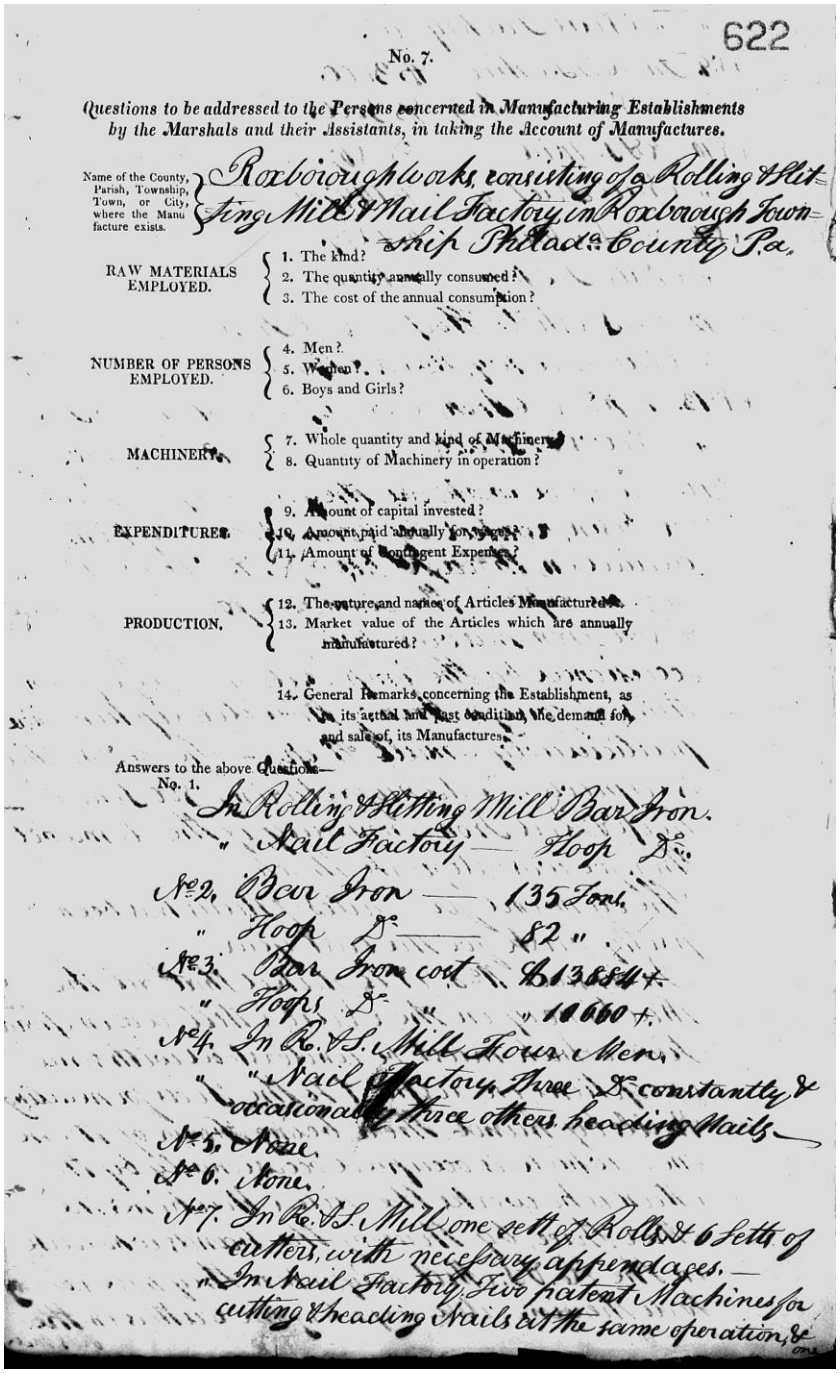
Rolling & Slitting Mill and Nail Factory[1]

1820 Census - United States Census Manufacturing Schedules: **"The Roxborough works consisting of a Rolling & Slitting Mill & Nail Factory Roxborough Township, Philadelphia County, Pa."**

John Moore is given as the employer. In 1820, he rented the mills from his father-in-law (Peter Robeson). Moore later owned a one-third part of the Mill upon the death of Robeson per an 1834 deed.

In 1804, Dr. John Moore married Catherine Robeson, b. 1781 d. 1860, the daughter of Peter Robeson and Martha Livezey. Peter Robeson was the great-grandson of Andrew Robeson Jr. (Andrew Robeson **Jr**. was the nephew of Andrew Robeson **Sr**., who purchased the land in 1691, not his son. Andrew Jr. came to own the land in 1703 after Andrew Sr. died. Martha Livezey[2] was the granddaughter of Thomas Livezey, Miller, whose home, "Glen Fern," is the last surviving miller's house in the Wissahickon Valley.[3]



622

No. 7.

Questions to be addressed to the Persons concerned in Manufacturing Establishments by the Marshals and their Assistants, in taking the Account of Manufactures.

Name of the County, Parish, Township, Town, or City, where the Manufacture exists. — Roxborough works consisting of a Rolling & Slitting Mill & Nail Factory in Roxborough Township Philada. County Pa.

RAW MATERIALS EMPLOYED.
1. The kind?
2. The quantity annually consumed?
3. The cost of the annual consumption?

NUMBER OF PERSONS EMPLOYED.
4. Men?
5. Women?
6. Boys and Girls?

