WASC 1588

WAI 0640

The Farmer Collection

(1) List of Slides

(2) Glass Slides +
(3) Index Cards
in Large Format

WASC-1588-3

WASC-1588-2

WA1-0640

R·C· FARMER- CONTACT PRINTS

HEAVY — GLASS SLIDES

List of 3¼ x 3¼ - inch slides on explosives subjects thought to be related to the lectures of Dr R.C. Farmer.

To be included in WASC collection

Slides. Series C. Explosives (Artillery Coll.)

		2
		4
C.1	Sectioned filled shell	6
C.2.	Design of large propellant bomb.	8
C.3.	Calorimetric bomb	10
C.4	Calorimetic bomb.	12
C.5	Calorimetic bomb.	14
C.6	Large propellant bomb.	16
C.7	Dautriche app. for R. of D.	18
C.8.	Lead plates after Dautriche test.	20
C.9	Lead plates after Dautriche test.	22
C.10	Impact machine plan and elevation.	24
C.11	Impact machine. Closed vessel	26
C.12	Impact machine	28
		30

Slides. Series C. Explosives (Artillery Coll.)

		2
		4
C.13	Lead Cylinder test.	6
C.14	Pressure bar for 18 pdr shell.	8
C.15	Pressure bar for guines.	10
C.16	Pressure bar for 10 gr detonators	12
C.17.	Pressure bar for 10 gr detonators	14
C.18.	Fragmentation of 18 pdr shell.	16
C.19	Test for CE. Vacuum stability tube.	18
C.20	Falling sphere Viscometer	20
C.21.	G.P. charcoal retorts	22
C.22	G.P. grinding mill.	24
C.23	G.P. mixing	26
C.24	G.P. incorporating mill	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd.
To repeat order state 5x8 Q.R. Feint

Slides Series C. Explosives (Artillery Coll.)

		2
		4
C.25	G.P. pressing	6
C.26	G P granulating	8
C.27.	G P Glazing barrels	10
C.28	N.G. Hill (picture)	12
C.29.	Nitrator Separator.	14
C.30	N.G. Hill explosion.	16
C.31.	N.G. Nitrator Separator house explosion.	18
C.32	Forms of nitroglycerine.	20
C.33	N/C picking tables	22
C.34.	Picking tables.	24
C.35	Willowing	26
C.36	Drier for Cotton.	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd.
To repeat order state 5x8 Q.R. Feint

Slides. Series C. Explosives (Artillery Coll.)

		2
		4
C.37	Aluminium cooling bins	6
C.38	Nathan Thomson Displacement pans.	8
C.39.	Nitrating house (G.C.)	10
C.40	Wooden vats for boiling G.C.	12
C.41.	Beating engine.	14
C.42.	Sand chutes magnets	16
C.43.	Circulating tanks.	18
C.44.	G/C Press.	20
C.45	Ballistite. Wet mixing of N/C + N/G	22
C.46	Ballistite. Roller drying plate.	24
C.47.	Ballistite. Rolling dough.	26
C.48	Ballistite. Cutting sheets into squares.	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Slides. Series C. Explosives (Artillery Cols.) 2

4

C.49	Ballistite blending.	6
C.50	Cordite paste mixing	8
C.51.	N/C Incorporator	10
C.52	N/C Incorporator tilted.	12
C.53	Cordite Incorporator	14
C.54.	Cordite Incorporator	16
C.55	Drive for Incorporators	18
C.56	Cordite press houses	20
C.57.	Cordite press houses	22
C.58.	Cordite press cylinder.	24
C.59	Cordite Press	26
C.60	Cordite Press	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Slides Series C. Explosives. (Artillery Cols.) 2

4

C.61	Cordite press	6
C.62	Rifle Cordite press	8
C.63	Cordite Solvent recovery Stove	10
C 64	Recovery drying Stove.	12
C 65	Cordite Solvent recovery. Flask trap on vapour main	14
C 66	Air main Sulphur burners.	16
C.67	Reaction Tower in Centre	18
C 68	Cordite Solvent recovery towers	20
C 69	Primary Stills + condensers.	22
C 70	Rectifying Still + condensers	24
C 71	Arden Cordite discs for pressing	26
C.72	Derivation of TNTs from Toluene (diagr.)	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Slides. Series C. Explosives (Artillery Coll.)

		2
		4
C.73	Old TNT plant.	6
C.74.	HMF Queensferry.	8
C.75	TNT. Queensferry "A" unit.	10
C.76	TNT unit Queensferry.	12
C.77	TNT Nitrationprocess diagram.	14
C.78	TNT Nitrating House. Nitration Pot.	16
C.79.	TNT Nitration House.	18
C.80	TNT detonators	20
C.81.	Pellite vats	22
C.82	TNT discharging pellite	24
C.83	TNT Nitration House	26
C.84.	TNT Sulphite Purif. House.	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Slides. Series C. Explosives (Artillery Coll.)

		2
		4
C.85	TNT Sulphiting	6
C.86	TNT Sulphite wash.	8
C.87.	TNT Sulphite washer.	10
C.88.	TNT. Wash House. Driers.	12
C.89	TNT Granulating roll.	14
C.90	TNT. Packing House.	16
C.91.	TNT Wash House.	18
C.92	TNT. Continuous washer.	20
C.93.	Principle of the Screwfilling machine (diagram)	22
C.94.	Incorporating mills Amatol.	24
C.95	TNT. Spewing of Amatol due to NH_4CNS	26
C.96	P.A. Pot process.	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Slides Series C. Explosives (Artillery Coll.) 2

4

C.97.	Amatol mixer.	6
C.98	P.A. Continuous Process	8
C.99	Tetryl mixing house.	10
C.100	Tetryl Nitration.	12
C.101.	Tetryl Nitration House filling	14
C.102.	Tetryl Nitration House Boiling Vats.	16
C.103.	Tetryl Nitration House Displacement.	18
C.104.	Tetryl ~~Nitration~~ Purifn by HNO_3. Boiling Vat.	20
C.105.	Tetryl Quinan Process.	22
C.106.	Tetryl. Corning House	24
C.107	Sulphonating & Nitration Tanks.	26
C.108	Sulphonating Pot for Tar Oil.	28
		30

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Slides Series C. Explosives (Artillery Coll.) 2

4

C.109	CE Fillers for & Separating Crude CE	6
C.110	CE Purification. Acetone dissolving pots.	8
C.~~11~~110	CE Purification. Acetone recovery stills.	10
C.111	Fulminate	12
C.112.	Fulminate. Jelly Bag mixer.	14
C.113.	Fulminate. Press for filling detonators.	16
C.114	Recovery of N/G waste acids	18
C.115	G.C. waste acids. Absorption towers.	20
C.116	G.C. waste acids. Recovery	22
C.118	H_2SO_4 recovery.	24
C.119	H_2SO_4 Concentrator.	26
C.120	Parts of Rotary pump.	28
C.121	Rotary Pump.	30

Slides. Series C. Explosives (Artillery Coll.)

C.1	Sectioned filled shell	2
C.2.	Design of large propellant bomb.	4
C.3.	Calorimetric bomb	6
C.4	Calorimetric bomb.	8
C.5	Calorimetric bomb.	10
C.6	Large propellant bomb.	12
C.7	Daubriche app. for R. of D.	14
C.8.	Lead plates after Daubriche test.	16
C.9	Lead plates after Daubriche test.	18
C.10	Impact machine plan and elevation.	20
C.11	Impact machine. Closed vessel	22
C.12	Impact machine	24
C.13	Lead cylinder test	26
C.14	Pressure bar for 18 pdr shell.	28
C.15	Pressure bar for guns.	30

C.16	Pressure bar for 10 gr detonators	6
C.17.	Pressure bar for 10 gr detonators	8
C.18.	Fragmentation of 18 pdr shell.	10
C.19	Test for CE. Vacuum stability tube.	12
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C.25 G.P. pressing

C.26 GP granulating

C.27. GP Glazing barrels

C.28 N.G. Hill (picture)

C.29. Nitrator Separator.

C.30 N.G. Hill explosion.

C.31. N.G. Nitrator separator house explosion.

C.32 Forms of nitroglycerine.

C.33 N/C picking tables

C.34. Picking tables.

C.35 Willowing

C.36 Drier for Cotton.

C.37 Aluminium Cooling bins

C.38 Nathan Thomson Displacement pans.

C.39. Nitrating house (G.C.)

C.40 Wooden vats for boiling G.C.

C.41. Beating engines.

C.42. Sand chutes magnets

C.43. Circulating tanks.

C.44. G/c Press.

C.45 Ballistite. Wet mixing of N/c & N/G

C.46 Ballistite. Roller drying plates.

C.47. Ballistite. Rolling dough.

C.48 Ballistite. Cutting sheets into squares.

Moore's Modern Methods, Ltd., London. Binder and holes in leaves. Pat'd.
To repeat order state 5x8 Q.R. Feint

Moore's Modern Methods. Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

Moore's Modern Methods, Ltd., London. Binder and holes in leaves, Pat'd. To repeat order state 5x8 Q.R. Feint

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C.54.	Cordite Incorporator	16
C.55	Drive for Incorporators	18
C.56	Cordite Press Houses	20
C.57.	Cordite Press Houses	22
C.58.	Cordite Press Cylinder.	24
C.59	Cordite Press	26
C.60	Cordite Press	28
C.61	Cordite Press	30
C.62	Rifle Cordite Press	6
C.63	Cordite Solvent Recovery Stove	8
C 64	Recovery drying Stove.	10
C 65	Cordite Solvent Recovery. Flask traps on Vapour Main	12
C 66	Air Main Sulphur Burners.	14
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C 68	Cordite Solvent Recovery Towers	18
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C. ~~No~~ 110	CE Purification. Acetone recovery Stills.	10
C. 111	Fulminate	12
C. 112.	Fulminate. Jelly Bag mixer.	14
C.113.	Fulminate. Press for filling detonators.	16
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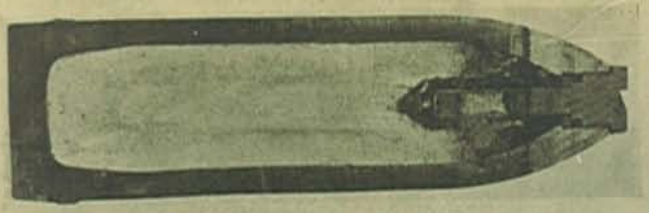
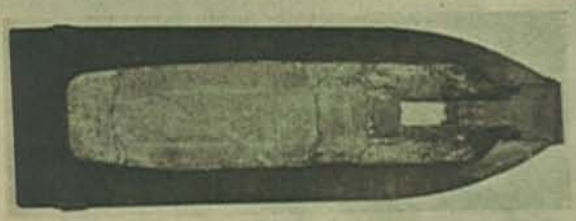
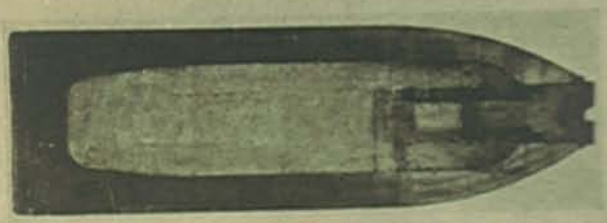


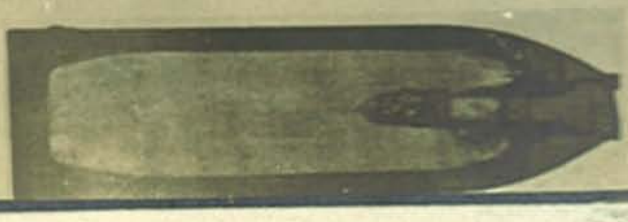
8 1 AINTREE ... ... 6" Shell, Batch 17.
Mark of merit = 4·1 and 3·5. Set-back 0·3".
Trotyl badly broken.



8 5 AINTREE ... ... 6" Shell, Batch 13.
Mark of merit = 2·9 and 5·0. Set-back 0·2".
Main charge of amatol is cracked and head of charge is slightly damaged.



8 9 AINTREE ... ... 6" Shell, Batch 21.
Mark of merit = 9·2. No set-back. Head of charge is soft but quite intact.



c2

Design of large propellant bomb.

Not located at 10.9.86.

C3

Calorimetric bomb.

Not located at 10.9.86.

C4.
Calorimetr bomb.

Not located at 10.9.86.

C5

Calorimetric bomb.

NST located at 10.9.86.

C6.

Large propellant bomb.

Not located at 10.9.86.

C7

Dautriche (?) app-for R. of D.

Not located at 10.9.86.

C8

Lead Plates after Daubrée test.

Not located at 10.9.86.

C9

Leadplates after Dautriche test.

Not located at 10.9.86.

C10.

Impact machine plan and elevation.

Not located at 10.9.86.

C11.

Impact machine. Closed vessel.

Not located at 10.9.86.

C12.

Impact machine.

Not located at 10.9.86.

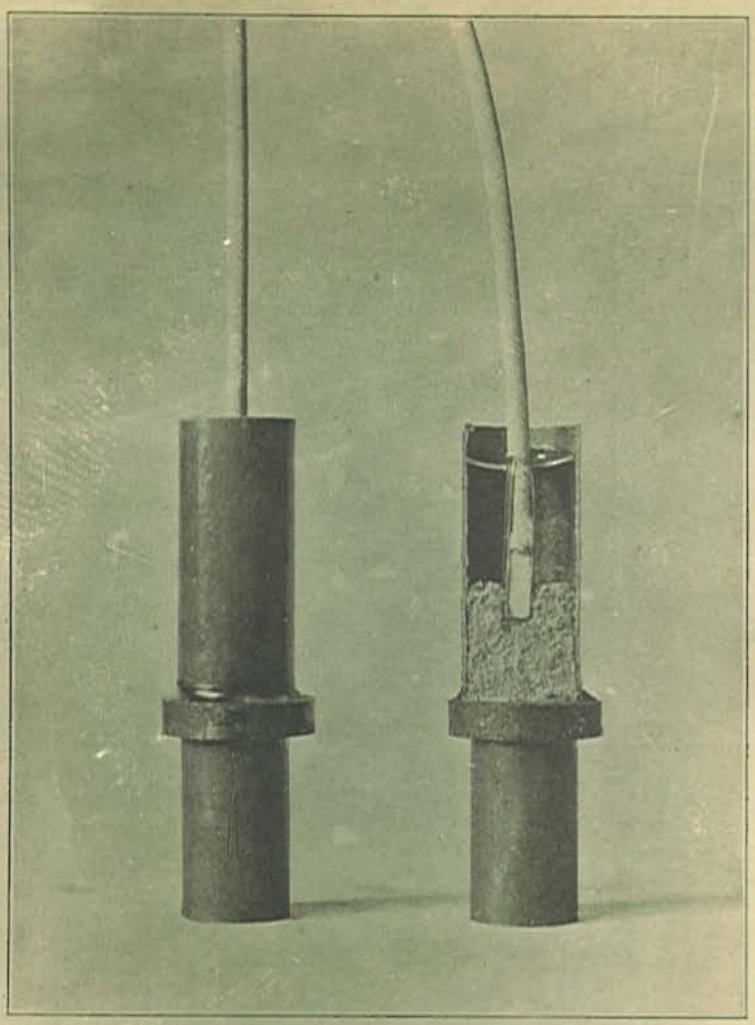


FIG. 2.

ARRANGEMENT OF CHARGE FOR LEAD BLOCK COMPRESSION TEST.

C 14

Pressure bar for 18 pd (?) Shell.

Not located at 10.9.86.

C15

Pressure bar for gauzes (?)

Not located at 10.9.86.

C16

Pressure bar for 10 gr. detonators.

Not Located at 10.9.86.

C17

Pressure bar for 10 gr. detonators.

Not located at 10.9.86.

c18.

Fragmentation of 18 pd (?) Shell.

Not Located at 10.9.86.

C.19

Test for CE Vacuum Stability Tube.

Not located at 10.9.86.

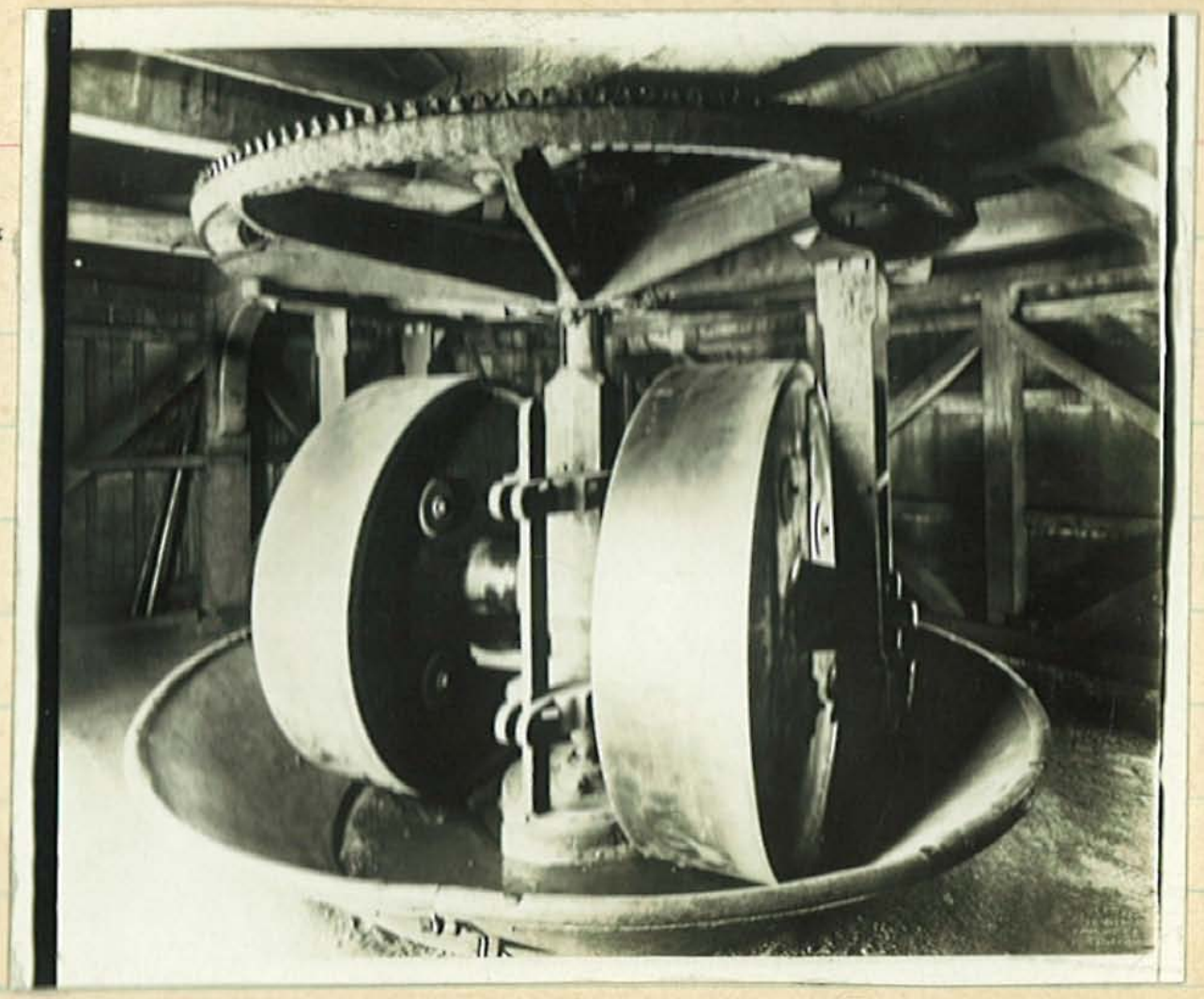
c 20.

Falling Sphere Viscometer.

Not located at 10.9.86.

