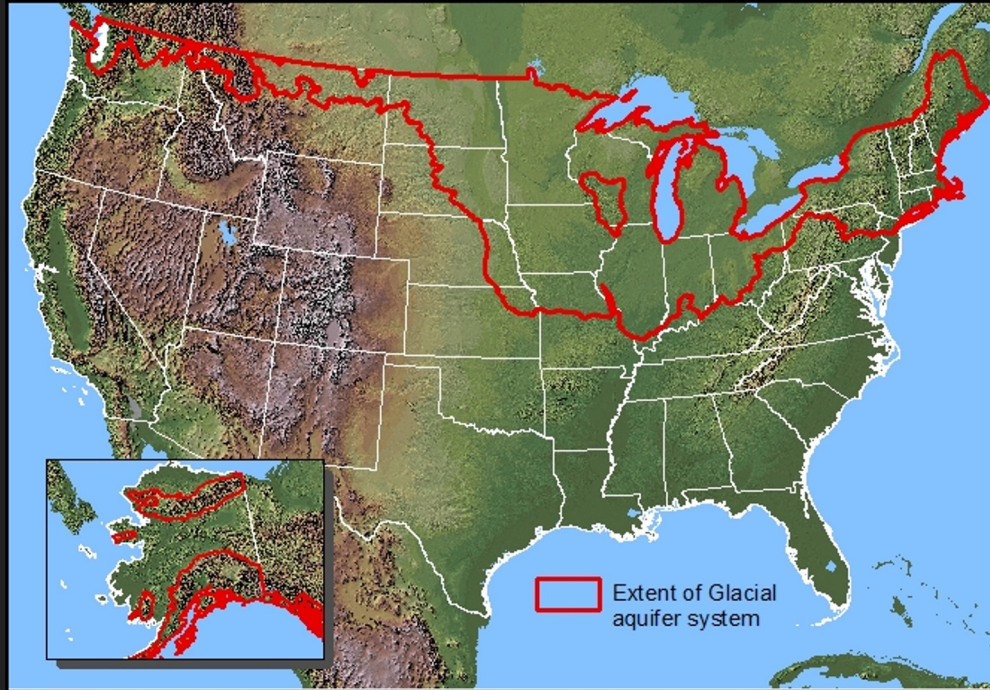


Common Brick

$\frac{1}{2}$ " joint

Visible tie bricks

Let's start at the beginning...



“Periglacial loess”

OR

“Brick Earth”

Handmade brick

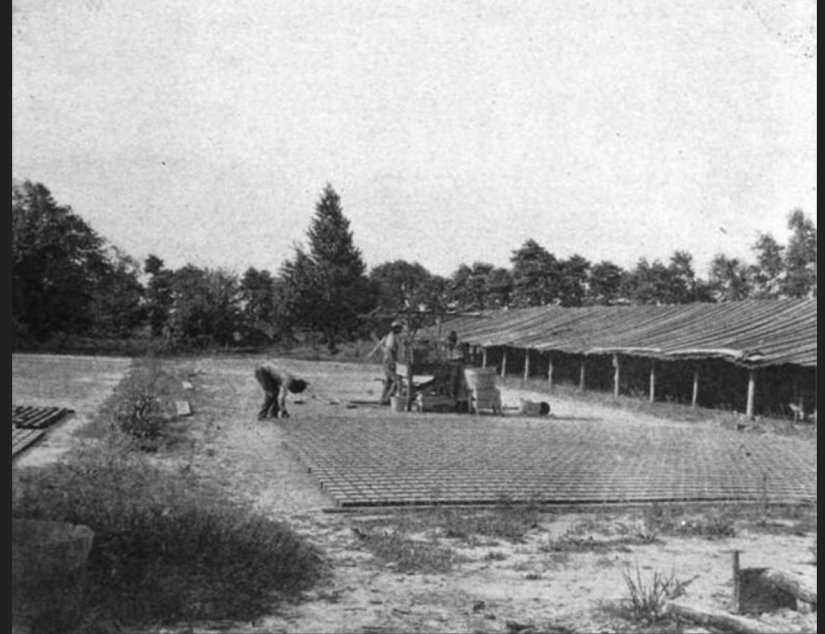
“My observation leads me to say the the old manual method of brick-making has destroyed many a man in the prime of life, and has undermined the constitutions and wrecked the systems of the most robust natures.”

