

**Caudwell's Mill
Rowsley
Derbyshire**

**Draft Listing of Machinery at present in the Mill
Technical Notes**

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Foreword

To undertake a complete and accurate inventory of all the machinery and plant on an industrial site like Caudwell's Mill is a daunting task.

What follows is a draft listing of the flour milling machinery in the mill (and not the provender machinery) together with some interpretive notes on the machines and their functions so that non specialists can appreciate what they are seeing or reading about.

After completion of the second draft, an inventory was supplied by the Haddon Estate office (in connection with the preparation of the lease) which covered both the flour and provender mills. A copy of this inventory has been included as an Appendix.

Signed

R. Shorland-Ball MA AMA

September 1980

BOOKS AND SOURCES CONSULTED

All the sources noted here may be consulted at Worsbrough Mill Museum

- | | |
|----------------------------|--|
| various authors | CAUDWELL'S OF ROWSLEY, FLOUR MILLERS Second Edition 1974 |
| Arkwright Society | CAUDWELL 'S MILL, ROWSLEY Local History Trail No 16, Revised 1975 |
| P. R. Owens | THE ROLLER MILL AND SILO MANUAL Third Edition 1912 |
| L. Smith | FLOUR MILLING TECHNOLOGY Third Edition 1944 |
| P. A. Kozmin | FLOUR MILLING English Translation by Falkner and Fjelstrup Second Impression c1912 |
| J. H. Scott | THE DEVELOPMENT OF GRAIN MILLING MACHINES First Edition 1972 |
| J. F. Lockwood | FLOUR MILLING Fourth Edition 1962 |
| Henry Simon Engineering | Technical Publications |

NOTE: This report is for private circulation and reference only: it is not designed or intended for publication. Diagrams and illustrations have been copied from a number of the works of reference noted above and a general acknowledgement of indebtedness is made herewith.

CAUDWELL'S MILL, ROWSLEY

Draft listing of machinery and technical notes

Introduction. The information given here is intended to form the basis for the gathering of more detailed information on the machinery at Caudwell's Mill. The technical notes on the purposes of the various machines are by no means exhaustive and are not intended to be interpretive since a number of technical terms are used without explanation. The line illustrations have been culled from various volumes in the reference collection at Worsbrough Mill Museum and are not necessarily representative of the exact type of machine in the Rowsley Mill. A bibliography is included at the end of this document.

None of the plans of the floors in the Mill are to scale, they merely indicate the relative positions of the various machines listed.

Caudwell 's Mill Rowsley.

Third Floor ELEVATOR TOPS/DUST FLOOR
(see attached plan)

1 FILTER DUST COLLECTOR (Suction Type)

AMME, GIESECKE & KONEGEN
BRUNSWICK
D. R. P.

No. 5186

Wooden framed, approx• 8' 6" high, 7' 0" wide and 3' 5" deep

Notes

The manufacturer's name is on a transfer, one at either end of the machine.

The machine number is stencilled onto the wood panels below the transfer and is now almost illegible.

The machine is built up of a number of airtight compartments formed by the wooden case (see illustration over page). Each compartment contains a number of textile sleeves arranged in vertical rows with the tops of the sleeves closed and the bottoms open into a common hopper extending under all the compartments.

Dusty air enters the hopper which acts as an expansion chamber and causes the heaviest particles to drop out of the air stream.

The air is drawn up through the sleeves which are closed at the top and the dust in the air is deposited on the inside surface of the sleeves; the air leaves the machine through a common manifold connecting all the compartments at the top and passes on to the exhaust fan.

On top of each compartment is a cam operated shaking mechanism to which the sleeves are connected. Each group of sleeves is cleaned in sequence by vertical shaking and a reversal of the air flow for a short period. As the sleeves in any one compartment are shaken a valve shuts off the outlet manifold and allows in air from the atmosphere. Since the bottoms of the textile sleeves are still open to the common hopper, air is drawn in through the sleeves and it carries down the dust detached by the shaking action.

Such a machine in good condition is little short of 100% efficient.