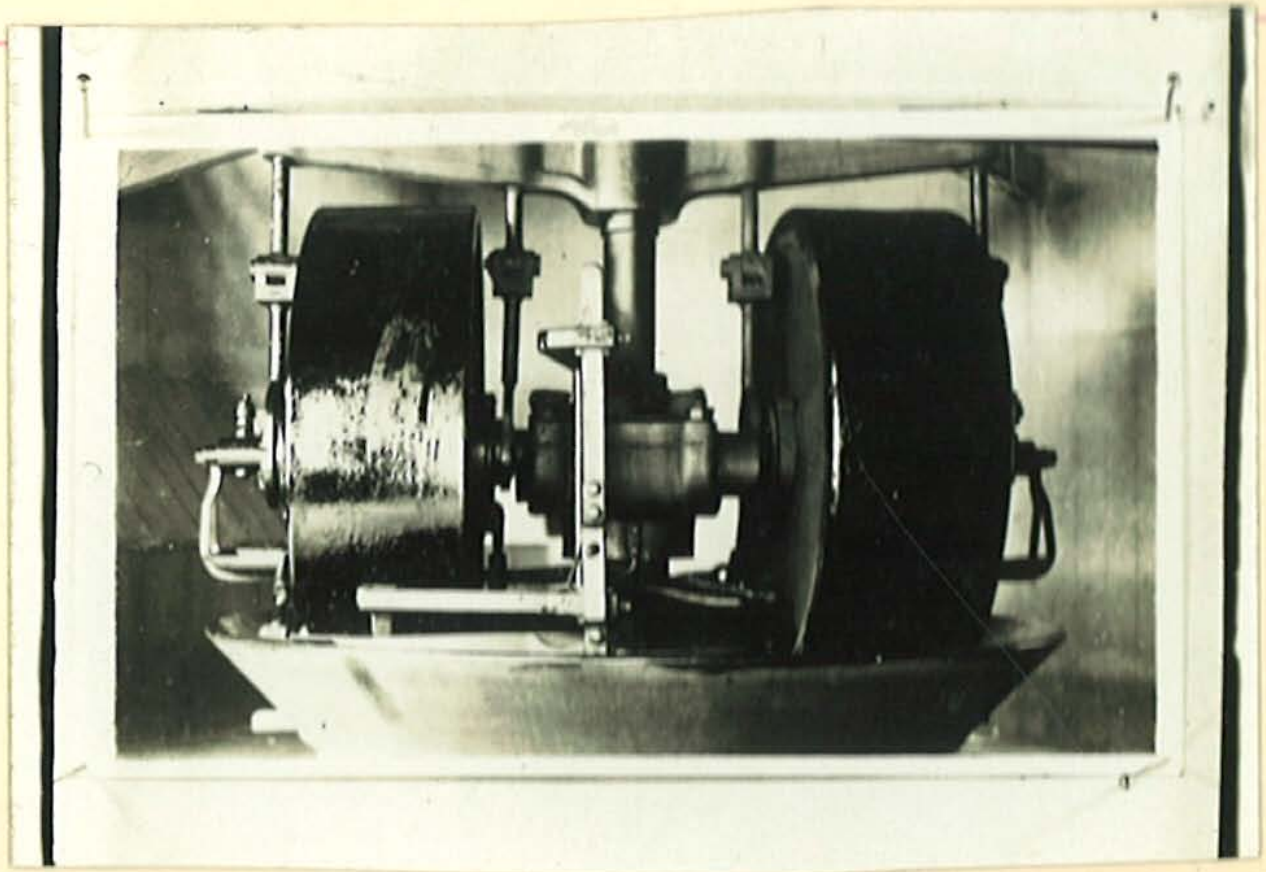
C. 21

C. 22

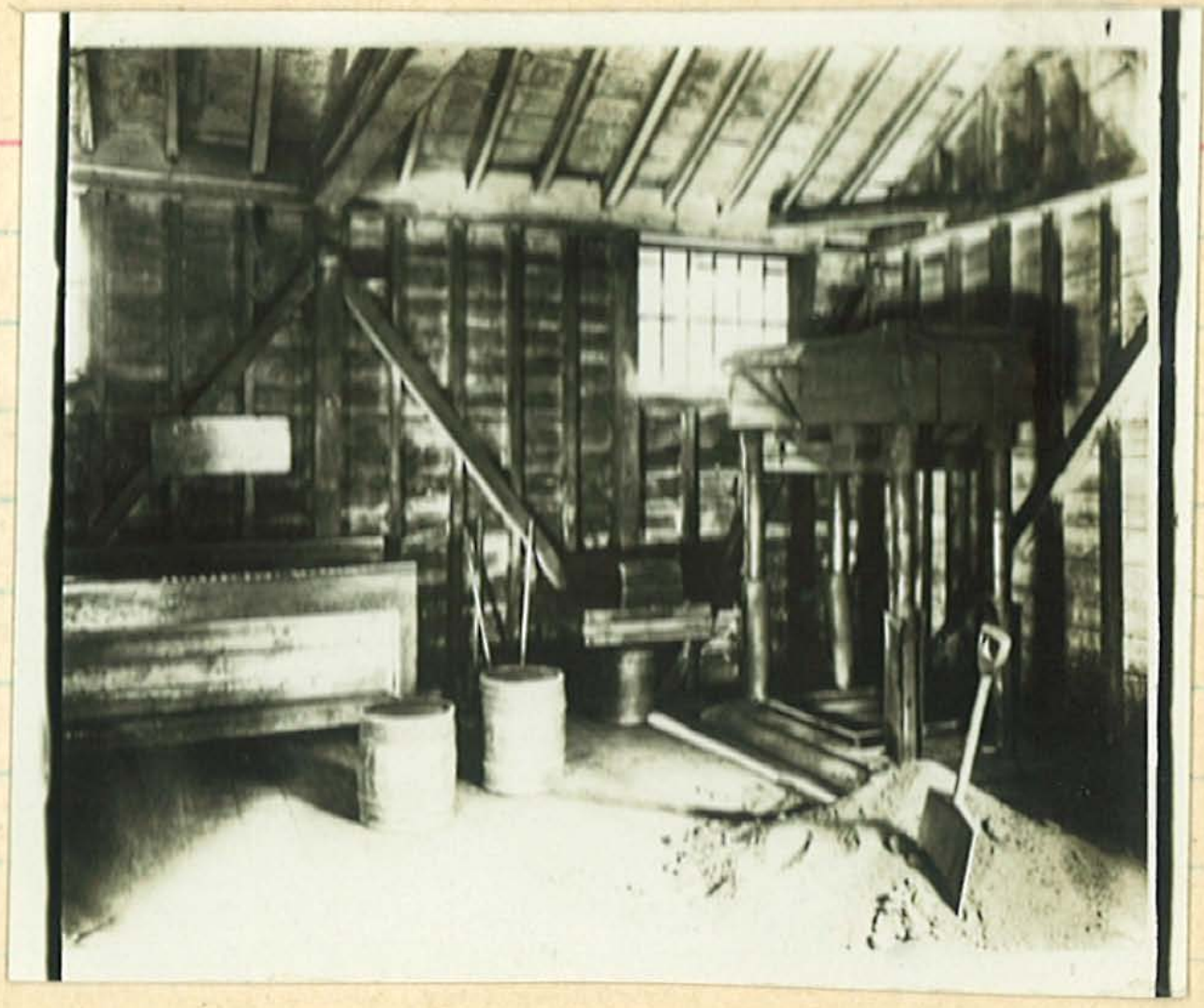


C 23

C. 24



C 25

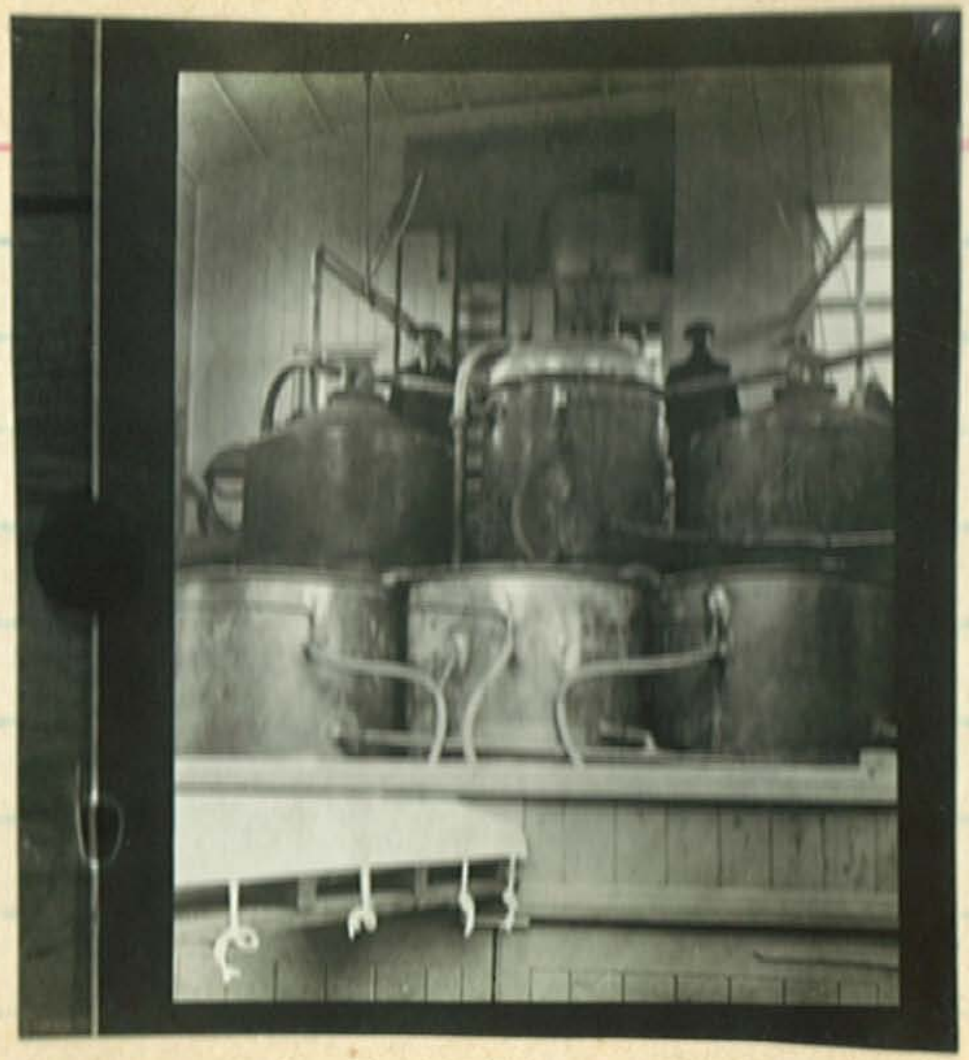


C. 26

C 27

C 28

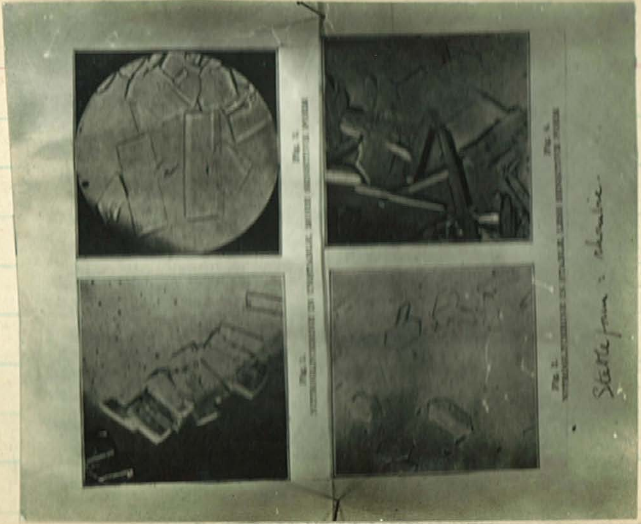
C 29



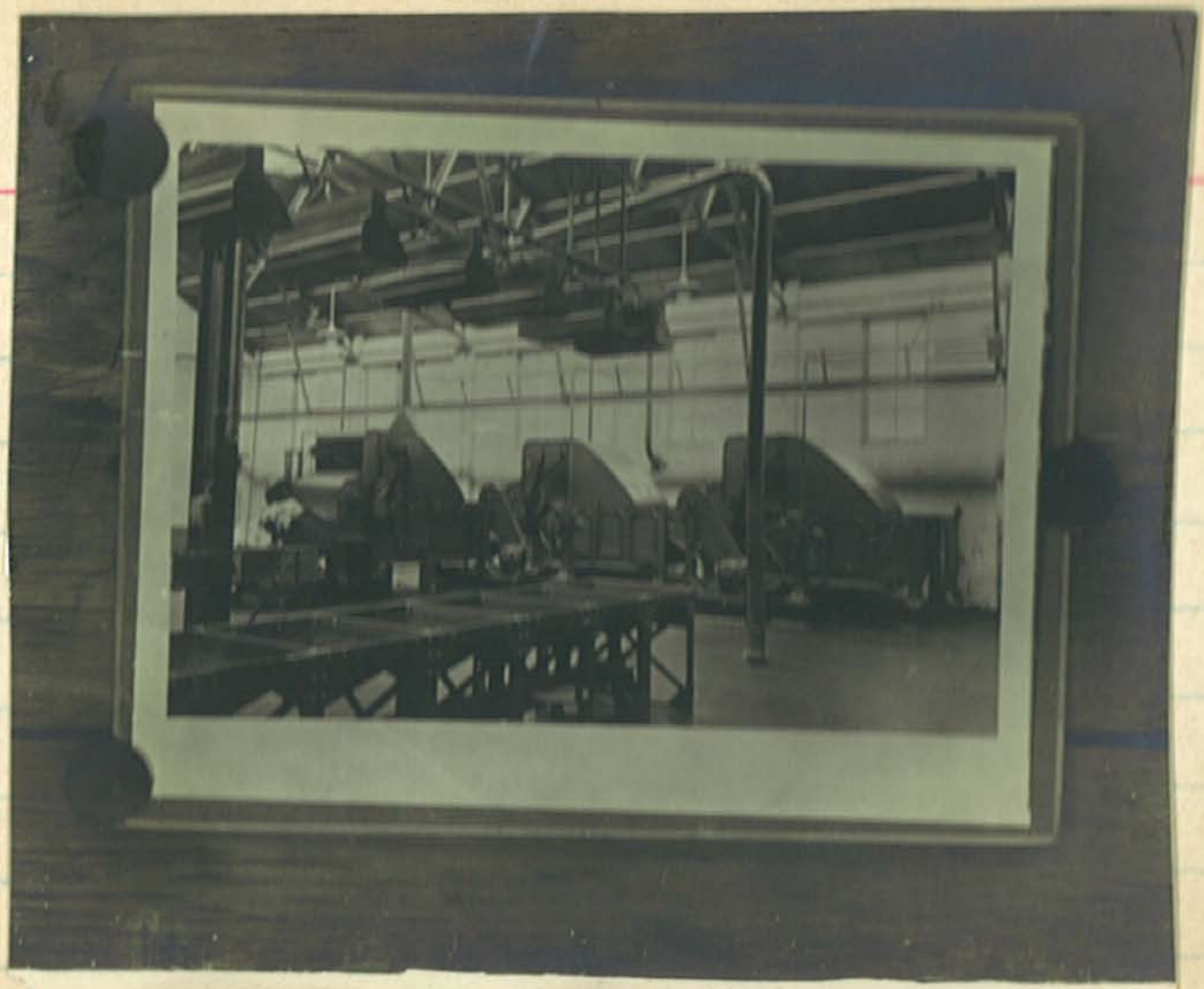
C 30

C. 31

C32

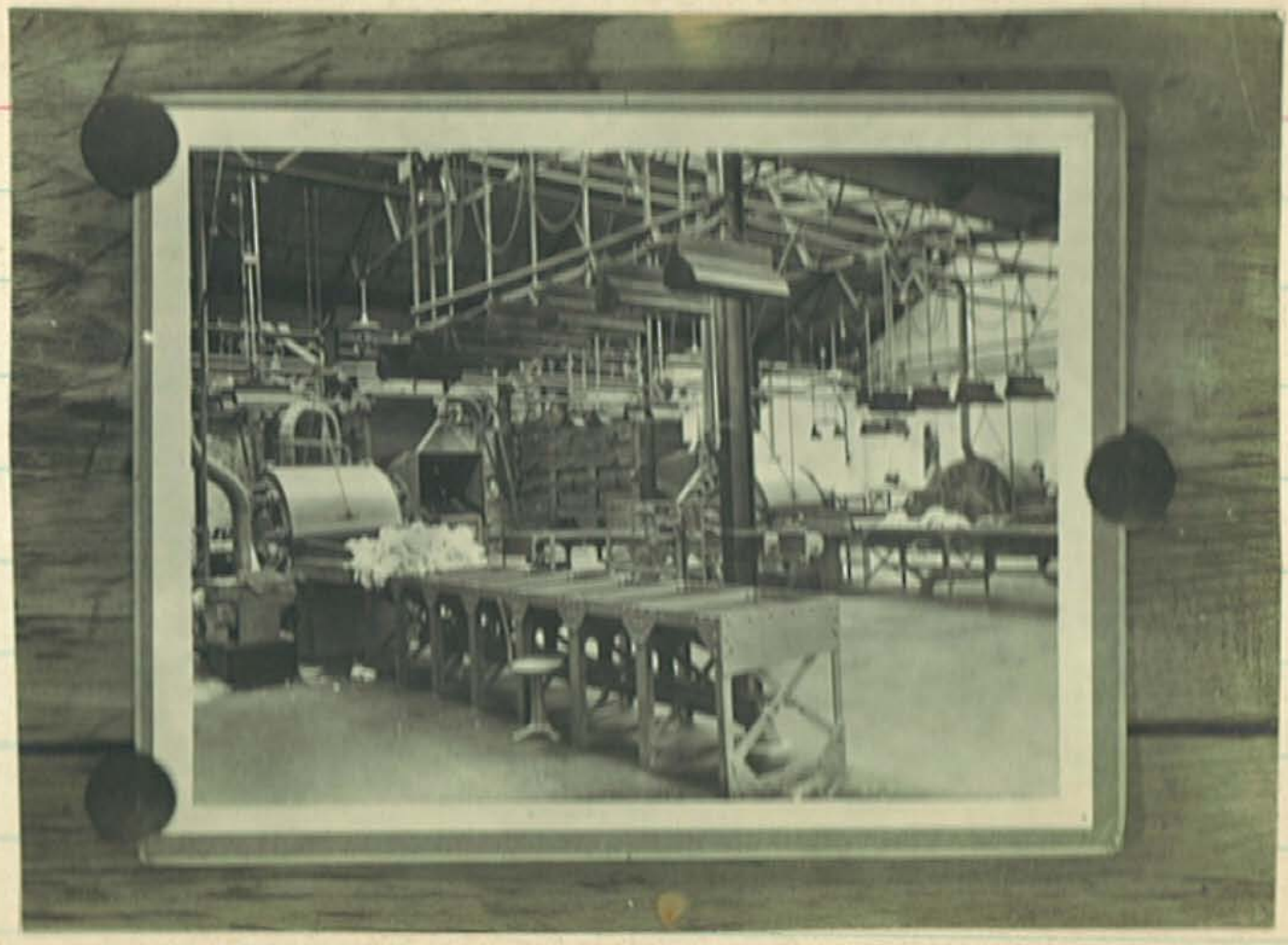


C.33



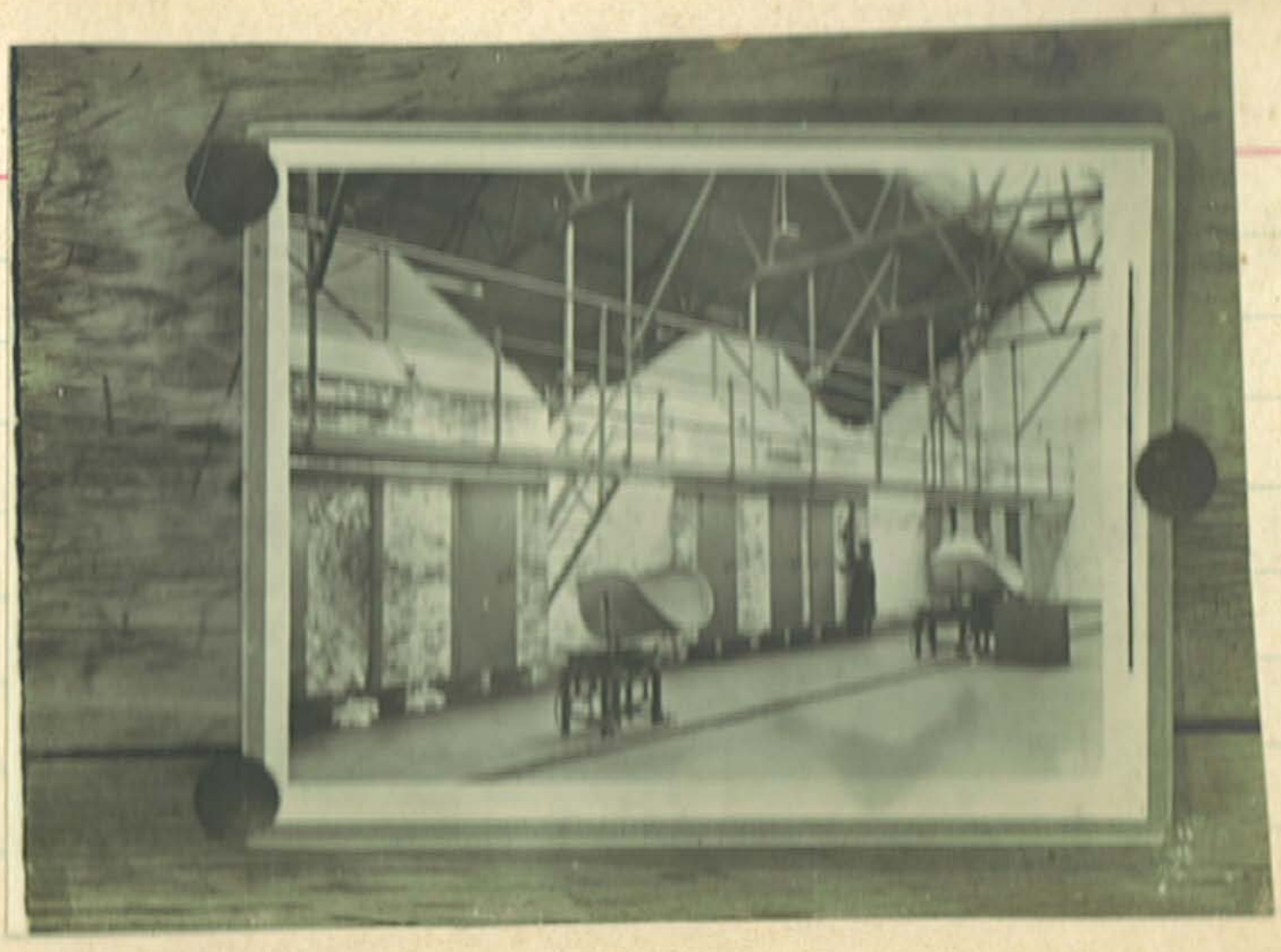
C 34

C 35

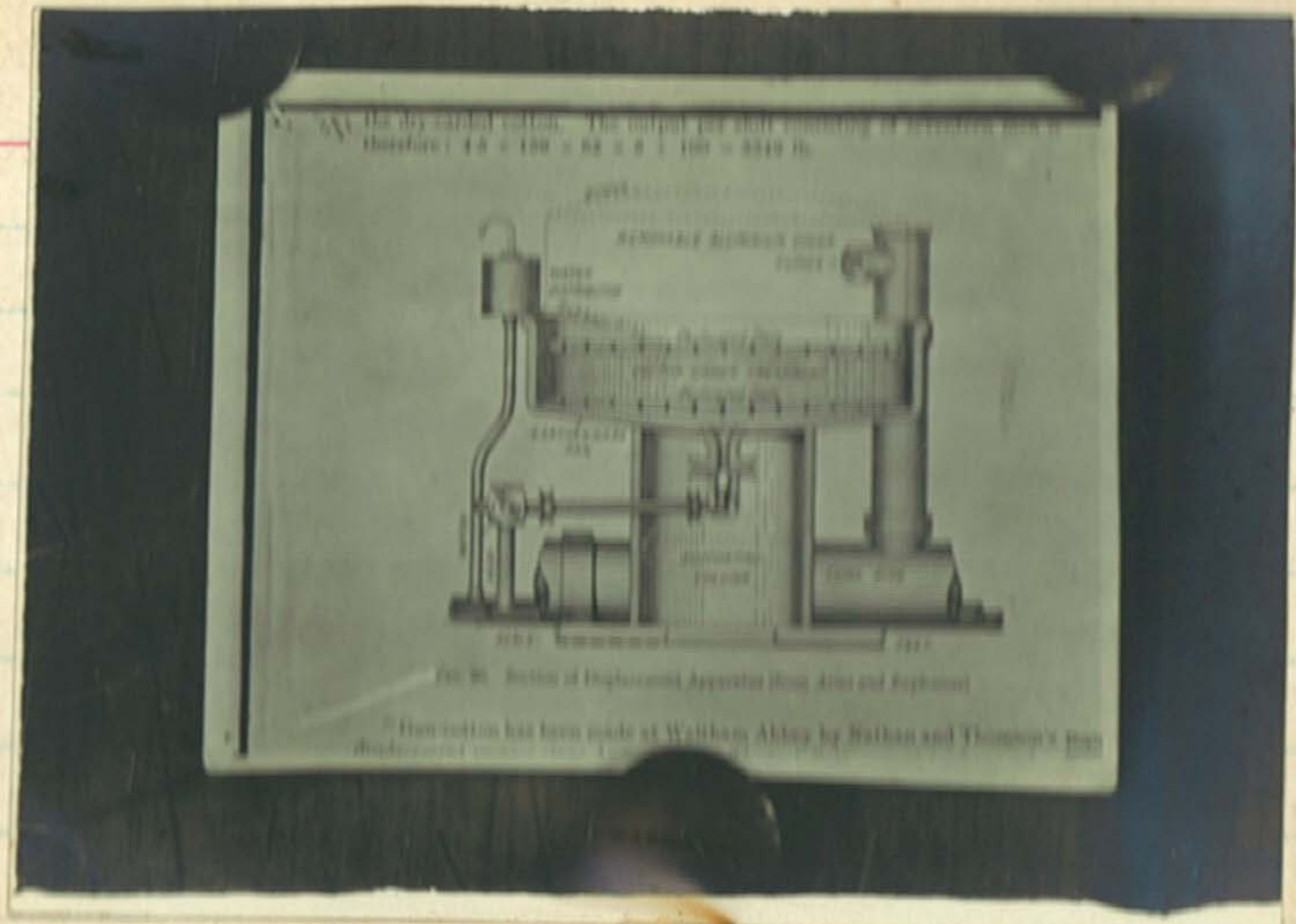


C.36

C.37

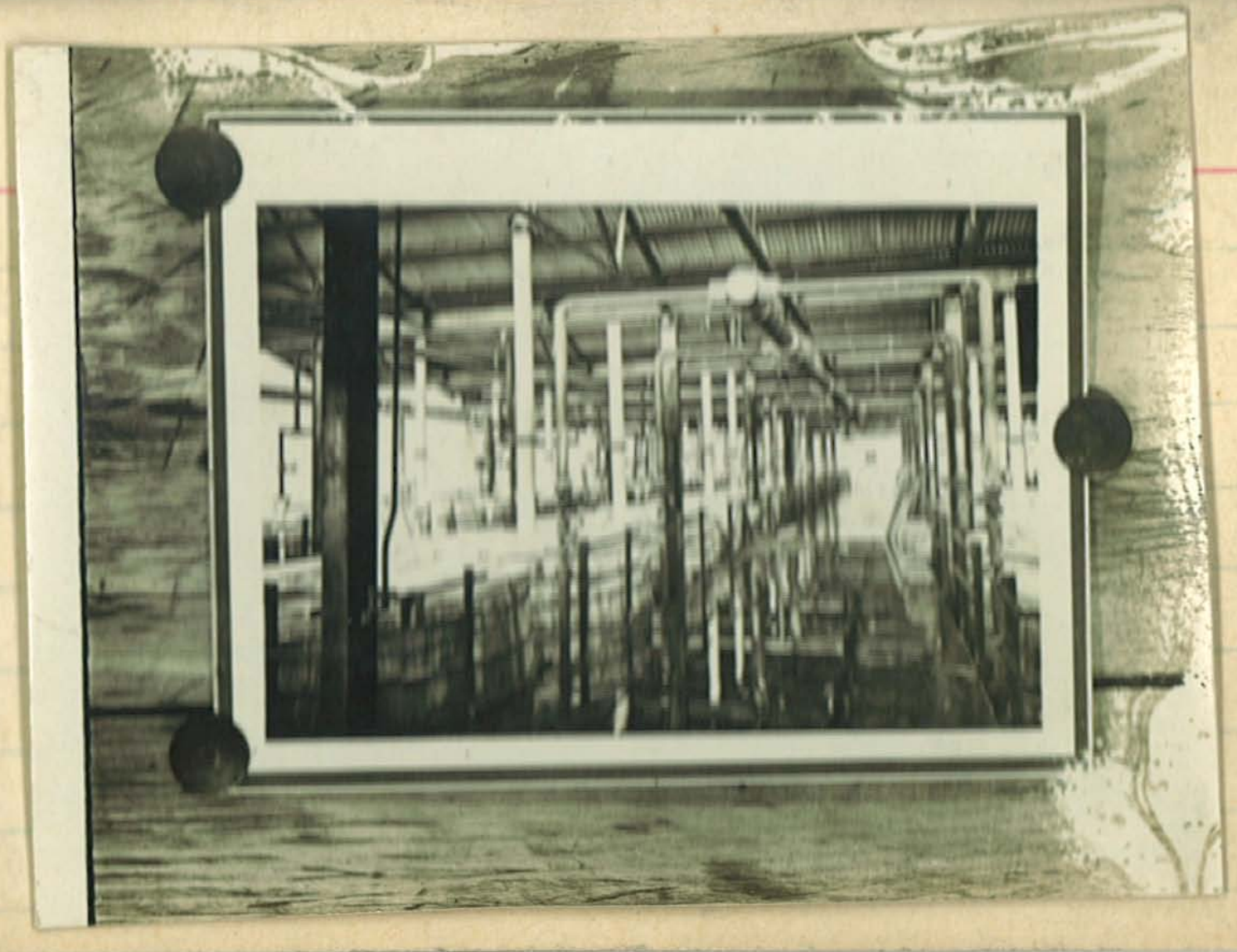


C 38

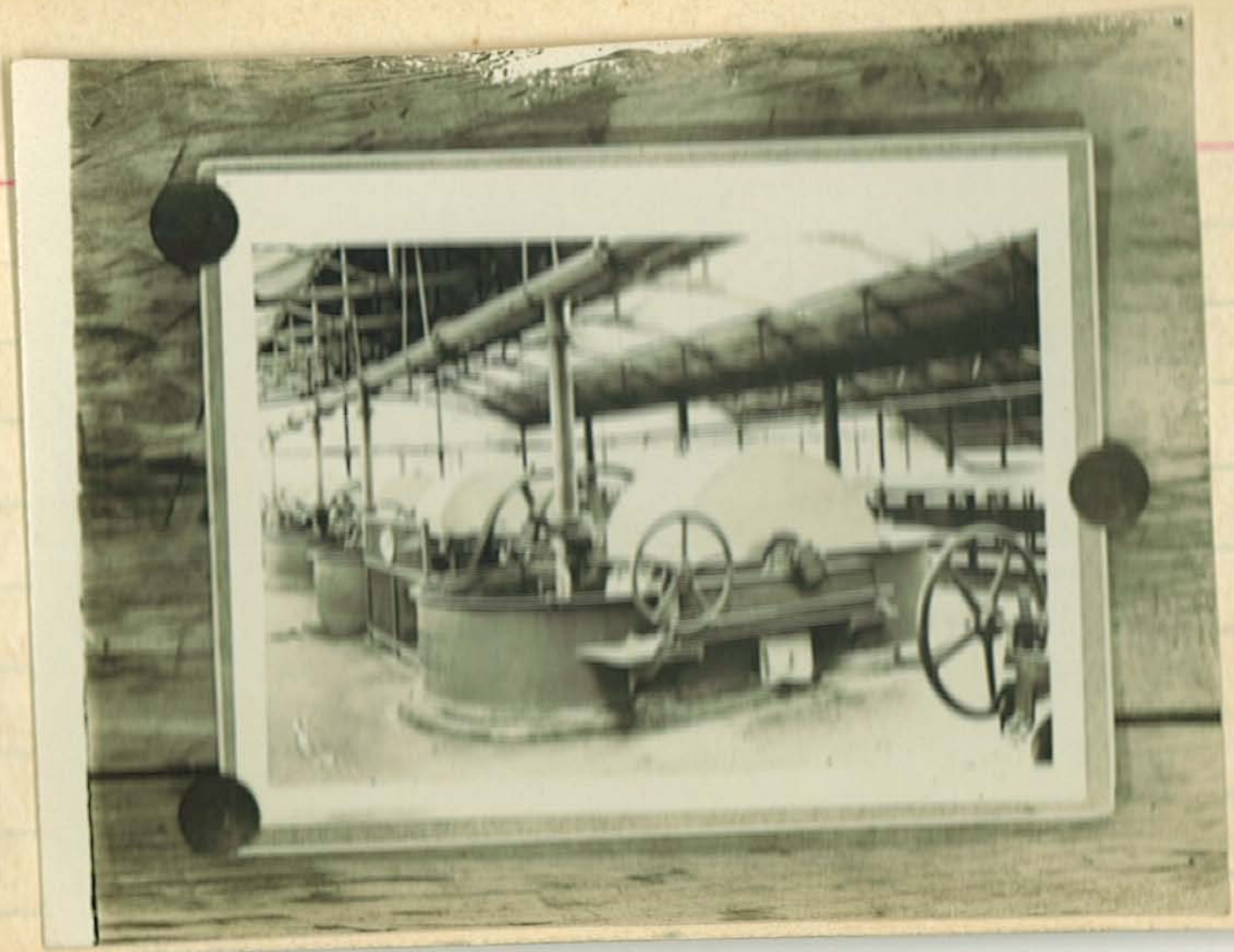


C39

C.40

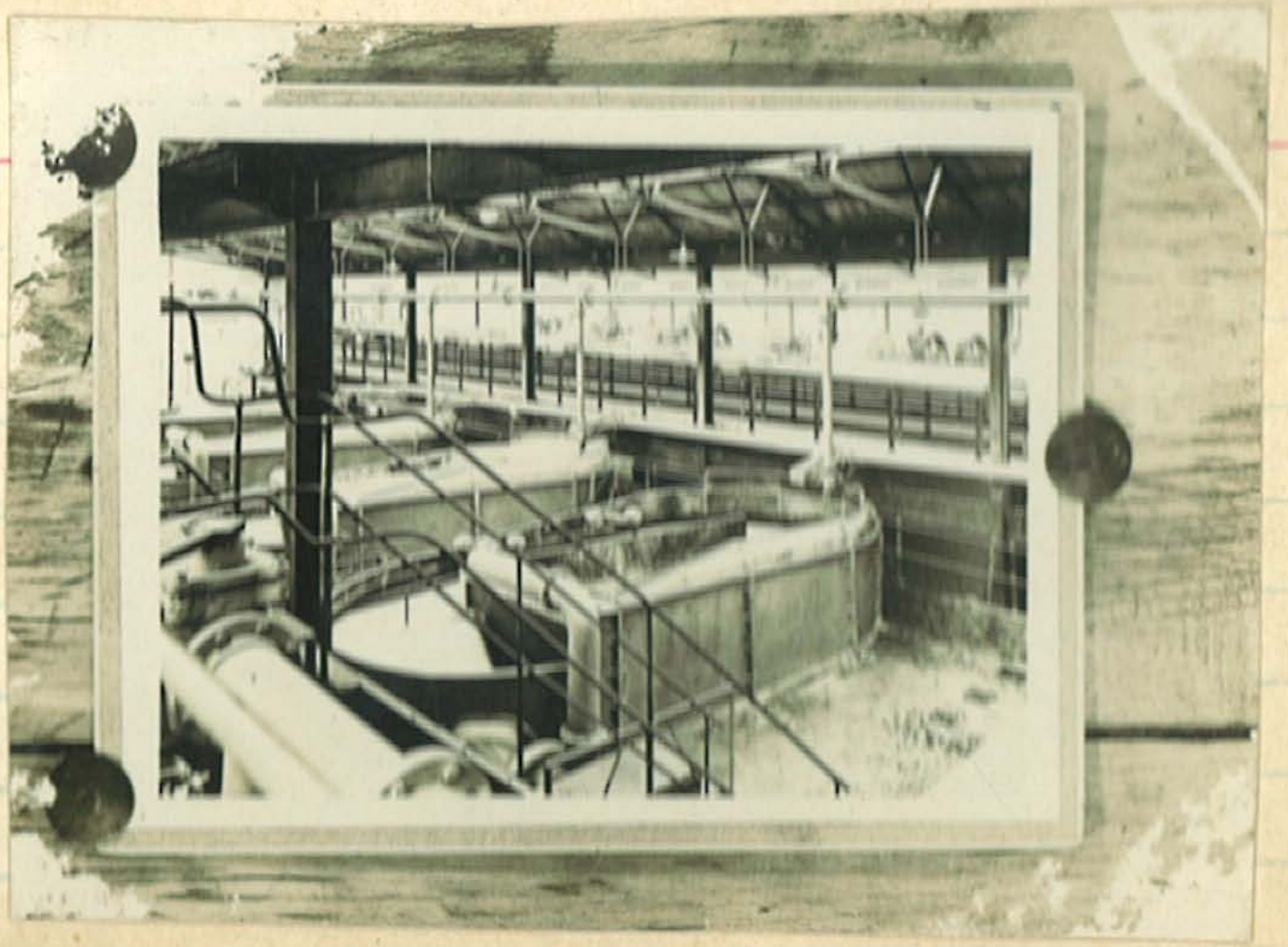


C 41



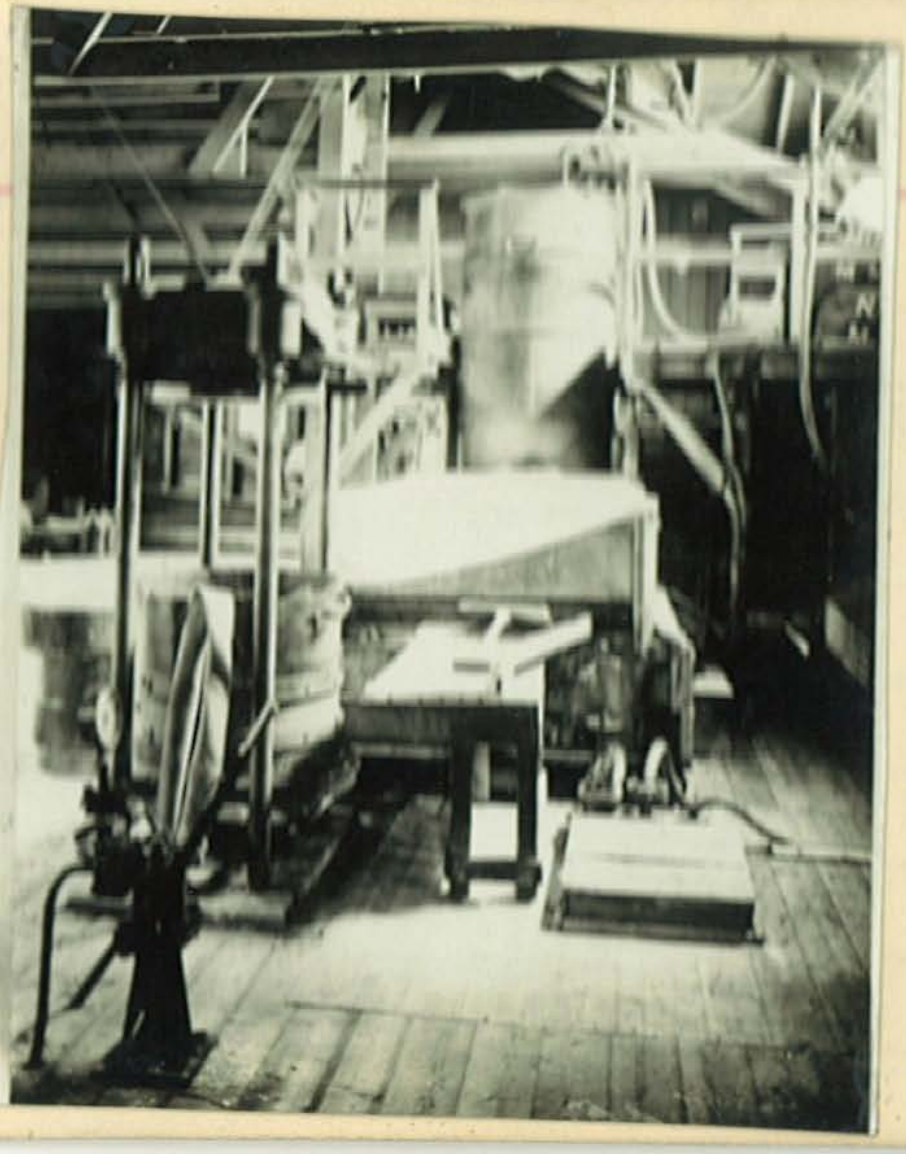
C.42

C. 43

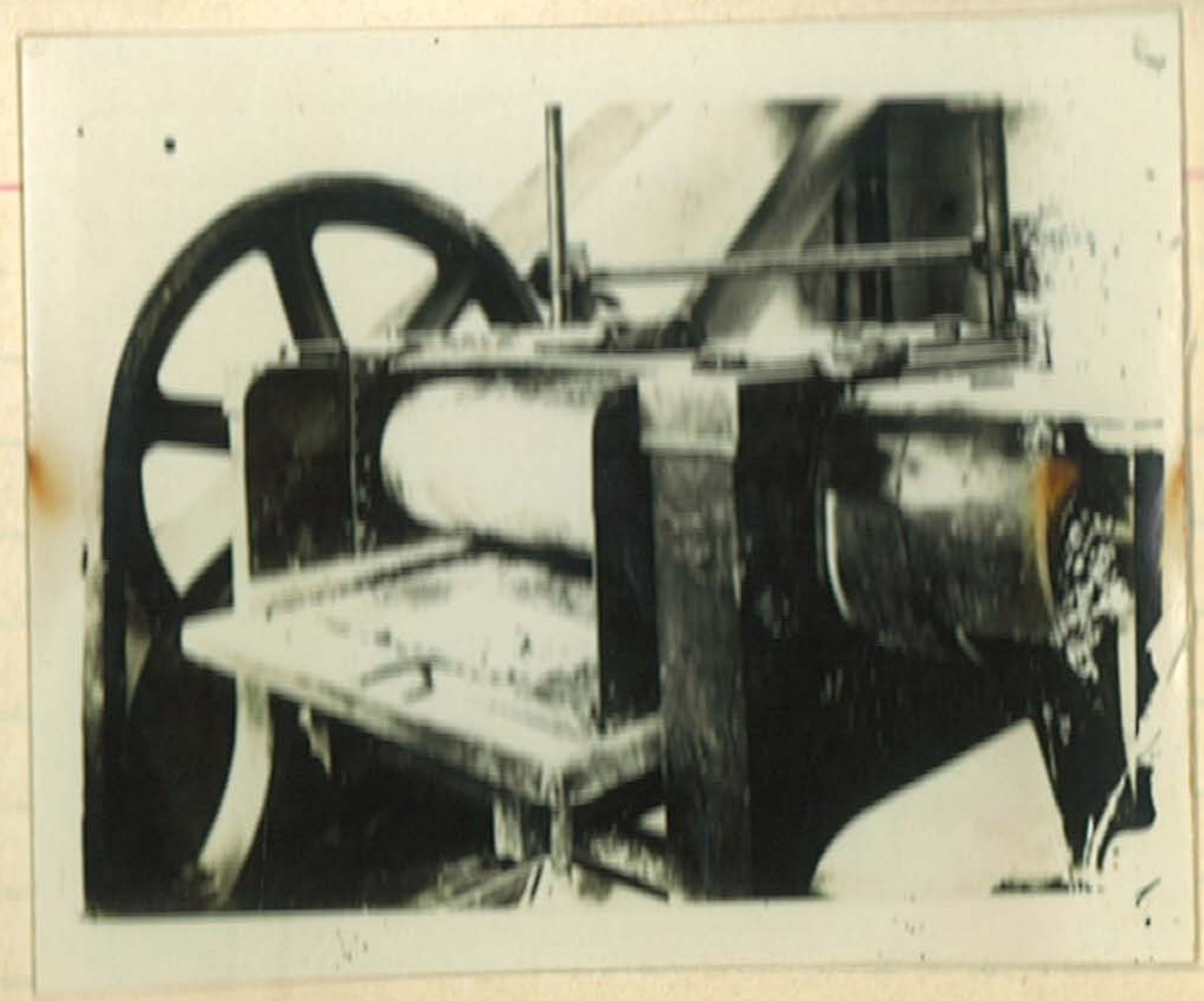


C. 44

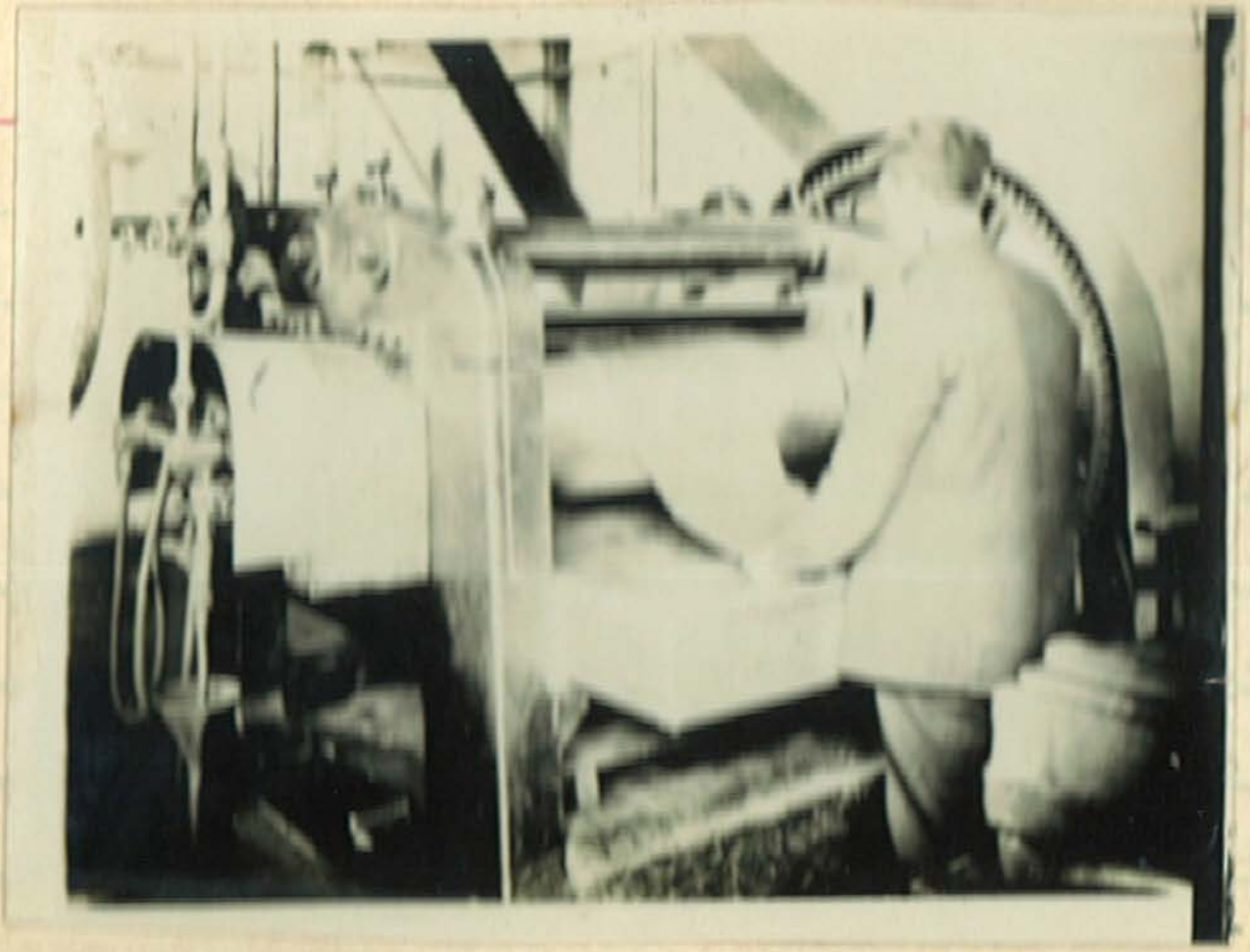
C. 45



C.46

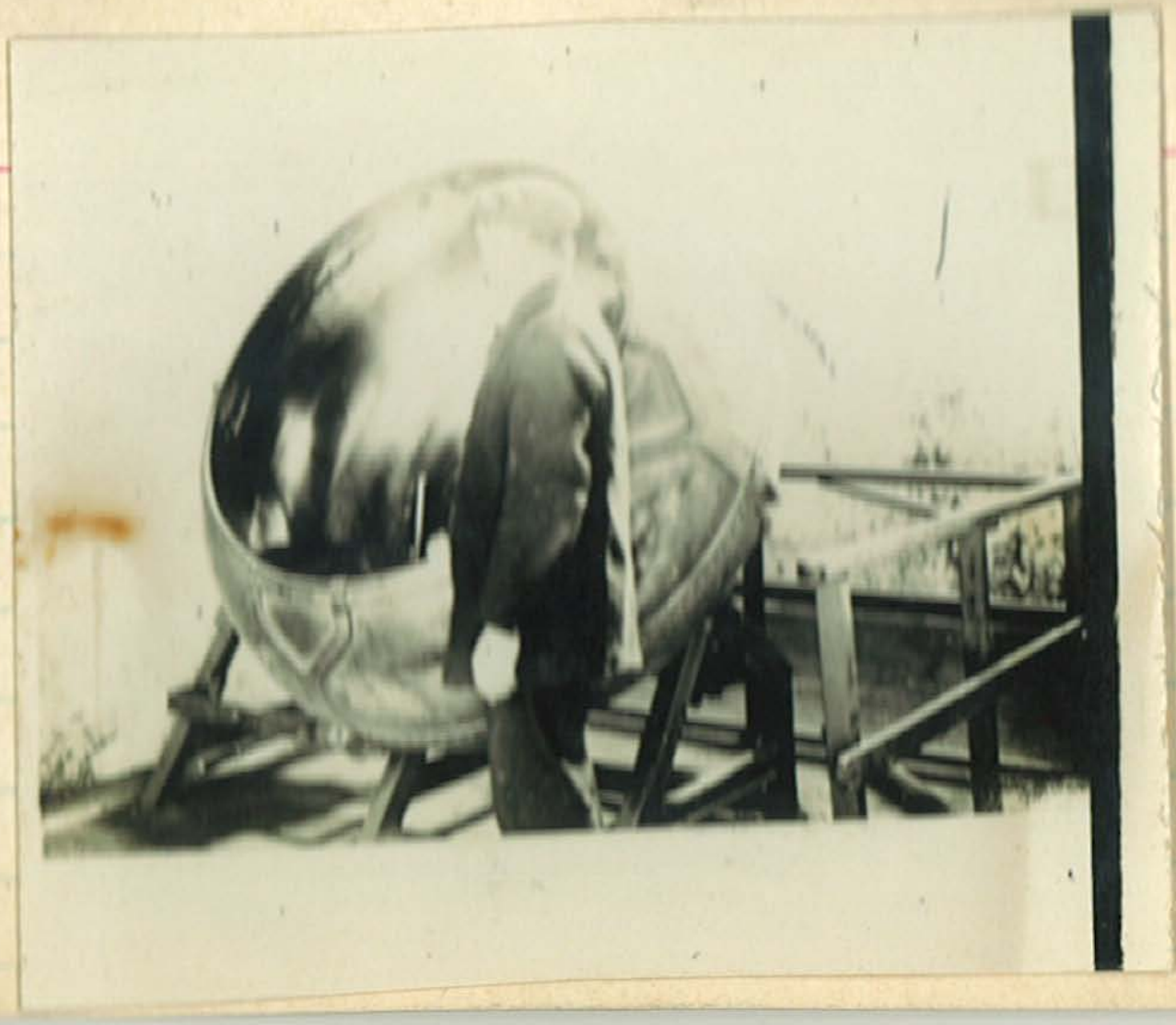


C. 47



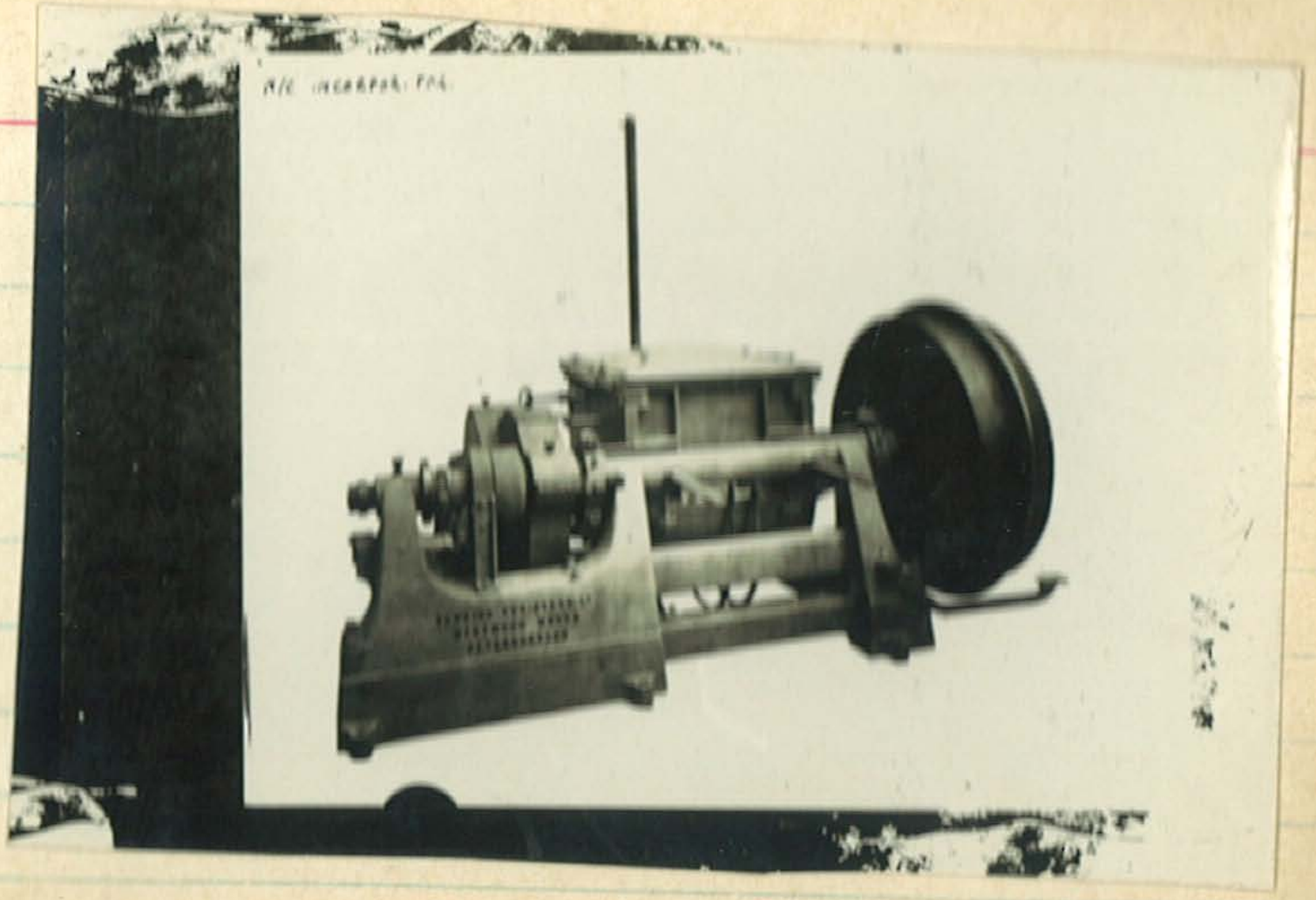
C.48

C.49

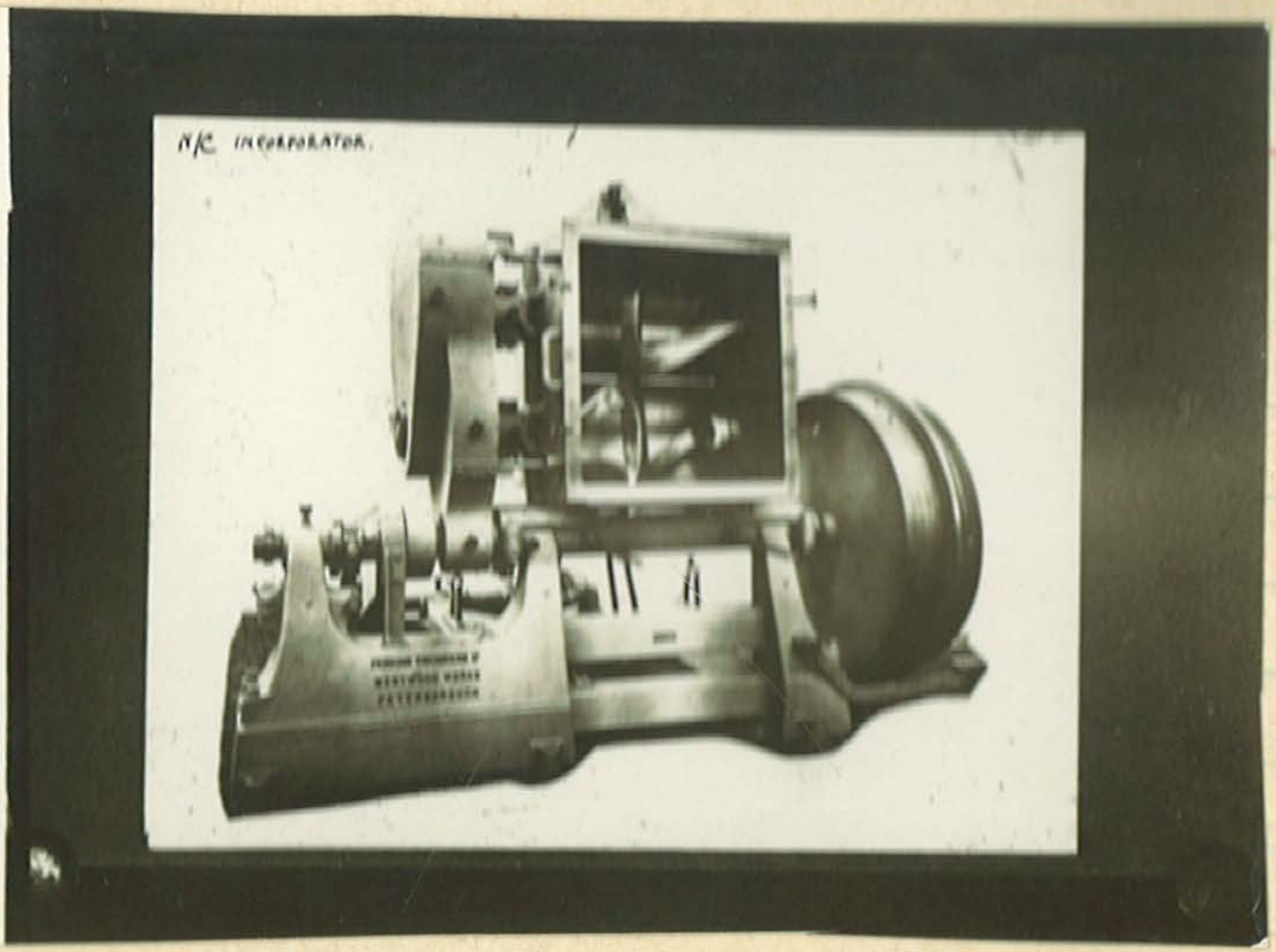


C. 50

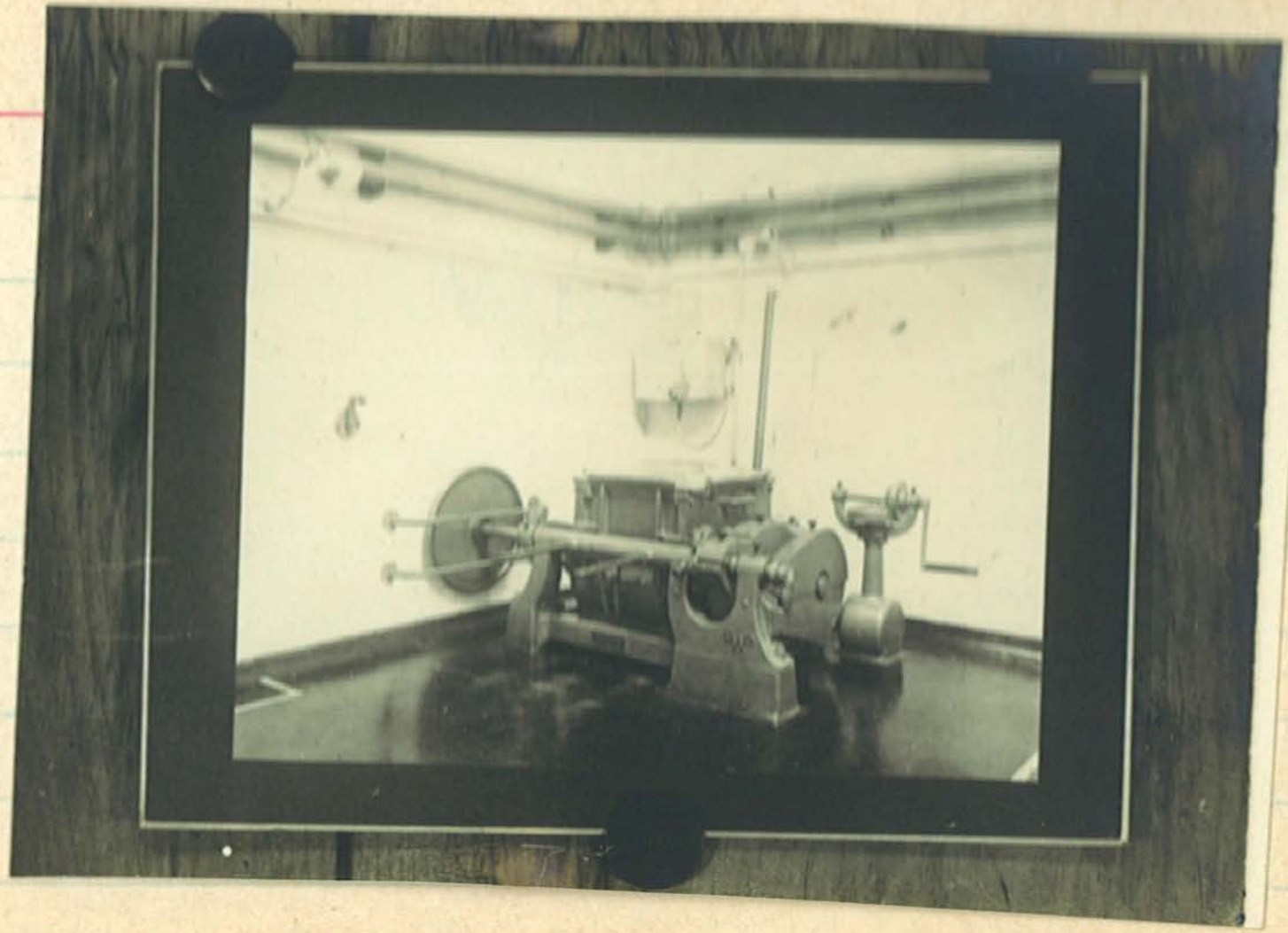
C. 57



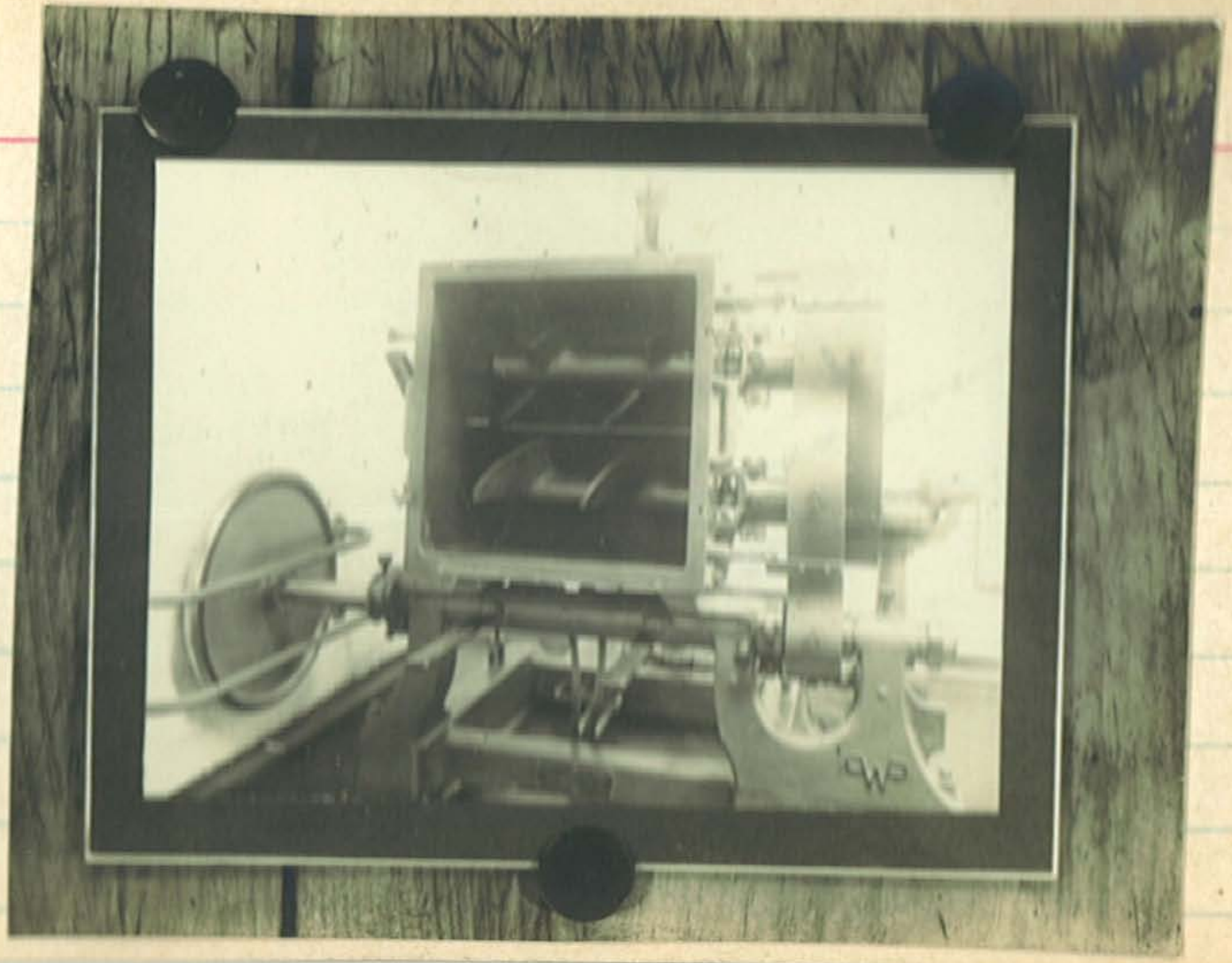
C.52



C.53



C.54

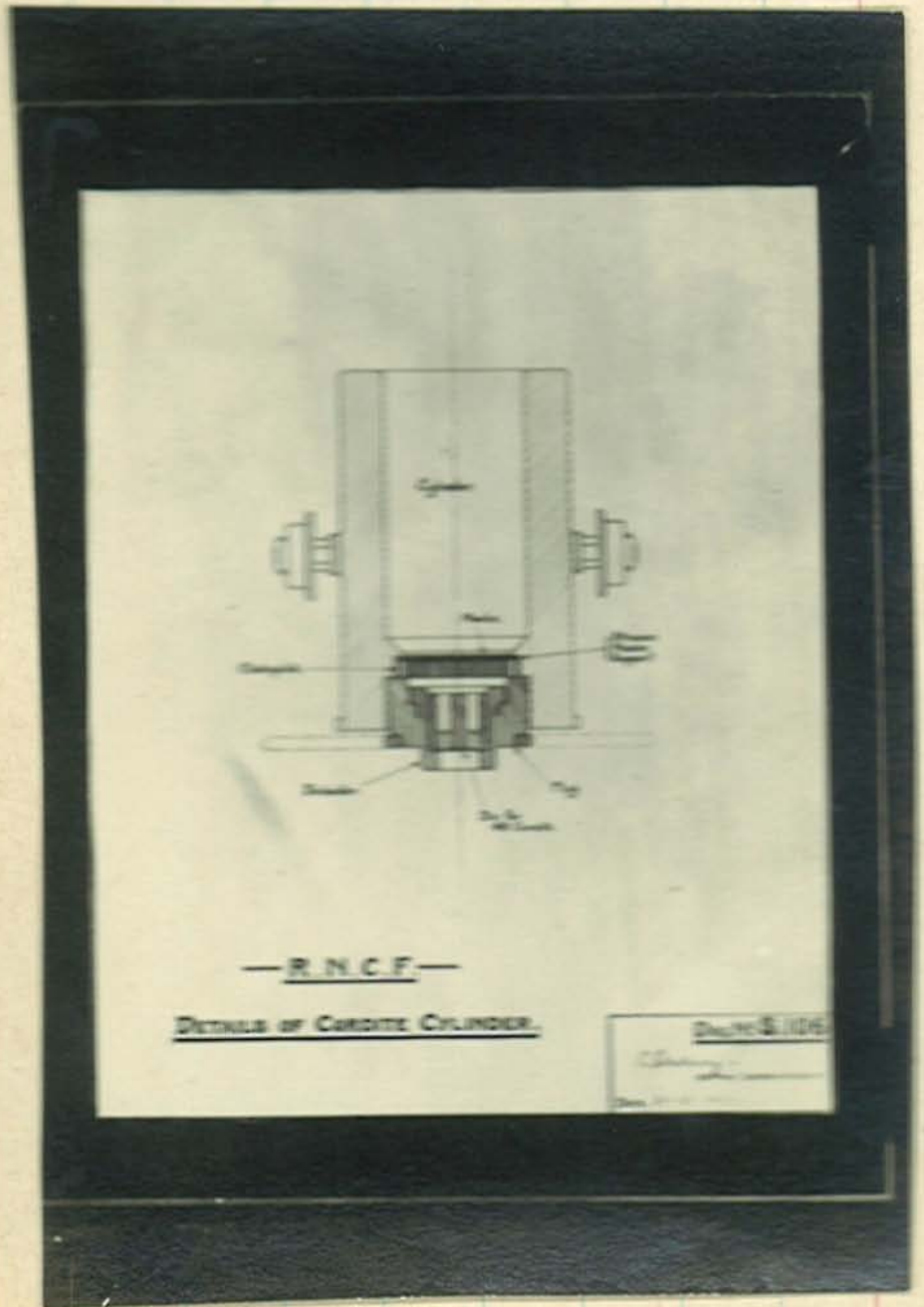


C 53

C.56

C57

C 52



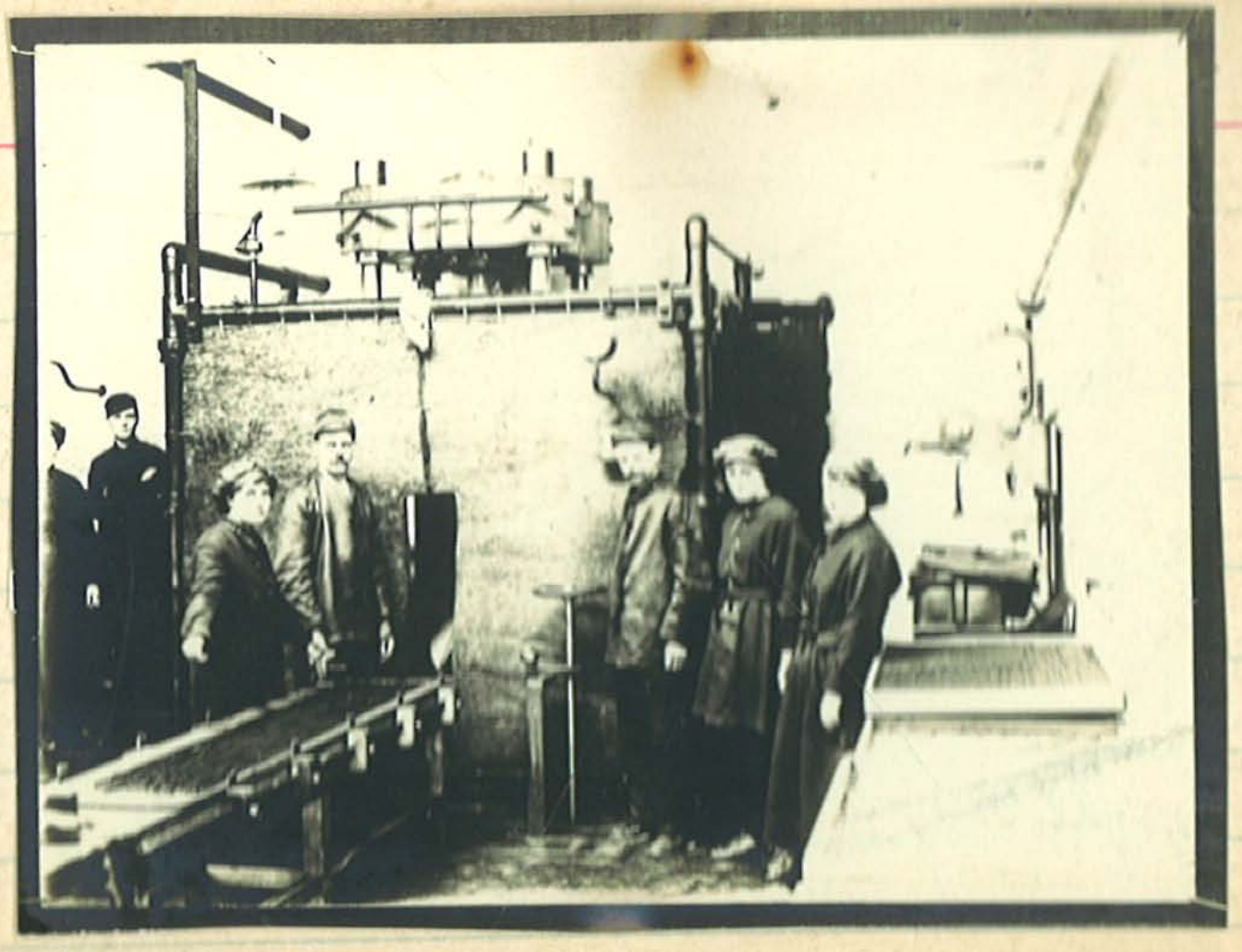
—R.N.C.F.—

DETAILS OF CARBITE CYLINDER.

C.59

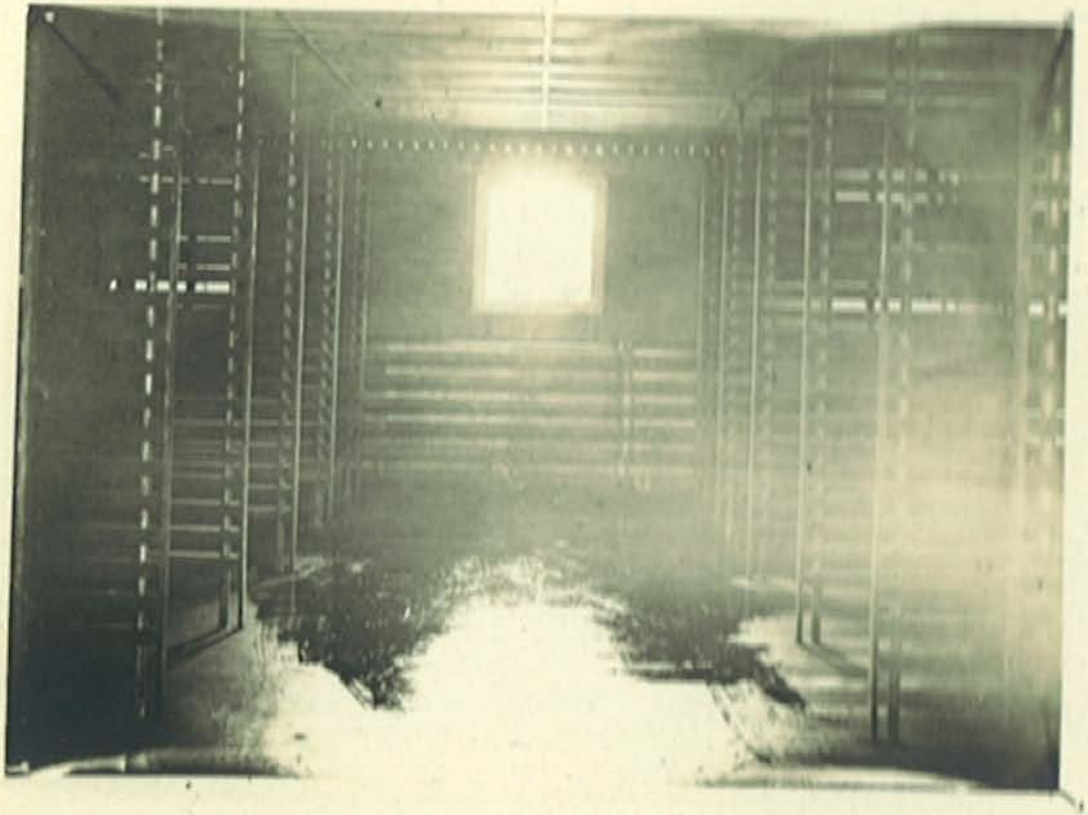
C.60

C 61



C.62

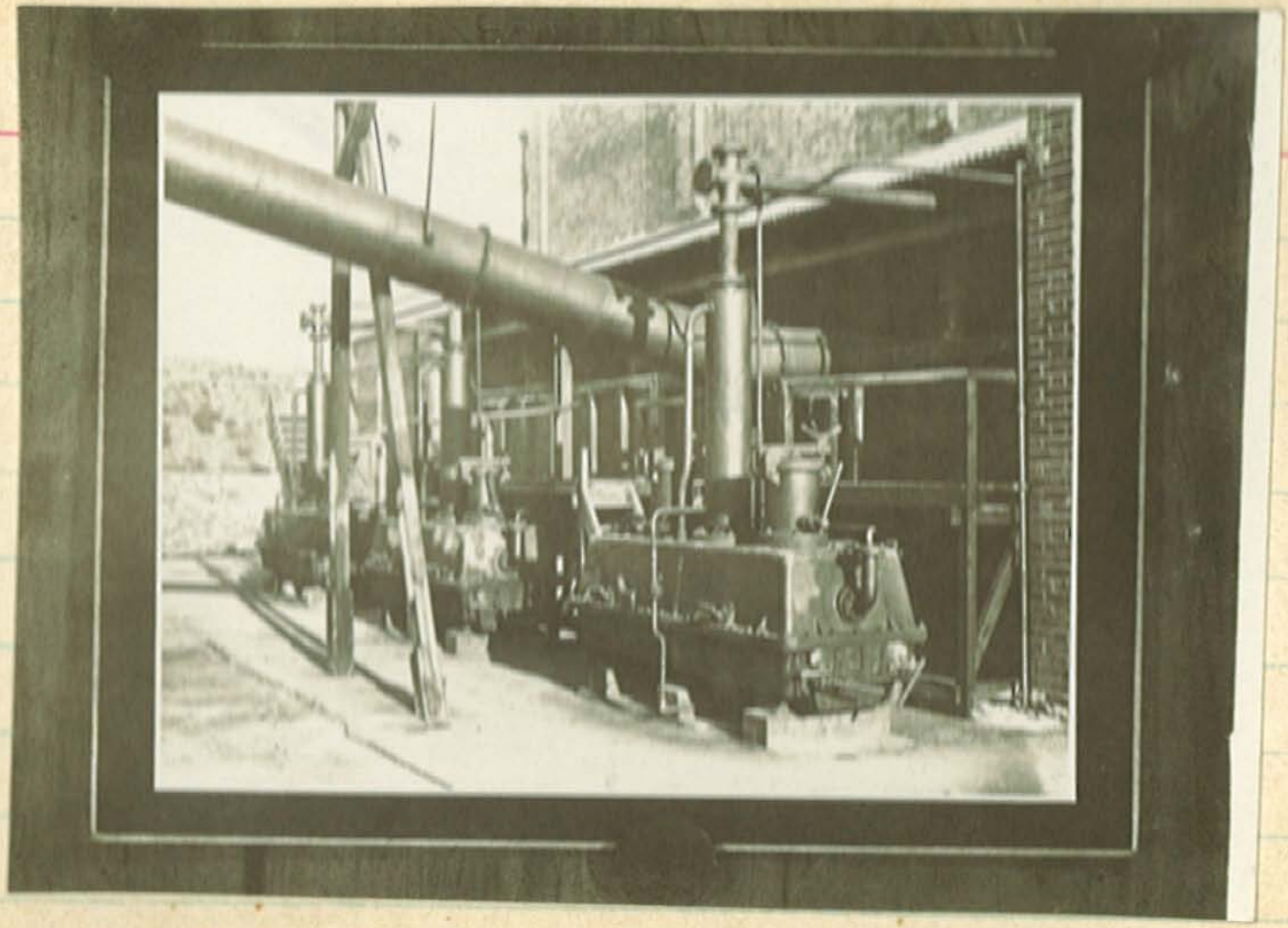
C 63



C 64

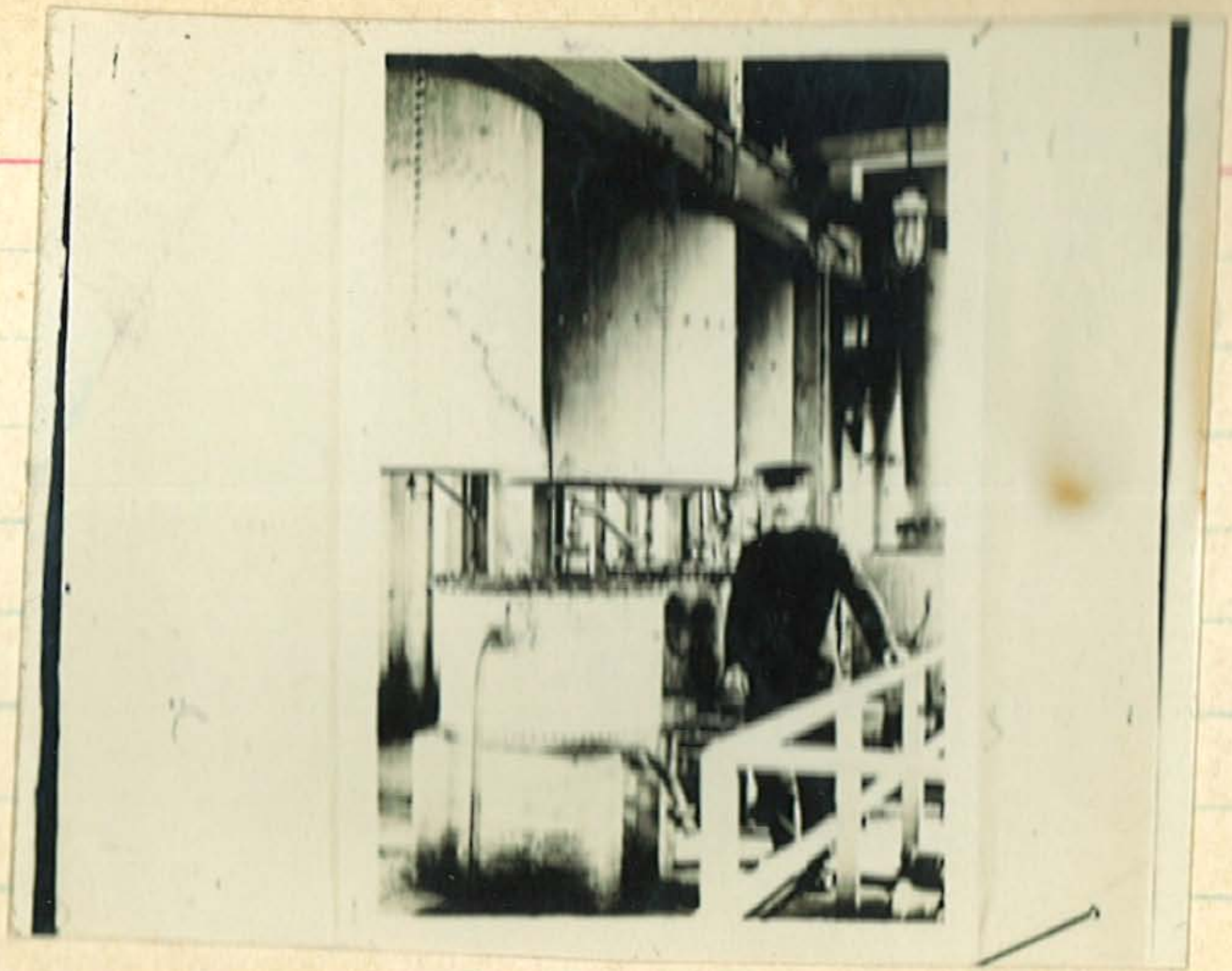
C-65-

C 66

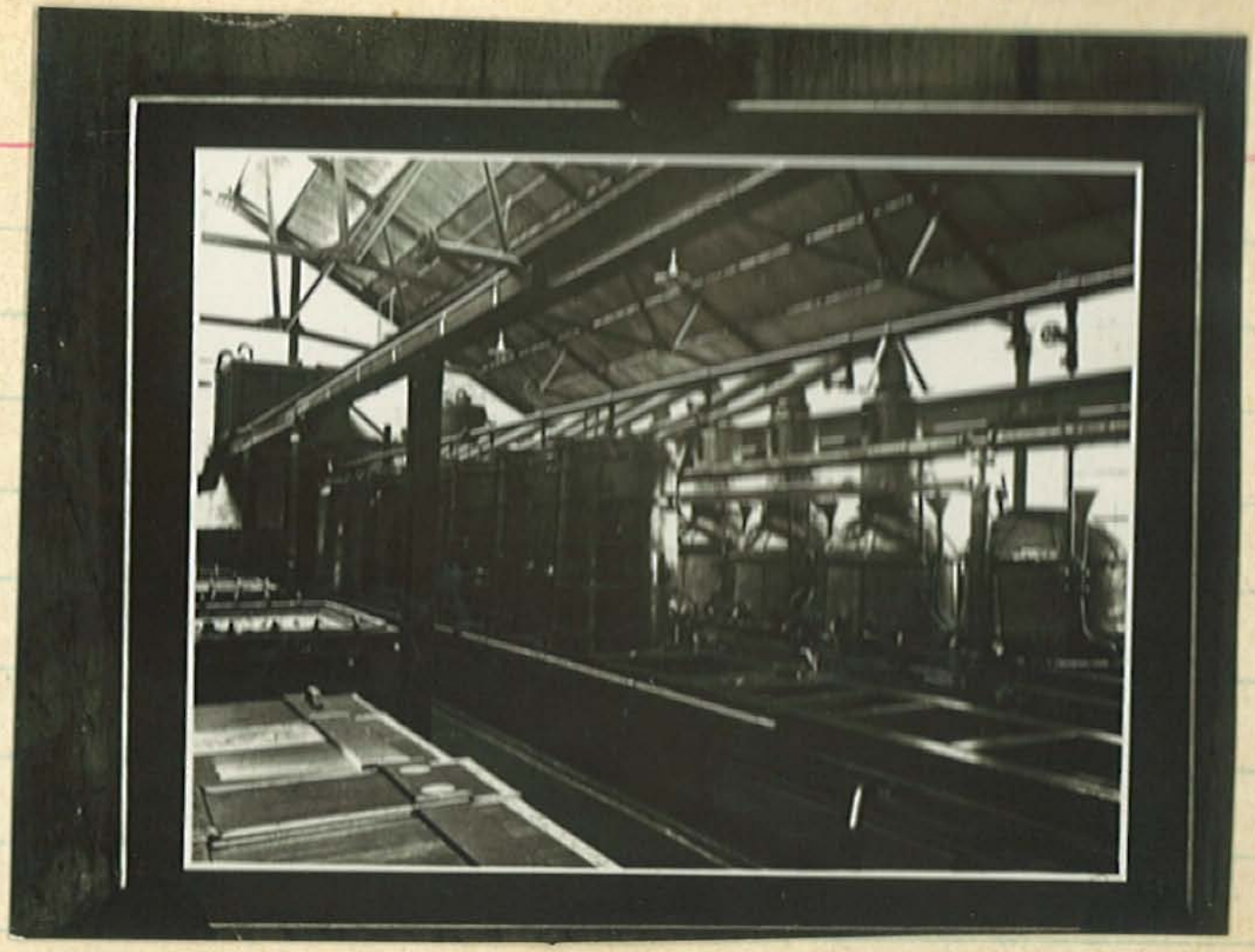


C.67

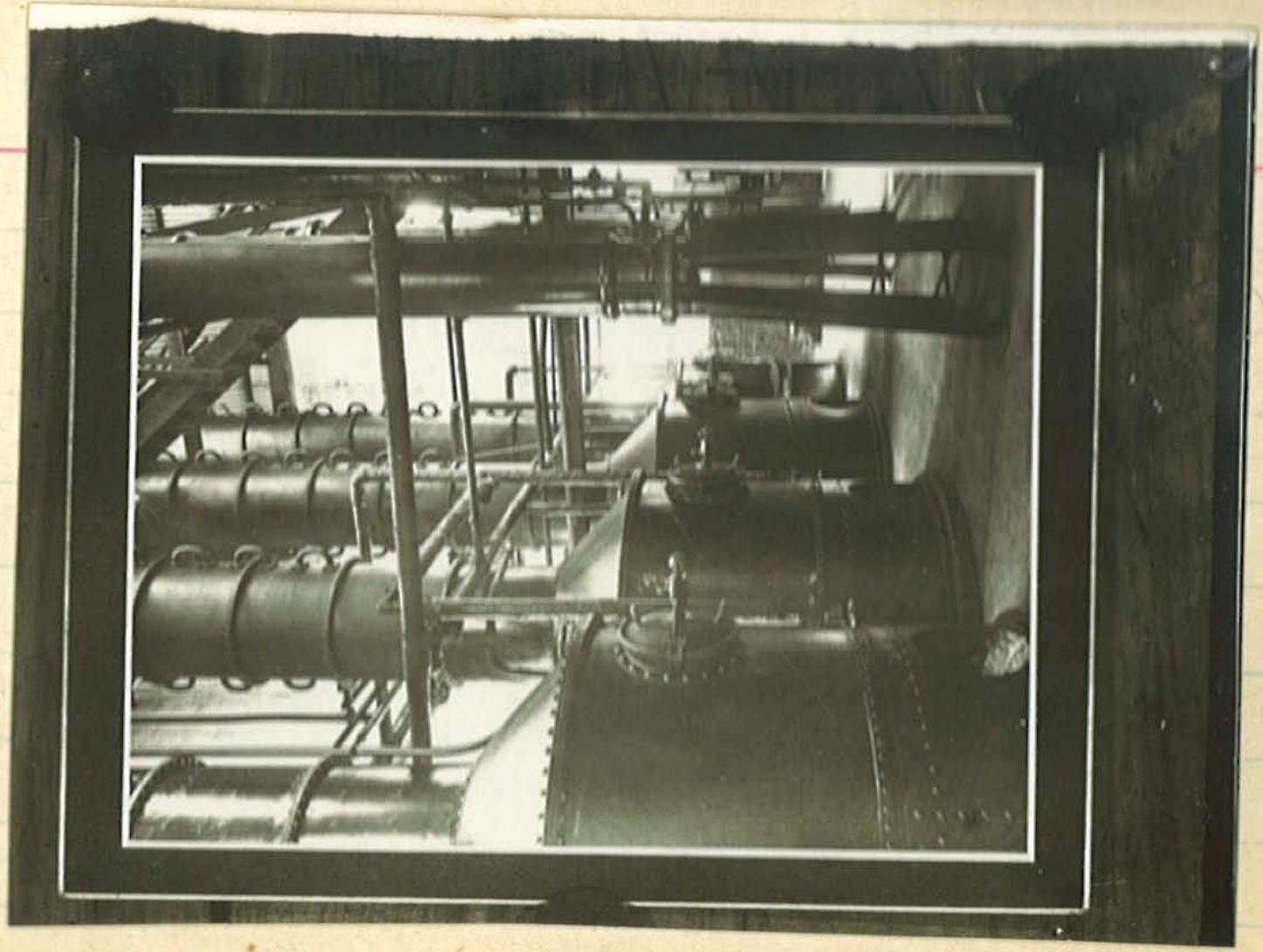
C 68



C.69



C 70



C. 71

c 72

Derivation of TNTS from Polve-a ?! (diagram)

Not located at 10.9.86.

C.73

TNT. Expts ½ ton plant at R.D.