- *A Practical Treatise on the Manufacture of Brick*, 1895



How handmade bricks were made

1. Clay is dug up in fall and winter
2. In Spring, clay moved to pit, watered and trampled by oxen
3. Tempered: mixed with sand and water to achieve desired consistency
4. Molded in wooden boxes - “green bricks”
5. Moved to drying sheds and stacked
6. Fired for three days, left in kiln for another five



Typical handmade brick construction



Traditional masonry finishes: pigmented lime wash

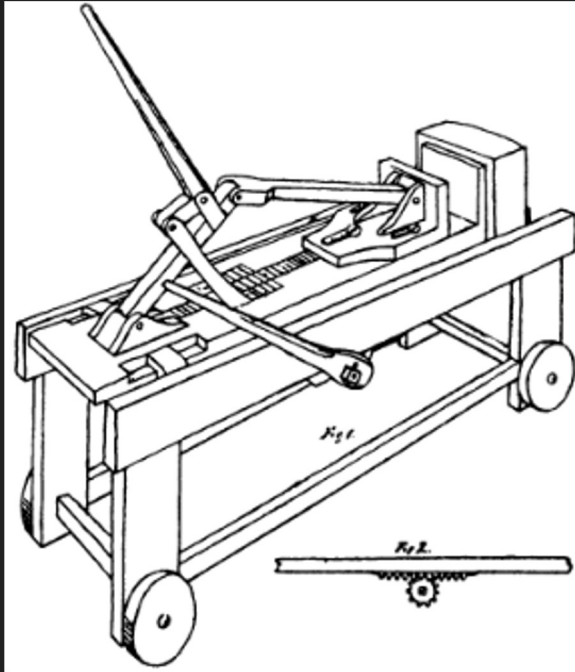


Considerations with handmade brick

- WEIGHT is the primary driver of brickmaking
 - Average house is ~170 tons
- *clamps*: temporary brick kilns built on the building site
- Clay destroys machinery
 - Cast iron molds replaced *three times* a year

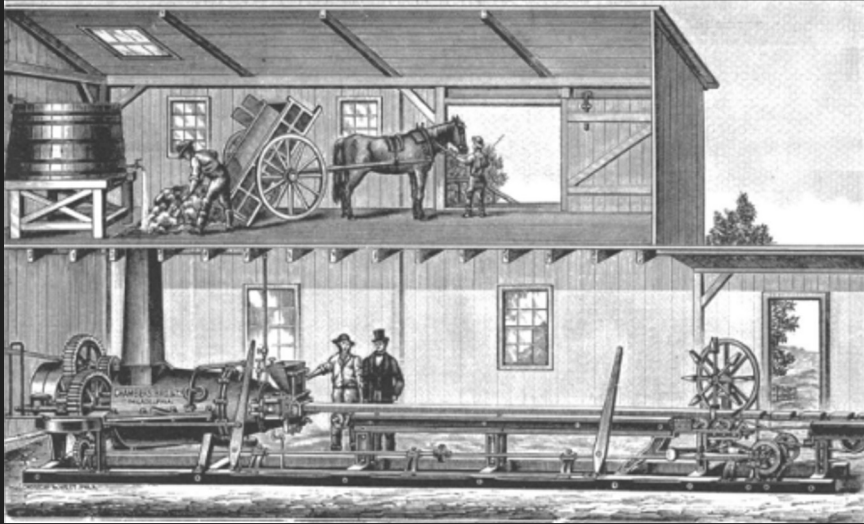


The rise of the machines



- Early attempts at wooden machines in the late 18th century
- First “successful” machine completed in Cornwall, NY in 1835
- Repressing machine and single-brick machines widely employed for face bricks

Slow pace of mechanization



- In 1867, over 20 different brick machines were published in *Scientific American*
- Early machines could produce 15,000 bricks per day... compared to 10,000 for the hand-made process
- Two problems had to be solved
 - How to remove the seam common with early brick presses
 - Uniform moisture content throughout the brick

Thanks to James Eads ...and railroads

Eads conducted compression strength tests:

