

neer, of Wellington. The foundations for the chimney comprise 42 ferro-concrete piles supporting a bed of reinforced concrete 6 feet thick. The method of reinforcing is by vertical bars in lengths of about 30 feet, with a substantial overlap. These are bound together by rings of round steel bars, at intervals of 18 inches. The thickness of the concrete varies from 12 inches at the bottom to 6 inches at the top. The deflection from the vertical when the chimney was oscillating in a heavy wind was found by the author to be only half an inch.

The contractor for building the chimney was Mr. John Moffatt.

In conclusion, I wish to express my indebtedness to Messrs. Morton and Hastwell for figures concerning the present destructor and the pumping plant, to Mr. Leask for particulars with regard to calorific values and analyses of refuse, and to Messrs. Heenan and Froude, Limited, for the photographs and diagrams.

No more telling figures than the following can be given in support of Messrs. Heenan and Froude's claim that their back feed hand-fired destructor is the cleanest, cheapest, and most economical on the market.

DESTRUCTOR CONTRACTS ENTERED INTO BY HEENAN AND FROUDE, LTD., DURING 1907.

New York (U.S.A.)	..	Back	60 tons
Vancouver (B.C.)	..	..	50 "
Victoria (B.C.)	..	..	50 "
Wimbledon	..	..	112 "
Cheltenham	..	..	60 "
Buxton	..	..	45 "
Redditch	..	..	45 "
Bury St. Edmunds	..	..	30 "
St. Albans	..	Front	90 "
Paignton	..	..	30 "
Total tons	..	..	572

DESTRUCTOR CONTRACTS ENTERED INTO BY ALL OTHER MAKERS DURING 1907.

Exmouth	..	Front	20 tons
Hampton	..	..	20 "
Gainsborough	..	..	25 "
Sowerby Bridge	..	..	30 "
Loughborough	..	Top	15 "
Ilford	..	..	90 "
Total Tons	..	..	200

The "Accelerator" Water Tube Steam Boiler.

This invention, illustrated on our front cover, is simple in design and constructed in such a manner as to secure all the advantages claimed and set forth, the chief points being as follows:—

A series of straight water tubes vertically inclined over the furnace, giving free rise to the circulating water, thus preventing internal incrustation, and the water being divided into small volumes quickly raised to a high temperature, forming steam, and immediately passing into wrought steel header boxes, where the steam instantaneously separates from the water. The separated steam then passes through tubular connections into the upper part of the steam drum in a manner preventing priming, and the separated water passes through tubular connections into the lower part of the main steam and water drum. The water from the main steam drum is further passed or falls through tubes connected to the rear end of the bottom generating boxes of the boiler, where the lower ends of the generating tubes are connected thus completing the cycle of circulation.

In cases in which the feed water supply is cold or of low temperature, and the boiler has its own combined or self-contained feed water heater, the cycle of circulation is the same, excepting that instead of the water from the main steam drum passing or falling through tubes to the rear end of the bottom generating boxes of the boiler, where the lower ends of the generating tubes are connected, it is further passed or falls through tubular connections into the upper part of feed water heater sections. These feed water heating sections are placed in the rear of the boiler in the path of the waste gases, so as to more efficiently utilise the heat, at the same time separating the sediment from the water, which sediment is deposited in the bottom boxes of the feed water heater sections, where arrangement is made for blowing off and cleansing, acting as a purifier, and thus obviating sediment or deposit going forward to the generating sections of the boiler, where the lower ends of the generating tubes are connected. The feed water by these means being highly raised in temperature, a separate feed water heater or economiser is not needed.

The boiler is most accessible for cleansing. Large hand holes are provided over the ends of all the tubes of the boiler and feed sections so that the tubes can be readily inspected, seen through, and cleaned. Man-holes are also fitted in the steam and water drum, and hand holes in the generating water boxes and feed boxes.