MACHINERY.
7. Whole quantity and kind of Machinery?
8. Quantity of Machinery in operation?

EXPENDITURES.
9. Amount of capital invested?
10. Amount paid annually for wages?
11. Amount of contingent Expenses?

PRODUCTION.
12. The nature and names of Articles Manufactured?
13. Market value of the Articles which are annually manufactured?

14. General Remarks, concerning the Establishment, as to its actual and past condition, the demand for, and sale of, its Manufactures.

Answers to the above Questions—
No. 1. In Rolling & Slitting Mill Bar Iron.
" Nail Factory — Hoop &c.
No 2. Bar Iron — 135 Tons.
" Hoop &c. — 82 "
No 3. Bar Iron cost $13884+
" Hoops &c. " " 10660+
No 4. In R. & S. Mill Four Men.
" " Nail Factory Three & constantly & occasionally three others heading Nails
No 5. None
No 6. None
No 7. In R. & S. Mill one sett of Rolls & 6 Setts of cutters, with necessary appendages.
" In Nail Factory, Two patent Machines for cutting & heading Nails at the same operation &

No. 1. **Raw Materials Employed**: In Rolling & Slitting Mill Bar Iron. Nail Factory Hoop Iron.

2. Annually consumed: **Bar Iron 135 Tons, Hoop Iron 82 Tons**.

3. Annual Cost: Bar Iron $13,884, Hoop Iron $10,660

4. # Men: In R&S (Rolling & Slitting) Mill Four Men. Nail Factory Three men consistently & occasionally three others heading nails.

5. & 6. None (No Women or Boys/Girls)

7. Machinery: In R&S Mill, one sett *(sic)* of Rolling & 6 setts cutters with necessary appendages.

In Nail Factory, two patent Machines for cutting & heading nails at the same operation & one side Machine for cutting Brads & points, also, Four tools for heading nails by hand.

[1] CTRL-CLCK: Records of the 1820 census of manufactures (familysearch.org)

[2] See Martha's family history here: Genealogies Details — FamilySearch.org

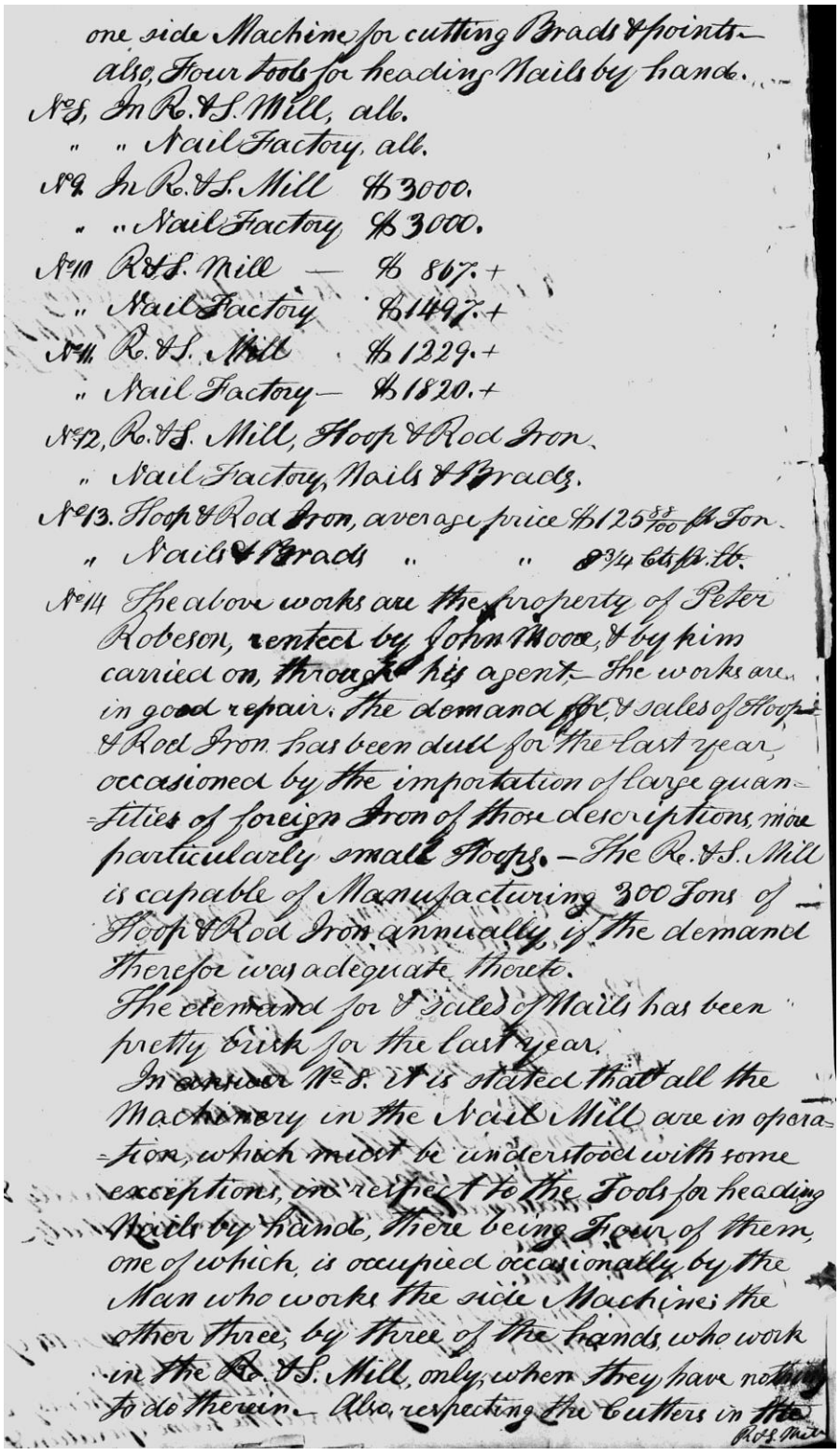
[3] Glen Fern was once the home to the Valley Green Canor Club: Northwest: Rediscovering The Past At Glen Fern - (philadelphianeighborhoods.com)