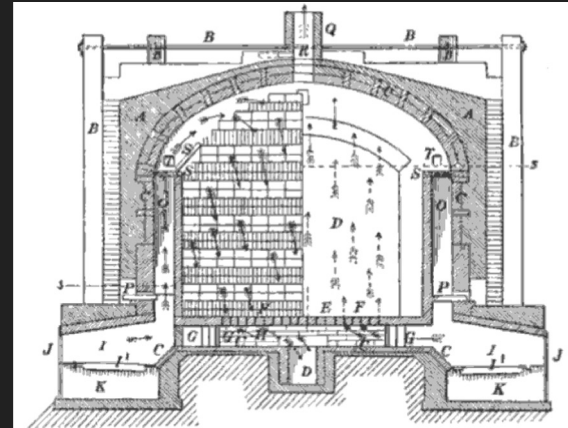
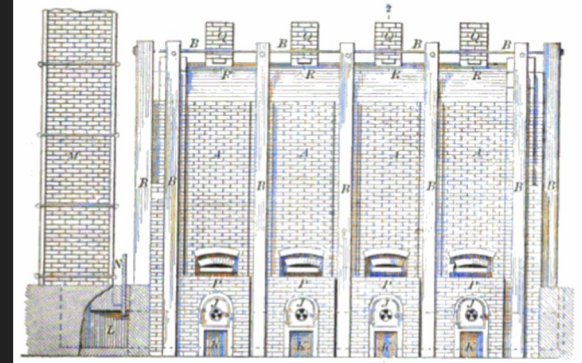
- Hand-made brick: 65 tons
- Machine-made brick: 160 tons



All of Hydraulic Brick Company's red clay was shipped into the city by rail

St. Louis: Home of the dry-press brick

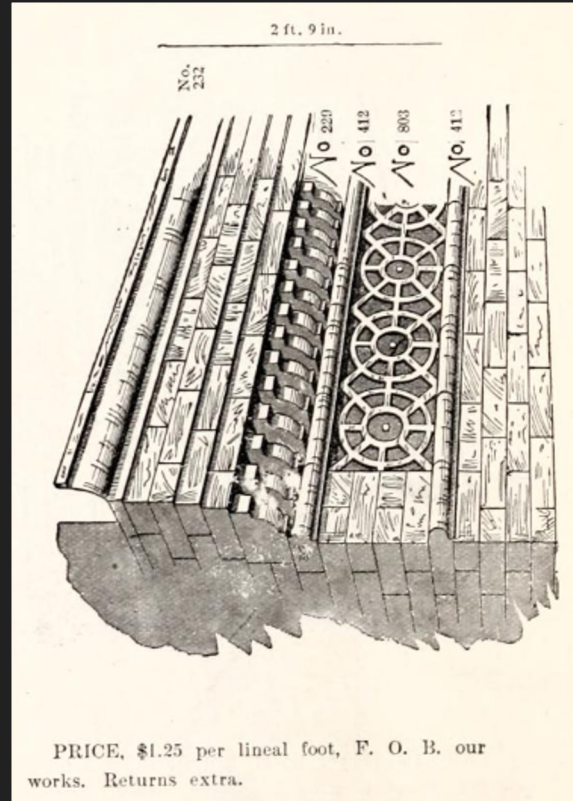
1. Plow only a few inches deep
2. Leave to dry in the sun, then store in sheds
4. “Pulverized”: lifted up in an elevator and dropped through a series of sieves
 - Good clay is “torn” not crushed, ground, etc.
5. Pressed - only once! The key of the dry-press method
6. Steam dried
7. Fired - very slowly and carefully to maximize moisture retention



Architectural Consequences



Catalog cornices

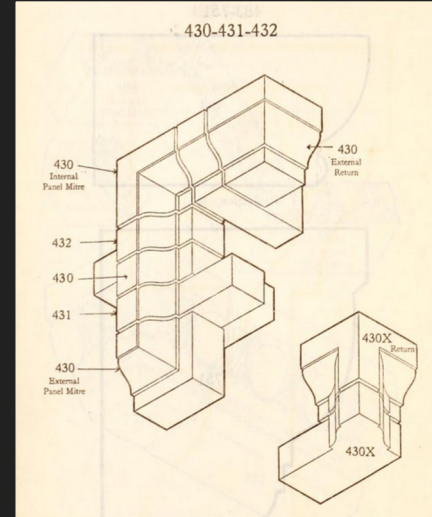
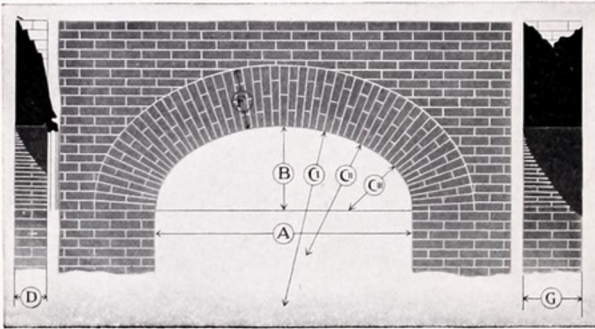