2a 2b

3a 3b DETACHERS

AMME, GIESECKE & KONEGEN
AKTIENGESELLSCHAFT
BRAUNSCHWEIG

2a No 3445

2b No 3447

3a No 3448

3b No 3449

Both machines are of cast metal constructions and are double ended

Notes

The manufacture's name is on cast metal plates secured by screws to the end covers of the machines.

The machine numbers are punched onto the plates

Detachers are used to break down flakes of endosperm without disintegrating the bran and germ particles so that they will contaminate the flow. Flakes may be produced by heavy pressures on the reduction rolls which are handling fine and coarse middlings. The flakes are likely to overtail the plansifters used for grading the reduction stocks and if these flakes are not broken down a good deal of endosperm material will be wasted by going to offals.

Stock fed into the detacher is forced into a narrow space between a revolving cone and a conical casing. Exit through the narrow end of the cone is controlled by a spring loaded pressure plate which can be preset to give the desired resistance.

Second Floor **PLANSIFTER FLOOR**

(see attached plan)

1 PLANSIFTER

E. R. & F. TURNER

IPSWICH

ENGLAND

No A 50/22645

Notes

Manufacturer's name is on a cast plate screwed to the main girder on the west side of the machine.

Machine number is punched onto plate.

2

3

4 PLANSIFTERS

AMME, GIESECKE & KONEGEN

BRUNSWICK (i)

D.R.P. (ii)

PATENT KONEGEN (iii)

There are no machine numbers visible

NOTES

All manufacturer's information is on transfers on the central girders of the machines

(i) (ii) (iii) Positions of these transfers are shown on the Plansifter floor diagram attached.

Plansifters are generally used for sorting or grading the stocks from the break rolls; in some mills plansifters have been used for flour dressing.

In essence the plansifters consist of two compartments or boxes which are made of nests of horizontal sieves. These sieves and their respective collecting trays for sieved products are only about four inches deep. They are built up one upon the other and then securely clamped together by detachable tension rods. The frame of the machine into which the two compartments are built is made of steel sections and suspended by four groups of canes.

The drive from above the plansifter is so arranged that the whole machine is moved by a balanced crank in a circle of about 3½ inches, thus providing a rotary sieving action on the flat sieves. the diagrams below illustrate the sort of separations which may be achieved by by differing arrangements within the nests of sieves.

5

6 CENTRIFUGALS

No manufacturer's name

No machine numbers

NOTES

Both machines, mounted one on top of the other, appear virtually identical and were installed c1947 by Mr. A. Fox, the chargehand rollerman. He states they were both by E. R. & F. Turner of Ipswich and that they have been out of use for about 20 years.

Both have 36" reels and are of the single feed type.

A centrifugal is a sieving machine whose general shape and mode of operation is indicated by the diagrams on the next page. The machines may be used for grading stocks like the plansifter or for dressing flour.

A wooden framed polygonal reel extends along the length of the machine and is covered with bolting cloth which varies in mesh from feed end to delivery end. Inside the reel, which revolves at about 20 r.p.m., a shaft revolving at about 200 r.p.m. carries beaters which lift the stock fed into the reel and throw it against the bolting cloth. Some beaters are slightly twisted to convey the stock slowly along the inside of the reel. Throughs are carried away from the hopper in the base of the machine; overtails pass along to the end of the reel opposite the feed and are taken off separately.

7 CONTINUOUS MIXER

Wm. GARDNER & SONS

(Gloucester)

PATENT "RAPID" MIXER

No machine number visible

Machine is approx. 5' 10" long, 2' 4" wide and stands 3' 10" high.

NOTES

The manufacturer's name and the machine name are cast into one endplate of the machine.

The diagram illustrates the principle of the mixer which is similar in many ways to the agitator (see 1a and 1b on the purifier floor). At Rowsley the sifter illustrated in the diagram as being on top of the mixer is missing.

The machine was used to blend a proportion of sharps and middlings with white flour to produce a wheatmeal or brown flour. Mr Fox states that it has been out of use for a number of years.

8 INFESTATION DESTROYER

HENRY SIMON LTD.