Cast iron pot [C.I. Stands HNO_3 + H_2SO_4]
Stirrer
Various inlet pipes
Pipes for heating & cooling

C 74

TNT. Queensferry.
Showing 5 nitration units A B C D E
(See letters on houses). 100 yards
apart
For description of same picture see
Tech Records TNT p. 44
Each house has 4 nitrators etc
Wash house Packing House Magazine
(Railway in foreground)

C.75

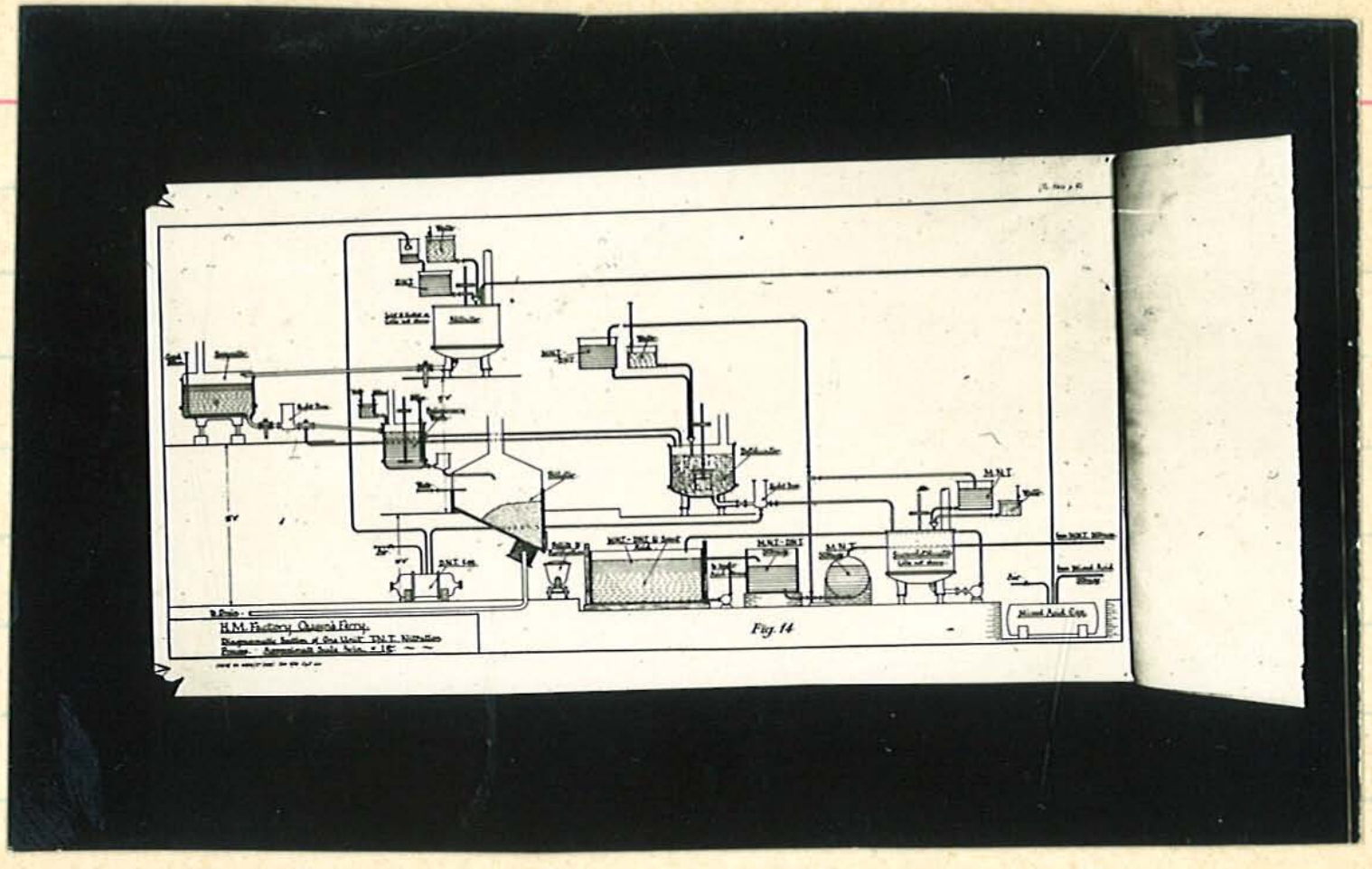
TNT Quarry.

Same picture in Tech Record TNT p. 44

(a) Nitration House
(b) Boiler House
(c) "A" fume towers
(d) "A" wash house
(e) "B. Nitration House
(f) "A" drying & granulation
(g) Reservoir
(h) "C" Nitration House
(k) "A" Packing House
(l) "A" granulation fan house
(m) "A" granulator motor house
(n) "A" Motor house for washing gear.

C 76

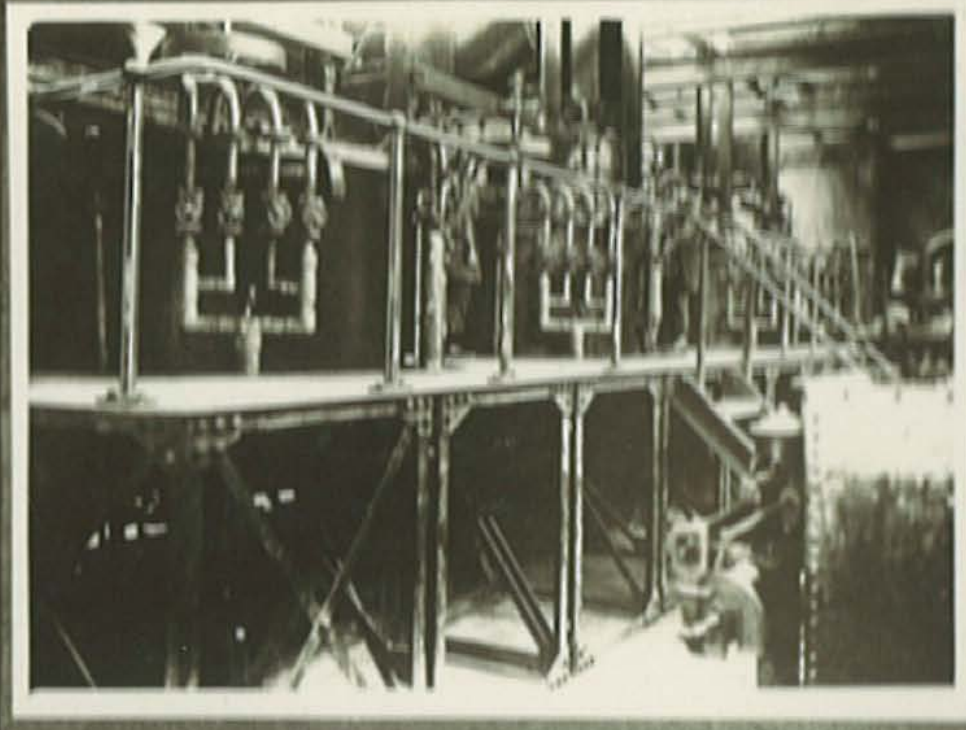
C.77


H.M. Factory, Chorley Ferry.
Diagrammatic Section of One Unit T.N.T. Nitration
House. Approximate Scale 1/16" = 1'-0"
Fig. 14

Tech Records facing p. 45

Chart showing
Nitration
Separation
Prelim wash
Pelleting
Detoluation
Superdetoluation

C.78



T.N.T. Nitration House.
H.M. Factory Queensferry.
Showing:- Nitration Pot with cooling water

TNT. Queensferry.

Same as in Tech. Records p 52.

Nitrators

Numerous pipes & Cocks

Heating
Cooling
Mixed acids
" MNT. DNT
" Water
Thermometer
Outlet
to Draining Tank

C.79

TNT Briquettes

Same as in Tech. Records TNT. p. 57

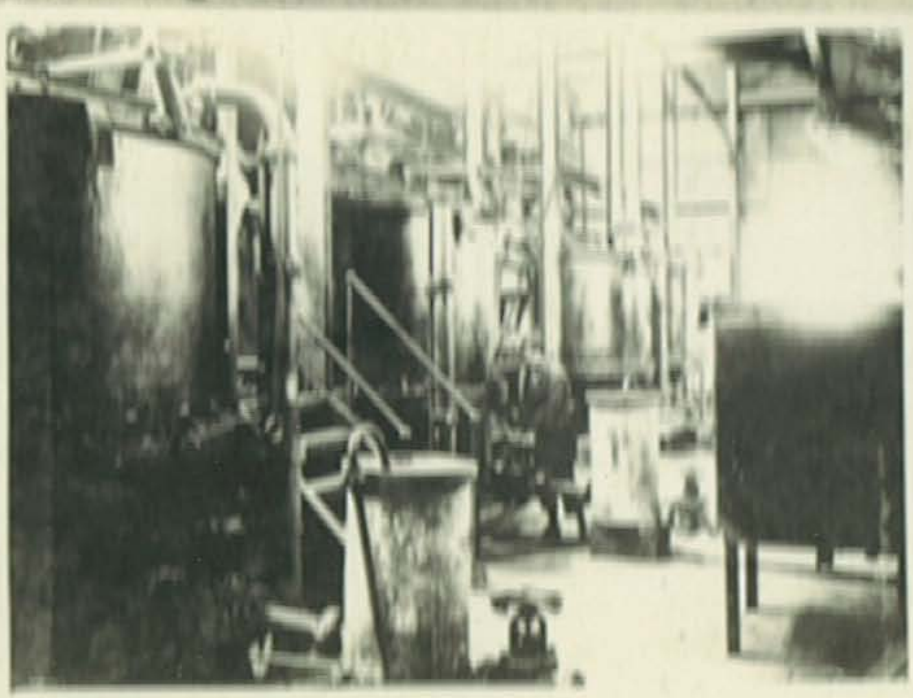
TNT Separators.

Rectangular C.I. vessels 7'6" wide

Small Steam coils

Aluminium lid.

C80



TNT Quantity.
Same as in Tech. Records TNT p 58
Detonators. Pans somewhat similar
to initiation pans.