Kit arches

HYDRAULIC-PRESS BRICK COMPANY

ELLIPTIC ARCH

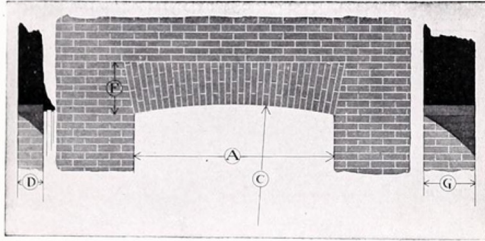
Can Be Made With Moulded Reveal



Kit arches

SEGMENT ARCH WITH FLAT TOP

Can Be Made With Moulded Reveal



GIVE FOLLOWING DETAILS:

A—Width of opening.

C—Radius.

D—Depth of reveal or soffit.

F—Height of face.

G—Depth of reveal when faced on both sides.

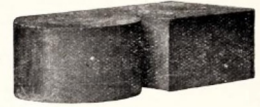
If on piers, give width of pier.

Size of joints.

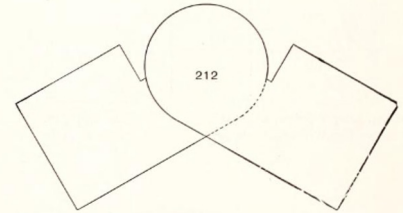
We provide for $\frac{3}{16}$ inch joints unless otherwise specified.



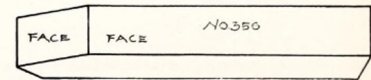
ANGLE BRICKS.



No. 212.

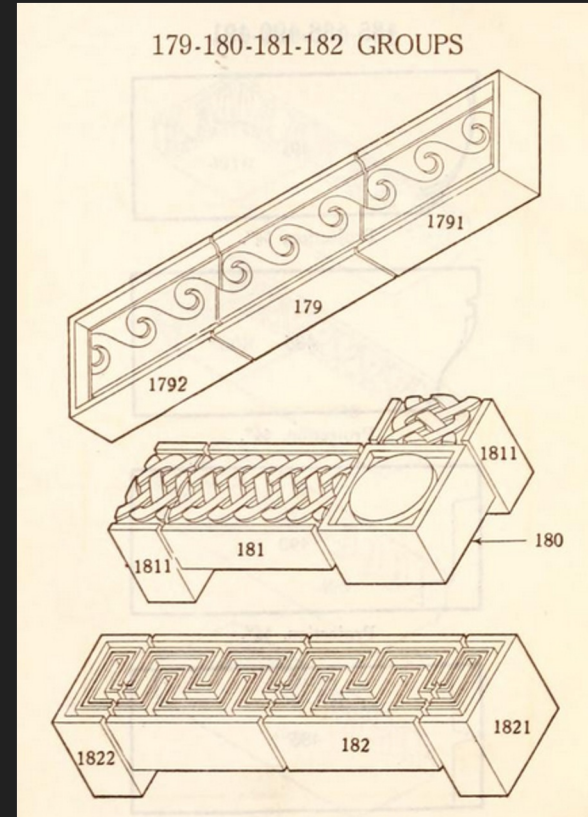


No. 212, with plain square brick, can be used to turn any angle for bay windows or for buildings built on lots of irregular shape. Projection, $\frac{1}{4}$ inches.



Roman Size, Angle 45°.

Decorative elements



Hydraulic Brick Company



- 42M brick produced in 1882
- Accounted for ½ of all STL brick production



Anthony Ittner



- Born in Lebanon, OH
- Dropped out of school at 9
- Started as a bricklaying apprentice
- Ittner brick company HQ in Swansea, IL
 - 132,000 bricks a day!
 - employed 150 men
- City councilman, state legislator, and congressman
- Co-founder of the National Brick Manufacturers Association