8. Quantity of Machinery in Operation: In R&S Mill, all. In Nail Factory, all.
9. Expenditures: Amount capital invested: In R&S Mill $3,000, In Nail Factory $3,000.
10. Annual Wages: R&S Mill, $867, Nail Factory, $1,497.
11. Annual Contingent Expenses: R&S Mill, $1,229, Nail Factory, $1,820.
12. Articles Manufactured: R&S Mill, Hoop & Rod Iron. Nail Factory, Nails & Brads.
13. Annual market Value: Hoop & Rod Iron, average price $ 125 88/100 per ton. Nails & Brads 8 ¾ lots per lb.
14. General Remarks concerning the Establishment, as to its actual and past condition, the demand for, and sale of, its Manufactures.

The above works are the property of Peter Robeson, rented by John Moore & by him carried on, through his agent. The works are in good repair. The demand for & sales of Hoop & Rod Iron has been dull for the last year occasioned by the importation of large quantities of foreign Iron of those descriptions, more particularly small hoops. The R&S Mills is capable of Manufacturing 300 tons of Hoop & Rod Iron annually if the demand thereof was adequate thereto,

The demand for & sail of Nails has been for the last year.

In No. 8, it is stated that all the Machinery in the Nail Mill are in operation, which must be understood with some exceptions, on respect to the Tools for heading nails by hand, there being four of them one which is occupied occasionally by the man who works the side machines the other three, by three of the hands who work in the R&S Mill only when they have nothing to do therein. Also, respecting Cutters in the R&S Mill…(next page)



one side Machine for cutting Brads & points—
also, Four tools for heading Nails by hand.
No8, In R.&S. Mill, all.
" " Nail Factory, all.
No9 In R.&S. Mill $3000.
" " Nail Factory $3000.
No10 R&S. Mill — $ 867.+
" Nail Factory $1497.+
No11 R.&S. Mill $1229.+
" Nail Factory— $1820.+
No12, R.&S. Mill, Hoop & Rod Iron.
" Nail Factory, Nails & Brads.
No13. Hoop & Rod Iron, average price $125 88/100 pr Ton.
" Nails & Brads " " 8 3/4 lots pr. lb.
No14 The above works are the property of Peter Robeson, rented by John Moore, & by him carried on, through his agent. The works are in good repair. The demand for & sales of Hoop & Rod Iron has been dull for the last year, occasioned by the importation of large quantities of foreign Iron of those descriptions, more particularly small Hoops. — The R.&S. Mill is capable of Manufacturing 300 Tons of Hoop & Rod Iron annually, if the demand therefor was adequate thereto.
The demand for & Sales of Nails has been pretty brisk for the last year.
In answer No 8. it is stated that all the Machinery in the Nail Mill are in operation, which must be understood with some exceptions, on respect to the Tools for heading Nails by hand, there being Four of them, one of which, is occupied occasionally by the Man who works the side Machines the other three, by three of the hands who work in the R.&S. Mill, only, when they have nothing to do therein. — Also, respecting the Cutters in the R.&S. Mill

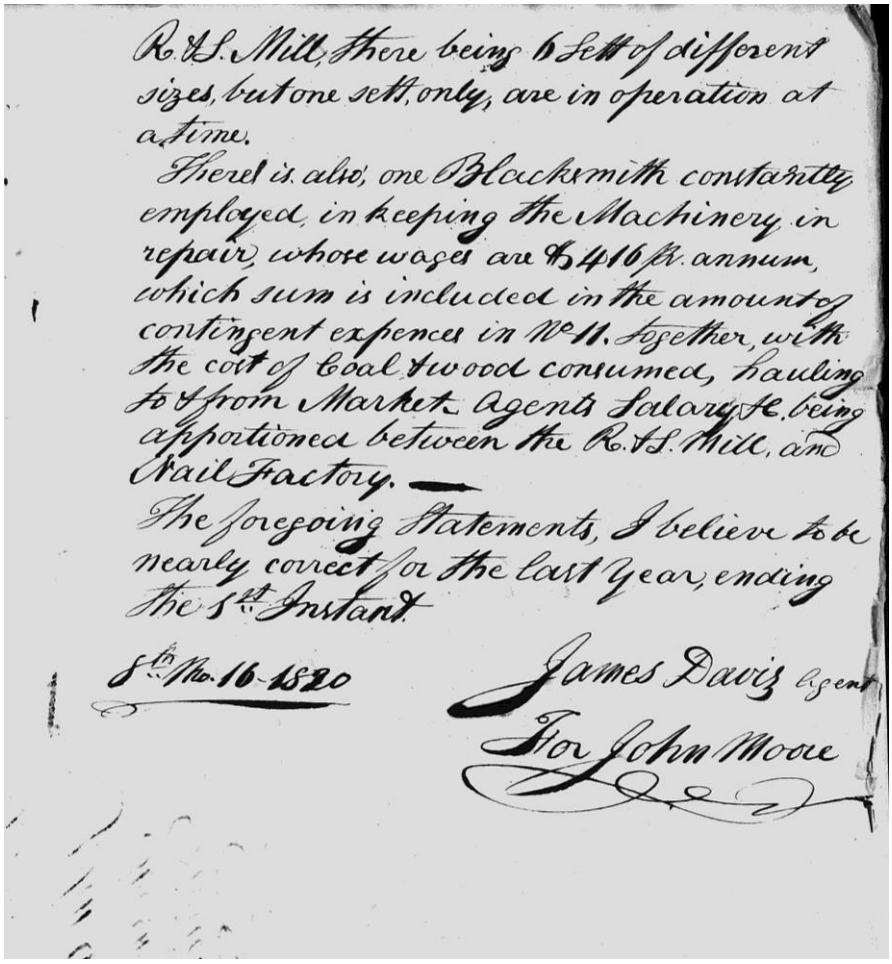
14. General Remarks continued.