C.81

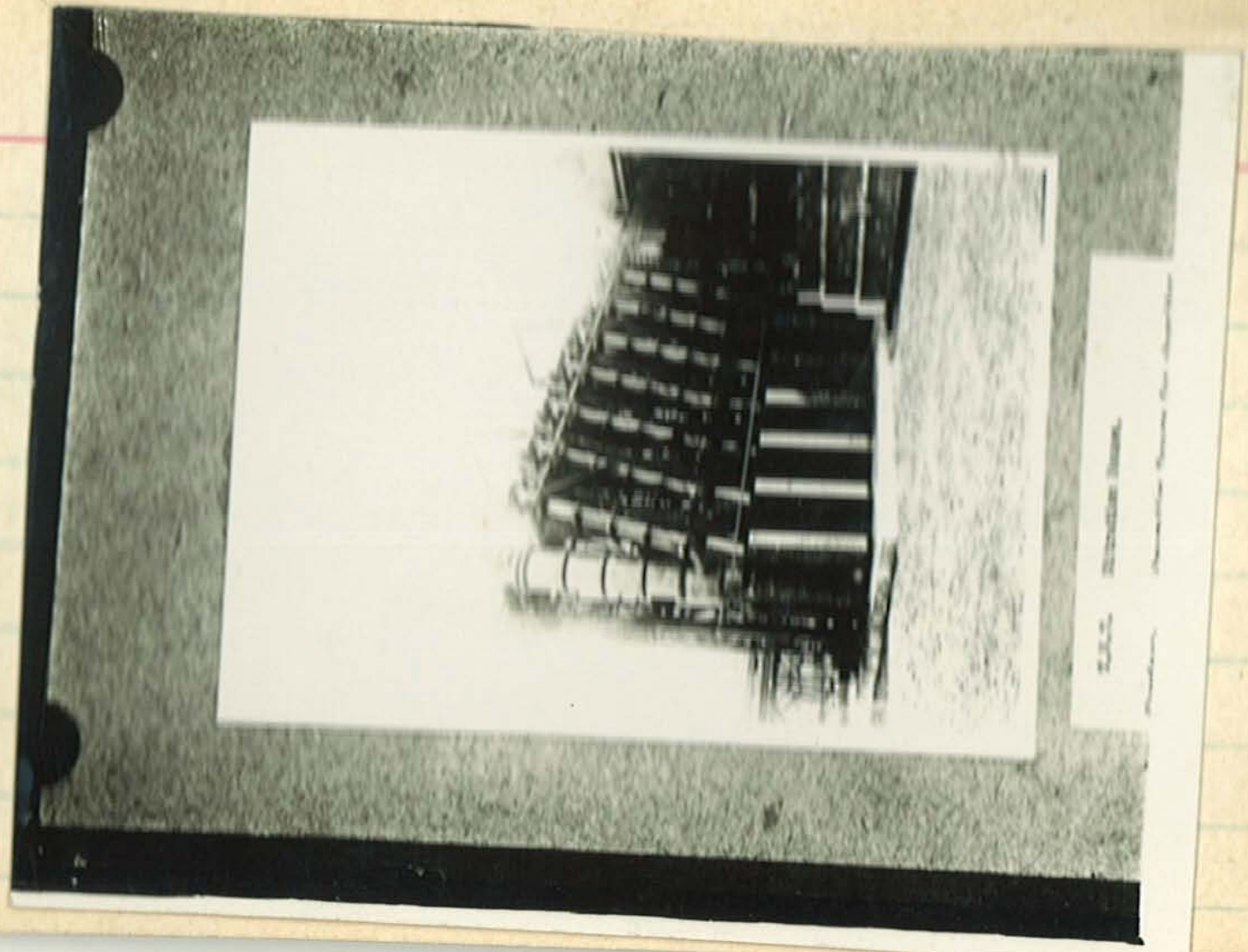
TNT Queensferry.
Same as in Tech. Records p. ~~60~~ 61

Pelleting.
Fume hood on account of objectionable
$C(NO_2)_4$
The picture shows method of emptying

C.82

Apparently method of transporting
pellite is purification process

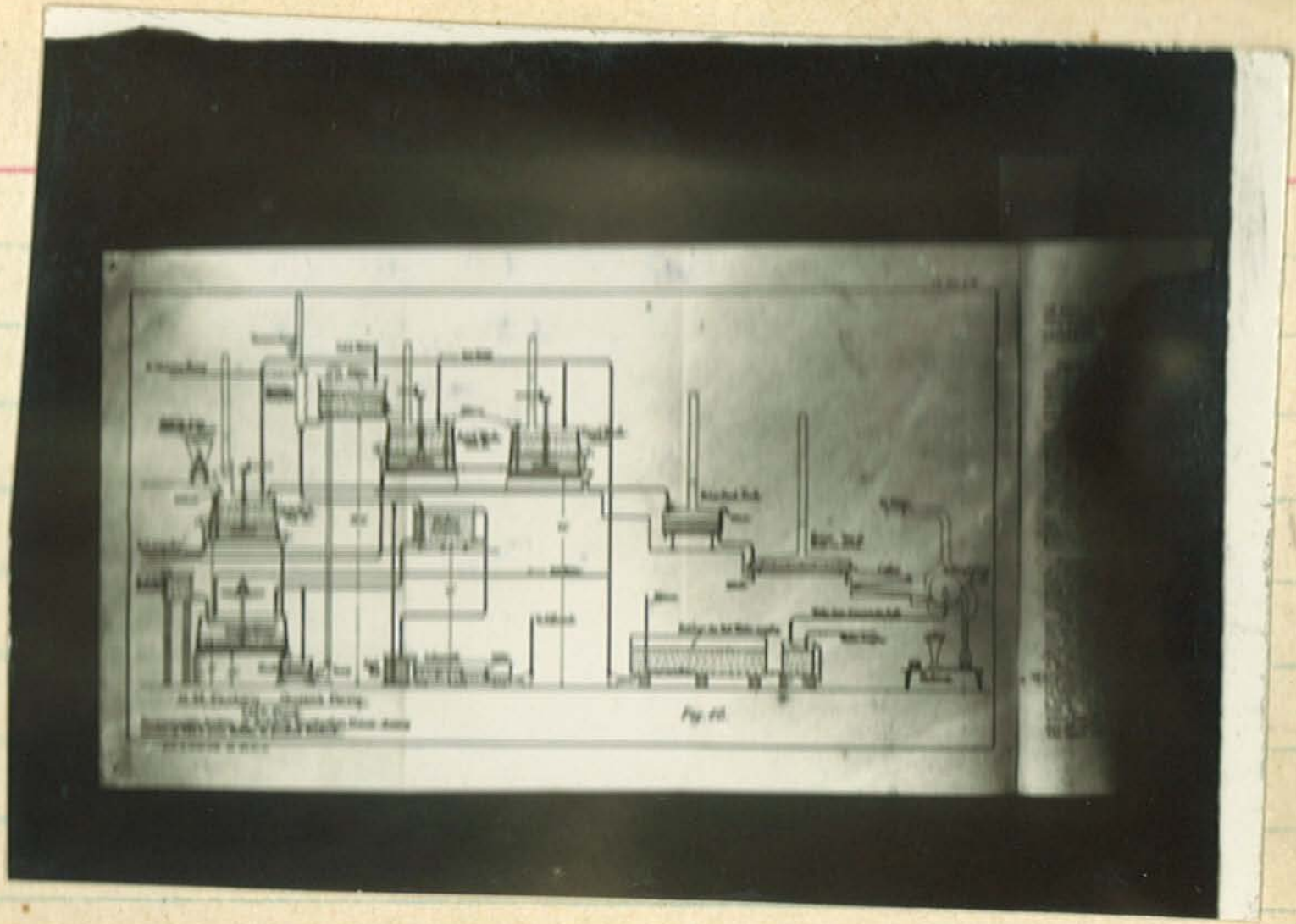
C 83



TNT Quarry

Same as (c) in No 75

C 84

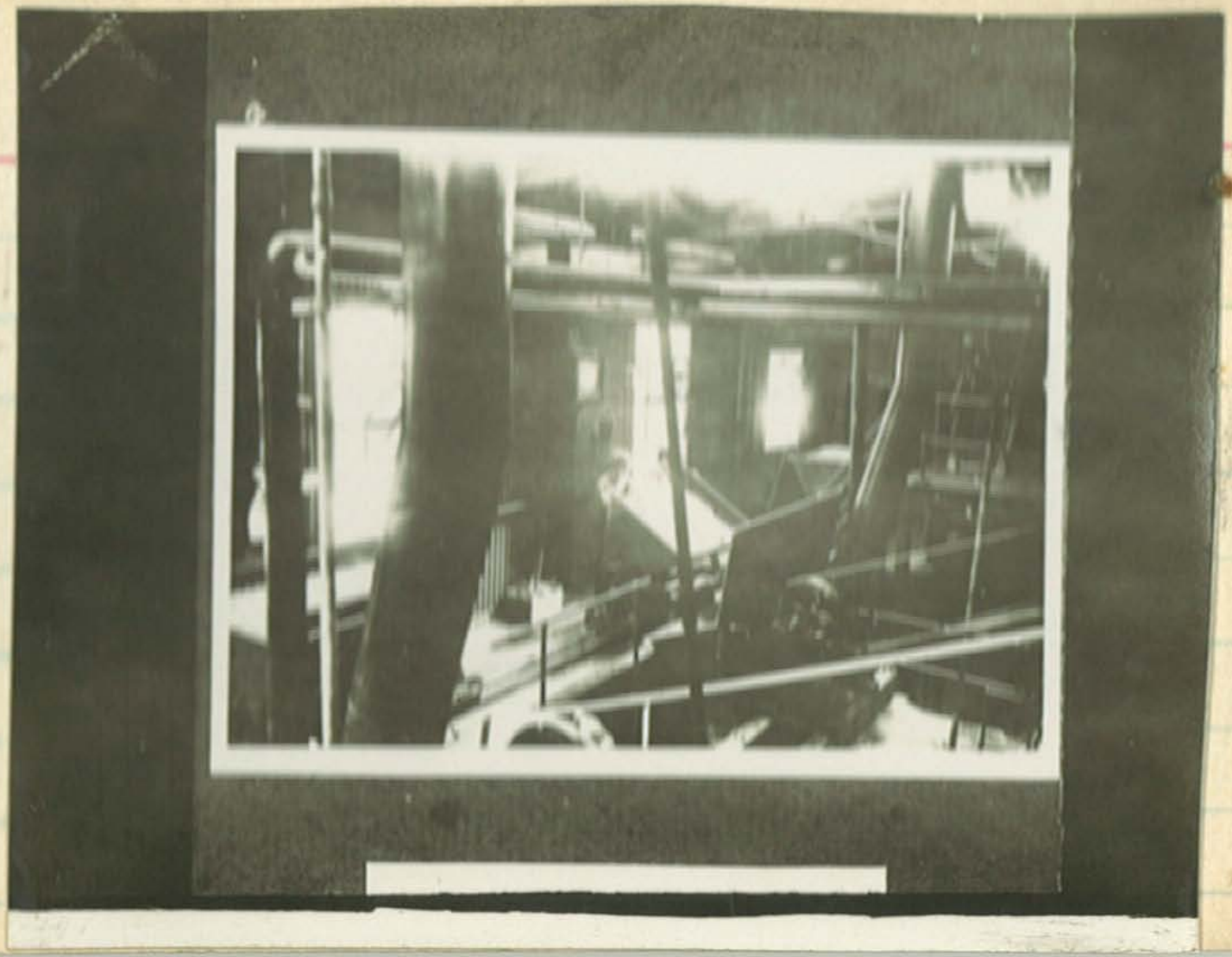


TNT. Quantity.

As in Tech Records TNT. p. 85

Sulphite washing

C 85



TNT - Purification.

Same as Tech. Records. TNT. p. 86

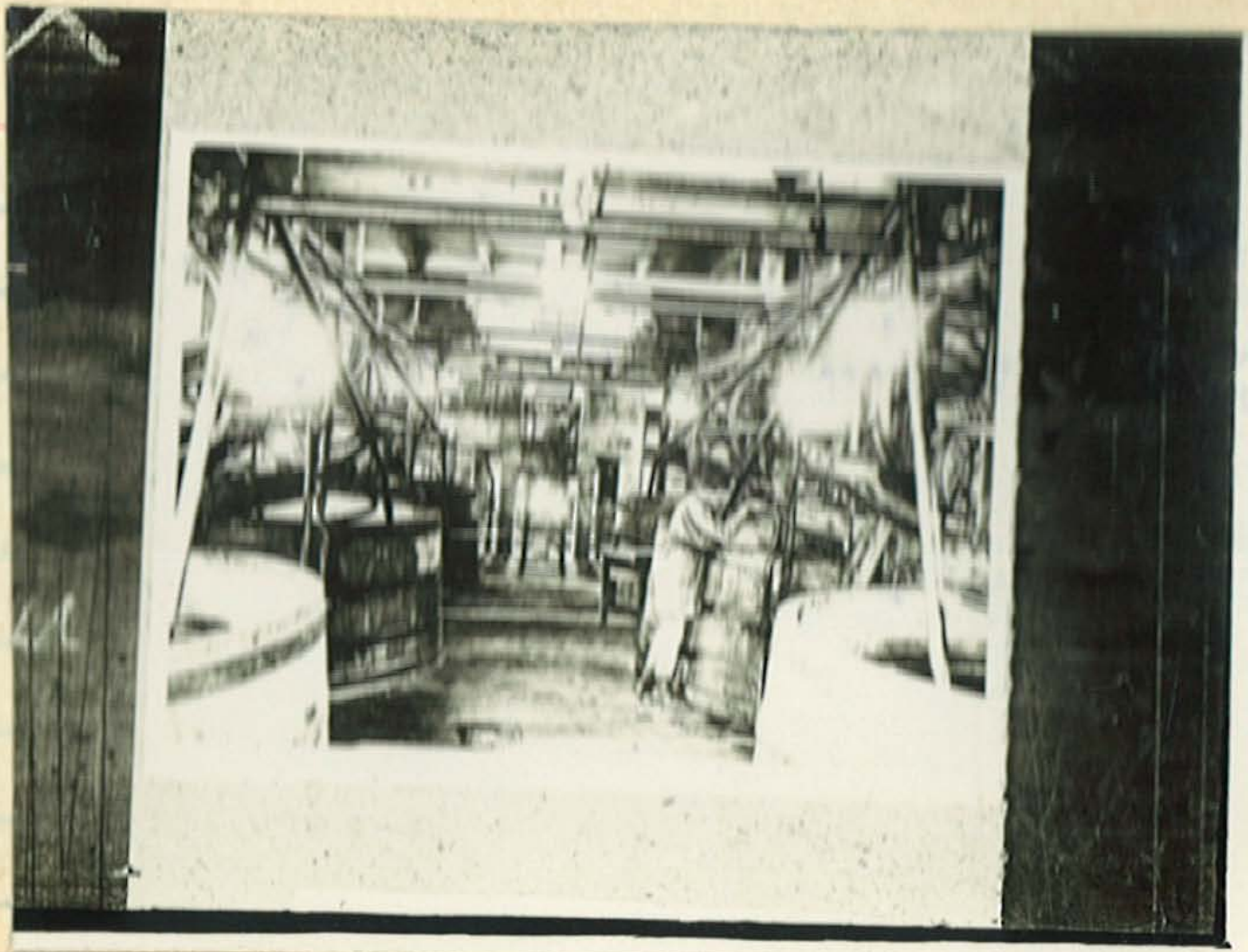
Preliminary wash to get rid of the bulk of the acid before Sulphiting. TNT (pellite) is melted in vats and poured into about its own vol. of water. 4 washes

Steam coils

Agitators

This plant is in the Nitration house

C86



TNT. Quantity.

As in Tech. Records p. ~~IV~~ 91.

Sulphiting.

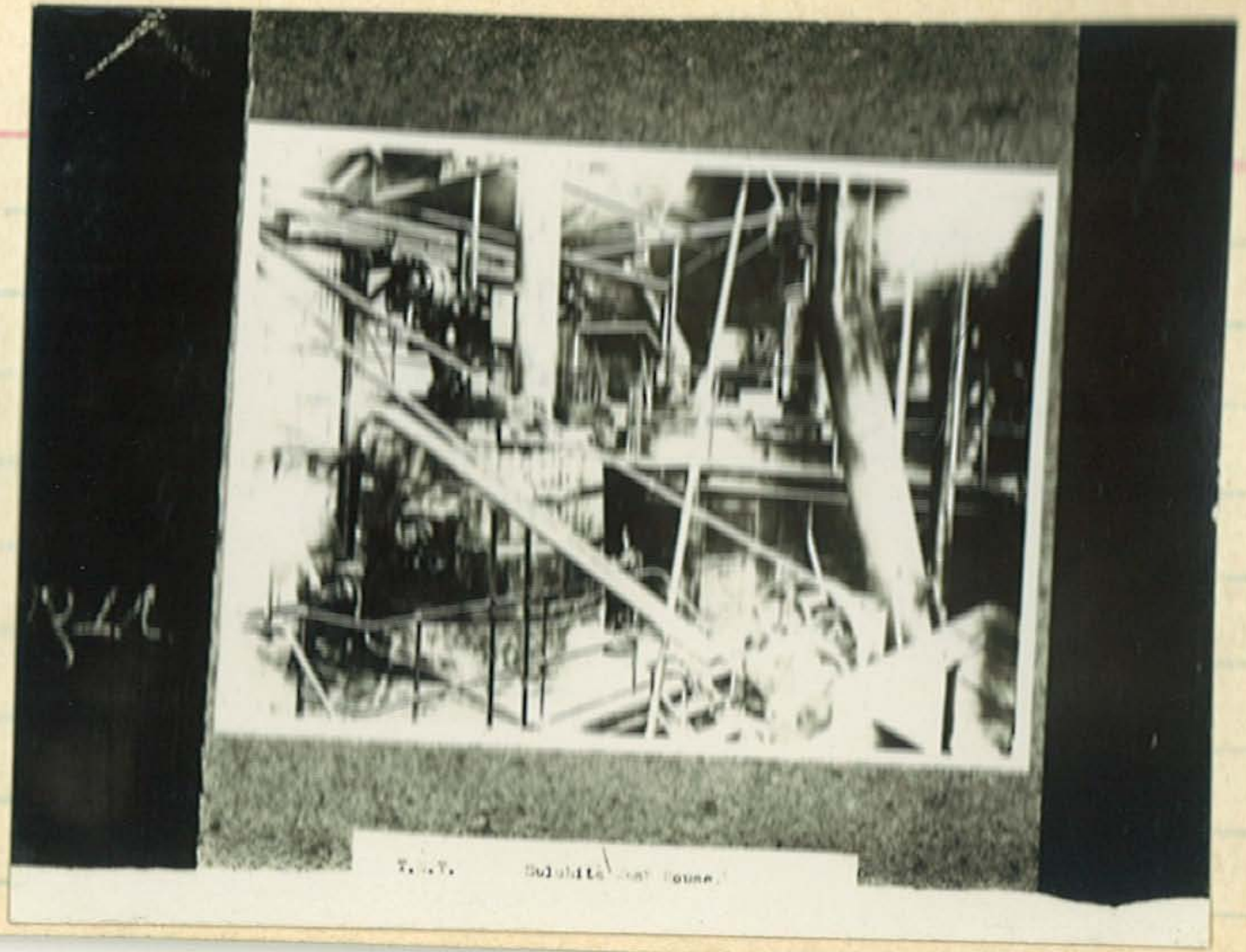
Melt TNT. Stir. Cool to crystallizing

At about 50° add Sulphite.

Stir 30 minutes. Open discharge cock.

Run Sludge into box & pump to filter.

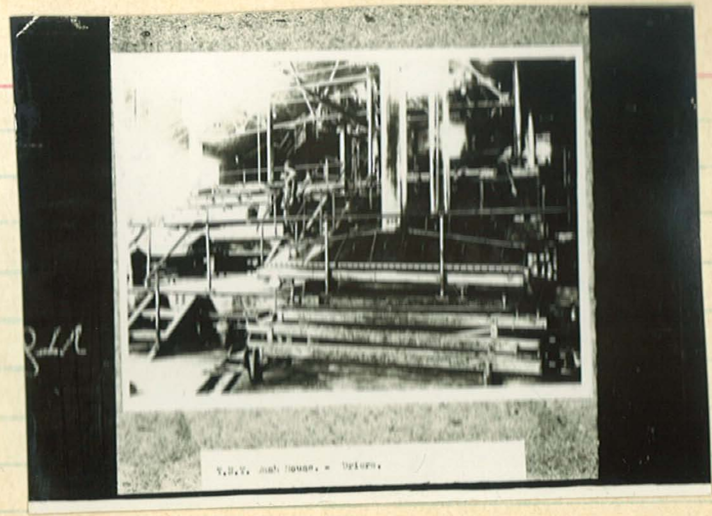
C 87



TNT. Quantity.
Same as Tech. Record Ft. TNT. p. 95

Sulphite wash house
After Sulphiting the TNT must be
acidified to remove all alkali
from the Sulphite. This is done
with very dilute H_2SO_4 or nitric acid.
(Hot Solution)

C 88


9.11

Y.B.V. Wash House. - Dryers.

TNT. Queensferry

Same as Tech. Record TNT. Fig 54. p. 103

Continuous dryer

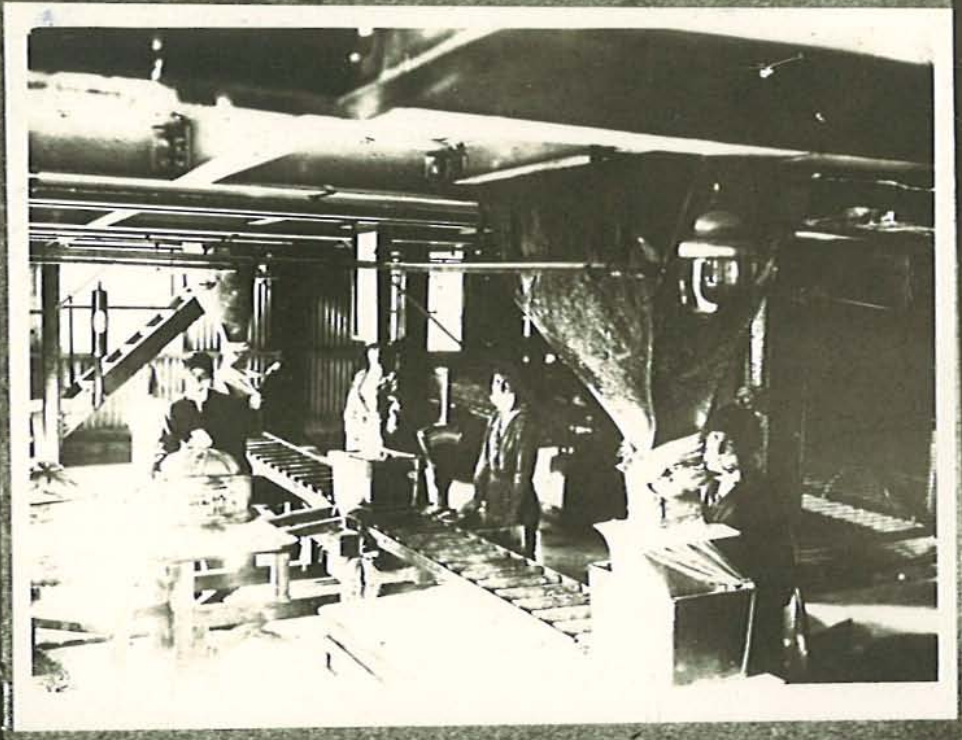
Feed tanks etc. Gradual slope

C 89

TNT. Queensferry
Same as Tech. Records TNT. Fig. 55 p. 103

Flaking drum. Enmeshed, with doctor

C 90



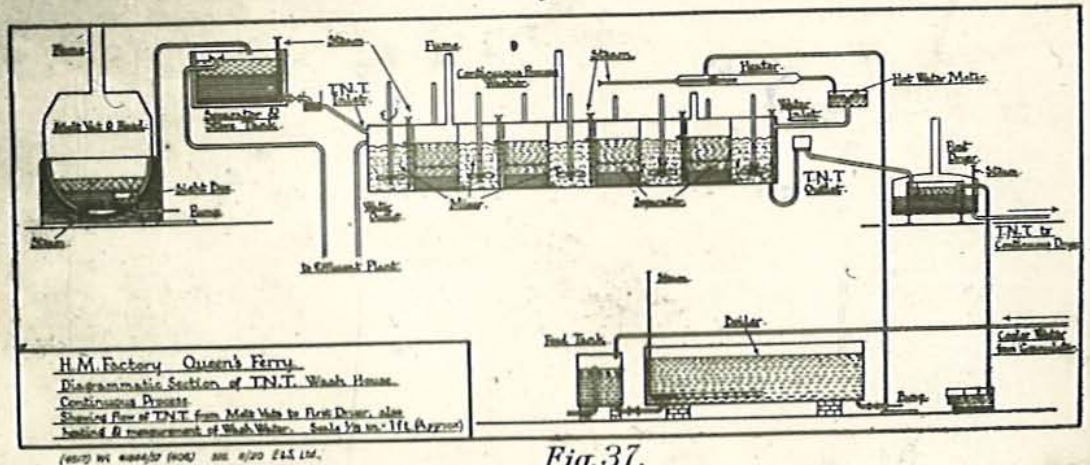
T.N.T. Packing House.

Showing:-

TNT. Quarry.
Same as Tech. Records TNT. Fig 56 p 104
Weighing in line with bags inside.
Mechanical Conveyor (like
escalator)

C91

[To face p. 80



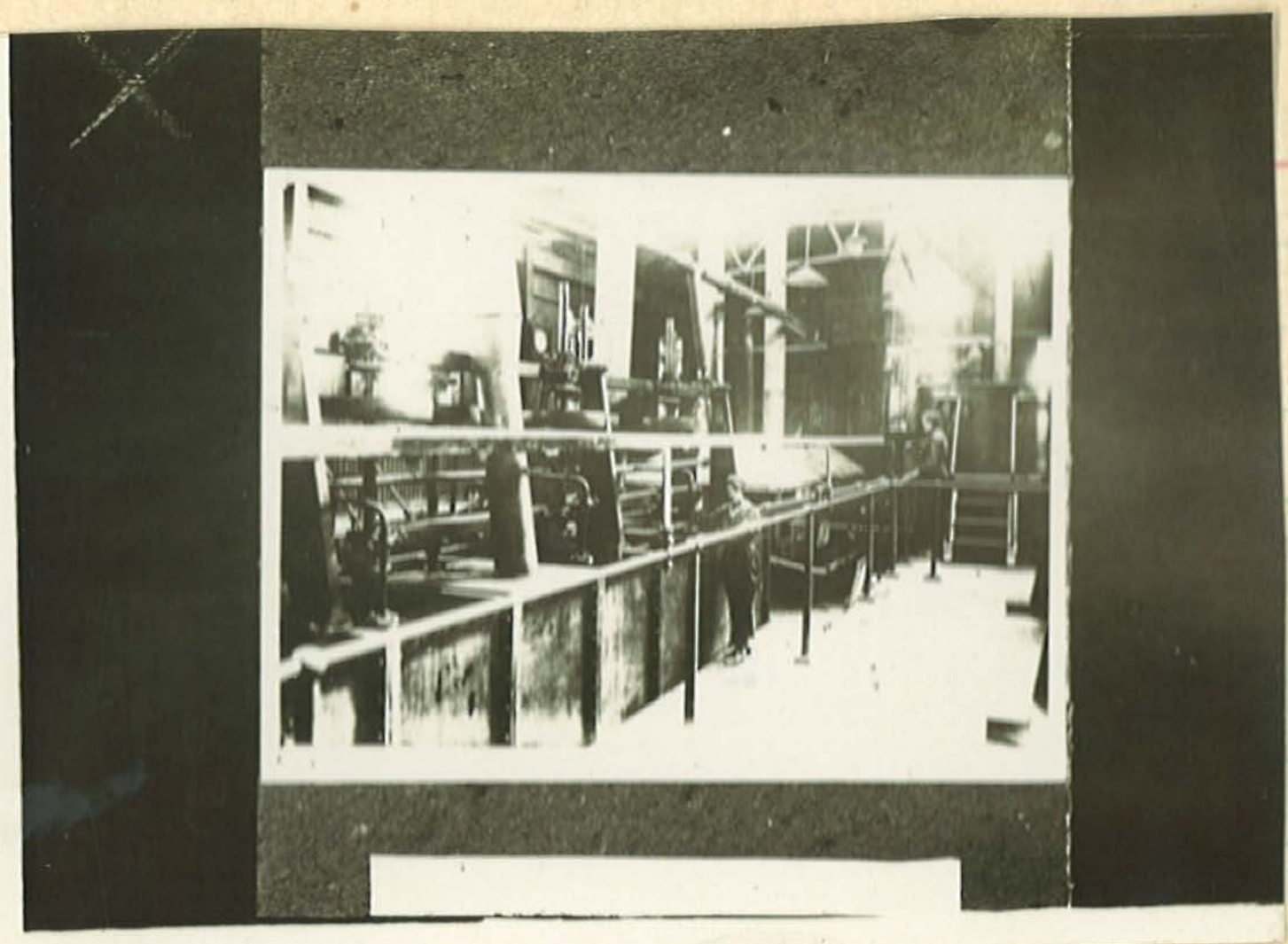
H.M. Factory Queen's Ferry.
Diagrammatic Section of T.N.T. Wash House.
Continuous Presses.
Showing flow of T.N.T. from Mixer Vats to First Dryer; also heating & measurement of Wash Water. Scale 1/8 in. = 1 ft. (Approx.)

Fig. 37.

TNT. Queensferry

Same as in Tech. Records TNT. B. 80

C92



TNT Queensferry
Same as in Macnab Tech Records
TNT p 82

Continuous washer.

C 93

Principle of the Screw filling machine (diagram)

Not located at 10.9.86.

C 94.

Incorporating mills another...(?).

Not located at 10.9.86.

C 95.

TNT. Spewing of amatol (?) due to NH_4CNS.

Not located at 10.7.86.

C 96

C 97

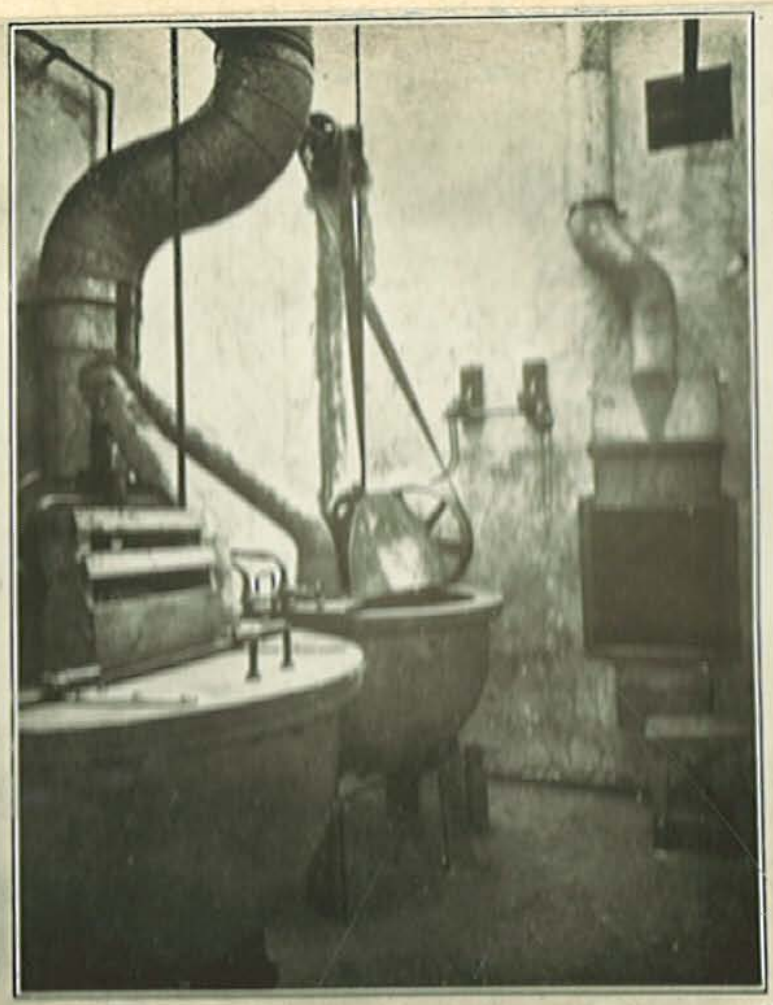
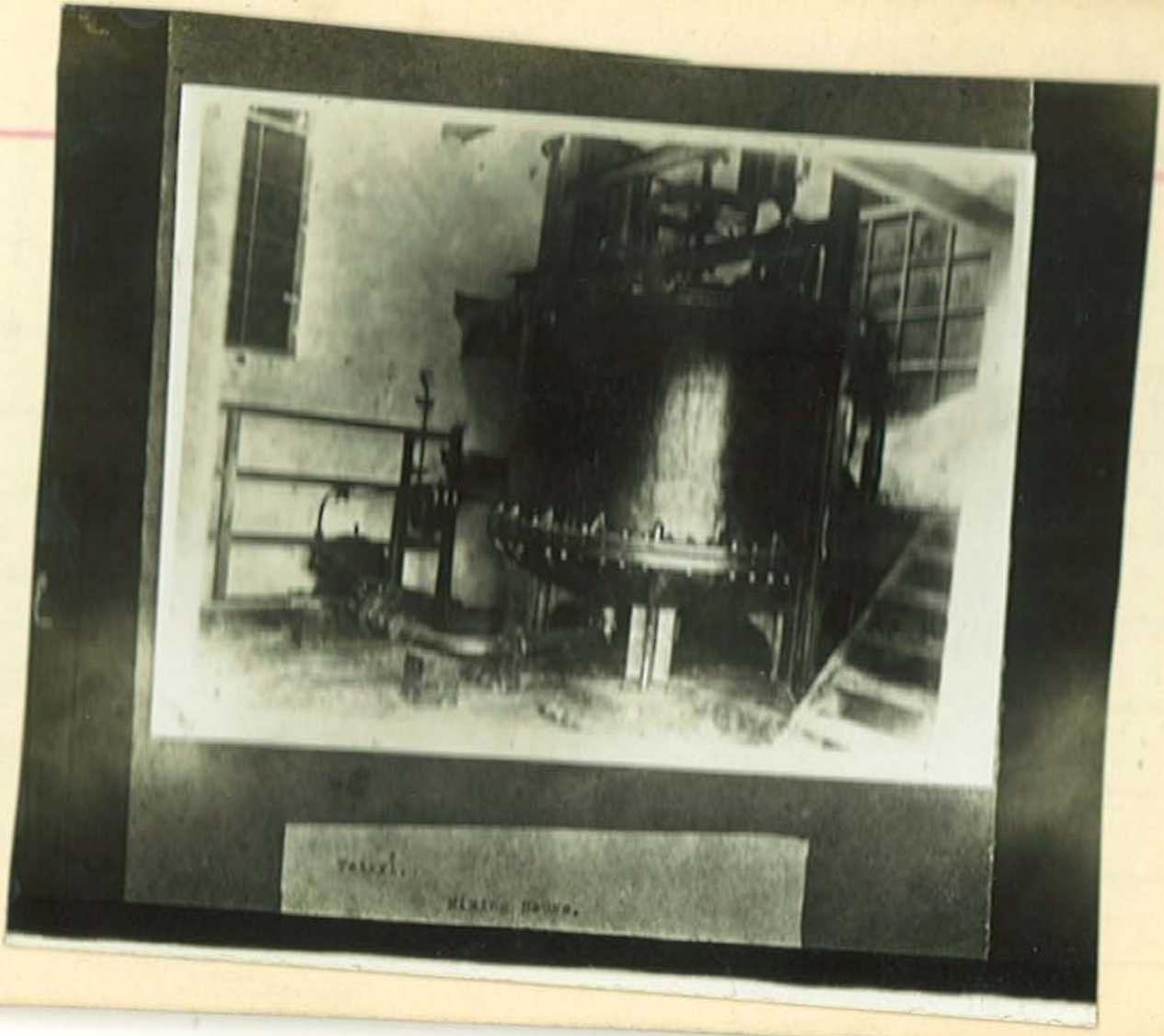


FIG. 8.—SWIZZLE-STICK MIXERS FOR HOT-MIXED AMATOL.

Two per house

C.98

[c.99]



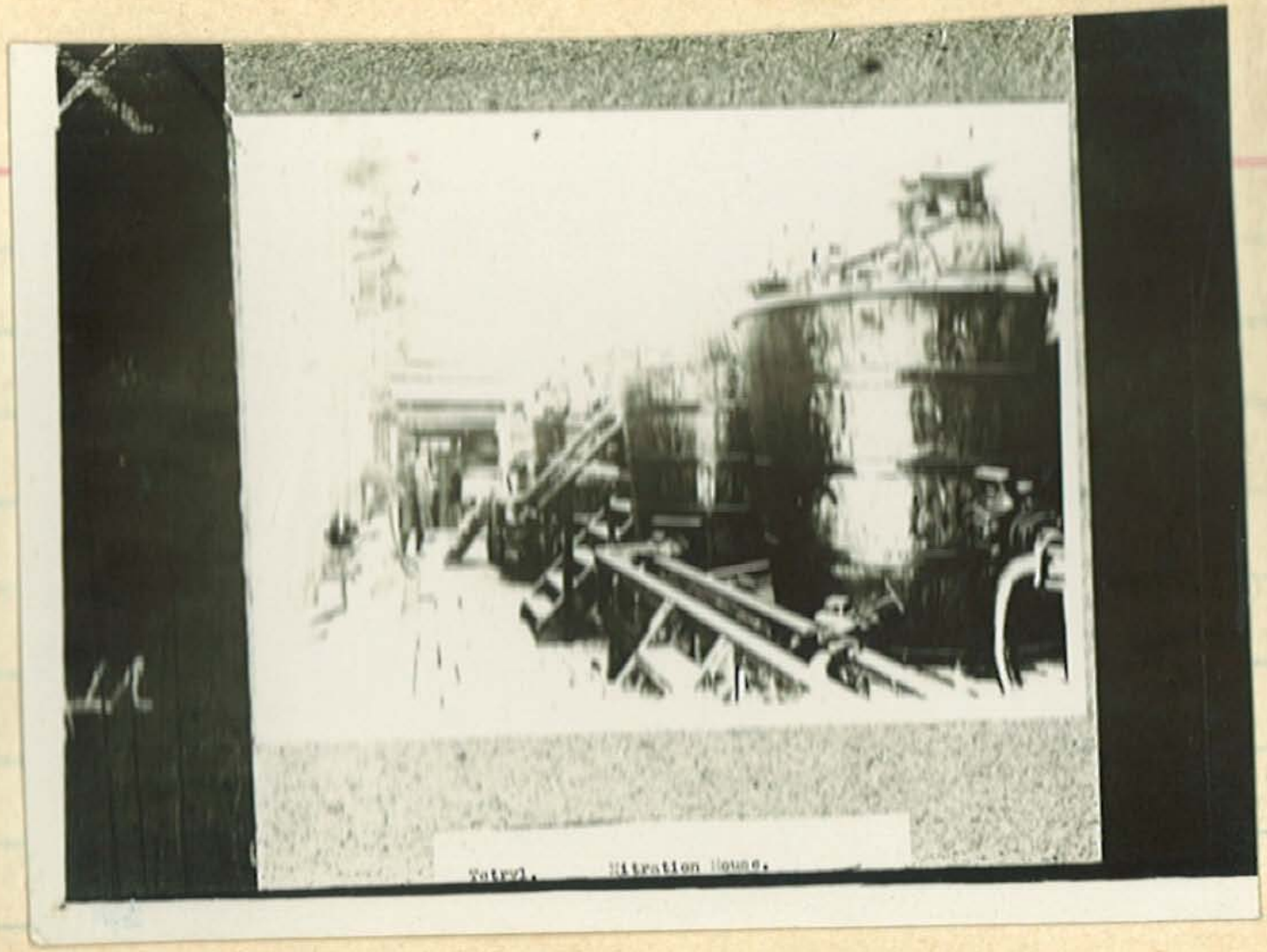
C 100

C101

Tetryl. Nitration House.

Filters.

C102

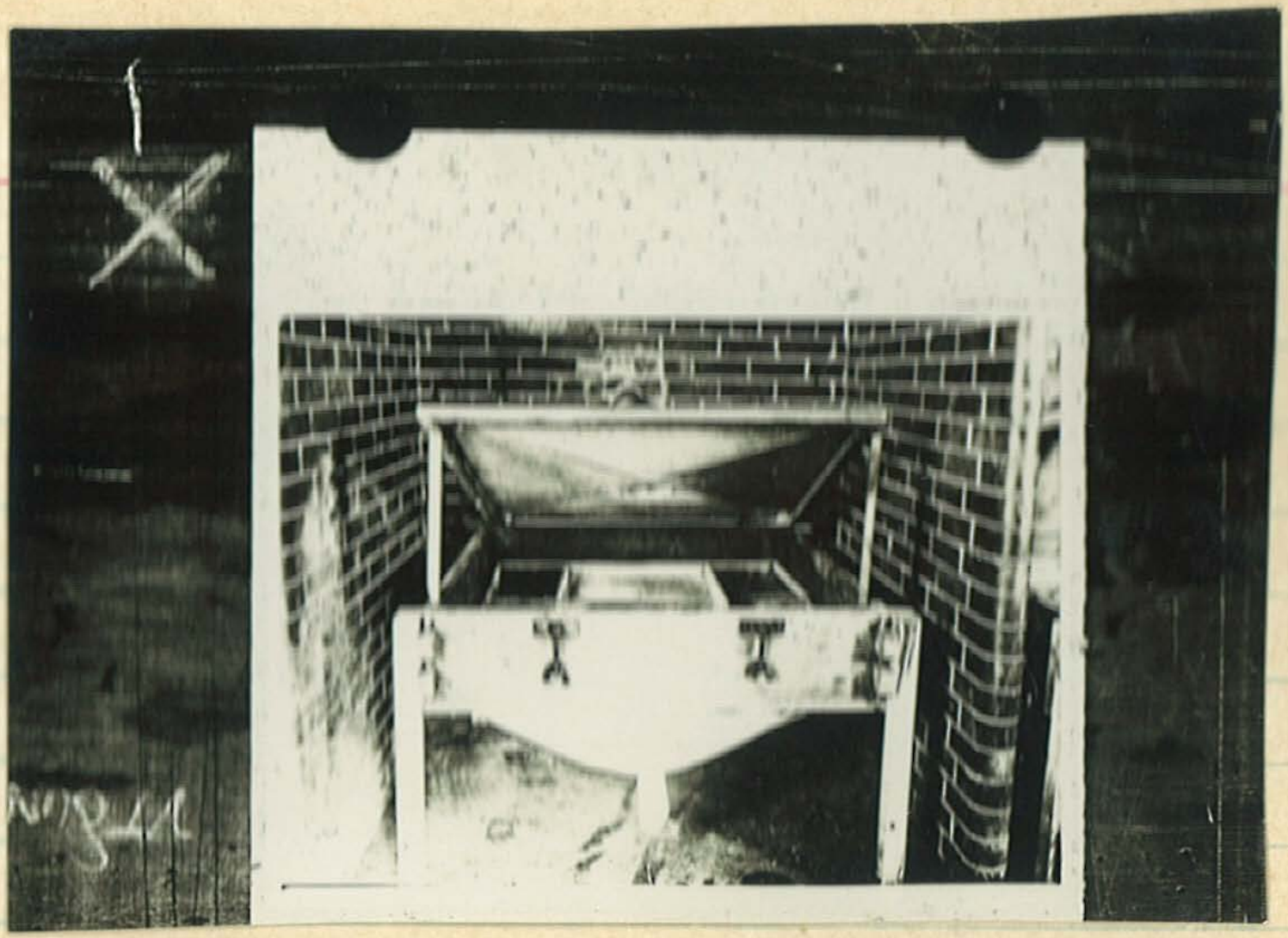


Water Filtration House.