STOCKPORT

SIMON Sentry

Mk III Infestation Destroyer

Machine serial No. 8343

NOTES

Sentry Infestation Destroyers

The remarkable Sentry centrifugal infestation destroyers have given reliable protection against infestation by insects, mites, etc., for several decades. It is now in continual use on thousands of sites throughout the world. All mill products are liable to contain pests, usually in the form of eggs or larvae and adult insects. These are killed by passage through the Sentry infestation destroyer, preventing the development of subsequent infestation from within the materials.

The Mk III range retains all the essential features of earlier models but incorporates many detail improvements.

All cereal grains and products milled from them, and all kinds of animal feed may be treated effectively.

When treating a more friable material degradation can be reduced and protection is particularly necessary when finished products are stored in bins.

Bulk storage of untreated products provides a risk of infestation which could rapidly spread to the mill or bakery. It is therefore essential for flour in bulk to be treated before entering the bins and again on being withdrawn. The bins themselves should therefore be free from infestation. The second treatment will completely destroy any insects, larvae or eggs that emerge with the flour.

From Henry Simon Sentry Range - current advertising leaflet HSE 2.5M.7B

9 CARTER DISC SEPARATOR

CARTER - MAYHEW MFG. Co.
MINNEAPOLIS
MINNESOTA
U. S. A.

Machine serial No. 2491
Style No. E6 COMB

NOTES

The manufacturer's name and address are cast onto one of the endplates of the machine.

The machine and style numbers are punched onto a separate plate secured by screws below the cast information noted above.

The machine separates impurities (particularly other cereal seeds such as barley & oats) from wheat. Discs with specially shaped pockets revolve in a mass of wheat contained within the body of the machine; the diagram above best illustrate the principle on which it works.

Mr Fox states that the separator at Rowsley has been out of use since a bearing collapsed; a replacement was unobtainable.

First Floor **PURIFIER FLOOR**
(SEE ATTACHED PLAN)

1a AGITATOR

HENRY SIMON

No machine number

1b AGITATOR

No manufacturer's name

No machine number

Notes

Agitators are used in connection with gas treatment for bleaching and "improving" flour.

The general arrangement of the machine is shown in the diagram above: a deep wooden box contains a worm conveyor fitted with extra large blades. The worm, running at about 200 r.p.m. moves the flour forward and throws it up in a cloud to bring it into intimate contact with the gas which has been introduced into the top of the box.

Bleachers such as Novadelox may also be introduced in powder form and the agitator serves to thoroughly mix the powder and flour together.

2

3 SIMON "TYPE B" FANLESS PURIFIERS

HENRY SIMON LTD.

MANCHESTER

2 No 6762

3 No 6739

Notes

The manufacturer's name is on cast metal plates secured by screws to the east end of the machines.

The machine numbers are transfers onto the wood frame of the machines above the manufacturer's name plate.

The SimonB Type Fanless Purifier was manufactured in the 1920's and 1930's, As mill exhaust and dust collection systems developed so it was possible to dispense with fans and dust collecting chambers on individual machines giving greatly reduced cost, much reduced height and greatly improved external appearance.

Stock fed to the purifier consists of a mixture of pure endosperm particles, pure bran particles and composite particles of endosperm with adhering bran. Once separated from one another, the pure endosperm can go to the reduction rolls for grinding down to flour free from bran. The composite particles may be broken down further on scratch rolls to release the endosperm or, if the particles are too small, they may be ground separately into low grade flour or wheatfeed. The bran, once separated can be sacked off.

Each purifier consists of two long, narrow reciprocating sieves within the airtight framework of the machine. Immediately above the sieves are a number of narrow tin trays placed side by side with gaps between them. The sieves are so driven that the stock, entering the machine at one end, is shaken along the surface in a series of minute waves. Air, drawn up through the sieves lifts the lighter particles through the gaps between the trays; the heavier particles fall back into the trays and the lightest ones are exhausted through the air trunk along the top of the machine.

Thus, the pure endosperm particles pass through the sieves, a mixture of endosperm & bran particles "overtail" the end of the sieve and are re-treated, dust & light bran is lifted by the air currents and the heavier liftings fall back into the trays from which they are removed by revolving brushes (see diagrams on previous page).