R&S Mill there being Sett of different sizes, but one sett only are in operation at a time.

There is also one Blacksmith constantly employed in keeping the Machinery in repair, whose wages are $416 per annum, which sum is inclusive in the amount of contingent expenses No. 11 together with the cost of coal & wood consumed, hauling to & from Market. Agents Salary being apportioned between R&S Mill and Nail Factory.

The foregoing Statements I believe to be nearly correct for the last year ending the 1st Instant.

8th Mo. 16, 1820 James Davis, Agent, for John Moore.


R & S. Mill, there being 6 Sett of different sizes, but one sett only, are in operation at a time.

There is also one Blacksmith constantly employed in keeping the Machinery in repair, whose wages are $416 pr. annum, which sum is included in the amount of contingent expences in No. 11. together with the cost of Coal & wood consumed, hauling to & from Market. Agents Salary &c. being apportioned between the R. & S. Mill, and Nail Factory.

The foregoing Statements, I believe to be nearly correct for the last Year, ending the 1st Instant

8th Mo. 16 1820

James Davis Agent

For John Moore

The Rolling Mill waterwheel was immense, 18 feet in diameter and 11 feet wide, three times the size of the typical flour water wheel with four to five times the water power measured in “inches of water.”

The pages that follow come from 1822 and represent a remarkable drawing by Frederick Graff, the architect of the Fairmount Dam, and as remarkable measurements of the Mill’s waterwheel and its power.

The Rolling Mill generated **596 “Inches of Water”** power, while the Grist Mill north of it above Ridge Avenue had three wheels under the same roof, and the three in total generated 353 Inches of Water power.

An inch of water is as much water as will pass through an aperture one-inch square under a head or pressure of three feet, measured from the surface of the water to the center of the aperture.

1822 Graff Collection - The Franklin Institute courtesy of the Philadelphia Water Dept. Archives

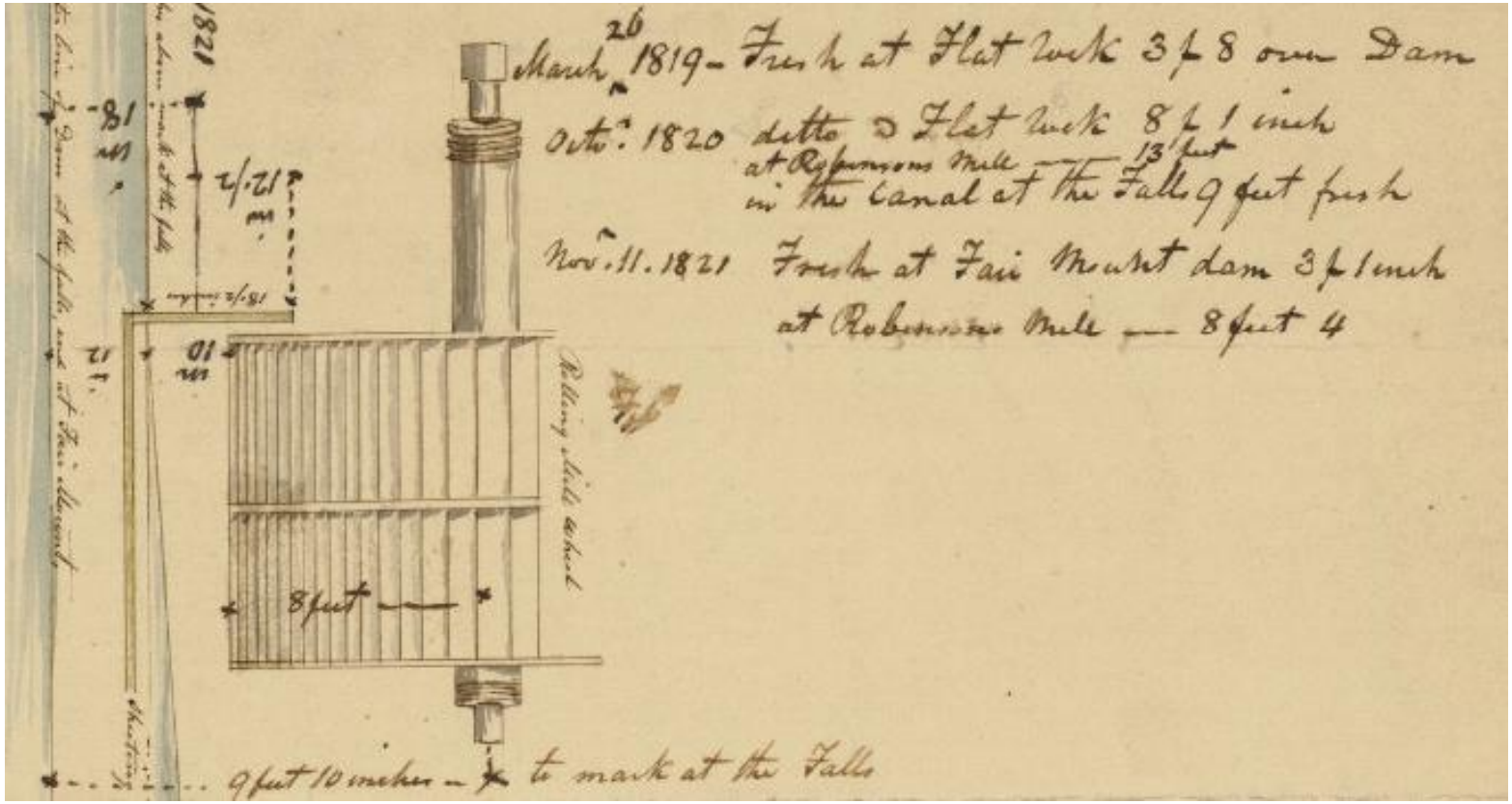
See footnote for link to full drawing[4].