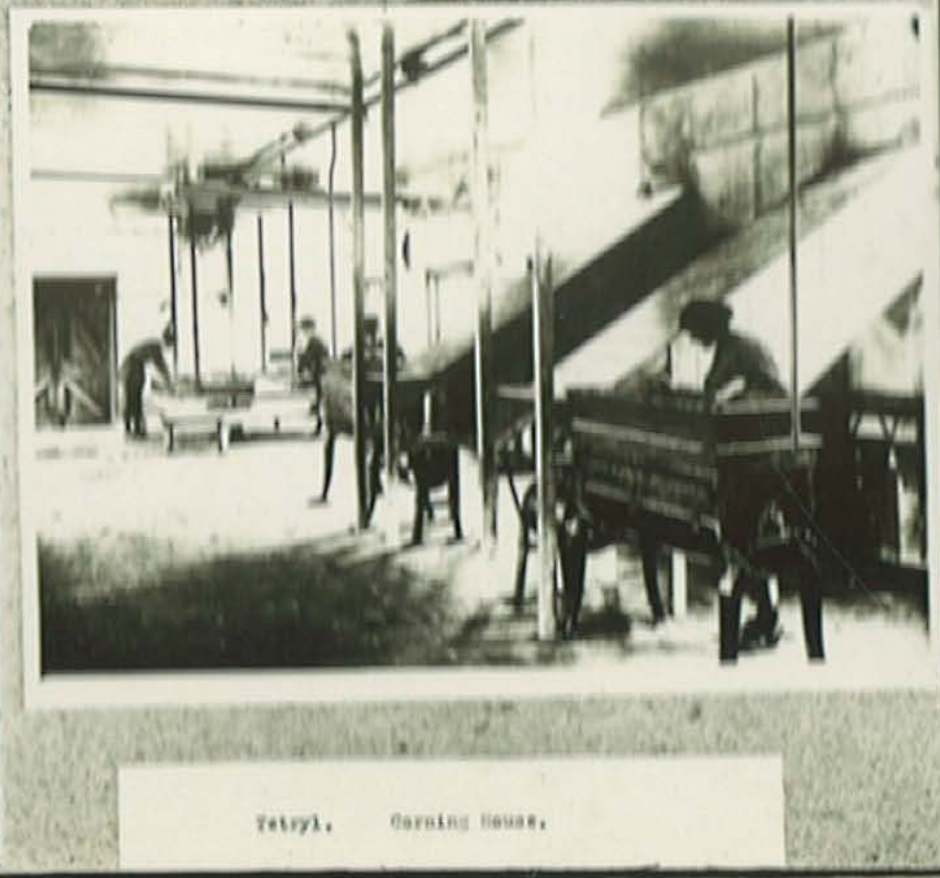
C 103

C104

C105



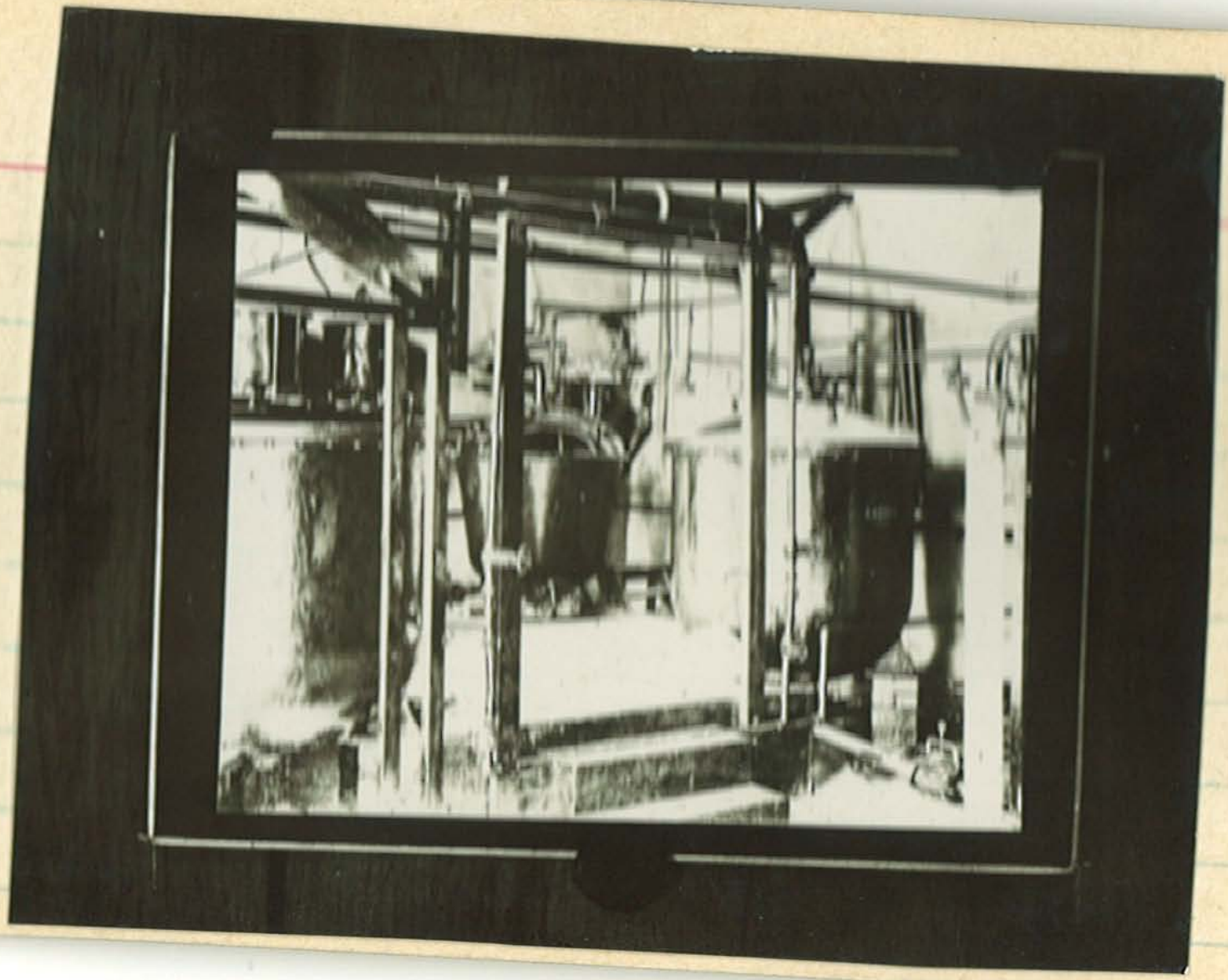
C106



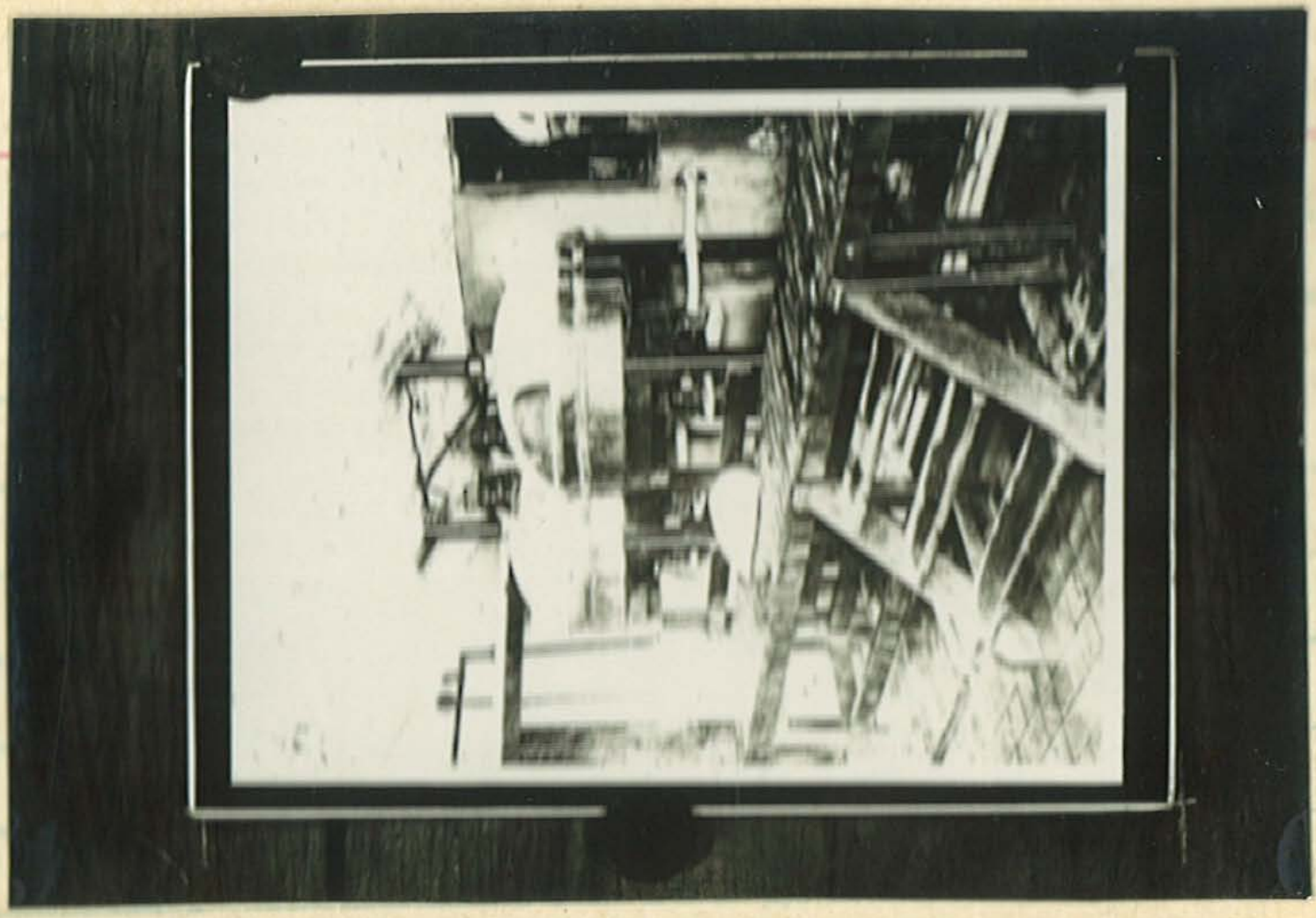
Tetryl. Corning House.

C107

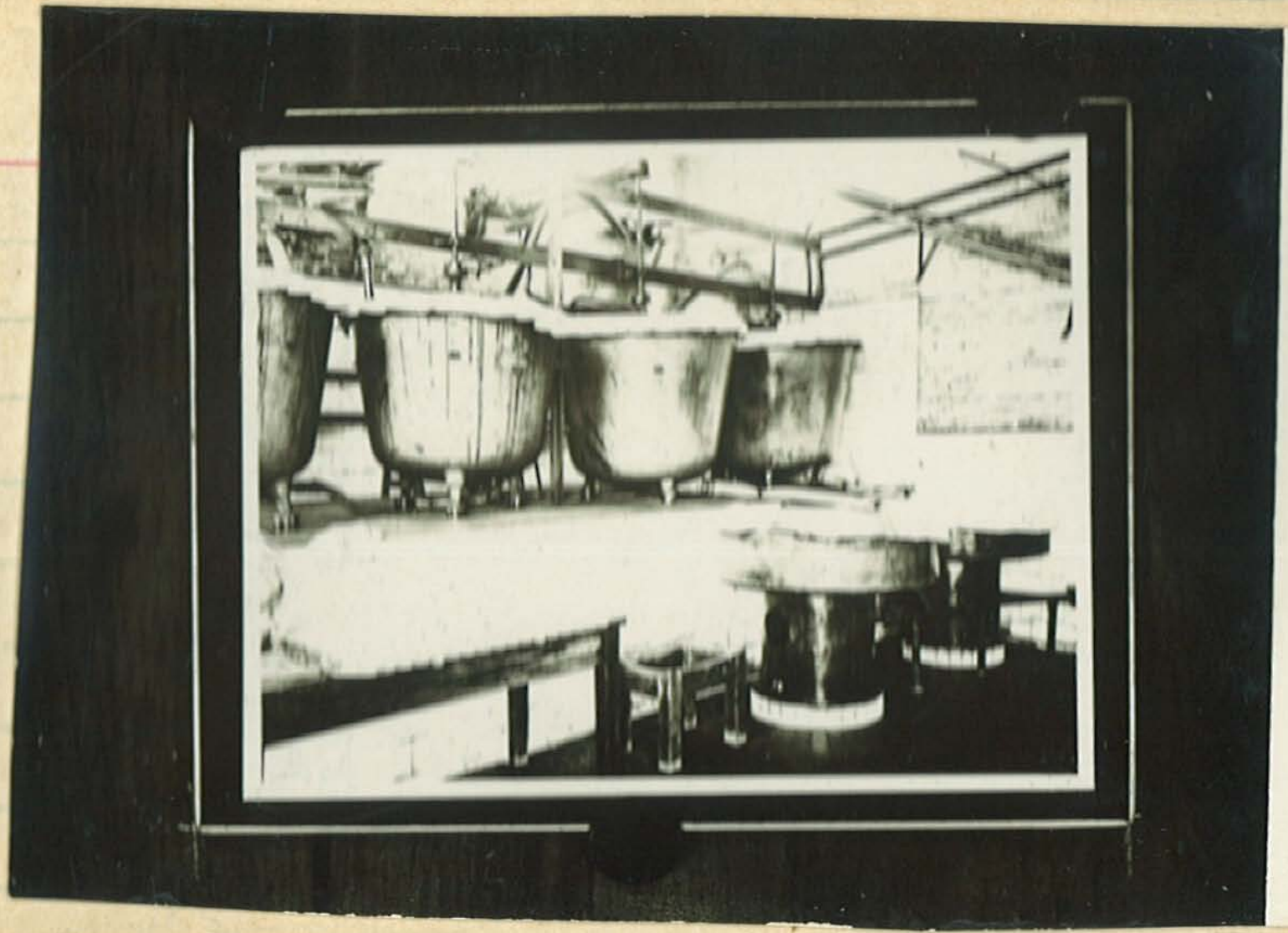
C108



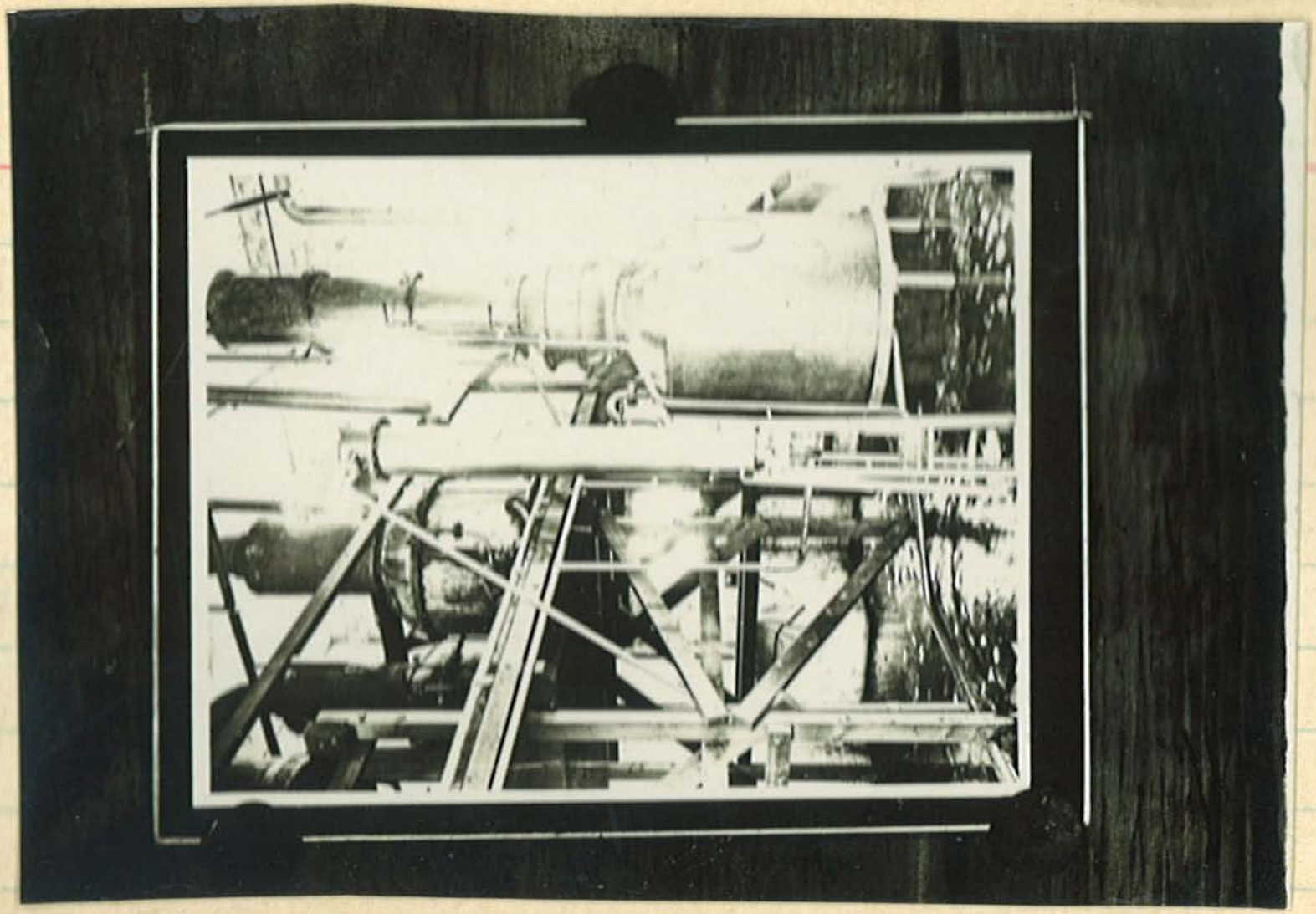
C109



C110
A



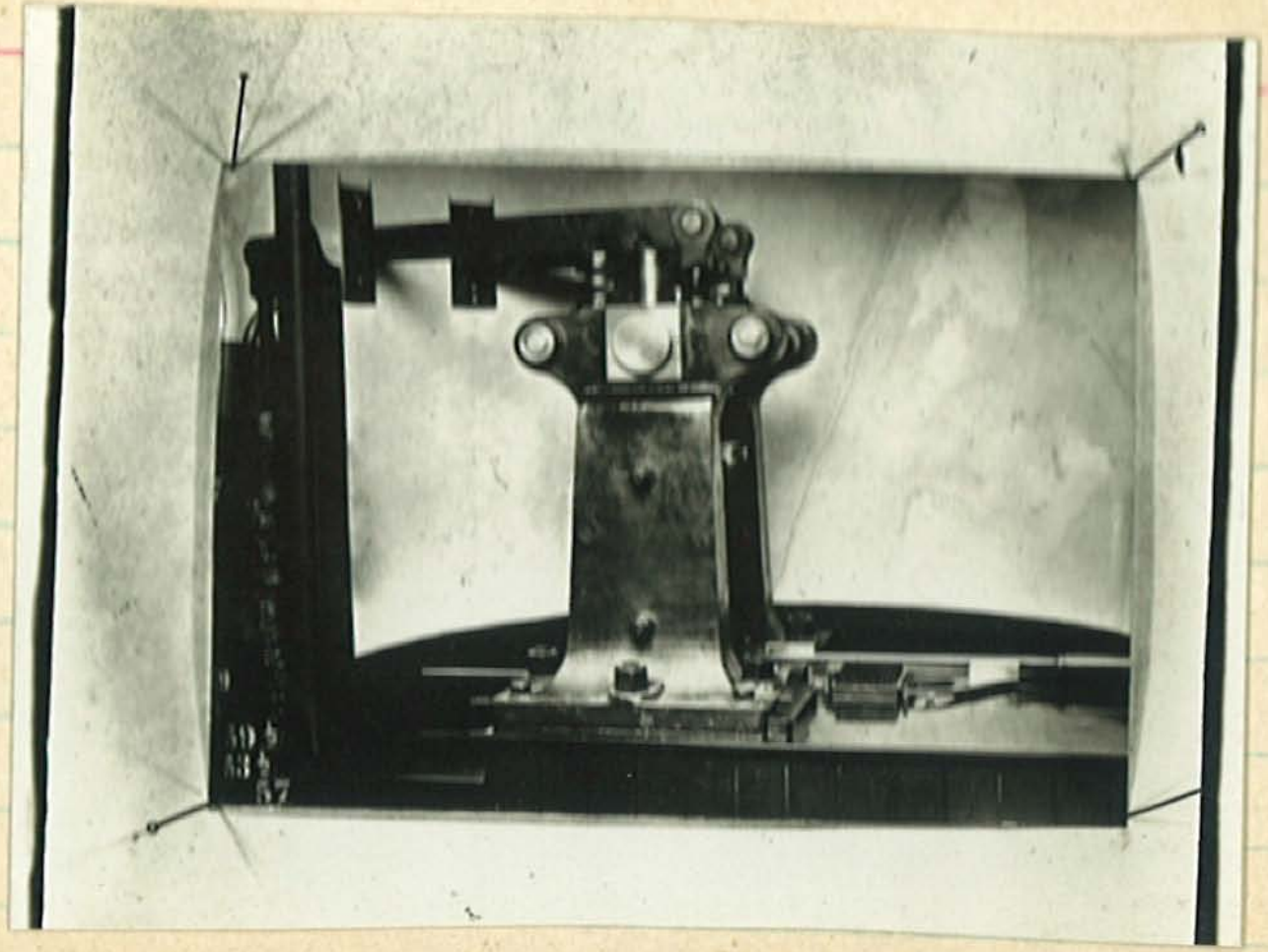
C 11 D
B



C. 111

C 112

C. 113

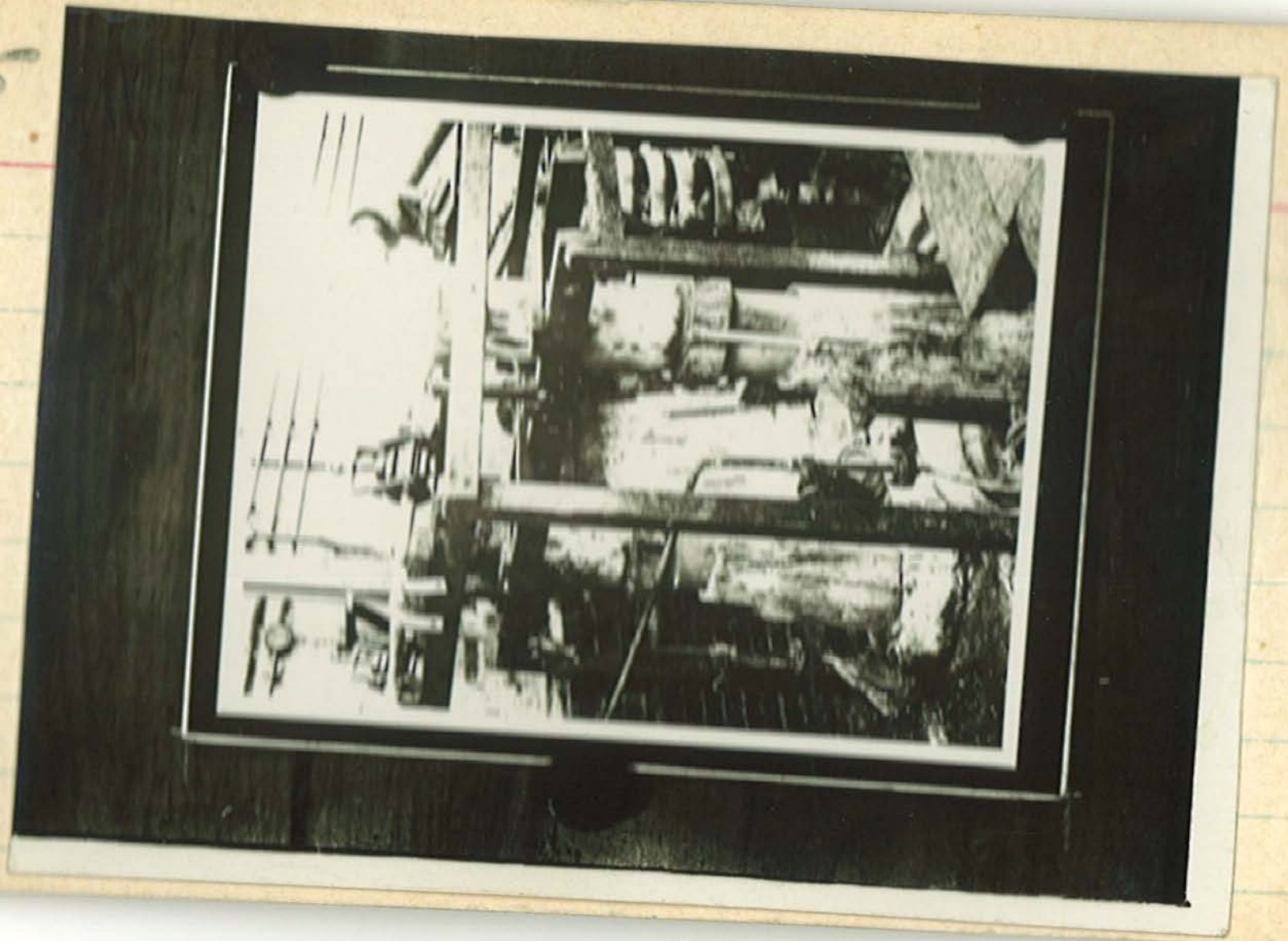


C114.

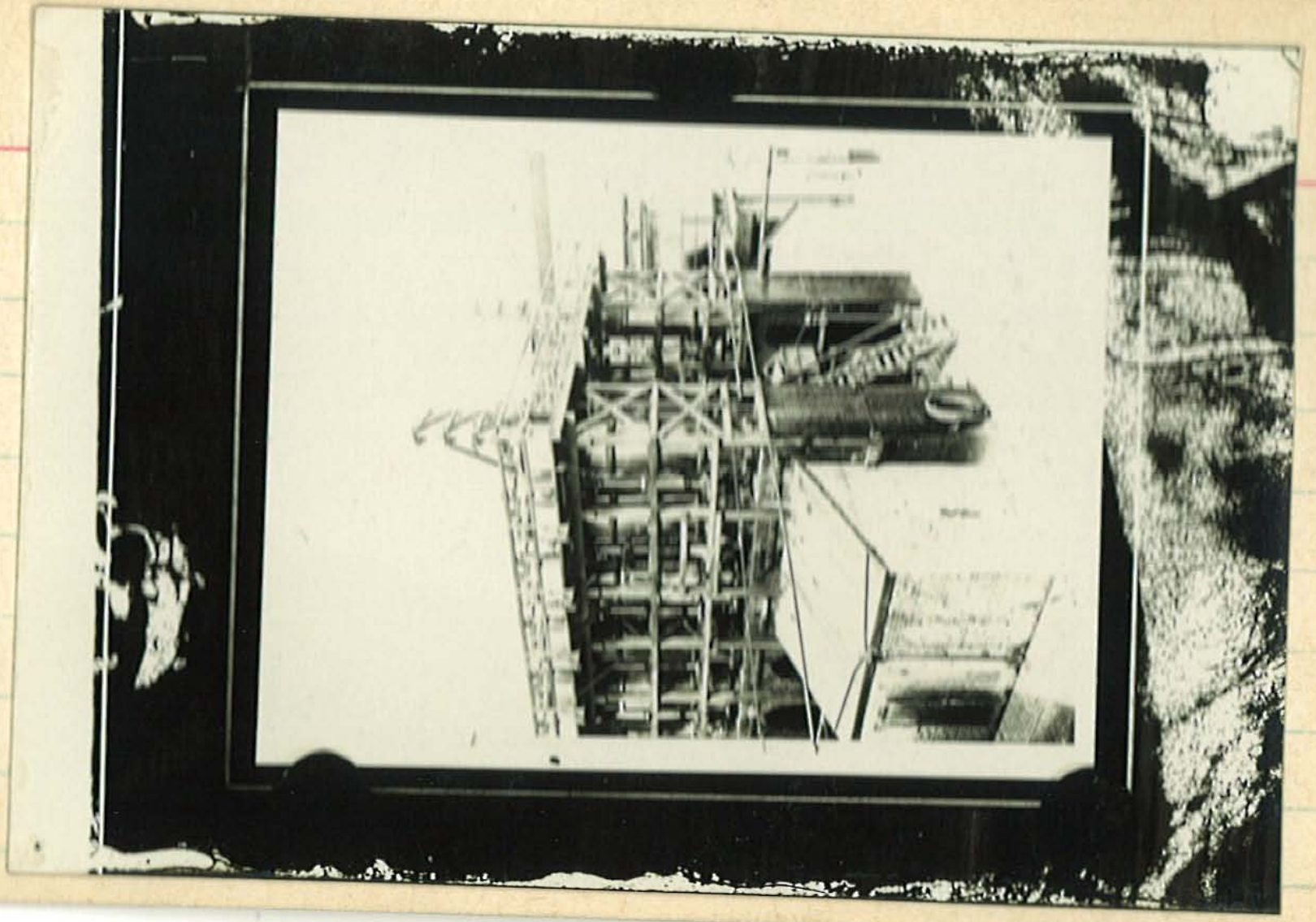
Recovery of N/G Waste Acids.

Not located at 10.9.86.

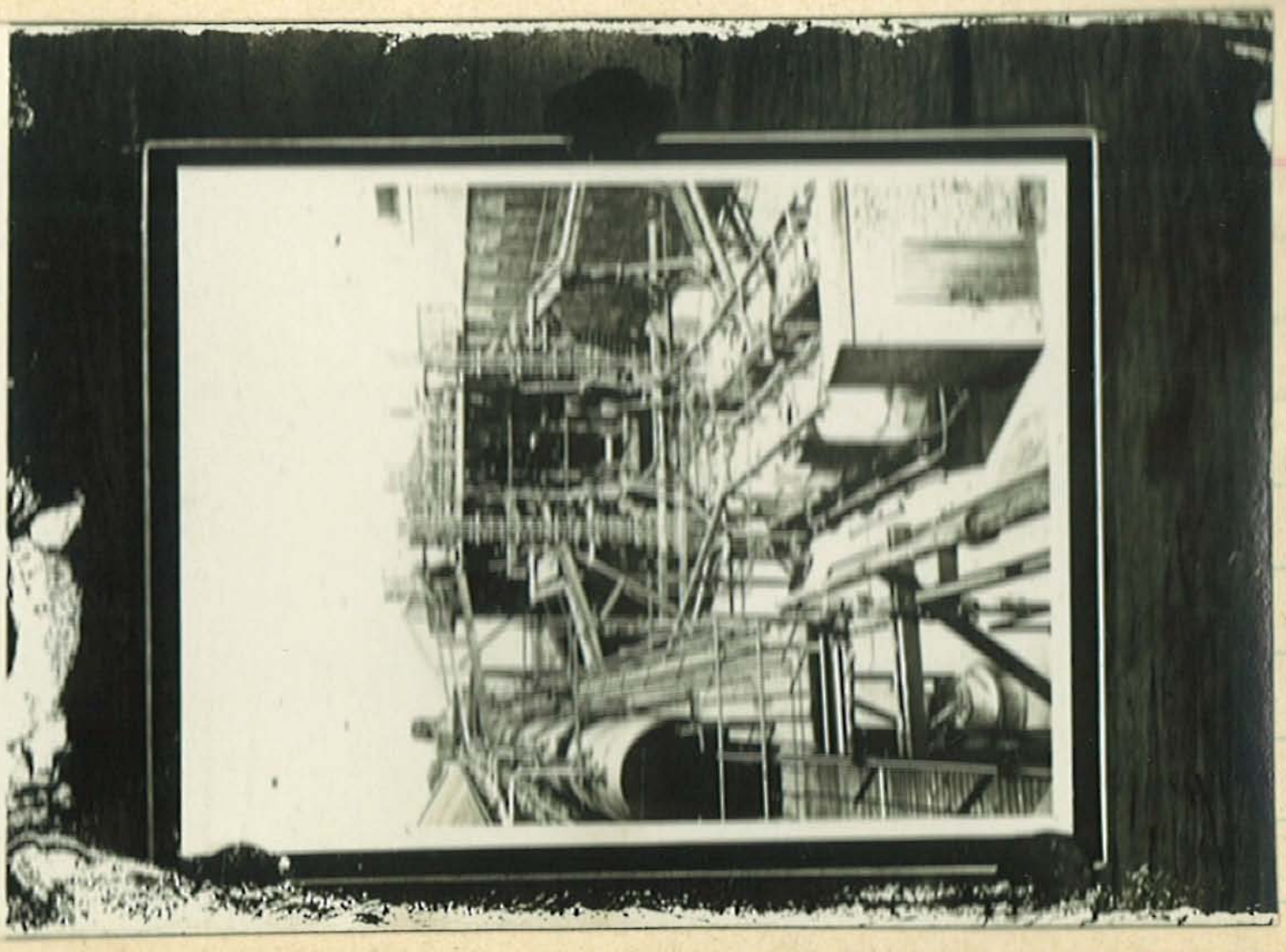
C.115



C 116

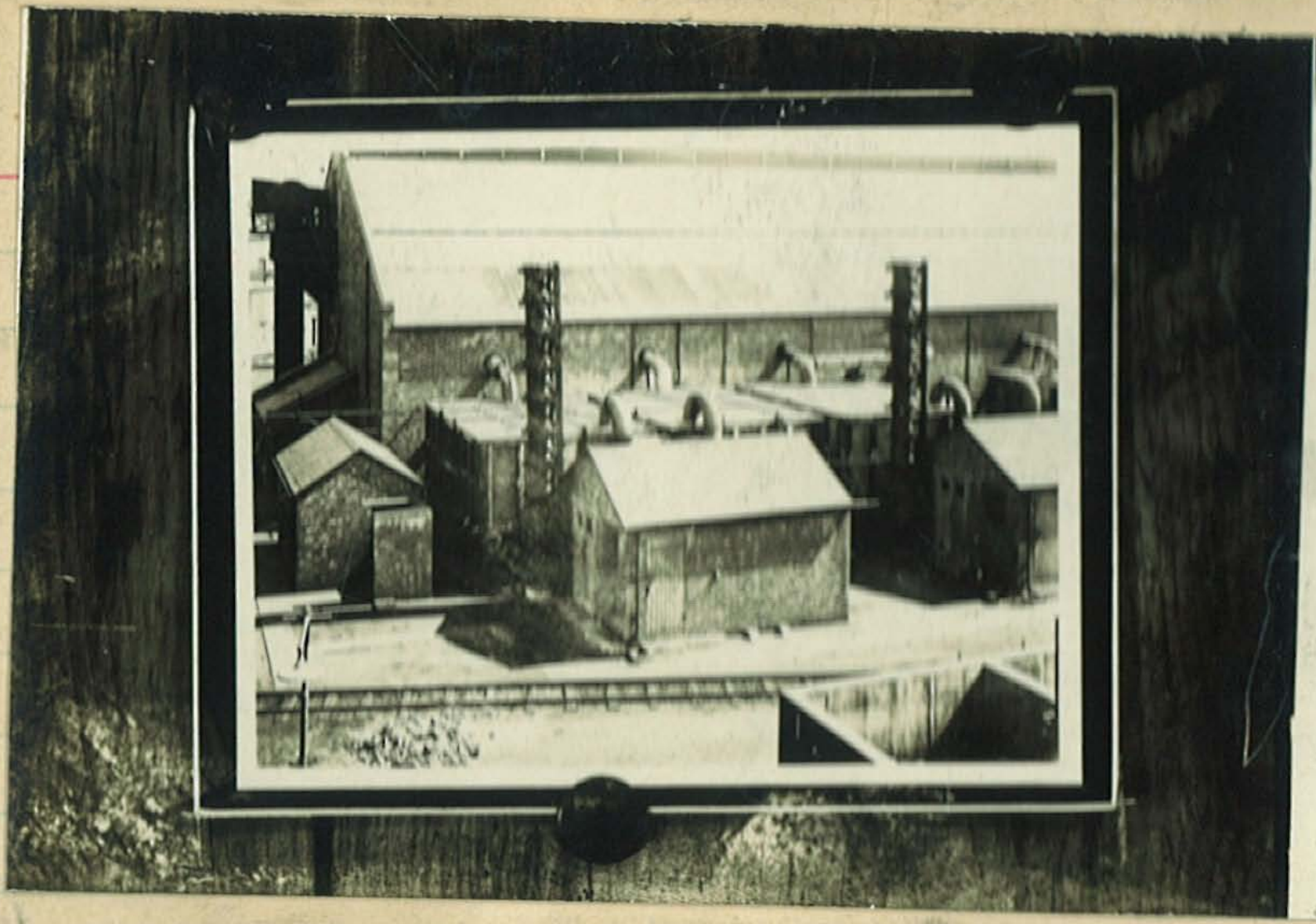


C.117



C.118

C. 119



C120.

Parts of Rotary Pump.

Not located at 10.9.86.

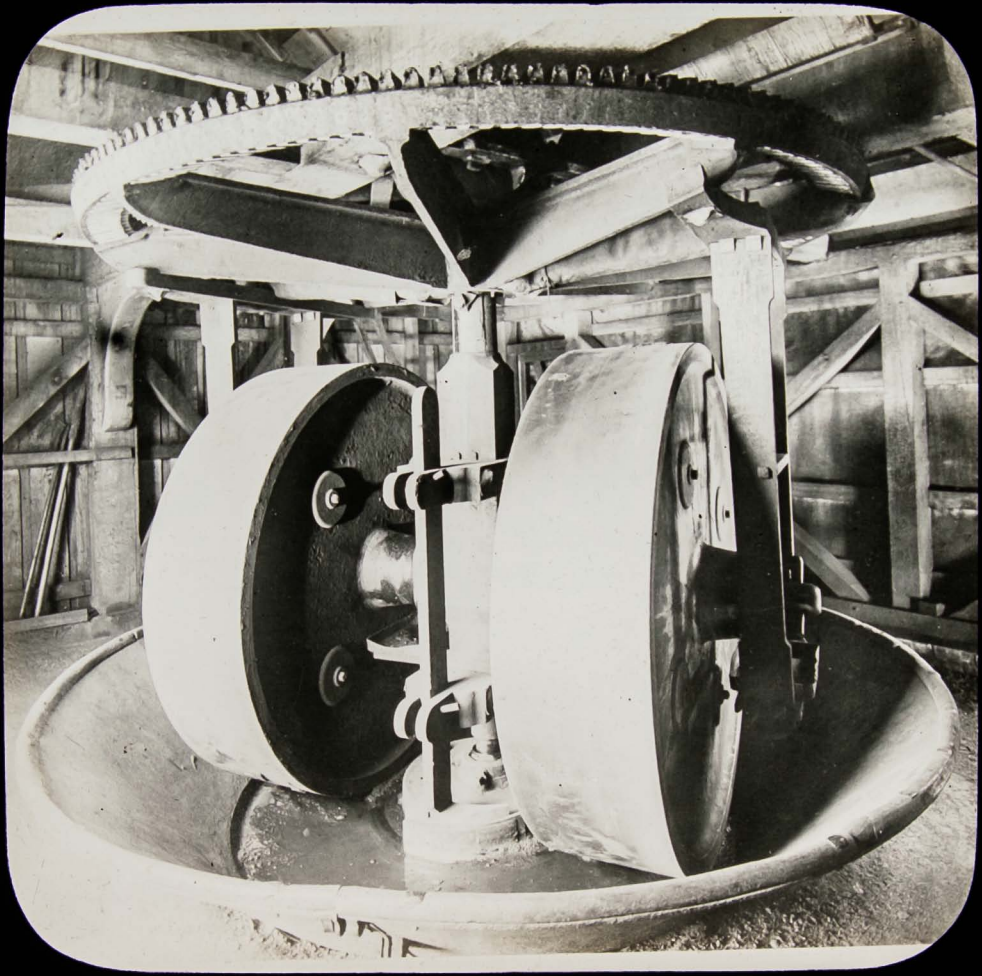
C121.

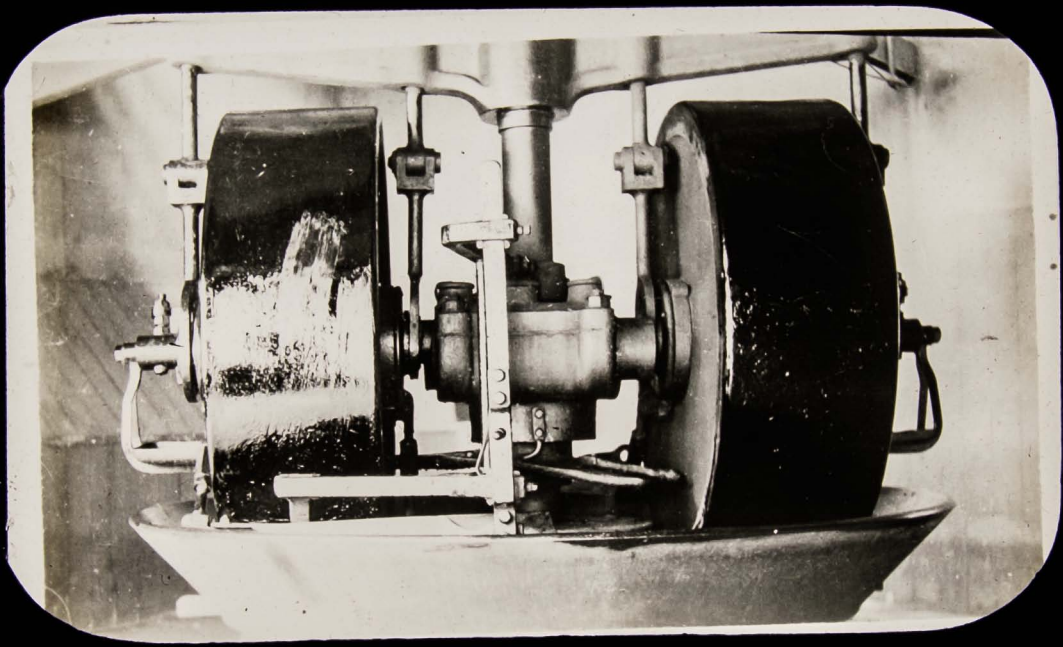
Rotary Pump.