Ground Floor **ROLLER FLOOR**

(See attached plans)

1 Roller Mill diagonal four roller 20" x 9"

BRIDDON & FOWLER
MANCHESTER

No. 282

2 Roller Mill diagonal four roller 800 mm x 250 mm

AMME, GIESECKE & KONEGEN
BRAUNSCHWEIG

No. 13893

3 Roller Mill diagonal four roller 32" x 10"

BRIDDON & FOWLER
MANCHESTER

No. 355

4 Roller Mill diagonal four roller 40" x 10"

BRIDDON & FOWLER
MANCHESTER

No. 397

5 Roller Mill diagonal four roller 20" x 9"

BRIDDON & FOWLER
MANCHESTER

No. 280

6 Roller Mill diagonal four roller 20" x 9"

BRIDDON & FOWLER
MANCHESTER

No. 282

6 Roller Mill diagonal four roller 20" x 9"

BRIDDON & FOWLER

MANCHESTER

No. 283

7 Roller Mill diagonal four roller 24" x 10"

BRIDDON & FOWLER

MANCHESTER

No. 356

8 Roller Mill diagonal four roller 32" x 10"

BRIDDON & FOWLER

MANCHESTER

No. 1073

9 Roller Mill diagonal four roller 20" x 9"

BRIDDON & FOWLER

MANCHESTER

No. 281

10 Roller Mill diagonal four roller 40" x 10"

BRIDDON & FOWLER

MANCHESTER

No. 401

11 Roller Mill diagonal two roller 24" x 10"

HENRY SIMON

MANCHESTER

No. 26306

12 Roller Mill diagonal two roller 24" x 10"

HENRY SIMON
MANCHESTER

No. 46225

NOTES

Details of manufacturers' names, machine numbers and roll sizes are given on pages xx to yy in diagrams and text.

The diagram on page zz shows the utilisation of the roller mills and should be read in conjunction with a mill flow diagram when one becomes available.

All the mill at Caudwells have diagonally placed main rolls and all but two are four roller units. Four roller mills are "double" machines - two machines back to back in one frame each having its own separate feeding mechanism.

The diagram below illustrates the main mechanical features and principles of the four roller mill, though the mill unit shown is more recent than those at Caudwell's.

CAUDWELL'S MILL, ROWSLEY

NOTE

SINCE THE COMPLETION of the draft listing of the machinery in the flour mill, an inventory of machinery and plant has been supplied by the Haddon estate for the purposes of drawing up the lease. That inventory is appended here for reference.

INVENTORY OF STANDING AND GOING MACHINERY AND PLANT

PROVENDER MILL

Attic

Five Single Belt and Bucket Elevators

Two Worm Conveyors

Vertical Steam-Heated Grain Conditioner for approximately 4 tons per hour.

Mild Steel Shaft 8 ft 6 ins long x 1½ ins diameter with 6 pulleys. 3 ring oil bearings and wood fixings

Approximately 18 lin ft Wood Spouting

Belting

Third Storey

“Howes” “Eureka” Dustless Milling Separator No. 4268 with self-contained fan and wood duct in connection

Steel Cased Worm Conveyor 7 in diameter x 16 ft 3 in long and fixings

Second Storey

9 in Single Belt & Bucket Intake Elevator approximately 23 ft centres height and wood delivery spout

1 - 2½ sheet Wood Cased Centrifugal Rubble Separator with geared drive

Mild Steel shaft 7 ft 6 in long x 2½ in diameter with 3 pulleys, 2 bearings and wood fixings

Belting

First Storey

1 - 12 in x 10 ft 9 in Ratchet Wheat Measurers with shafts and fittings

2 Double 7 in Steel Cased Worm Conveyors each 21 ft long and floor stands

4 “Briddon and Fowler” 9 in Ratchet Wheat Measurers and fittings

1 7 in Worm Conveyor 8 ft long, stands and electric motor drive

FLOUR MILL

Attic

5 Double Belt and Bucket Elevators

11 Single Belt and Bucket Elevators

3 "Amme Giesecke Konegen" Cast Iron Flour Detachers (2 Double and 1 Single)