Title: "Peter Robinson's mills above the Falls examined by the Watering Committee as leveled by Graff[5] same day Sep. 25, 1821." "Description Peter Robinson's mills above the Falls examined by the Watering Committee as leveled by Graff same day Sep. 25, 1821 in order to ascertain how much the raising of the dam 18 inches at Fair Mount would injure them" *("Them" being the Robesons.)*

The wheel is shown to have a 16-foot diameter and was 10 to 11 feet wide (see 1822 Saw Mill, Nail Factory, and Rolling Mill Measurements).

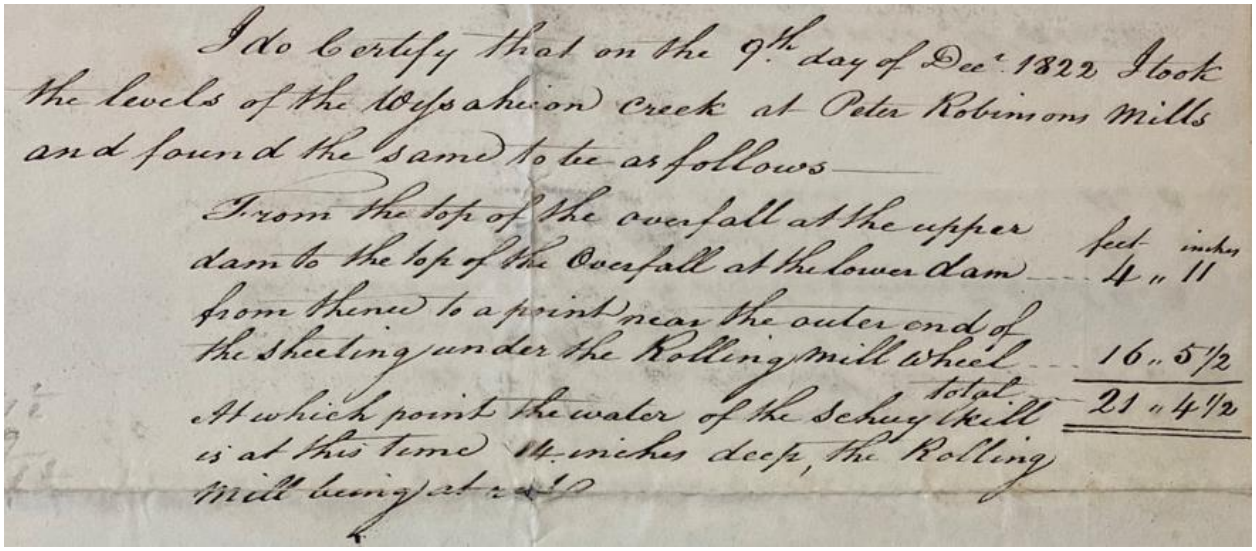
[4] Best quality: -- Philadelphia Architects and Buildings (philadelphiabuildings.org) or CTRL+CLCK: Peter Robinson's mills above the Falls examined by the [Watering?] Committee as leveled by Graff same day Sep. 25, 1821 - 1821 | Philadelphia Water Department (pastperfectonline.com)

[5] Graff, Frederic, Jr. (1817 - 1890) -- Philadelphia Architects and Buildings (philadelphiabuildings.org)


March 26 1819 – Fresh at Flat rock 3 f 8 over Dam
Octo. 1820 ditto @ Flat rock 8 f 1 inch
at Robinsons mill — 13 feet
in the Canal at the Falls 9 feet fresh
Nov. 11. 1821 Fresh at Fair Market dam 3 f 1 inch
at Robinsons Mill — 8 feet 4
8 feet
9 feet 10 inches — to mark at the Falls