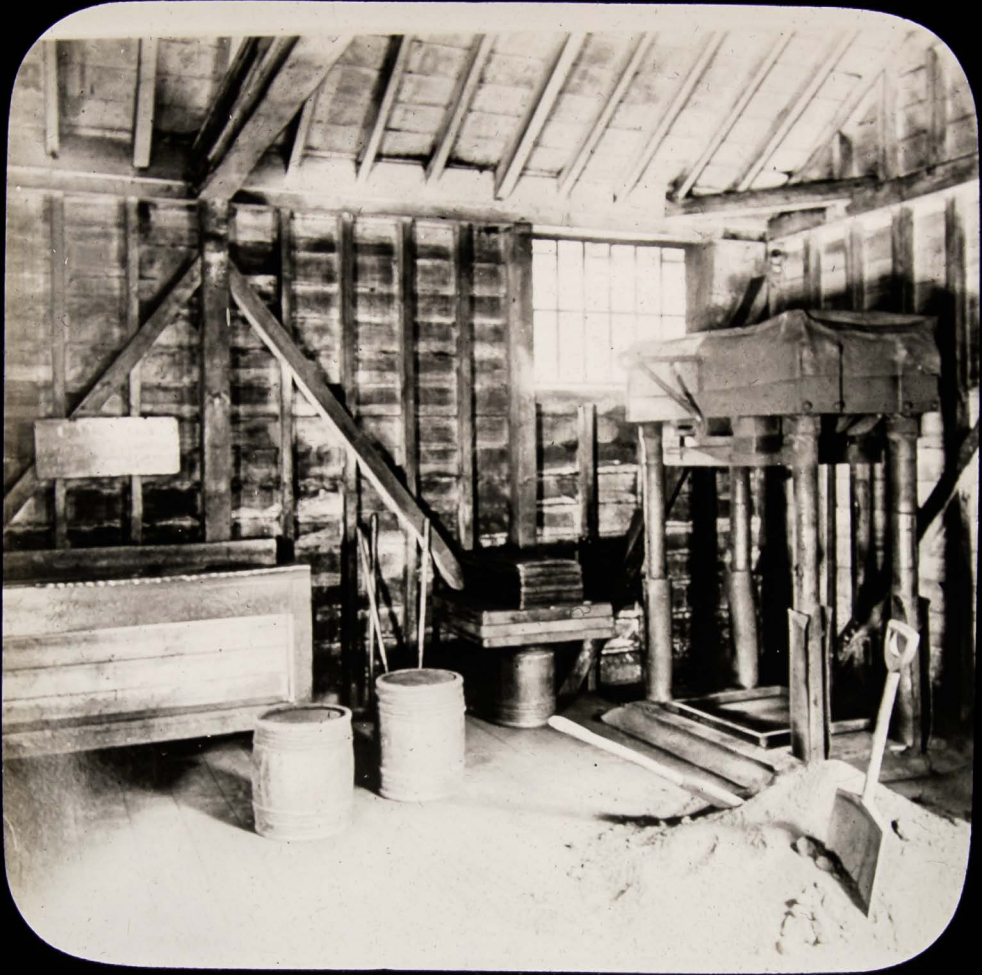
Not located at 10.9.86.

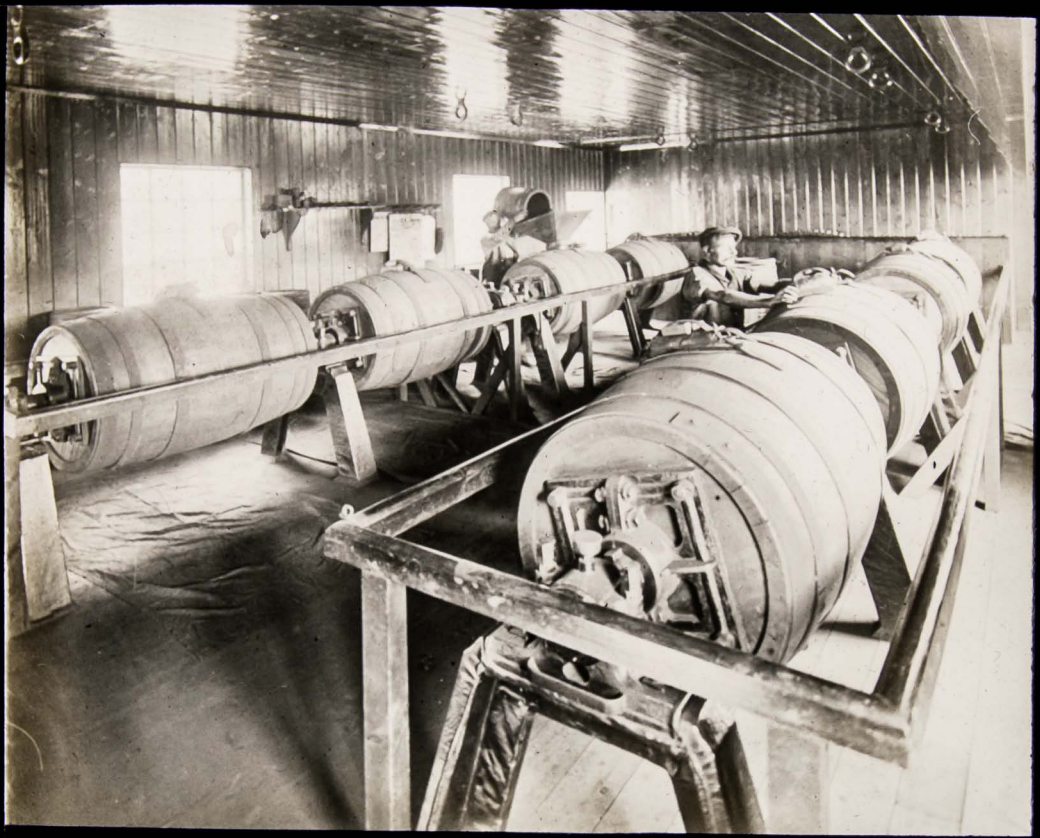
C1 REPEAT

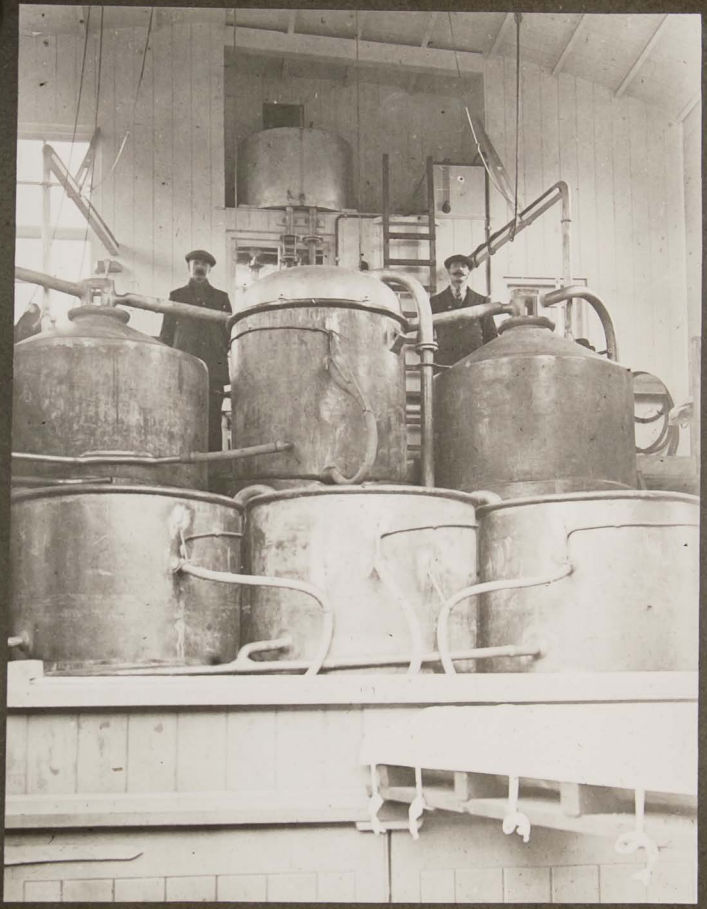
C.13 REPEAT.












Site III NC Hill 4 Nitrator Separator House Tue 27 3 17 No 529

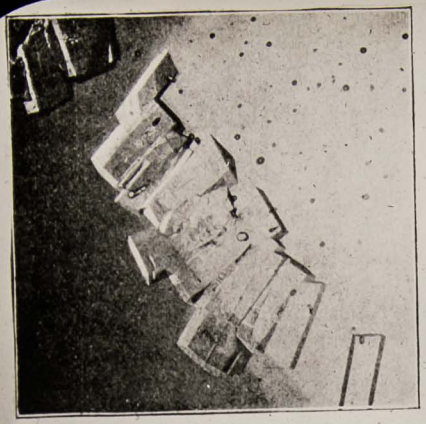


Fig. 1.

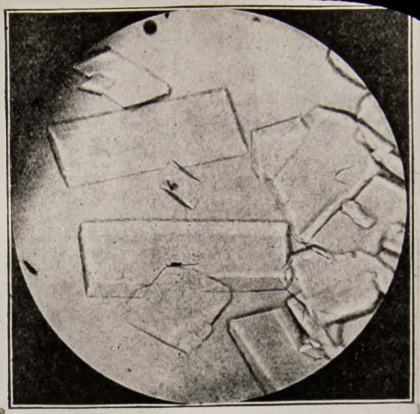


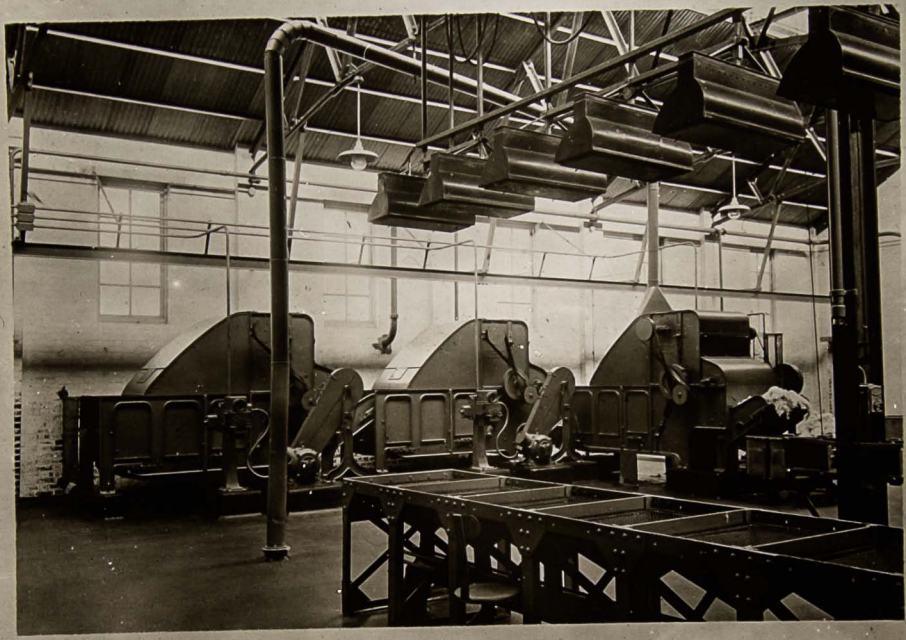
Fig. 2.

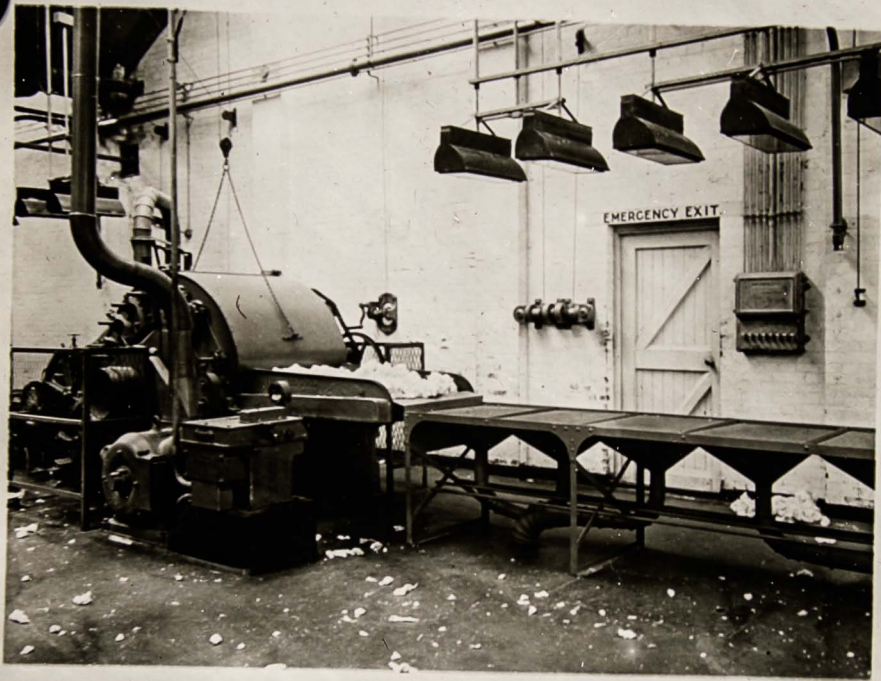
NITROGLYCERINE IN UNSTABLE, MORE SENSITIVE FORM

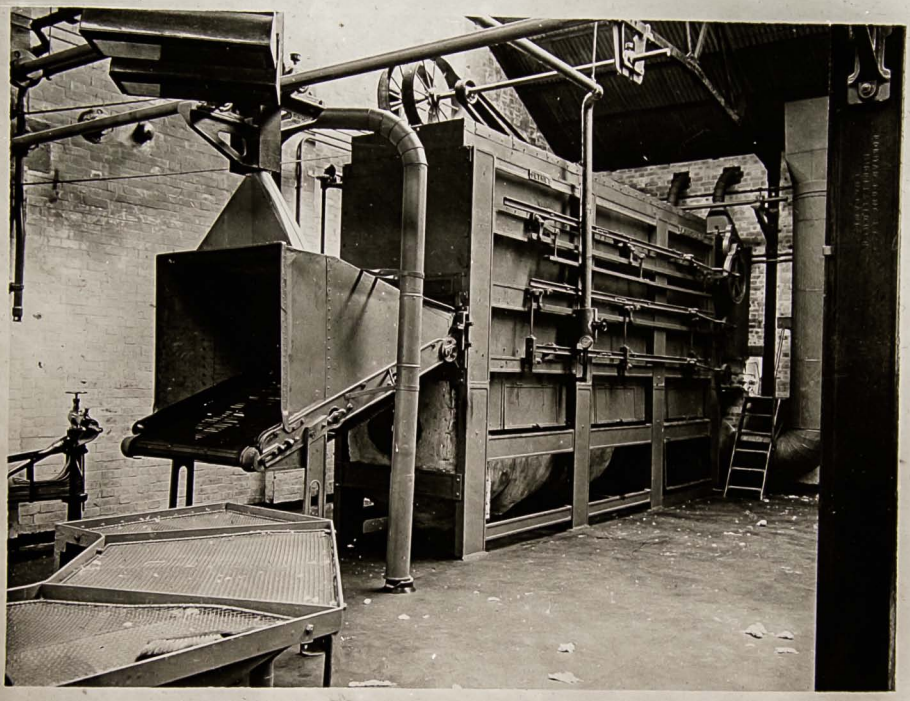
Fig. 3.

Fig. 4.

NITROGLYCERINE IN STABLE, LESS SENSITIVE FORM




EMERGENCY EXIT



the dry-carded cotton. The output per shift consisting of seventeen men is therefore : 4·5 × 159 × 62 × 8 ÷ 100 = 3549 lb.

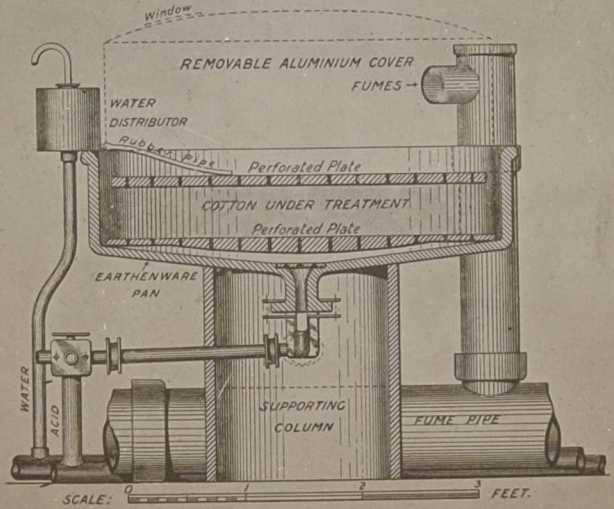
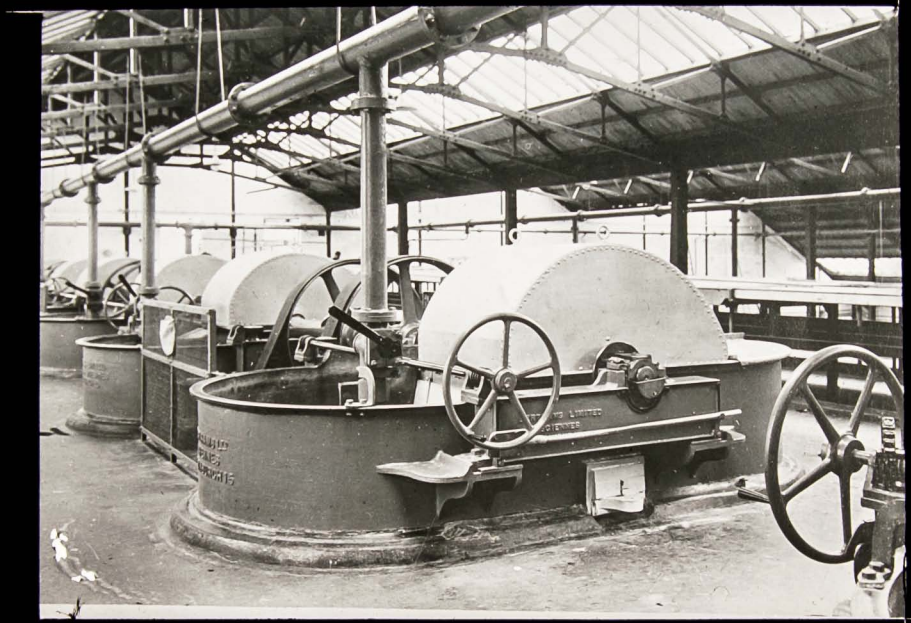
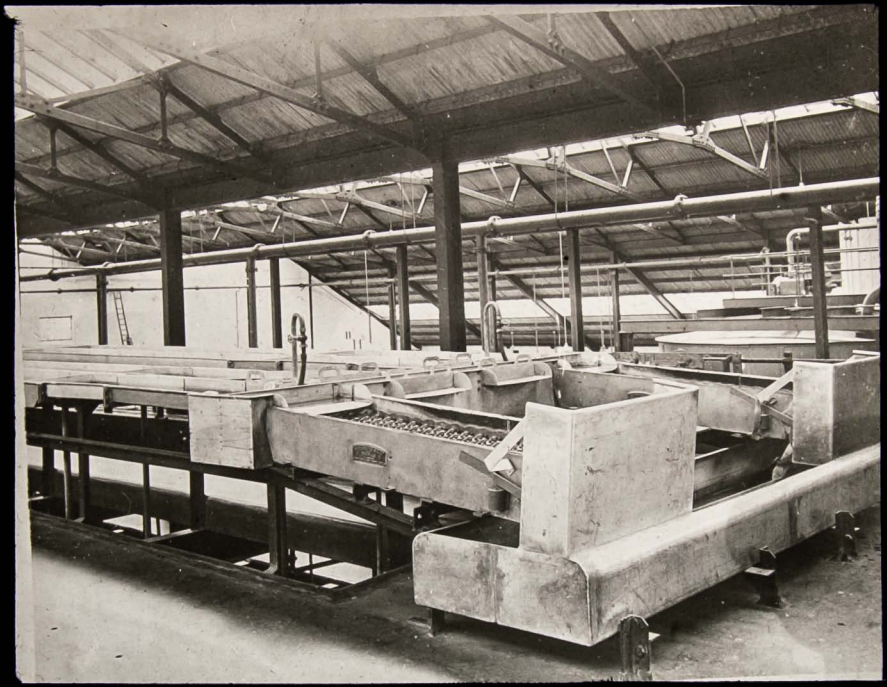
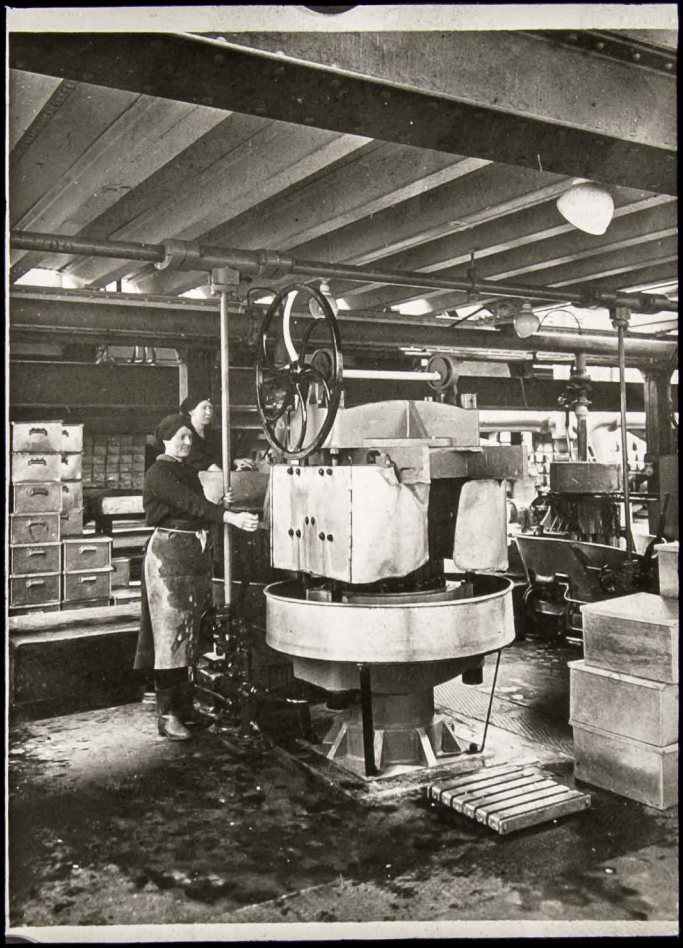


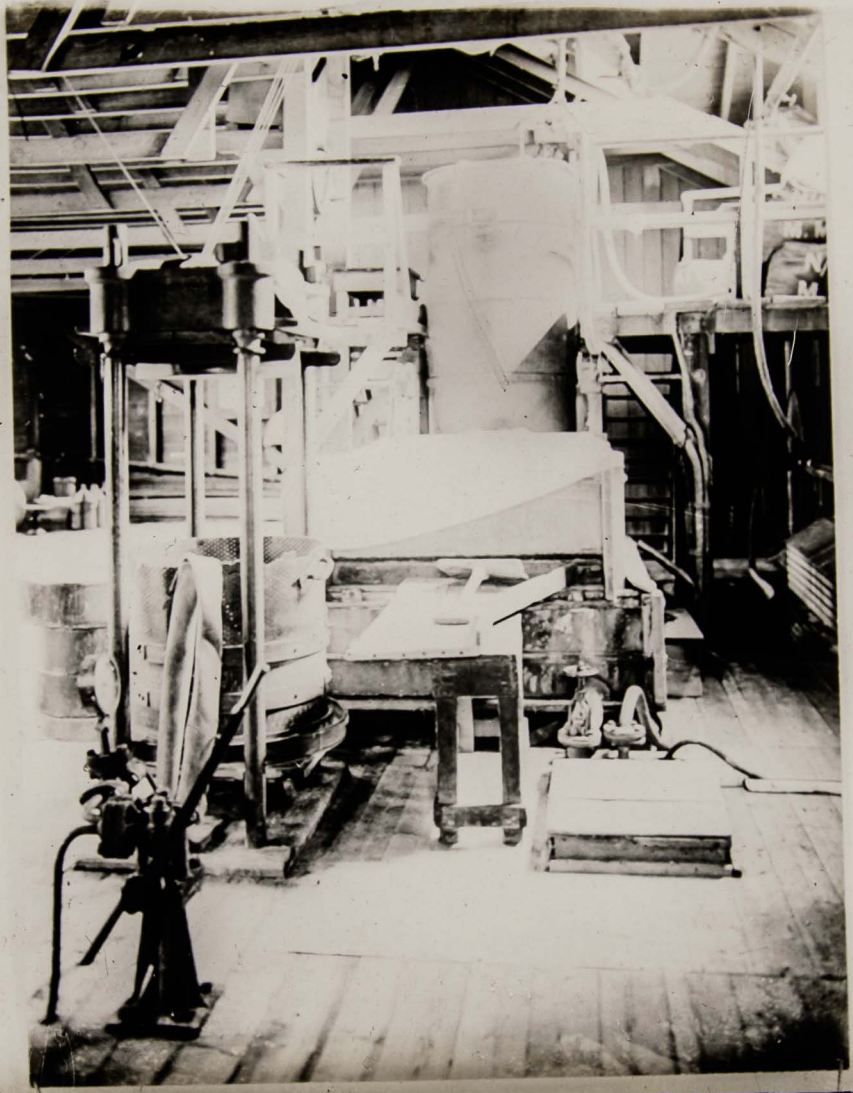
Fig. 30. Section of Displacement Apparatus (from *Arms and Explosives*)

" Gun-cotton has been made at Waltham Abbey by Nathan and Thomson's Displ
displacement process since A