Blow-pipe apparatus is provided with the boilers so that jets of steam may be directed across the heating surfaces to clear away soot, at any time when the boiler is under steam, by merely opening a valve.

The boiler is of minimum weight, and will occupy a minimum of space, and can be made in units or sections, to the largest number of units, each section practically forming or constituting a complete boiler of itself.

By nesting these sections together (few or more), boilers can be made from the smallest to the largest.

Steam super-heaters are easily placed in spaces between groups of generating tubes, or over fires or in front of combustion chamber, or in rear of generating tubes.

The circulating bends between headers or boxes and drums may be connected by expanding or by flanges as shown.

The accelerator is made by Daniel Adamson & Co., of Dukinfield, Manchester, at their well known boiler works.

APPLICATIONS FOR PATENTS.

THE following list of applications for Patents, filed in New Zealand during the month ending 27th Feb., has been specially prepared for PROGRESS:—

- 24012—E. Clemens Horst Company, New York, U.S.A.: Hop picker and separator.
- 24013—Auto-Hydraulic Limited, London, Eng.: Water elevator.
- 24014—J. T. Hunter, Wellington: Typographical composing and distributing machine.
- 24015—J. T. Hunter, Wellington: Justifying tabular matter in linotype machines.
- 24016—W. Tyree, Sydney, N.S.W.: Destruction of noxious animals.
- 24017—H. A. Fry, Riwaka: Acetylene generator.
- 24018—A. R. E. Burton, Malvern, Vic.: Manufacture of bread.
- 24019—W. H. Duncan, Glen Oroua: Water heater.
- 24020—W. Hooker, Albert Park, Vic.: Primary electrical battery.
- 24021—L. D. Mattes, Turin, Italy: Feeding current in electric railways.
- 24022—A. J. Ericsson, Stocksund, Sweden: Machine for grinding solid bodies.
- 24023—J. E. Friend, Annandale, N.S.W.: Turbine.
- 24024—British Automatic Aerators, Limited, London, Eng.: Aerating machines.
- 24025—D. W. Dike, Meenyan, Vic.: Milking bucket attachment.
- 24026—C. F. Gardner, Auckland: Oil, etc., tank filler.
- 24027—A. J. Madden, Caulfield, Vic.: Applying pressure to liquids.
- 24028—R. F. Marsh, E. Maitland, N.S.W.: Spring mattress.
- 24029—E. H. Moore and J. F. Cripps, Tamworth, N.S.W.: Securing rugs on horses, etc.
- 24030—H. Campbell, Melbourne, Vic.: Extension ladder.
- 24031—W. Tyree, Sydney, N.S.W.: Destroying noxious animals by poisonous fumes.
- 24032—W. C. Gee, H. N. Fletcher, and W. Godfrey, Wellington, N.Z.: Sun blind.
- 24033—R. M. Smith, Auckland: Building block.
- 24034—J. Blake, Otakho: Teat-cup of milking machine.
- 24035—W. J. Pallant, Palmerston North: Manufacture of uppers of shoes.
- 24036—A. J. Edwards, Auckland: Trolley head of an electric car.
- 24037—A. Lawton, Vogeltown: Milk cooler.
- 24038—C. A. Jewell and F. A. H. Watson, Hastings: Searing lambs' tails.
- 24039—J. G. Hudson, Wanganui, and J. W. Mardon, Wellington: Signalling apparatus.
- 24040—W. M. Orr, Dunedin: Rope grip.
- 24041—N. A. Booth, Leith Valley: Automatic sash fastener.
- 24042—J. R. Noble and F. C. Brown, Wahi: Feeding of tube mills, etc.
- 24043—G. Hyde, Masterton: Extension dining table.
- 24044—D. Donald, Masterton: Lifting jack.
- 24045—A. E. Brown, Maxwelltown: Governing outflow of water from dams.
- 24046—M. Janson and O. Anderson, Wellington: Manufacture of imitation marble.
- 24047—C. Giorgi, Palmerston North: Ventilator.