1822 Measurements Robeson's two Mill 1.) the "Rolling Mill and 2.) "Merchant and Grist Mills" (three wheels)

A transcription of measurements taken as part of Robeson suit vs. the Schuylkill Navigation Company for the loss of water power when the Navigation Company built the lower dam c. 1816 and reduced the amount of water the Rolling Mill received. Endnote includes other mill with three wheels.[i]



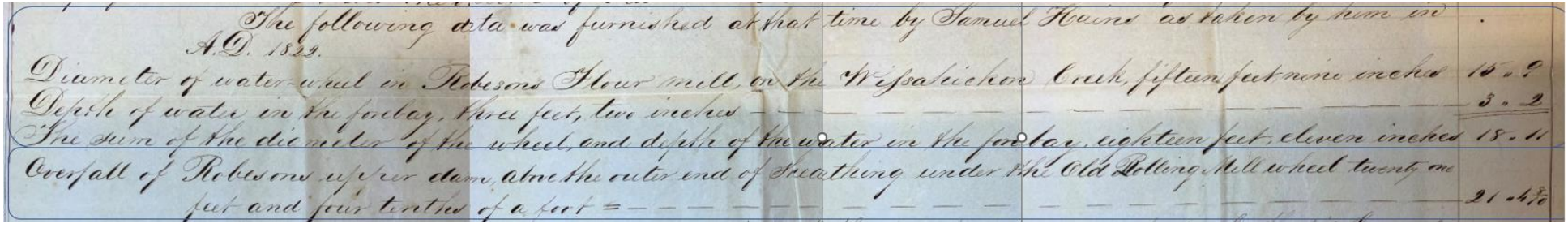
I do Certify that on the 9th day of Decr 1822 I took the levels of the Wissahickon Creek at Peter Robinsons Mills and found the same to be as follows

	feet	inches
From the top of the overfall at the upper dam to the top of the Overfall at the lower dam	4	11
from thence to a point near the outer end of the Sheeling under the Rolling mill Wheel	16	5½
total	21	4½

At which point the water of the Schuylkill is at this time 14 inches deep, the Rolling Mill being at work

Of great interest here, below is another recap of water flow measurements made in 1822 wherein the mill is referred to as "…the **Old Rolling Mill."** (Next to last line below on far right.)

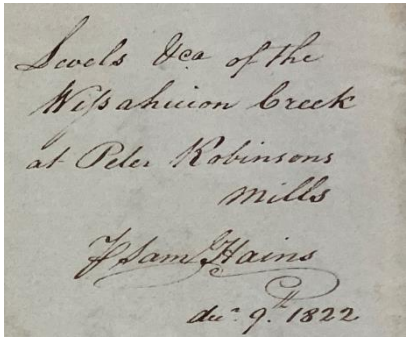
Knowing that there never was a '<u>new</u> rolling mill', it seems reasonable to posit that the **writer (Samuel Haines) is implying that the rolling mill was built well before the turn of the century.**



The following data was furnished at that time by Samuel Haines as taken by him in A.D. 1822.

Diameter of water wheel in Robesons Flour mill on the Wissahickon Creek, fifteen feet nine inches	15.9
Depth of water in the forebay, three feet, two inches	3.2
The sum of the diameter of the wheel and depth of the water in the forebay, eighteen feet, eleven inches	18.11
Overfall of Robesons upper dam, at the outer end of Sheathing under the Old Rolling Mill wheel twenty one feet and four tenths of a foot =	21.4/10

1822 Saw Mill, Nail Factory, and Rolling Mill Measurements[6]



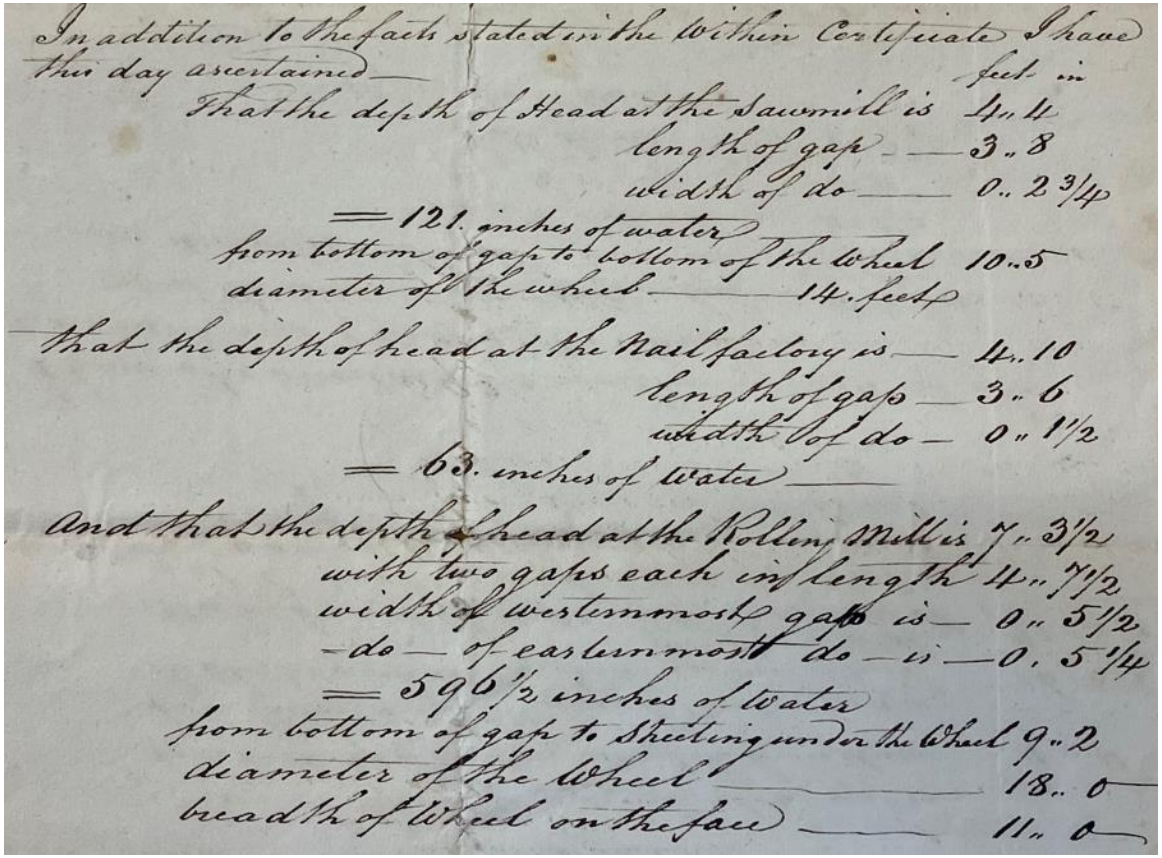
The document introduce on the prior page has evidence that a **Nail Factory** existed on the same race that the Saw Mill and Rolling Mill used to draw their power[7]. The document comes from the Philadelphia City Archives Fairmount Park purchases, Dobson Files: "Levels &, etc… Claims of the Peter Robeson on the Corporation" being the Schuylkill River Navigation Corporation for raising the dam.