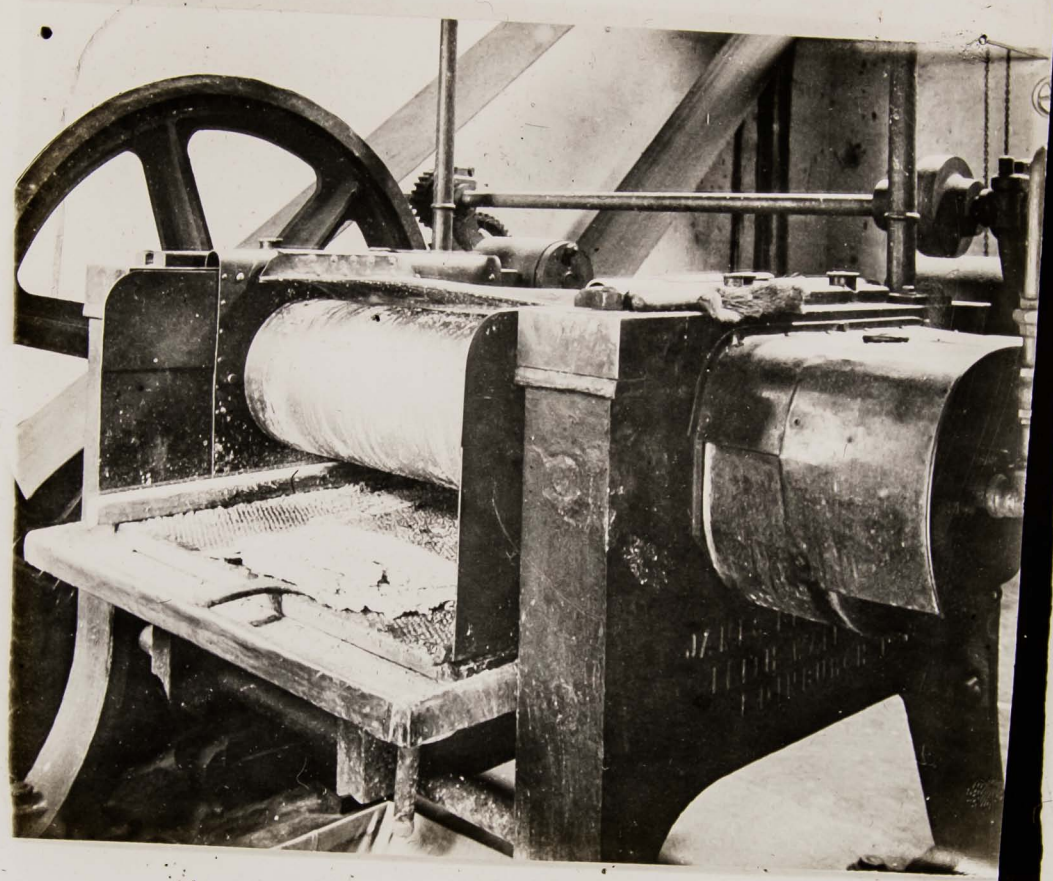


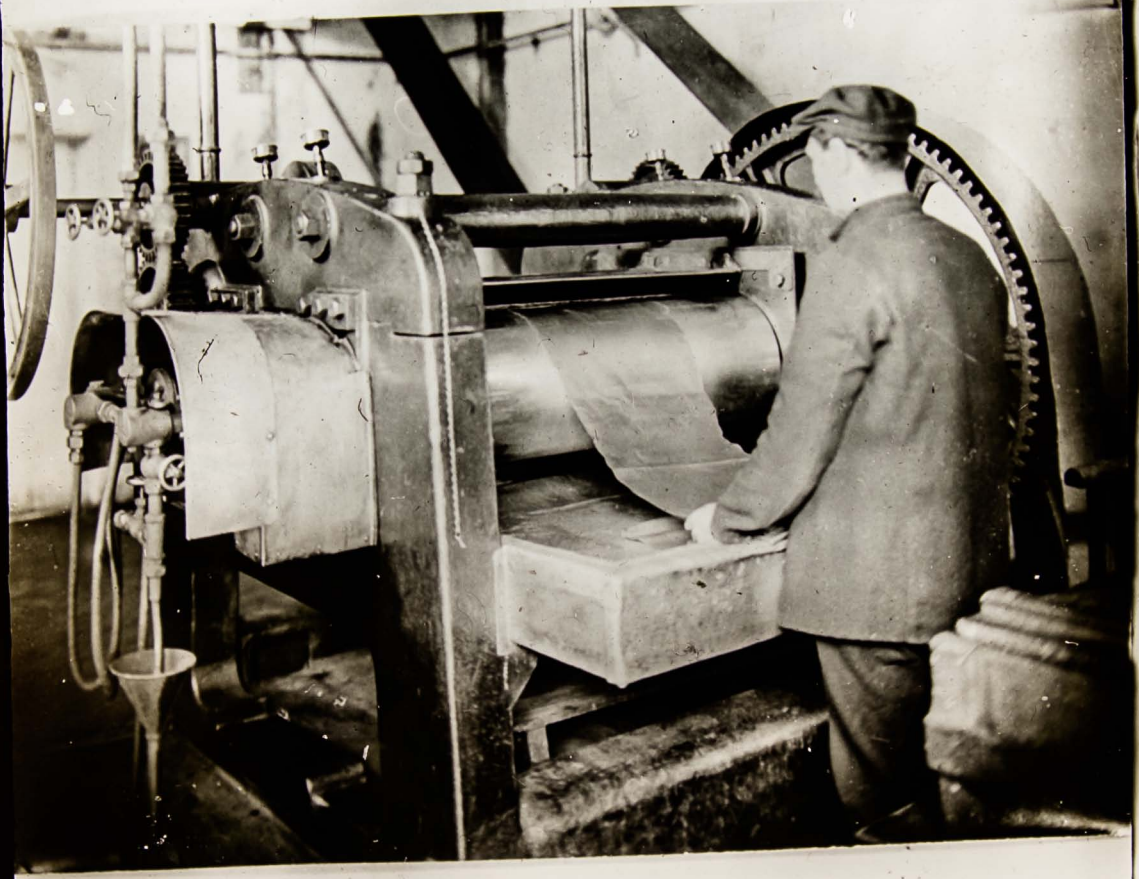




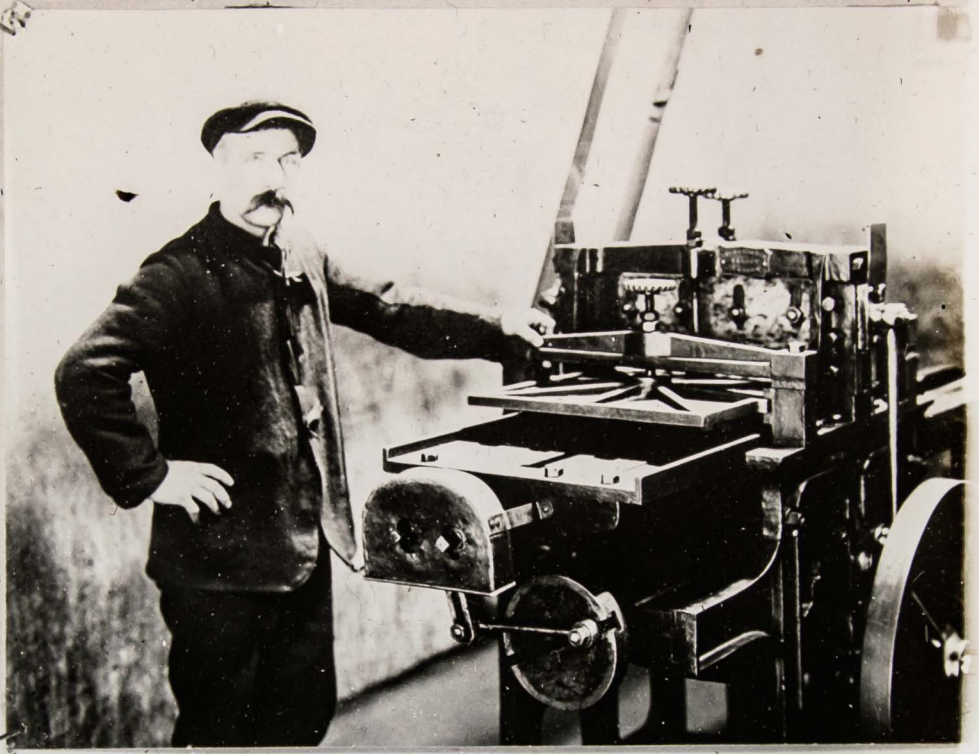


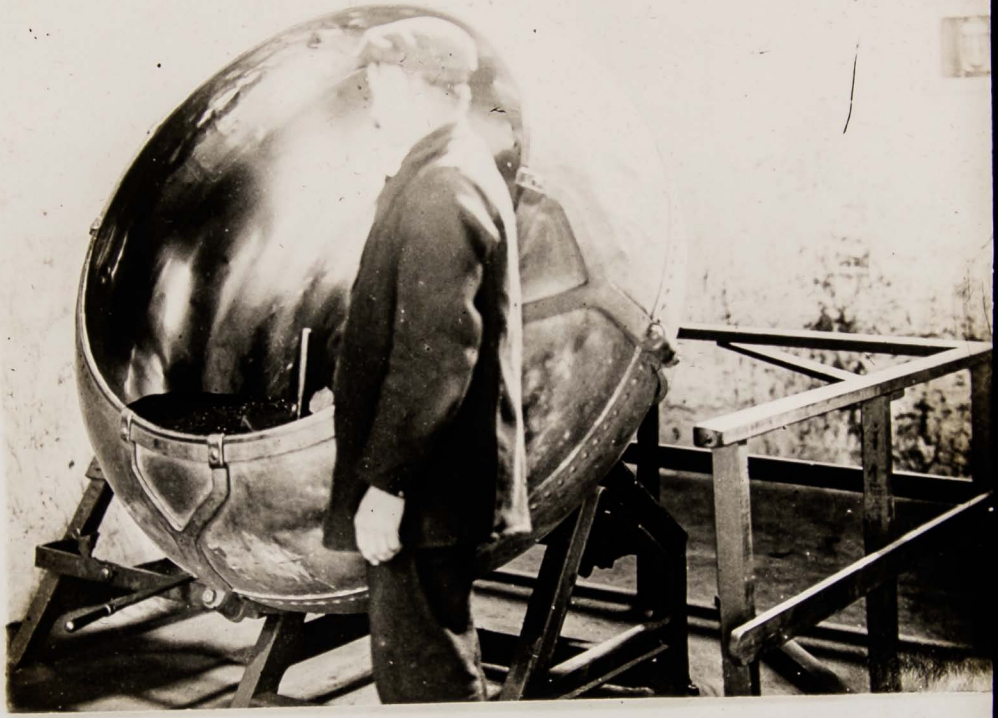
C.46





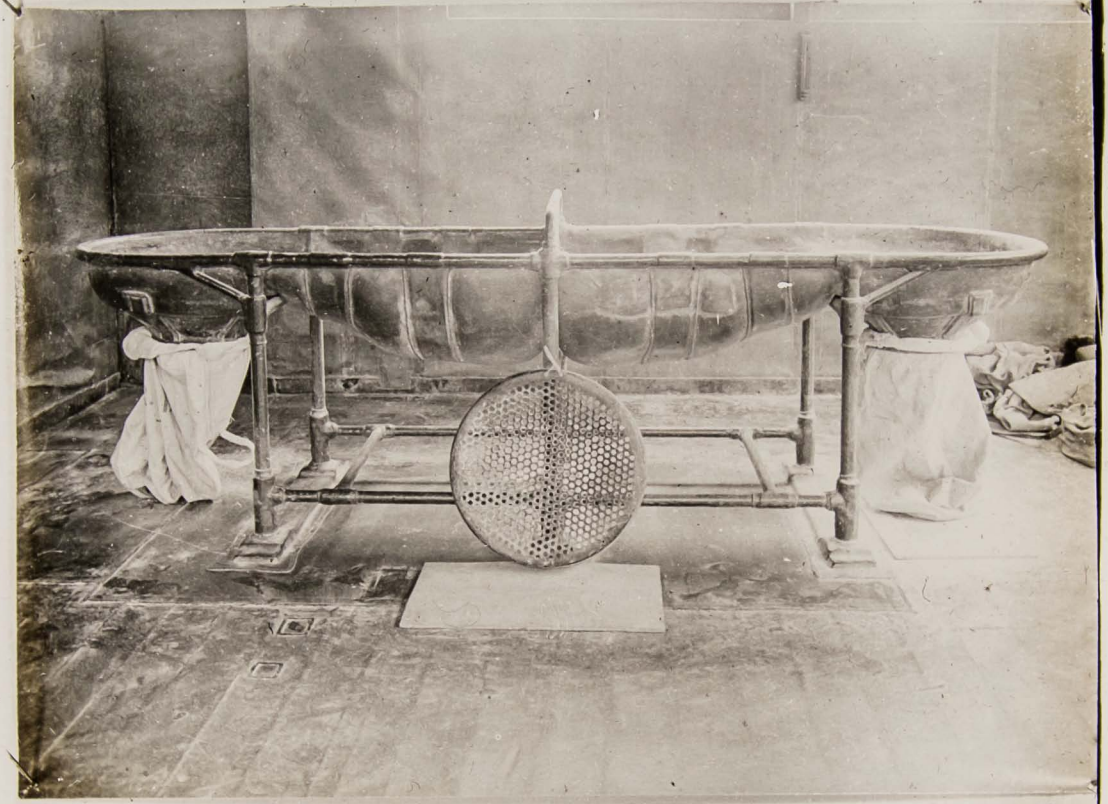
C. 48



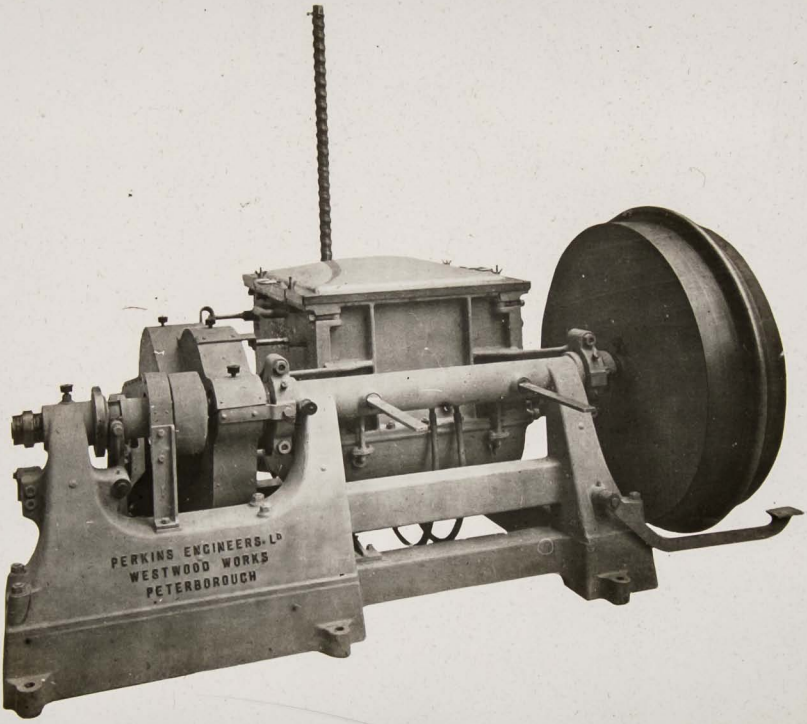


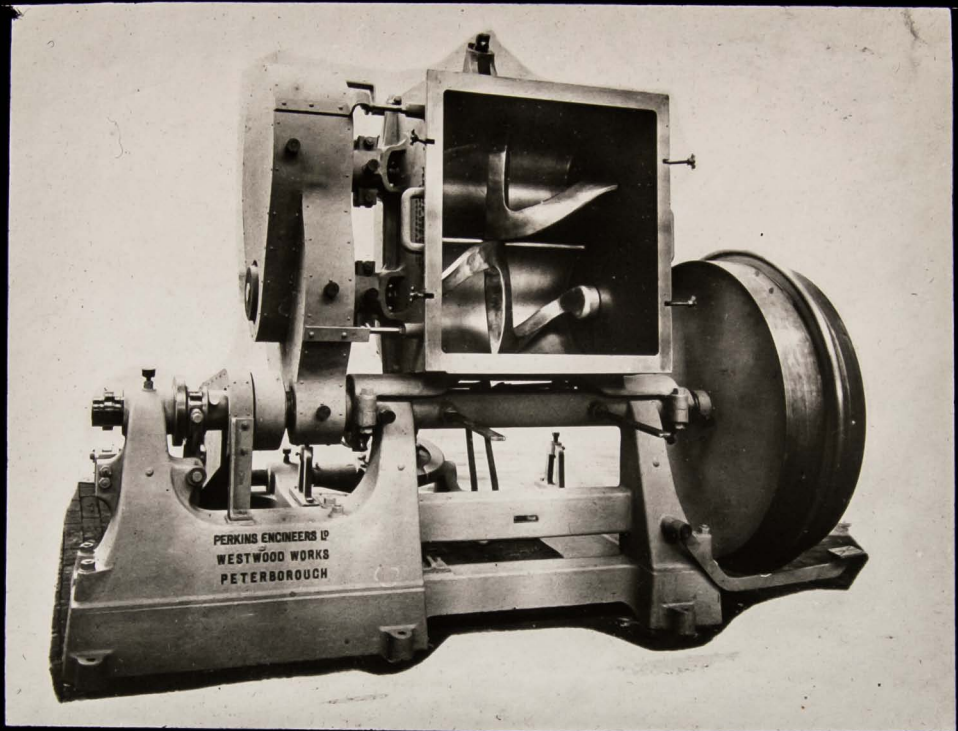
C #9

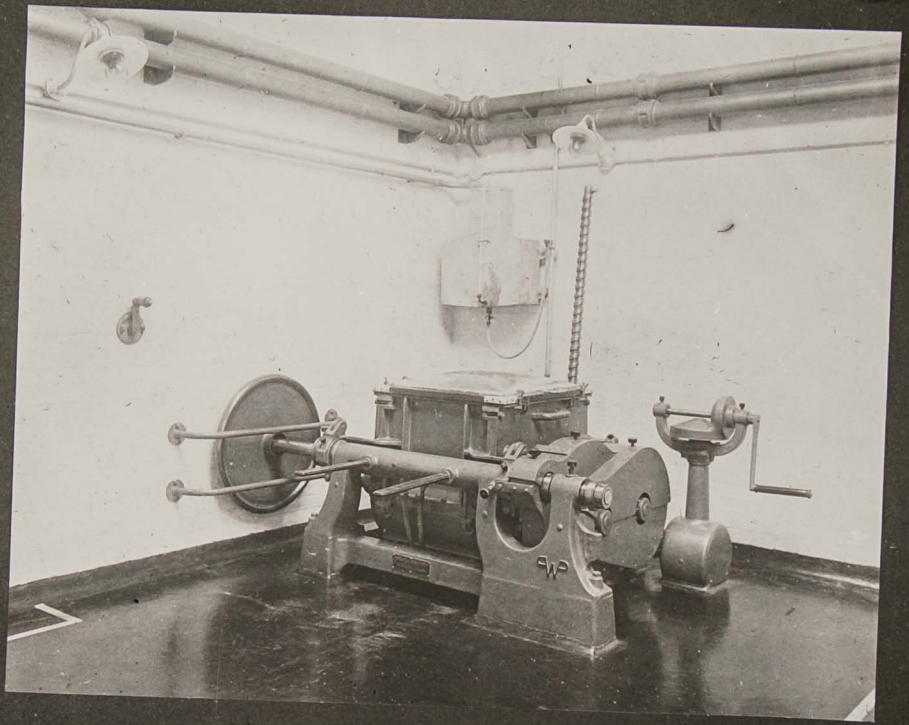
C.50

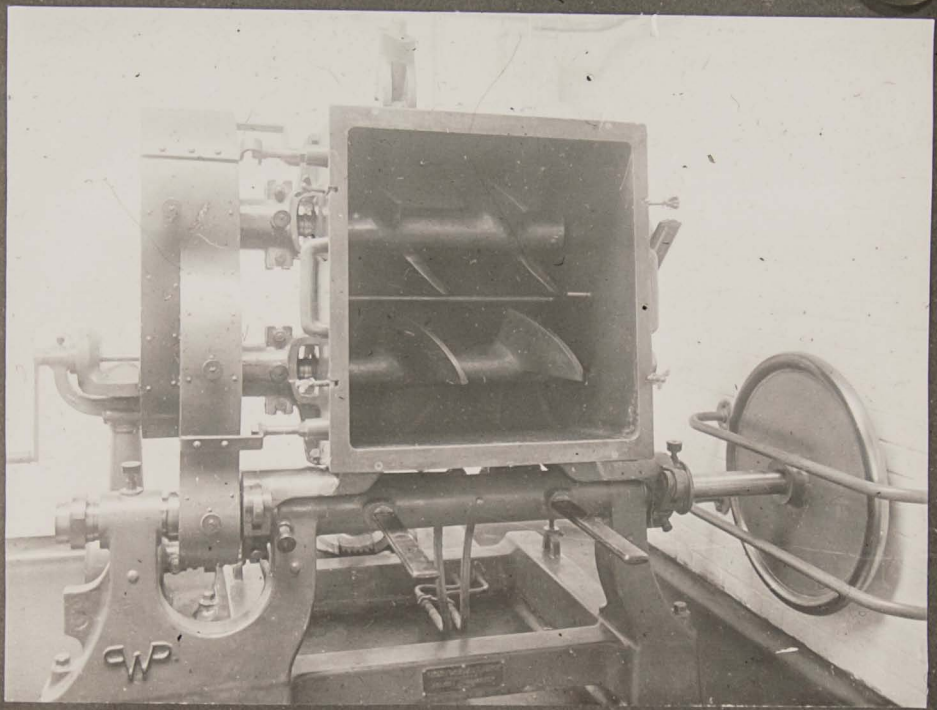


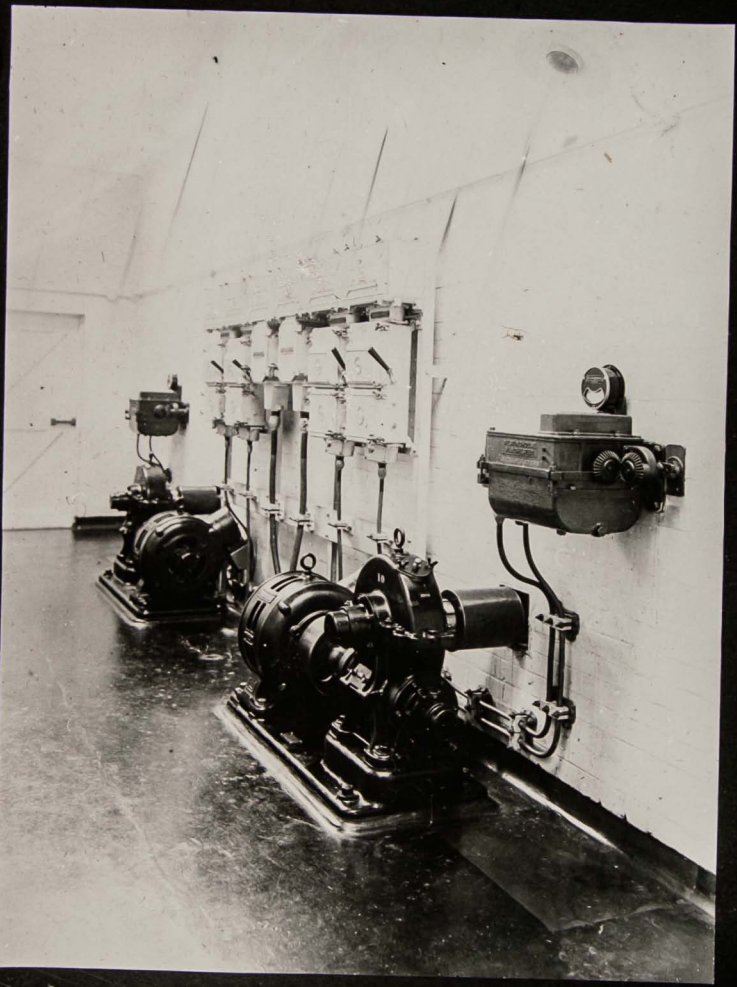
R/C INCORPORATOR.




PERKINS ENGINEERS LD
WESTWOOD WORKS
PETERBOROUGH




CWP

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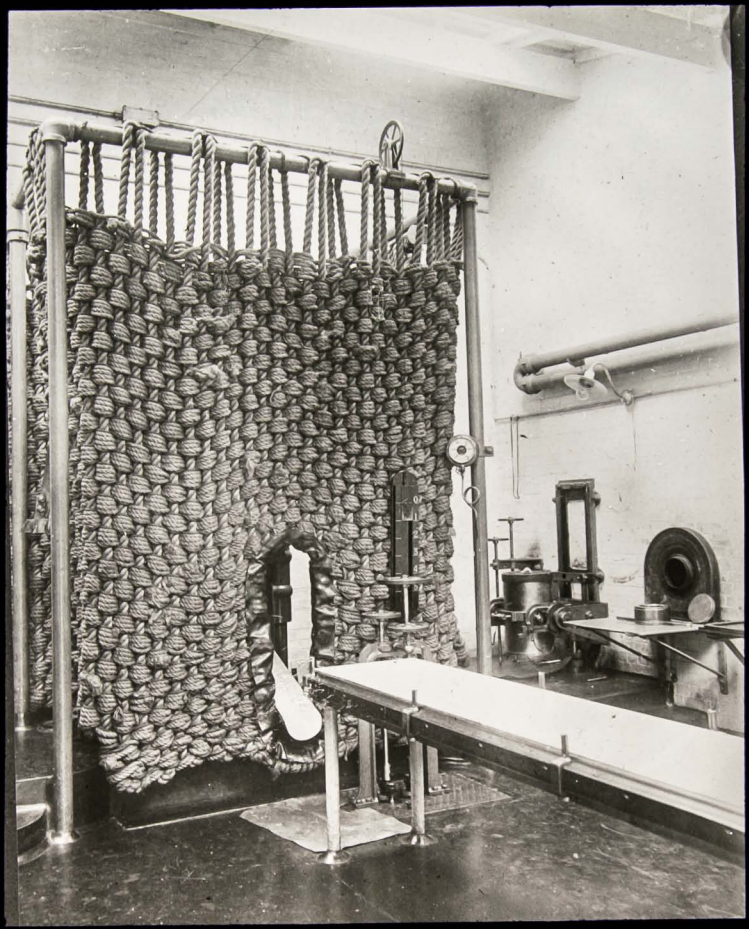
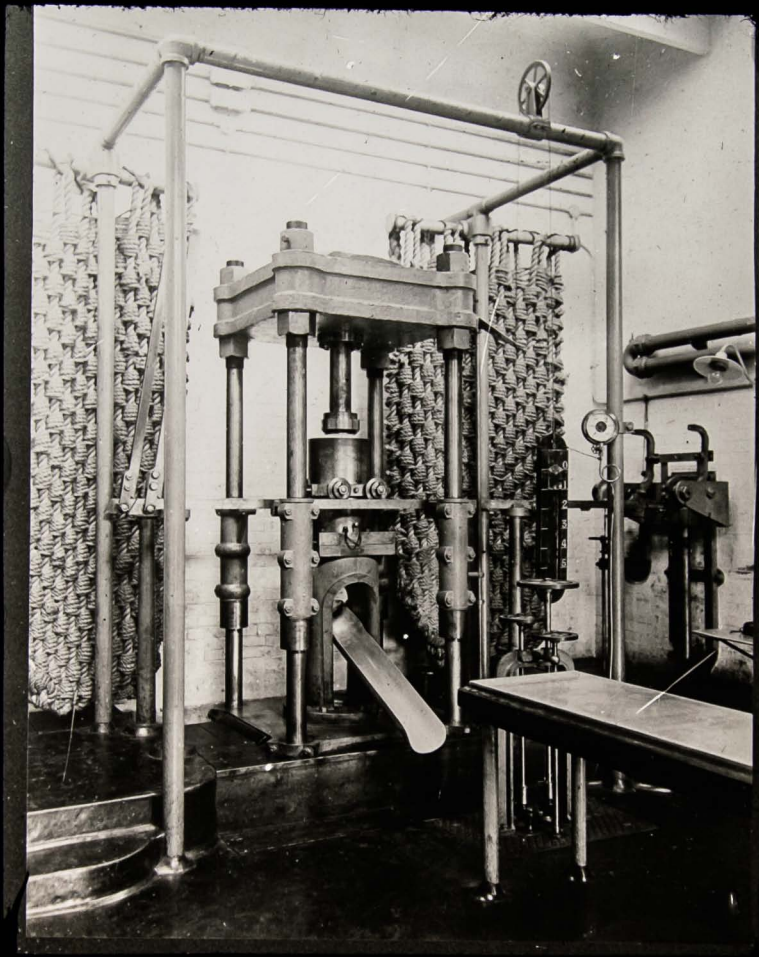
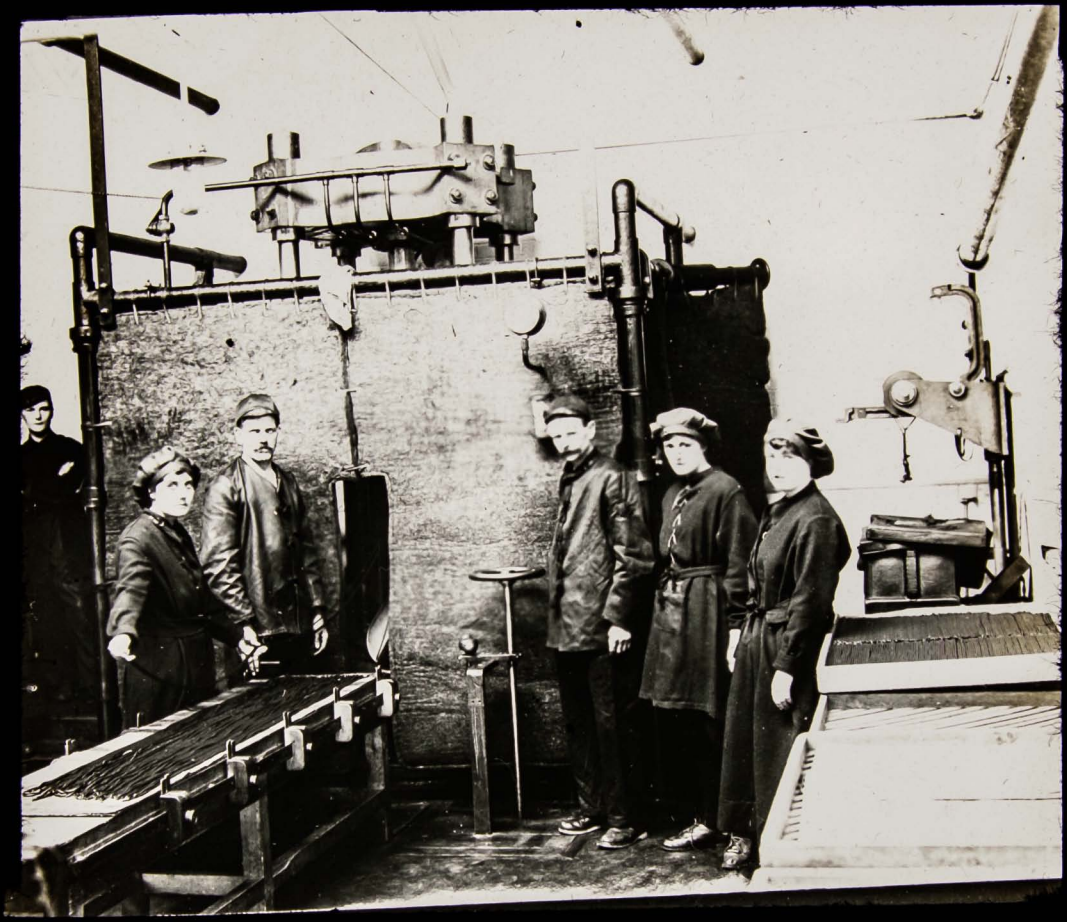
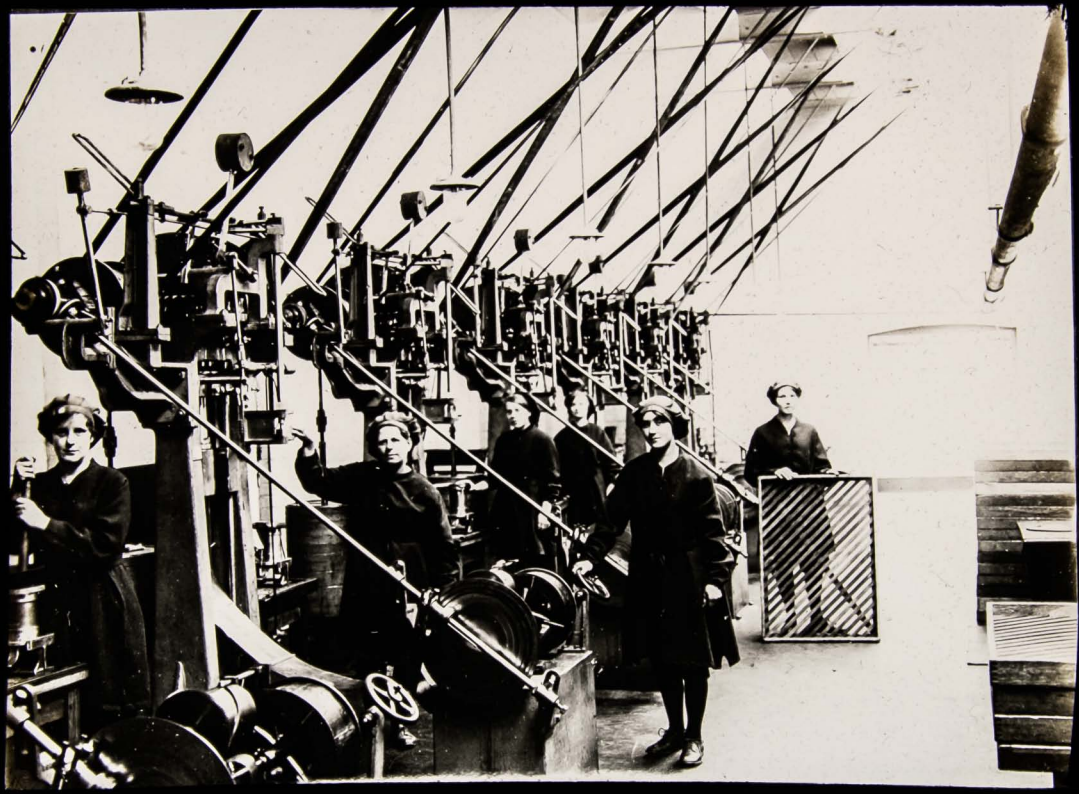


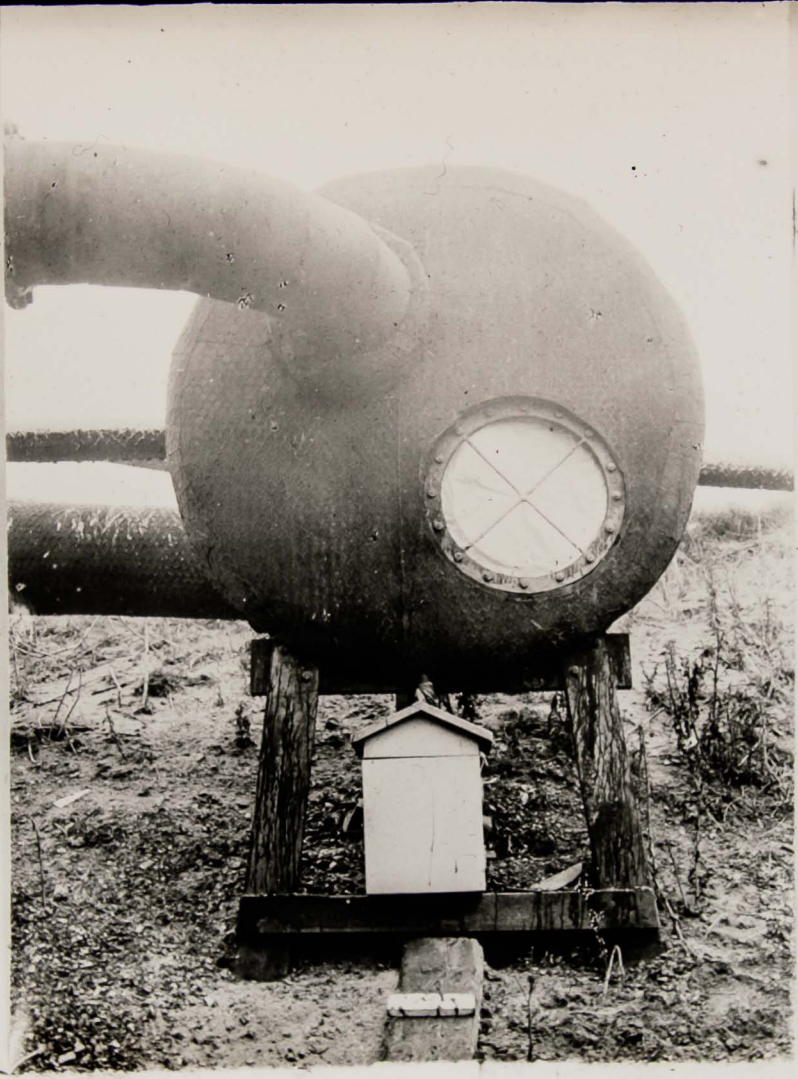


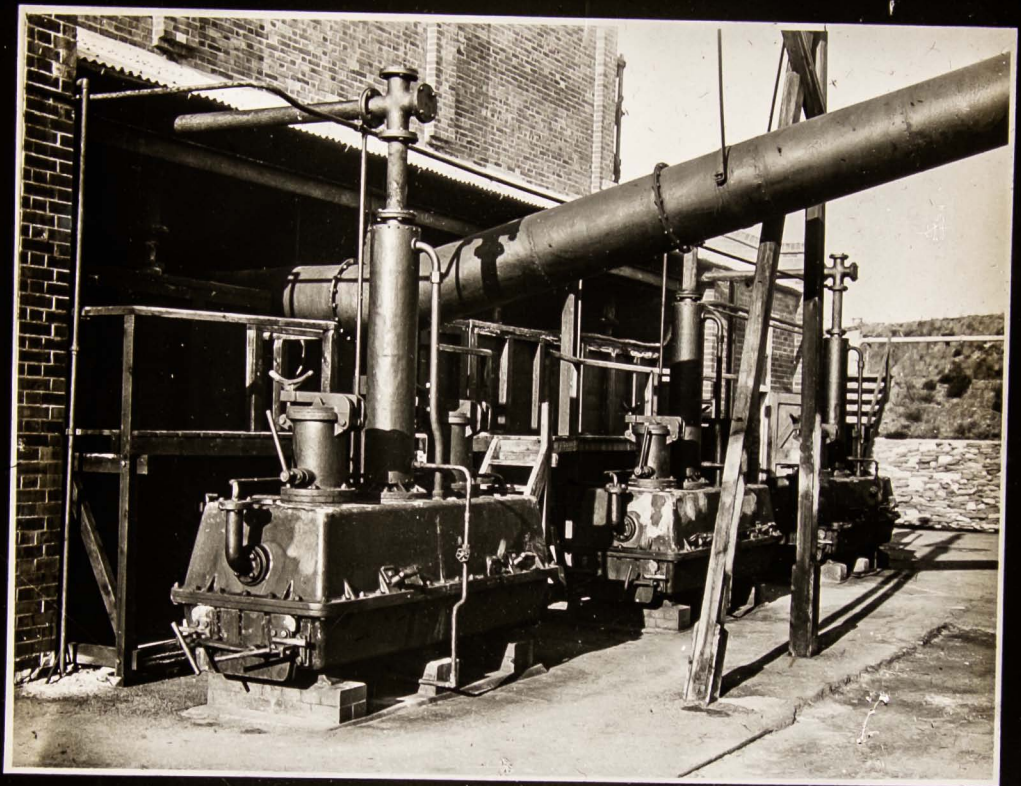




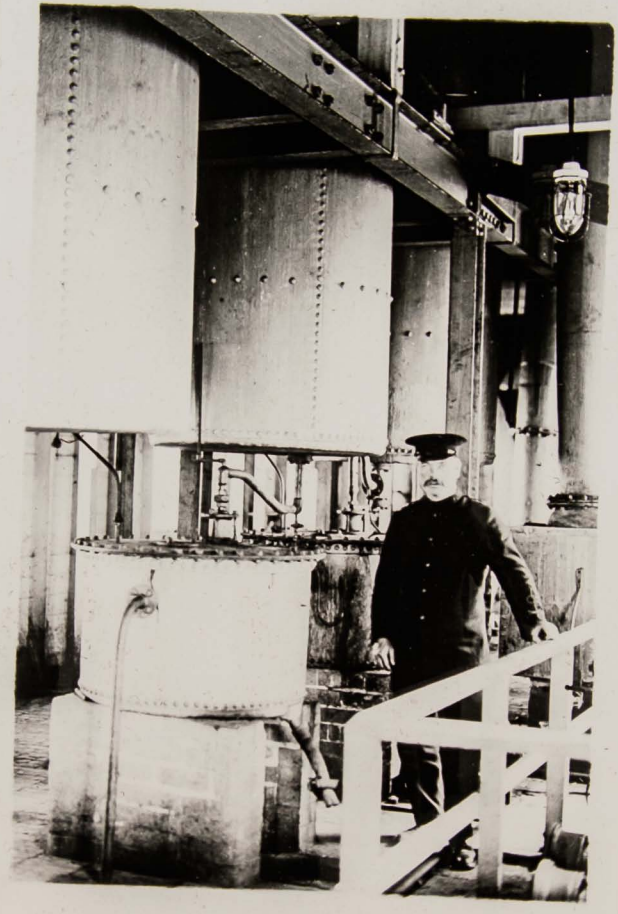
C. 63 ~~Repeat~~

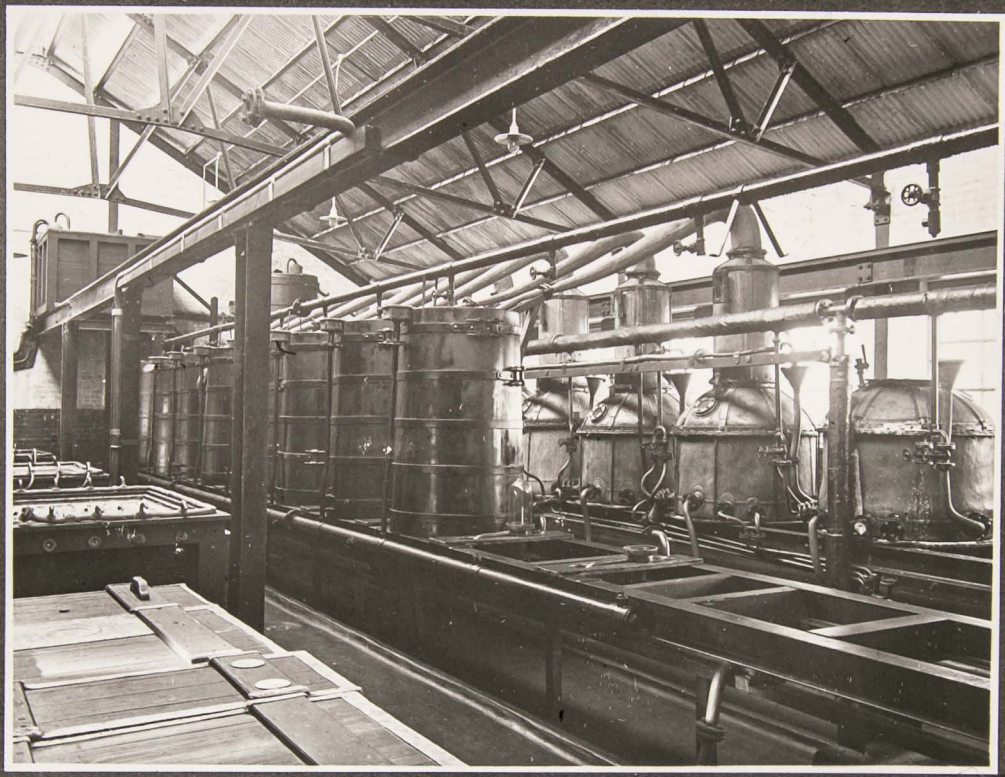
C-
65

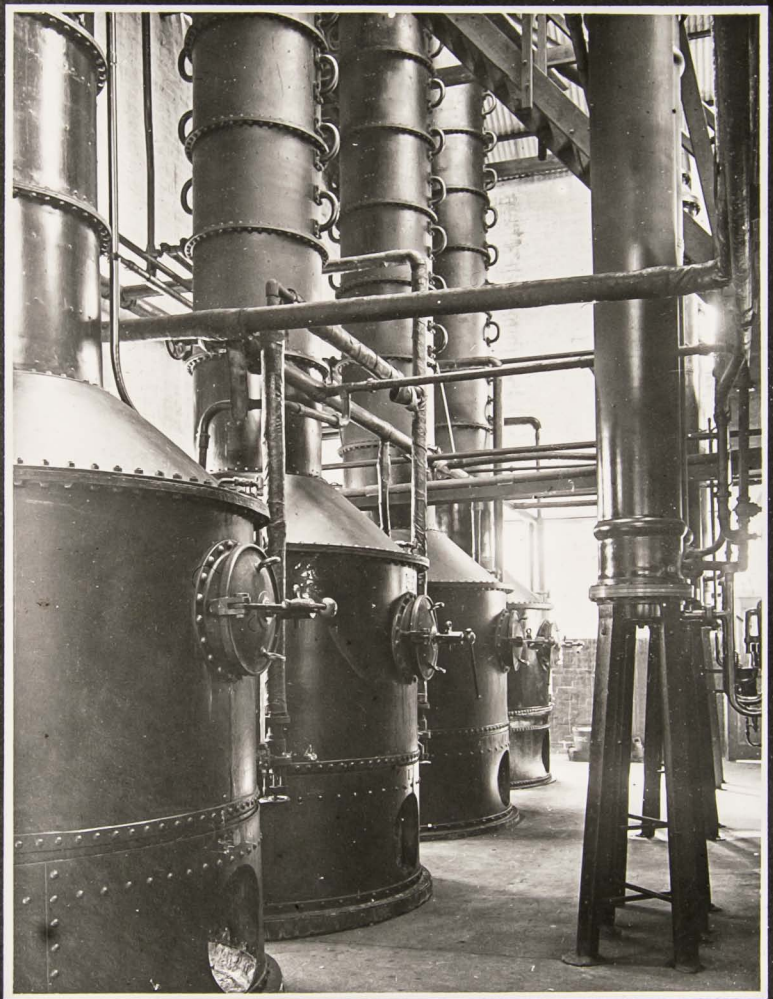




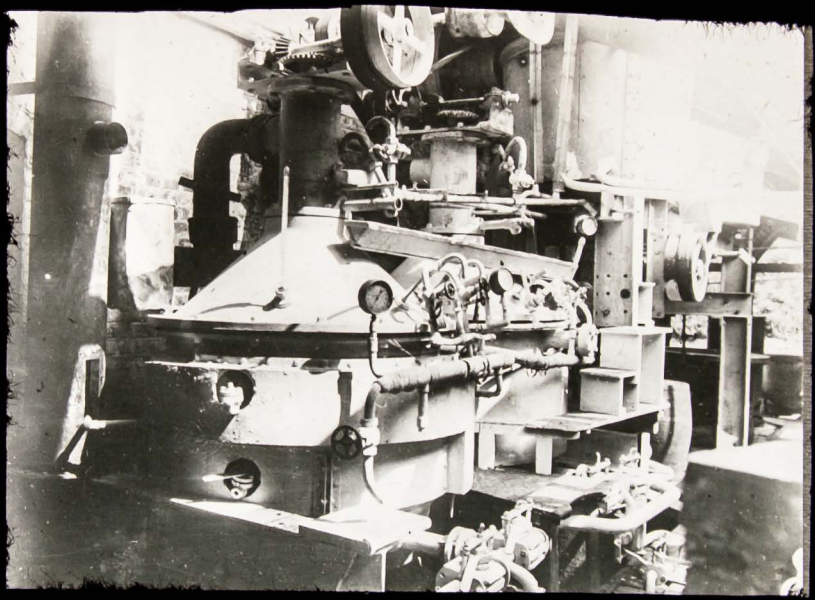
C. 68

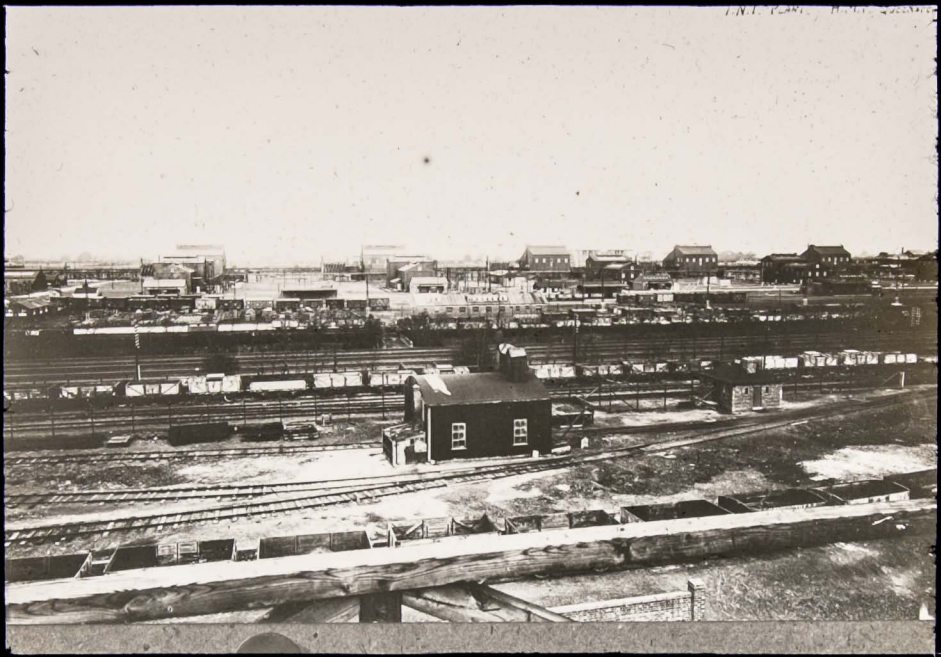






C. 71



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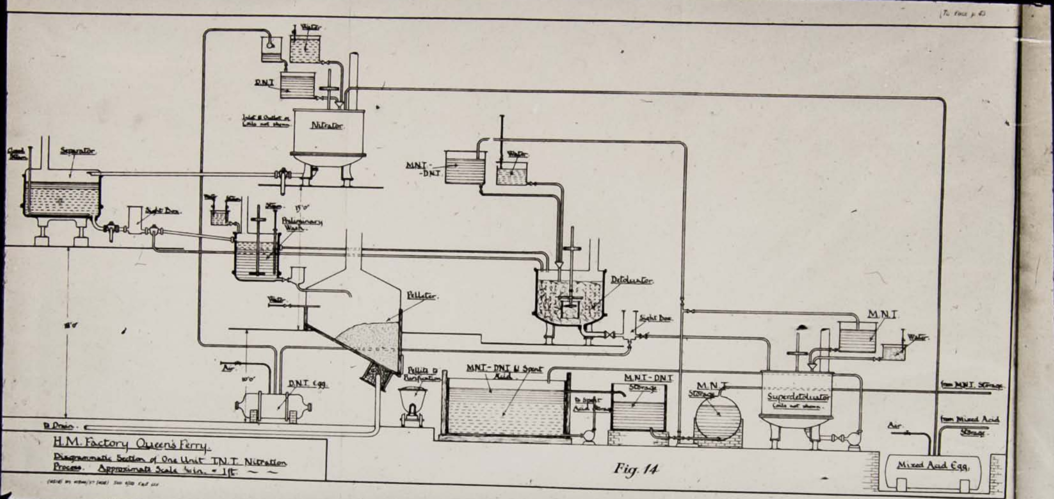
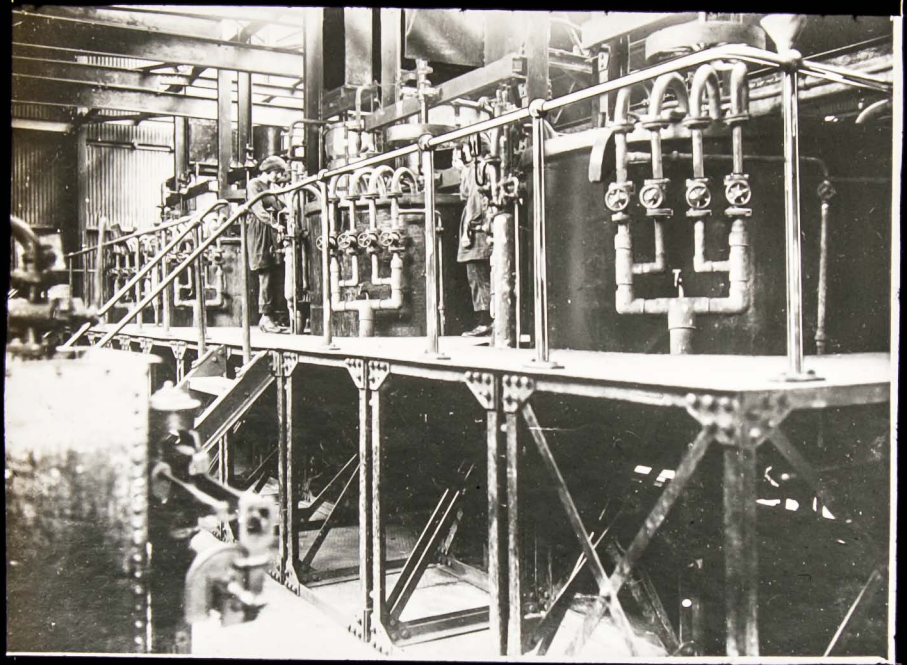
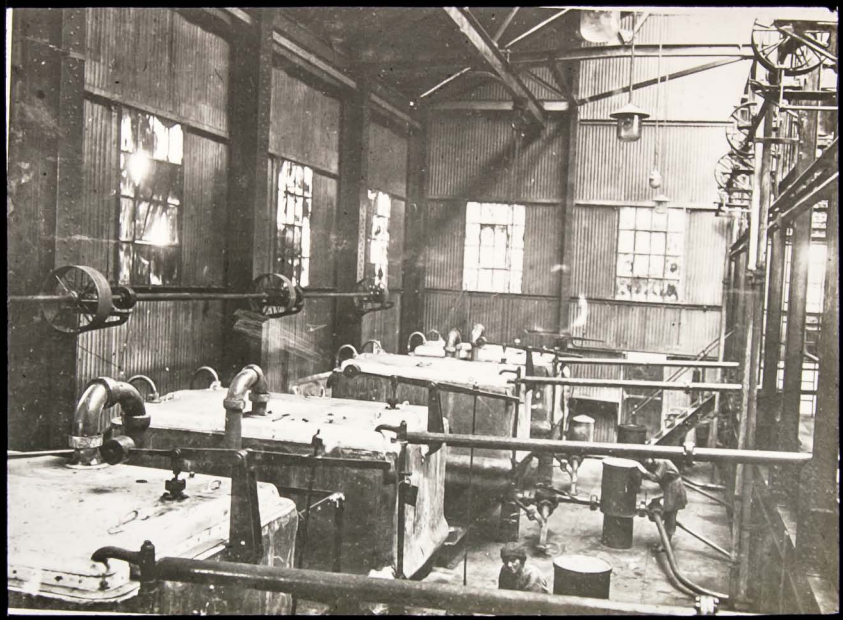
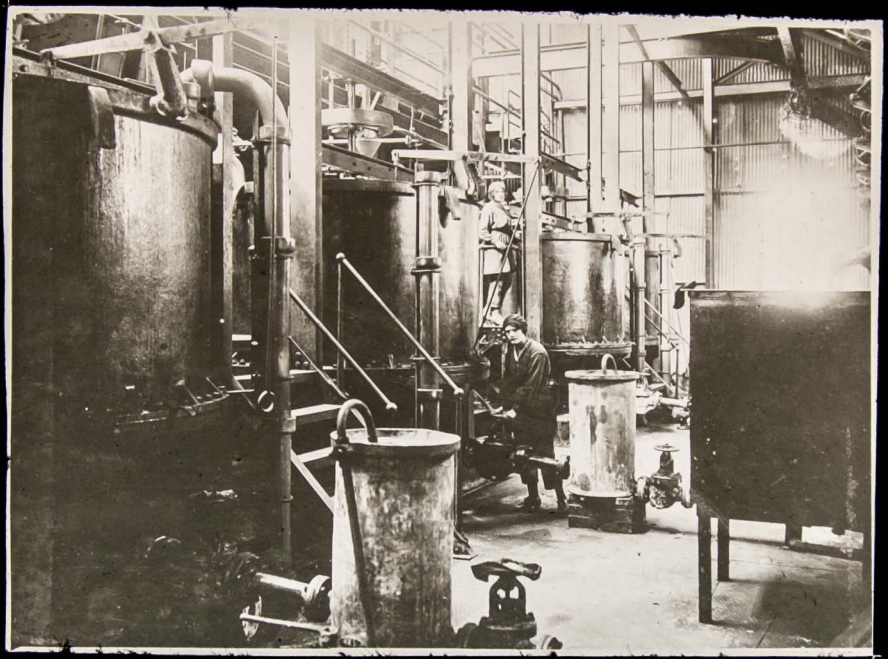
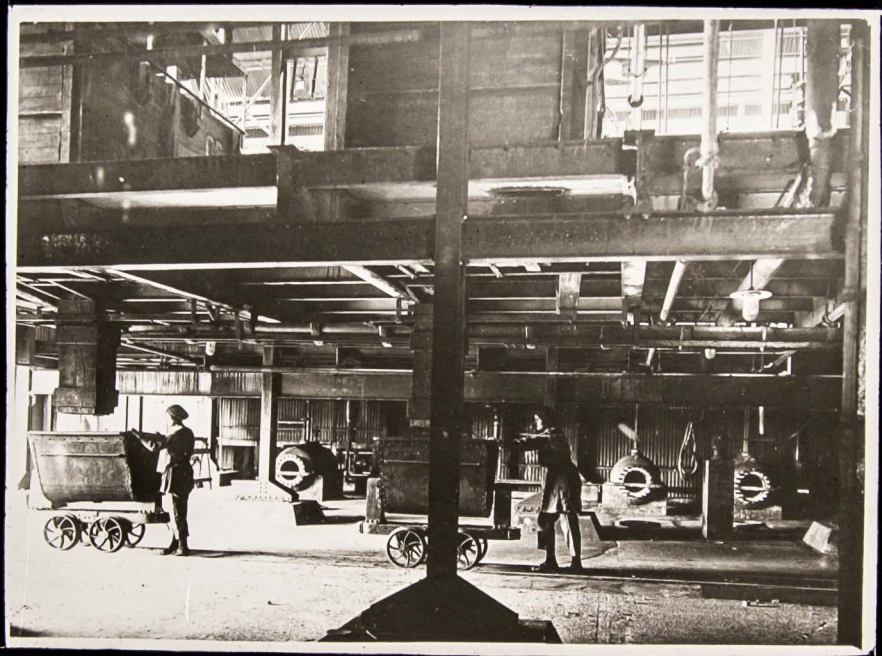

Separator
Water
D.N.T.
Nitrator
M.N.T.-D.N.T.
Water
Sight Box
Preliminary Wash
Detoluator
Pelleter
Water
Sight Box
Air
D.N.T. Egg.
Pellets to Purification
MNT-DNT & Spent Acid
M.N.T.-DNT Storage
M.N.T. Storage
M.N.T.
Water
Superdetoluator
from M.N.T. Storage
from Mixed Acid Storage
Air
Mixed Acid Egg.
To Drain.
H.M. Factory Queen's Ferry.
Diagrammatic Section of One Unit T.N.T. Nitration Process. Approximate Scale ¼ in. = 1 ft.