Ittner brick buildings

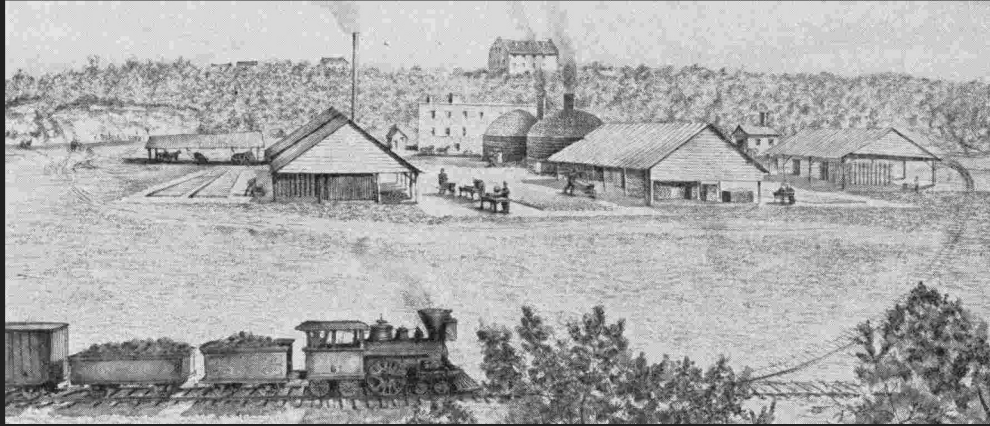


The Southern Hotel in 1908, looking southwest from the intersection of Walnut and 4th Streets
Image courtesy of the Missouri History Museum



THE BELCHER SUGAR REFINERY.

Laclede - Christy Fire Brick Company

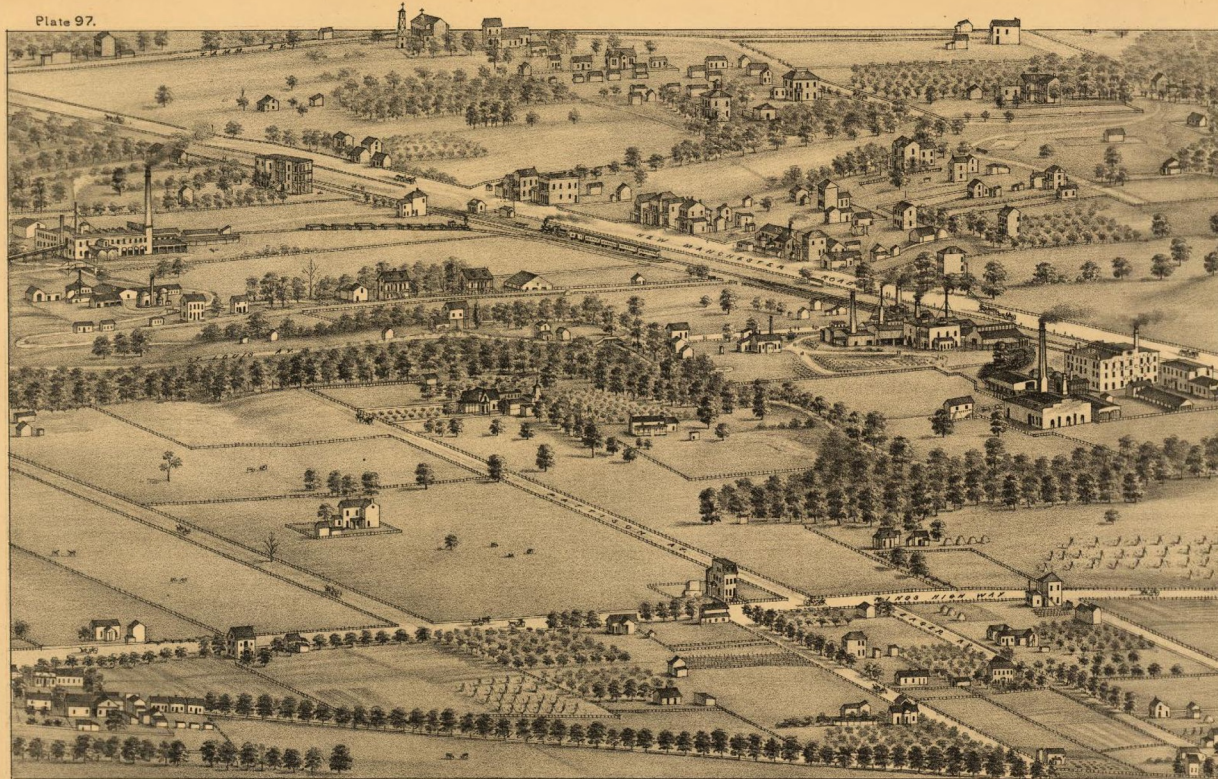


- Laclede Fire Brick founded by James Green, a contractor and furnace builder



- Christy Clay Company founded by William Christy
- Run by his two sons, William Jr. and Calvin