- 24048—V. S. Aston, Gisborne: Bleaching flax-fibres.
- 24049—F. A. G. Cotterell, Kingsland: Two-wheel motor car.
- 24050—A. Clifford, Christchurch: Soap cutter.
- 24051—J. G. Hudson, Wanganui, and J. W. Mardon and J. E. Watts, Wellington: Ferro-concrete construction.
- 24052—C. G. McKellar, Christchurch: Construction of pelton wheel.
- 24053—W. Cochrane, London, Eng.: Propeller.
- 24054—C. W. Nance, Sydney, N.S.W.: Extraction of air, gas, etc.
- 24055—T. T. Main and C. W. Nance, Sydney, N.S.W.: Preservation of edible substances.
- 24056—W. Cutler, Birmingham, Eng.: Propelling and steering boats.
- 24057—A. Parker, Dannevirke: Totalisator.
- 24058—H. Quertier, Dunedin: Umbrella.
- 24059—A. C. Anderson, Bluff: Agricultural implement.
- 24060—W. Bennet, Dunedin: Renewable sole and heel.
- 24061—A. G. Barnett, Wellington: Tie-adjuster for double collar.
- 24062—J. Gaut, Sydney, N.S.W.: Photographic camera.
- 24063—C. Davies, Normanby: Construction of vacuum tank for milking machine.
- 24064—G. Ullrich, Broken Hill, N.S.W.: Magnetic separation of ores.
- 24065—F. R. Hall, Brisbane, Q.: Composite pile or pillar.
- 24066—R. Tacon, Christchurch: Spark arrester.
- 24067—W. E. Kinnerney, Timaru: Fire-extinguisher.
- 24068—R. A. Wiggins, Christchurch: Teat cup.
- 24069—W. O. McFaddin, Hamilton: Drain tap.
- 24070—G. Herzog, Auckland: Hot water circulating boiler.
- 24071—A. K. W. Rissel and W. H. Hennah, Wellington: Temperature indicator and recorder.
- 24072—A. Simpson, Christchurch: Bicycle driving gear.
- 24073—H. Quertier, Dunedin: Seat, berth room, and table indicator.
- 24074—B. L. Donne and P. H. Stacey, Wellington: Mixture to be used in collecting and removing dust from the floors.
- 24075—G. T. Girdler, Auckland: Explosive engine.
- 24076—J. Hargreaves, Auckland: Ventilator.
- 24077—C. F. Snell, Sydney, N.S.W.: Iron and polishing machine.

Full particulars and copies of the drawings and specifications in connection with the above applications, which have been completed and accepted, can be obtained from Baldwin and Rayward, Patent Attorneys, Wellington, Auckland, Christchurch, Dunedin, etc.

Hotels and Their Progress.

Recent experience has awakened the people of the Dominion to the rapid development of the modern hostelry. "Mine ease in mine inn," has come to mean for them another way of spelling expense. Some have gone so far as to wonder how the inevitable connection between building and bankruptcy is to be avoided. Returned travellers comfort them with the statement that the building of palatial hotels in London has reached a point which one would think it is hardly possible to surpass. Each seems to be more magnificent than the last, and the wonder is that even in London there should be a sufficient number of hotel visitors to yield a return on the huge expenditure of capital involved in these great concerns. The Waldorf Hotel in Aldwych, which is to be opened on January 22nd, has cost about £400,000. It has been built by the Waring White Co., from the designs of Mr. Marshall Mackenzie. The building is furnished and decorated throughout in Louis Seize style—a style which is well adapted for magnificent display. Another great hotel is now nearing completion at Piccadilly Circus. This also is being superbly equipped, and it has the distinction of possessing one of the very finest elevations of any London hotel.

In spite of the strictest precautions, the South African diamond companies, it is estimated, lose over £400,000 a year by the theft of precious stones.

The purest breed of Arab horses are the Kochiani, whose genealogy has been preserved for 2000 years. They are said to be derived from King Solomon's stables.