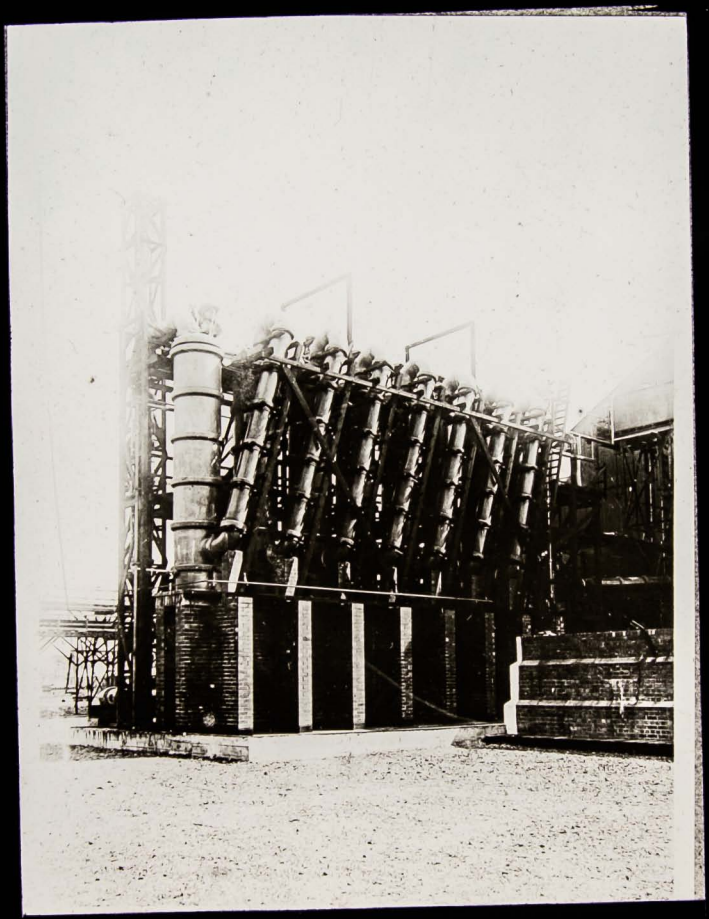
Fig. 14











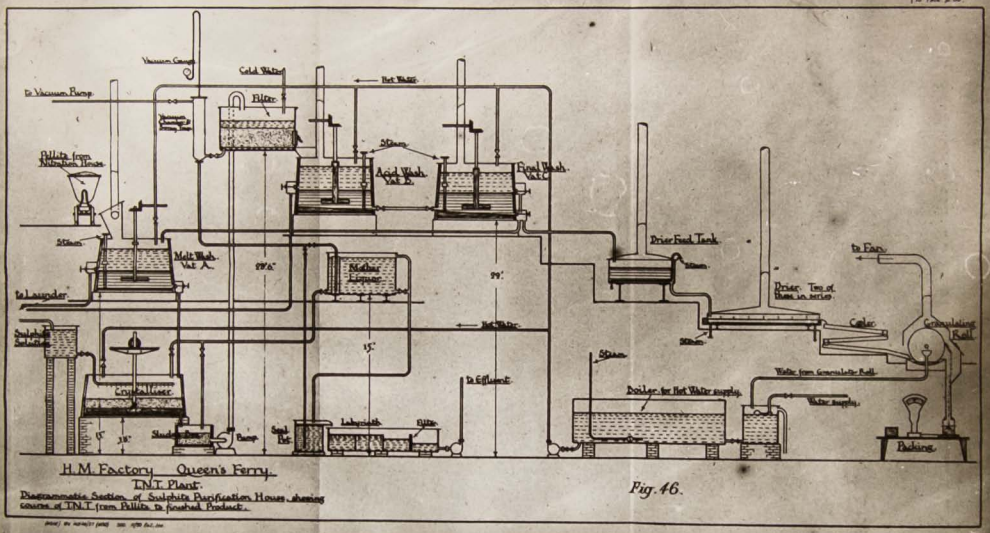
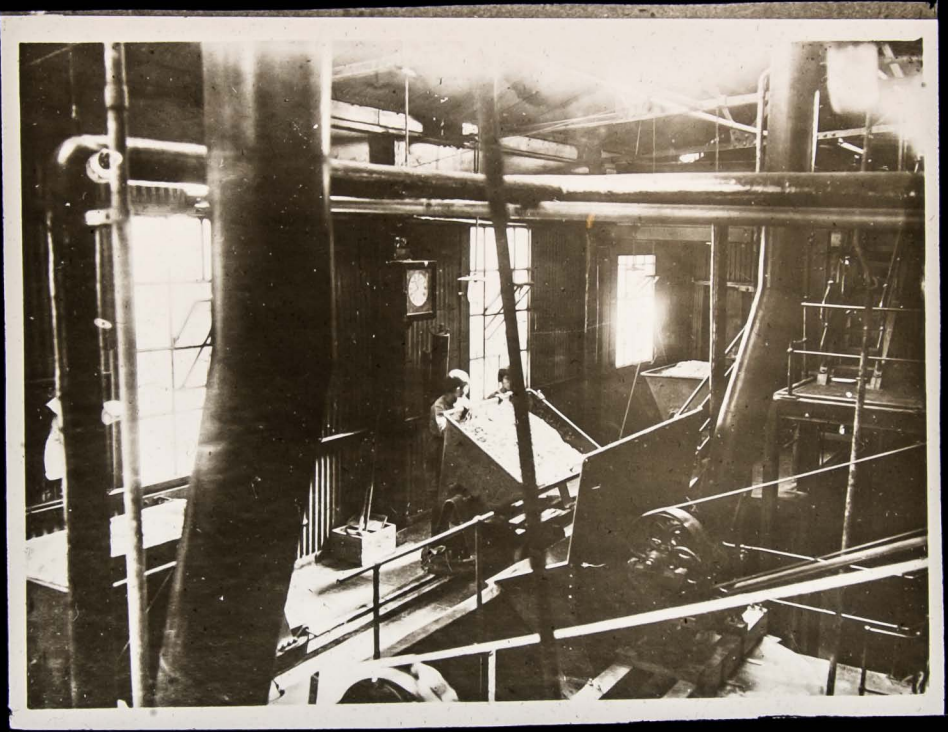
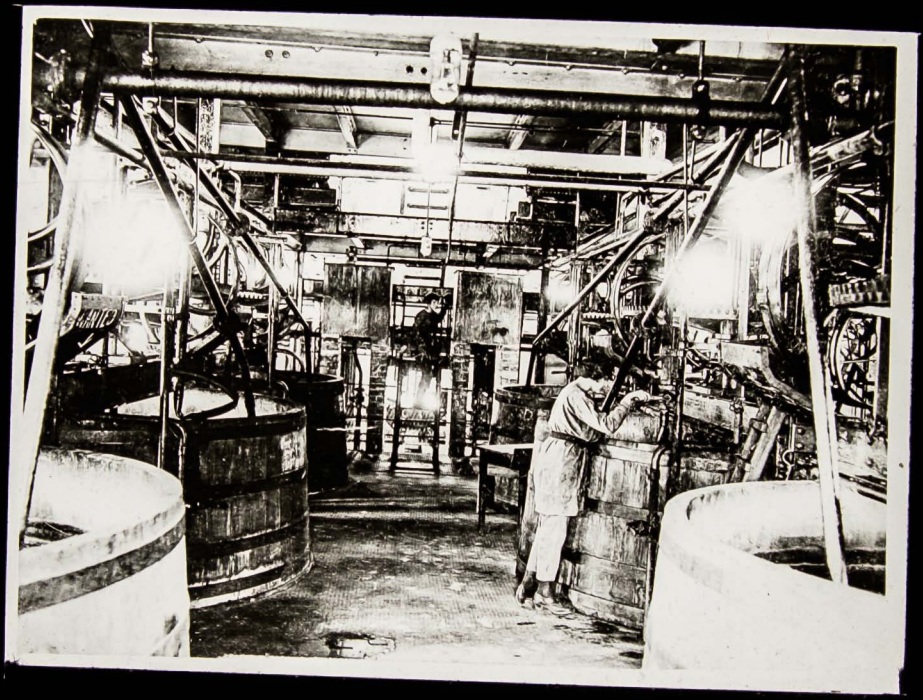
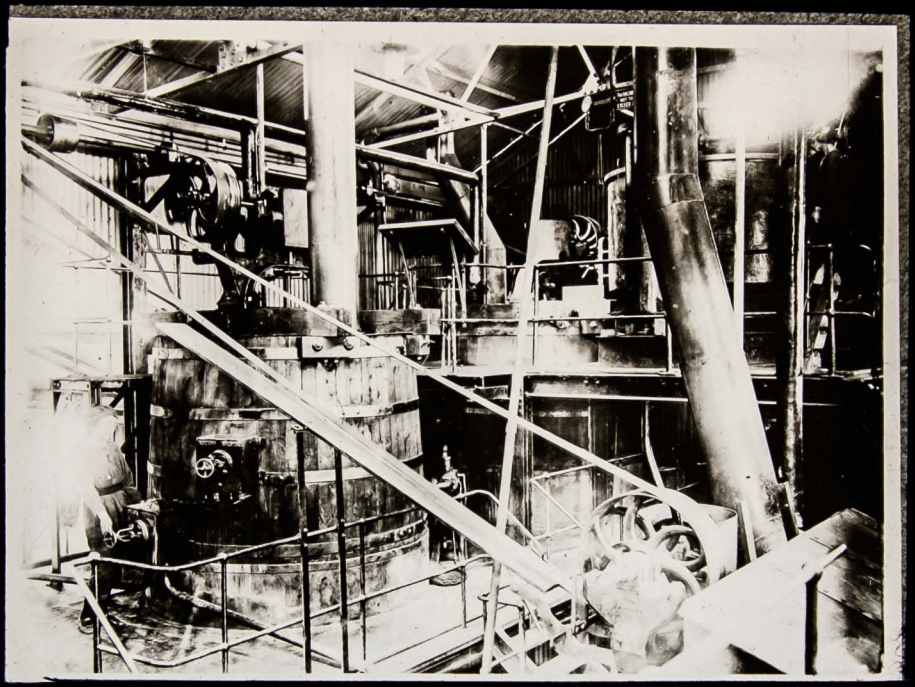
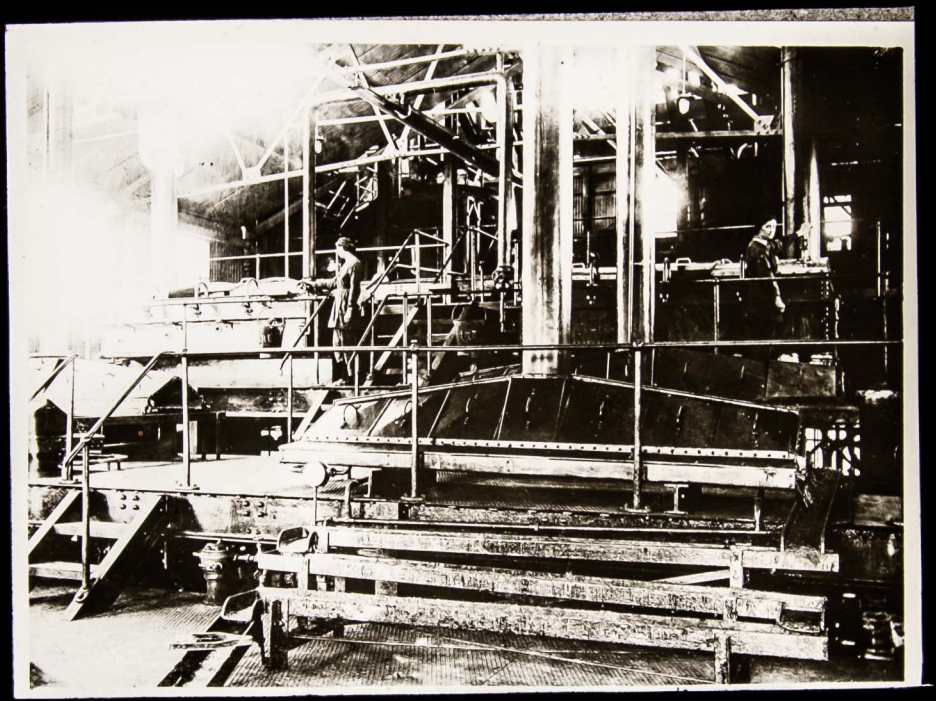


Fig. 46.

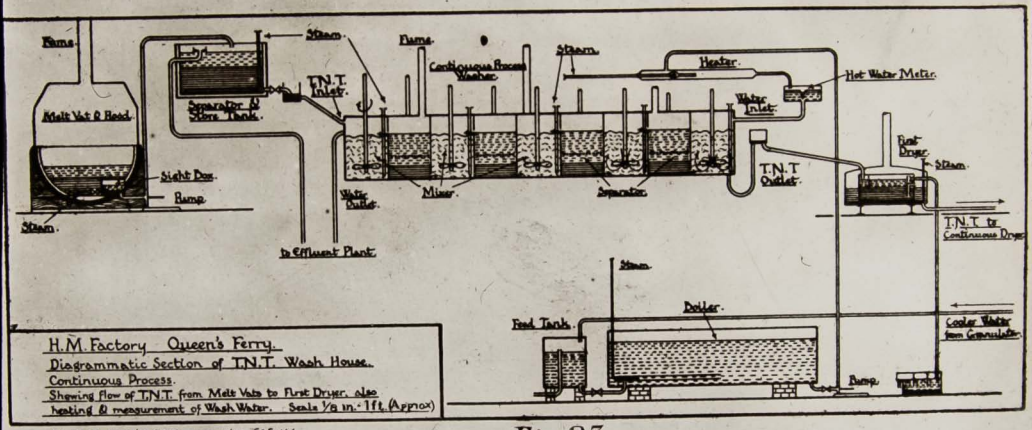








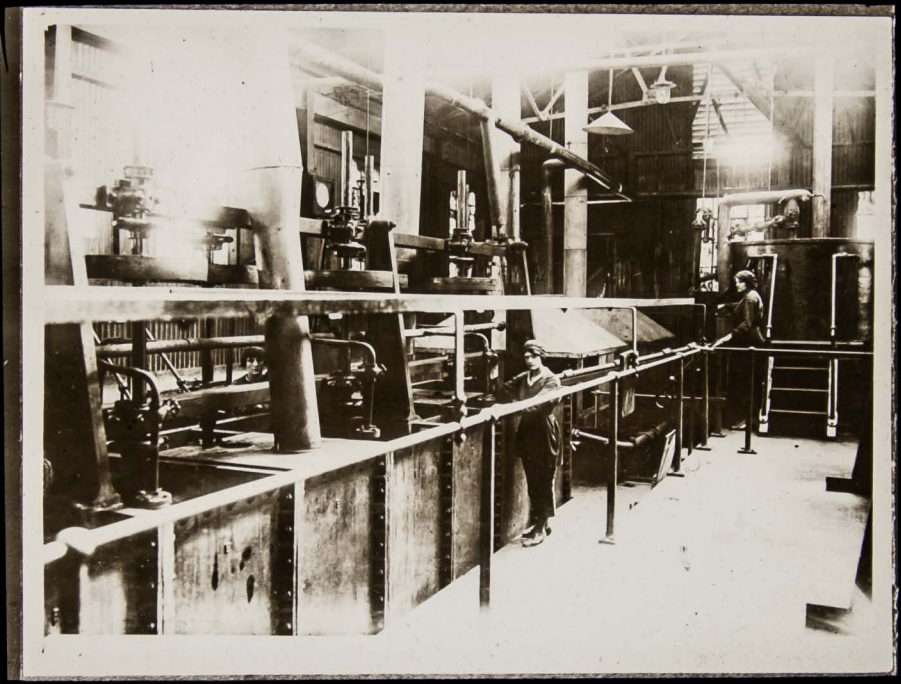
To face p. 80

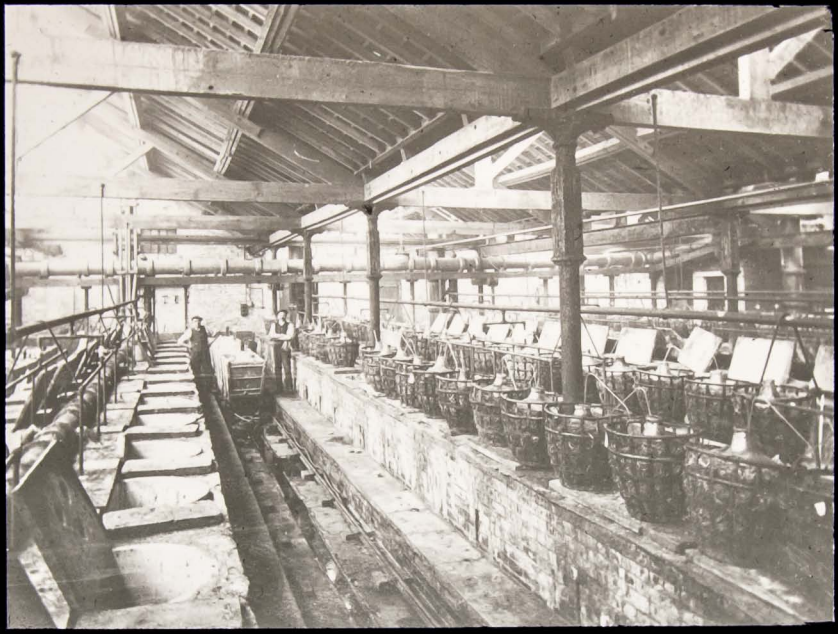


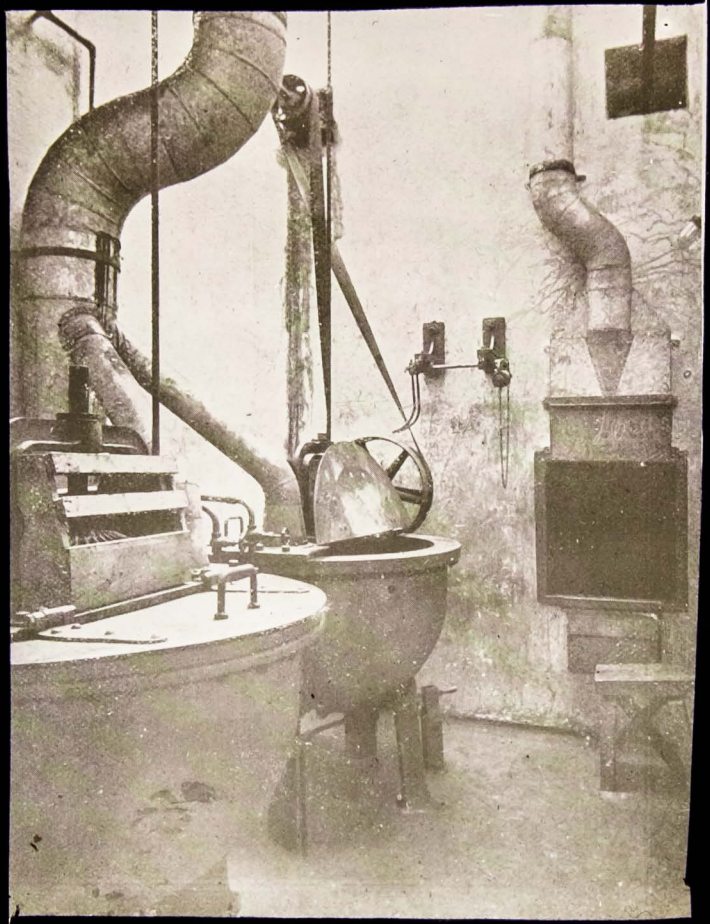
H.M. Factory Queen's Ferry.
Diagrammatic Section of T.N.T. Wash House.
Continuous Process.
Showing flow of T.N.T. from Melt Vats to First Dryer. also heating & measurement of Wash Water. Scale 1/8 in. = 1ft. (Approx)

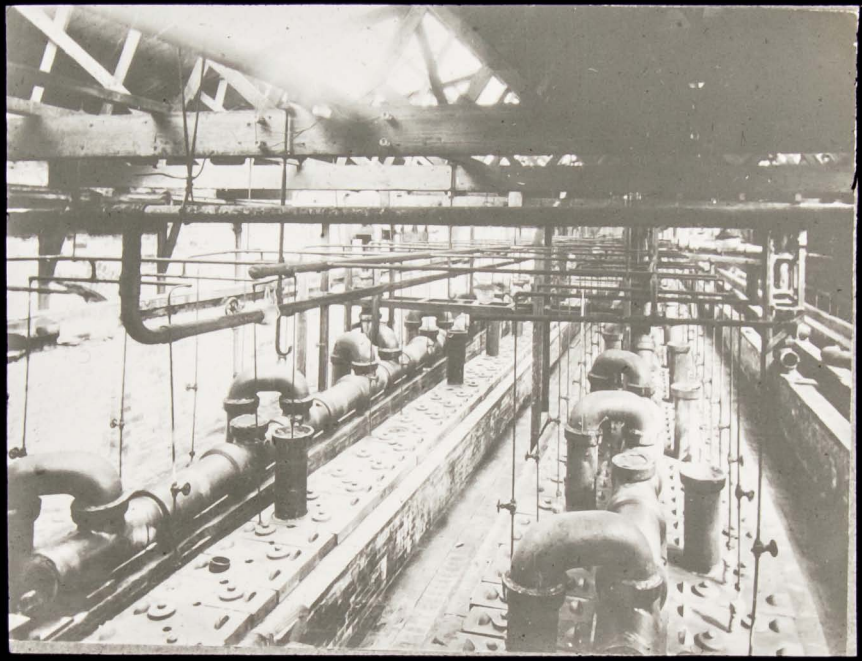
(4517) Wt. 61844/37 (406) 500. 11/20 E&S. Ltd.

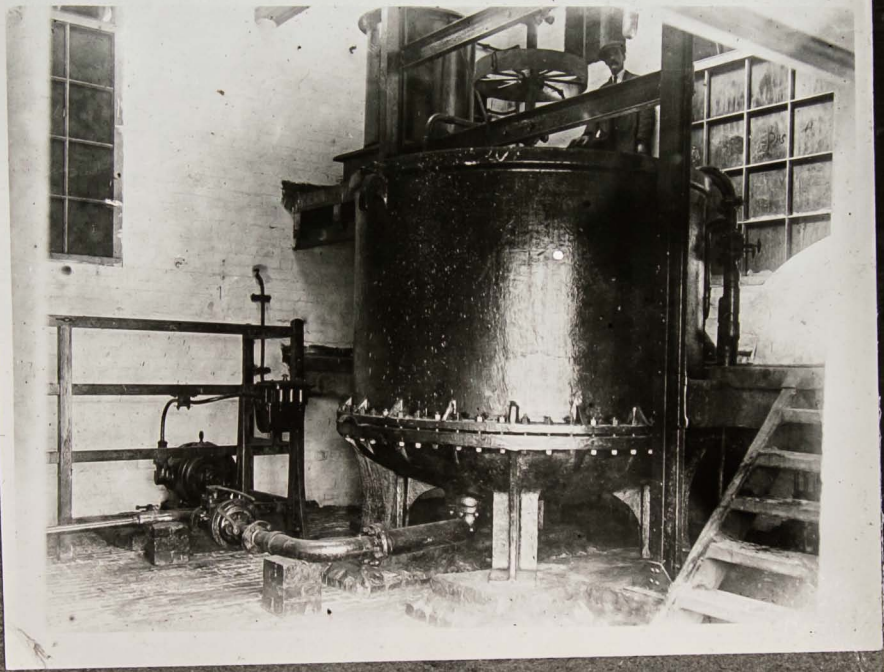
Fig. 37.







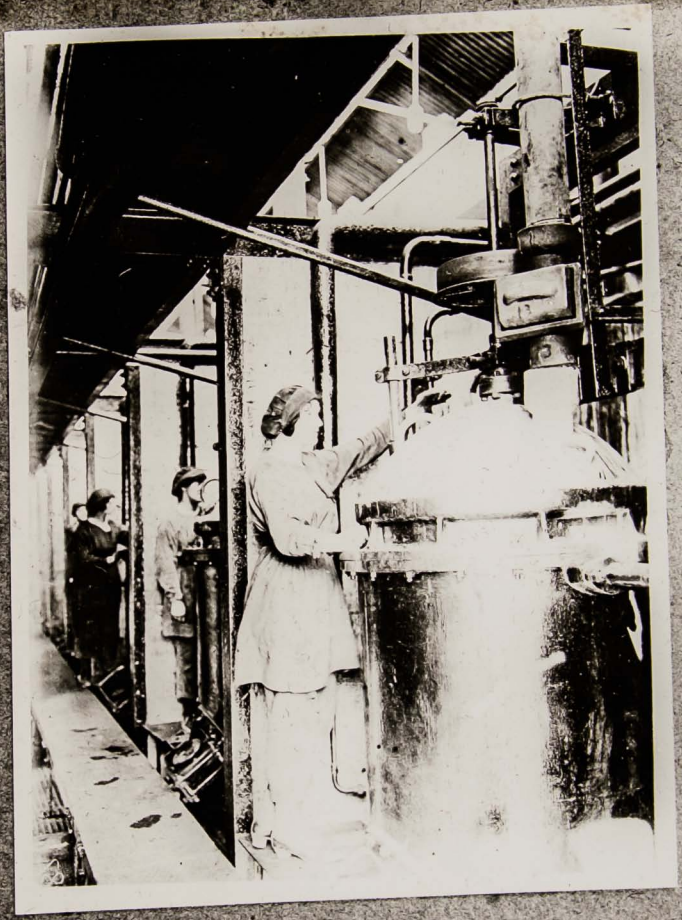




Tetryl.

Mixing House.

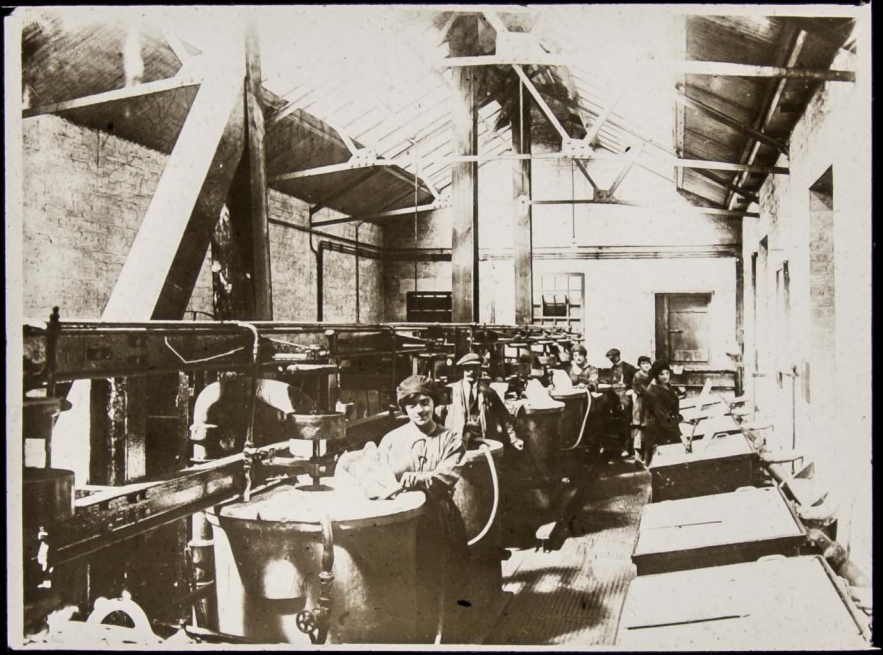
99



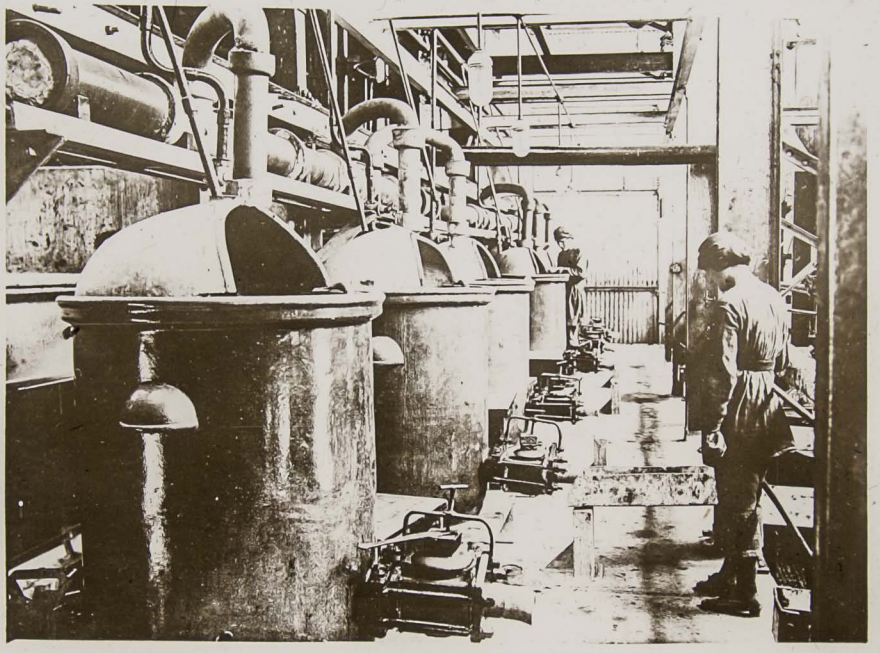
Tetryl. Nitrating House.

Showing: Nitrating Pot.

Walls separating Nitrating Pots.



Tottyl. Filtration House.



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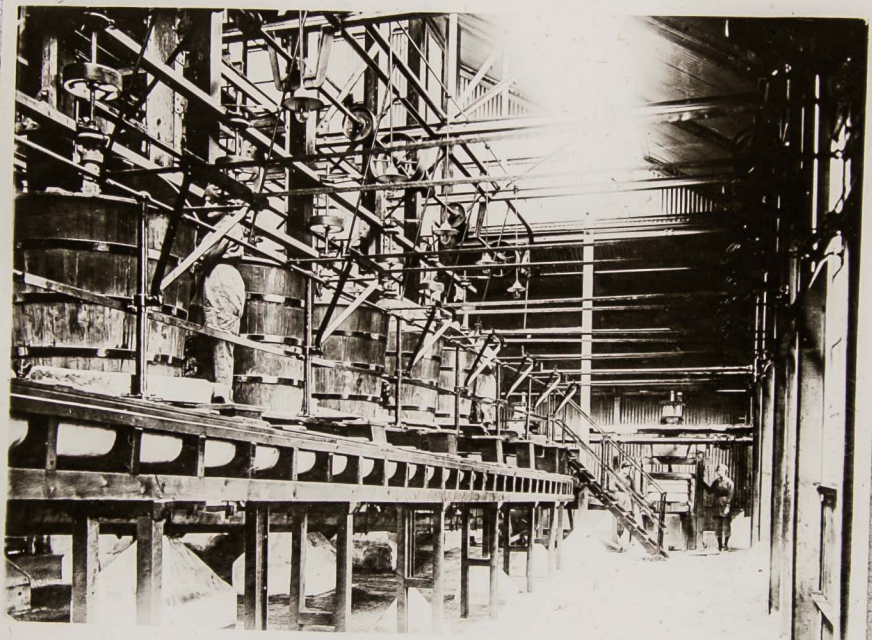

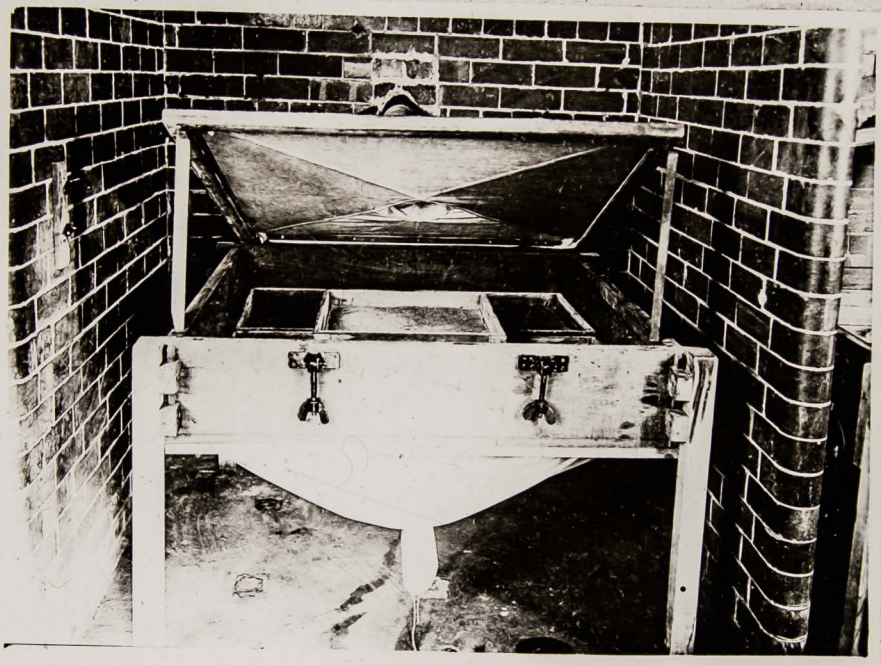

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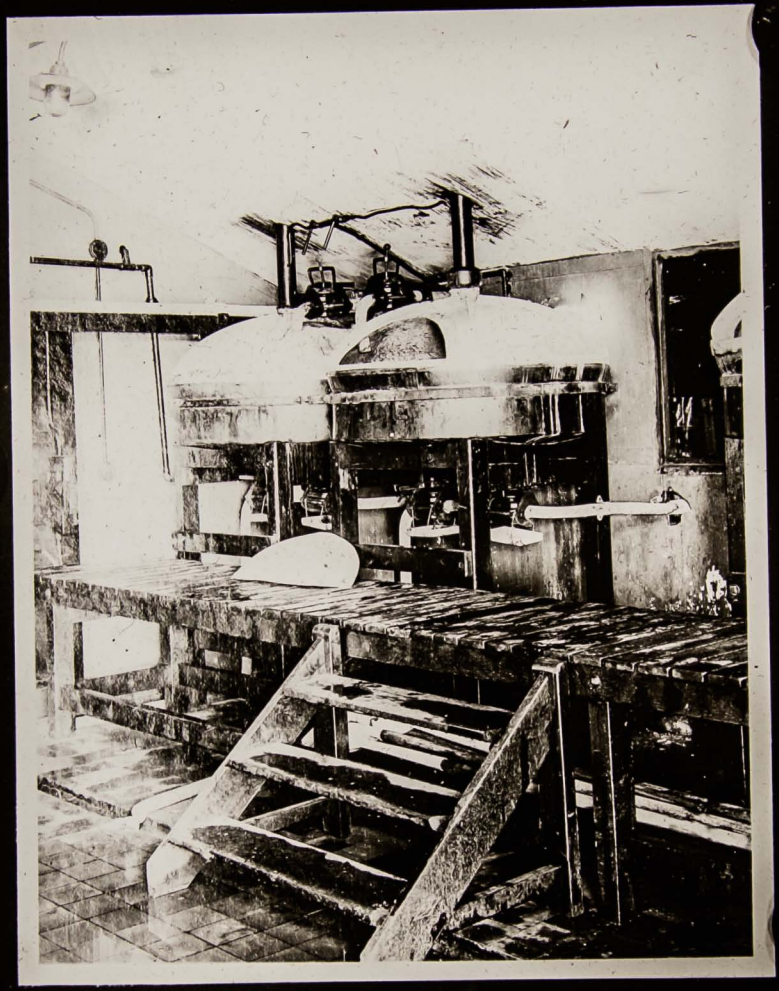

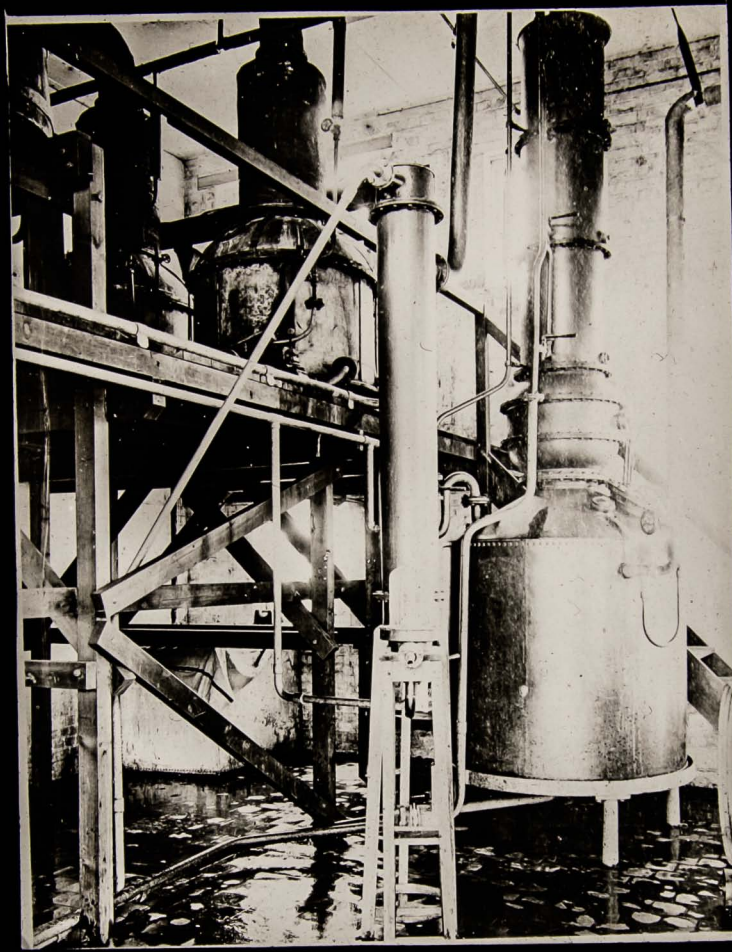

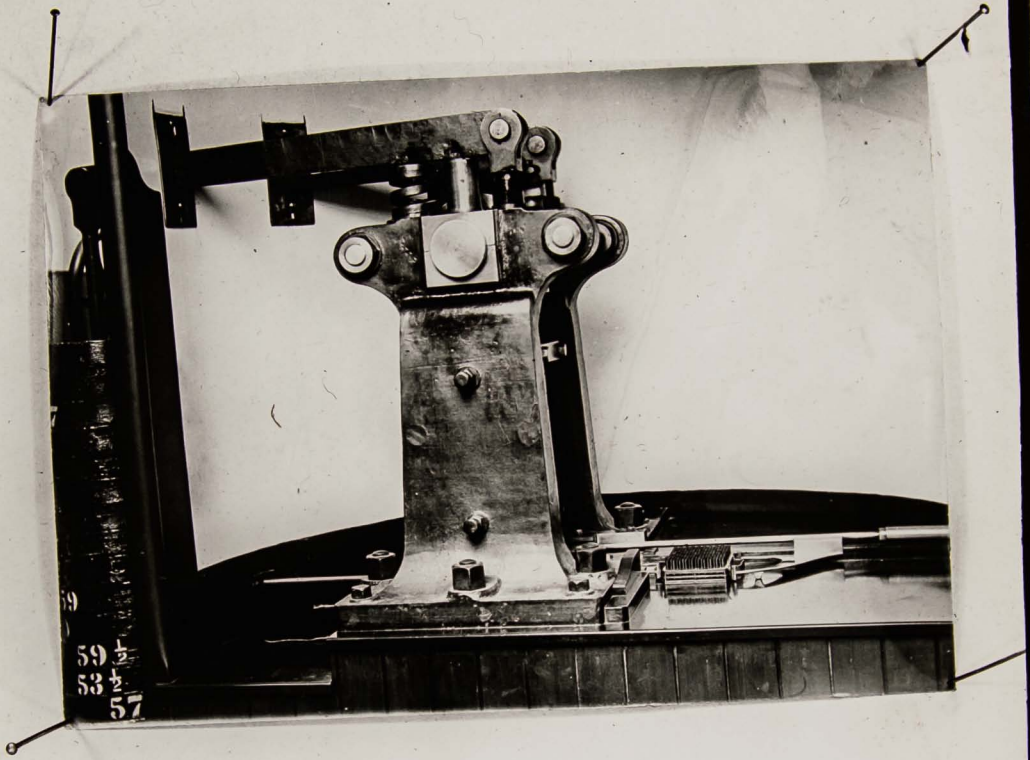
59
59 1/2
53 1/2
57