Water power was measured in "inches of water" the mill produced and it is interesting to note that the Saw Mill had **121** inches of water, the Nail Factory **63** inches of water and the Rolling Mill an impressive **596.5** inches of water – details in this Endnote[ii]. Also, a 'nail factory' is referend to in some documents as a "**slitting mill** to make strips that could be fashioned into nails or other products."[8]

[6] 1822 Measurements Robeson.pdf (philacanoe.org)

[7] See also reference in the Chadwick Papers to its being the first nail factory in the United States, albeit unsourced; pg 8: Chadwick Papers Volume 16.pdf (wsimg.com)

[8] See here and search on word "nail" ExplorePAHistory.com - Stories from PA History **Furnace and Forge of America**



In addition to the facts stated in the within Certificate I have this day ascertained—

	feet	in
That the depth of Head at the Sawmill is	4	4
length of gap	3	8
width of do	0	2 3/4

= 121. inches of water

from bottom of gap to bottom of the Wheel	10	5
diameter of the wheel	14.	feet

That the depth of head at the Nail factory is — 4 . . 10

length of gap	3	6
width of do	0	1/2

= 63. inches of Water

And that the depth of Head at the Rolling Mill is 7 . . 3/2

with two gaps each in length	4	7/2
width of westernmost gap is	0	5/2
do — of easternmost do — is	0	5 1/4

= 596 1/2 inches of Water

from bottom of gap to Shutting under the Wheel	9	2
diameter of the Wheel	18	0
breadth of Wheel on the face	11	0

[i] **1822** Measurements Robeson's two Mill 1.) the "Rolling Mill and 2.) "Merchant and Grist Mills" (three wheels)

I do Certify that on the 9th day of Decr 1822 I took the levels of the Wissahicon Creek at Peter Robinsons Mills and found the same to be as follows

	feet	inches
From the top of the overfall at the upper dam to the top of the Overfall at the lower dam	4	11
from thence to a point near the outer end of the sheeting under the Rolling mill Wheel	16	5½
total	21	4½

At which point the water of the Schuylkill is at this time 14 inches deep, the Rolling mill being at rest

I have also ascertained the following facts at the merchant and Grist Mills to wit

That the lower or Grist mill wheel is 15½ feet in diameter

	feet	in
depth of Head	4.	1¼
length of gap	2.	4
depth of do	0.	3¾

= 107. inches of Water

that the middle wheel is 15½ feet diameter

	ft	in
depth of head	3	10¾
length of gap	3.	3
depth of do	0.	4

= 156 inches of Water

that the upper mill wheel is 15 ft. 9 in diameter

	ft	in
depth of head	3.	2
length of gap	2.	0
depth of do	0.	3¾

= 90. inches of Water

Samuel Hains

DOBSON, JOHN & JAMES

CORRESPONDENCE & PAPERS

[ii] Measurements to validate water power 1822 part of suit Robeson's v. Schuylkill Navigation Co. for loss of power due to Fairmount dam raising level of the River.