Cheltenham clay vein: the good stuff



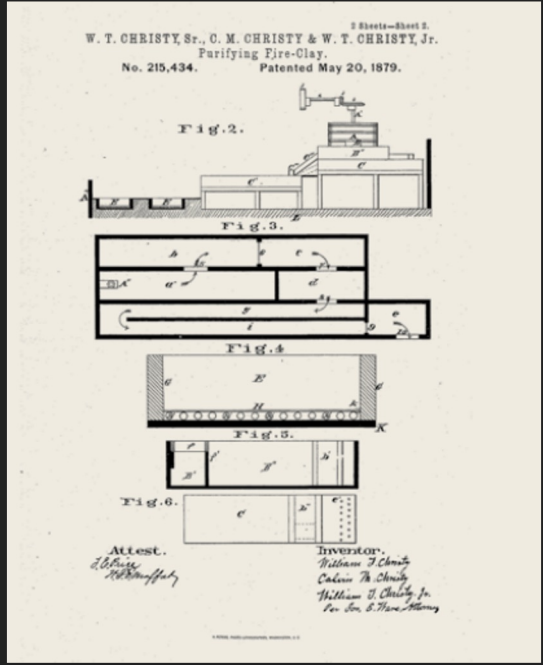
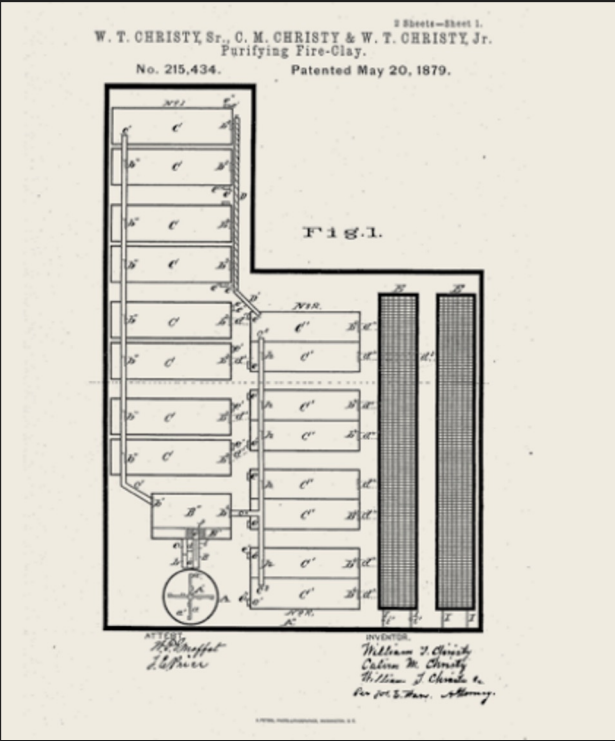
Best = glass
refractory

Better = fire brick

Good = face and
ornamental brick

- | | | | | |
|--|--|---|---|--|
| No. 1. Ince's Fire Brick Works
. James Green, Presl. | No. 4. Cheltenham Station, Face & F. N. K. | No. 8. Geo. B. Davis
. 9. Eliza J. Glen. | No. 12. P. Department
. 13. S. Mitchell's Fire Brick Works | No. 16. Professor Vies
. 17. Wm. Thomas |
| No. 2. Pacific Fire Clay Works
. Wm. W. Irvine & Co. Presl. | No. 5. Cheltenham Hotel | No. 10. Dr. Charles Gracie | No. 14. Schwab's Hotel | No. 18. St. Louis Smelting & Refining Co. |
| No. 3. St. James Church, Catholic | No. 7. District School 353. | No. 11. Henry H. Gracie | No. 15. Decker-Parbes | No. 19. Cheltenham Fire Brick Works |

Making firebrick



Winkle Terra Cotta



- Terra cotta first used in buildings in 1853
- Clay for Winkle Terra Cotta came from Glencoe, MO
- The highest quality clay possible

A lighter touch: the early 20th century



The art of brick craft



Post-WWI: Texture and “post-modern” bonding patterns



Post-war: from cement block to veneer



- Exclusively portland cement mortars
- Hard shale bricks with artificial colorants
- Expansion joints and metal ties

Modern day: protecting our historic brick



Two problems with portland cement:

- Too hard for soft brick
- Inhibits effective drying of porous bricks