2 Endless Band and Scraper Dust Conveyors with wood connections

Approximately 95 lin ft x 9 in diameter Painted Sheet Iron Dust Trunking 42 ft 6 in centres long

“A.G.K.” 4 section Suction Dust Filter Dust Collector with connections and rotary outlet seal

Steel Cased Exhaust Fan 17 in wide on casing and 12 lin ft x 18 in ducting

1 - 5 in Band Conveyor 18 ft centres long

Approximately 140 lin ft Wood and 6 lin ft Alloy Spouting

Mild Steel Shaft 15 ft long x 2 in diameter with 1 flange coupling,

9 pulleys and 4 ring oil bearings and wood fixings

Belting

Third Storey

4 "Turner" & "A.G.K./Turner" Suspended Reciprocating Plansifters each with feed boards and boxes and canvas sleeves, suspension canes and fixings

Wood Floor Boxes and canvas sleeves

2 Disused Single Sheet Centrifugal Dressing Machines

"Gardner" Belt-driven Horizontal "Rapid" Mixing Machine 5 ft 10 in wide on casing and wood feed hopper

Novadel Feeder and floor fixings

"Simon-Sentry" Motorised Aspirator No. 8343 and fixings

"Simon" Motorised Cyclone Receiver with rotary seal fixings and ducting in connection and air pressure gauge

"Carter-Mayhew" style E6 COMB Disc Separator with 27 - 25 in diameter discs and fittings No. 2491

1 - 4½ in Worm Conveyor 9ft 6in long with angle drive

Shoe Feeder with 15 in wide tray and fixings

Approximately 80 lin ft Wood and 28 lin ft Alloy Spouting and 1 permanent magnetic separator

4 Mild Steel Shafts in all 80 lin ft x 2½ in/1¼ in diameter with 3 flange couplings, 43 pulleys, 7 cast iron and 4 wrought iron sling hangers, 11 ring oil bearings 3 J hangers and bearings, 1 combined hanger and bearings and 1 end bearing

Belting

Second Storey

2 "Simon" Double 12 in Wood Cased Fanless Purifiers and fittings Nos. 6739 and 6767

Exhaust system with steel cased fan 14¼ in wide on casing and 15 in/6 in diameter trunking in connection, in all 60 lin ft

2 "Simon" Flour Agitator Worms each 4 ft 9 in long and fixings

"Briddon & Fowler" Shoe Feeder with 10 in wide tray and fixings

1 Double 6 in Worm Conveyor 28 ft long and extended shaft

1 - 6 in Worm Conveyor 18 ft long and fixings

3 Worm Conveyors each with floor fixings

Approximately 325 lin ft Wood & 175 lin ft Alloy Spouting and 1 bagging head

Mild Steel lineshaft 55 ft long x 3½ in/1¾ in diameter with 1 muff and 3 flange couplings

17 pulley, 8 cast iron and 2 steel sling hangers, 6 ring oiling and 2 roller and 1 ball bearing pedestals.

2 Disused Cast Iron Sling Hangers and ring oil bearings

Belting

Quantity Purifier Spares and fittings

First Storey

2 "Simon" 24 in x 9 in single Diagonal Two-roller Mills each with feed box
Nos. 28806 and 46225
9 "Briddon Fowler" Double-diagonal Four Roller Mill
1 "Amme Giesecke Konegen" 32 in x 9in Double-diagonal Four-roller Mill No. 13892/3
4 pairs Spare Rollers
1 Double 6in Worm Conveyor 7 ft 6in long with geared drive
6 Worm Conveyors
Approximately 85 lin ft Wood and 32 lin ft Alloy Spouting
Spare 3½ in Elevator Belt and Bucket
"Harding" Tachometer and fixings

Packing Area

Steel Packing Hopper and sack spout
Cast iron Bagging Spout with hand posser
Wood Spout and bagging head

Basement

2 - 3 in Band and Wood Scraper Exhaust Conveyors
Wood & Alloy Spouting
Mild Steel Countershaft 8 ft long x 2½ in diameter with 4 pulleys and 2 cast iron sling hangers
and bearings
Belting and guards

Store Shed

"Singer" Style 133K7 Sack Darning Machine Head and unit bench