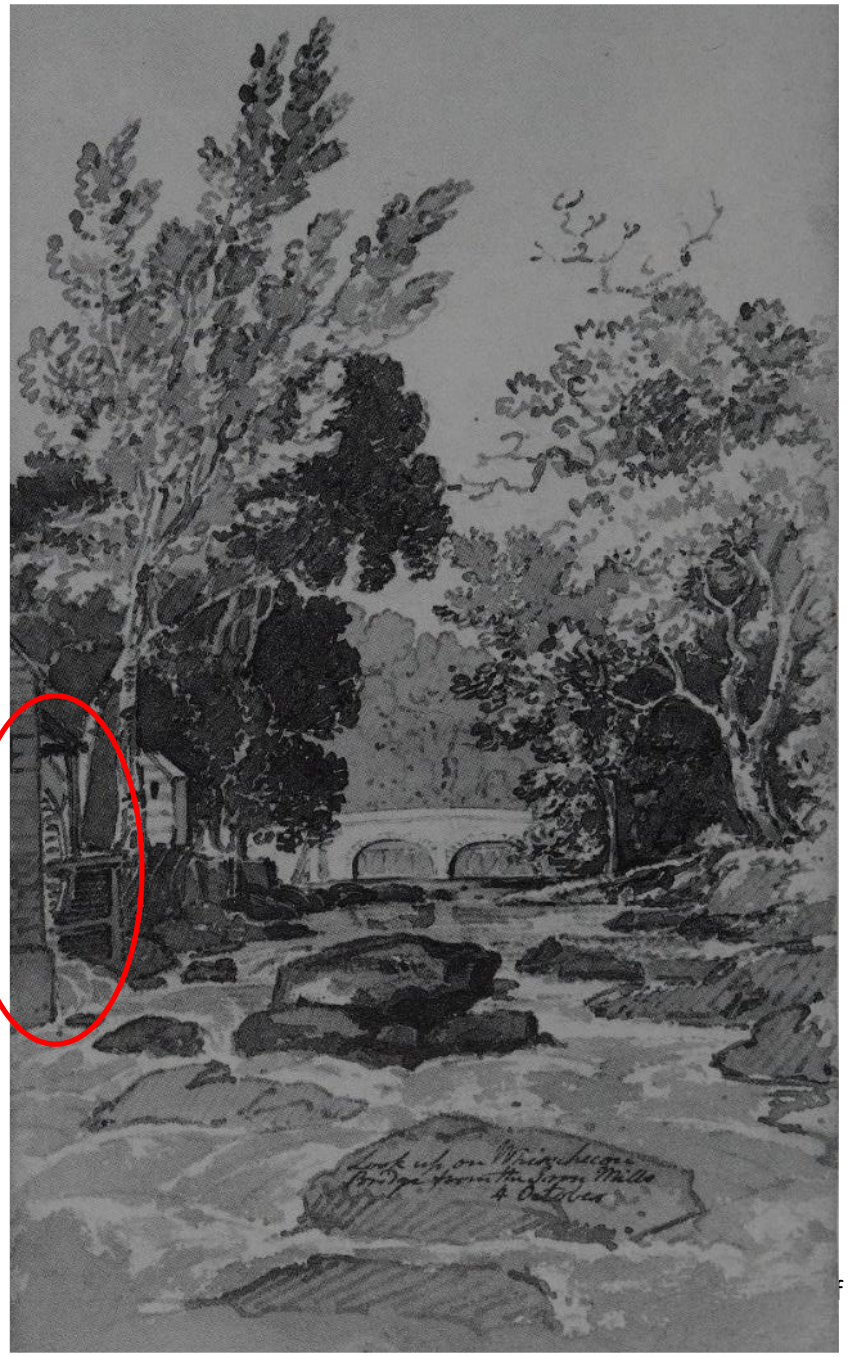
1822 Measurements **Grain Mill Waterwheels**	**Wheel** Diameter	Depth of Head Feet	Inches	Length Gap Feet	Inches	**Gap Total Inches**	Depth Inches Gap	INCHES of **WATER**	Formula **Gap x** Gap Depth
Lower	15.50	4	1.25	2	4	**28.00**	**3.75**	**107**	105.00
Middle	15.50	3	10.75	3	3	**39.00**	**4**	**156**	156.00
Upper	15.75	3	2	2	0	**24.00**	**3.75**	**90**	90.00

Three mills South of Ridge Ave	**Wheel** **Diameter**	Depth of Head Feet	Inches	Length Gap Feet	Inches	**Gap Total Inches**	Gap Depth **West**	Gap Depth **East**	Total Depth Depth	Document INCHES of **WATER**
Sawmill	14.00	4	4	3	8	**44.00**	**2.75**	-	2.75	**121**
Nail Factory	*Missing*	4	10	3	6	**42.00**	**1.5**	-	1.5	**63**
Robeson's Rolling Mill*	**18.00**	**7**	**3.5**	**4**	**7.5**	**55.50**	**5.5**	**5.25**	**10.75**	**596.5**
and its Head of the Wheel on its Face	**11.00**	***(width)***	1822 Graff Drawing has Wheel 10 inches above tail race bottom clearance				*Two Blade Buckets On the drawing **do.** = ditto			

Gap = distance between buckets on the wheel that carried the water to turn the wheel.

1816 Captain Watson's "Travels in America: The Sketchbooks and Diary of Joshua Rowley Watson."

The Robeson Mills looking from the west bank of the Schuylkill River. Watercolor by Captain Joshua Watson, 1816. Source: The Barra Foundation, Inc.



The <u>writing on the rock</u> on the right reads**:**

Look up on the Whissihicon Bridge

from the Iron Mills 4 October 1816

The NE corner of the Robeson Rolling Mill and the **<u>waterwheel's 10+ foot wide paddles can be seen on the left side</u>**, with water flowing out of its tail race (red circle).

Farther up on the left is a Saw Mill.

The bridge crosses 'Ridge Road,' known as Ridge Turnpike In 1816.