

Machinery and Appliances.

THE HYDRO-EXTRACTOR.

MESSRS. THOMAS BROADBENT AND SONS,
HUDDERSFIELD.

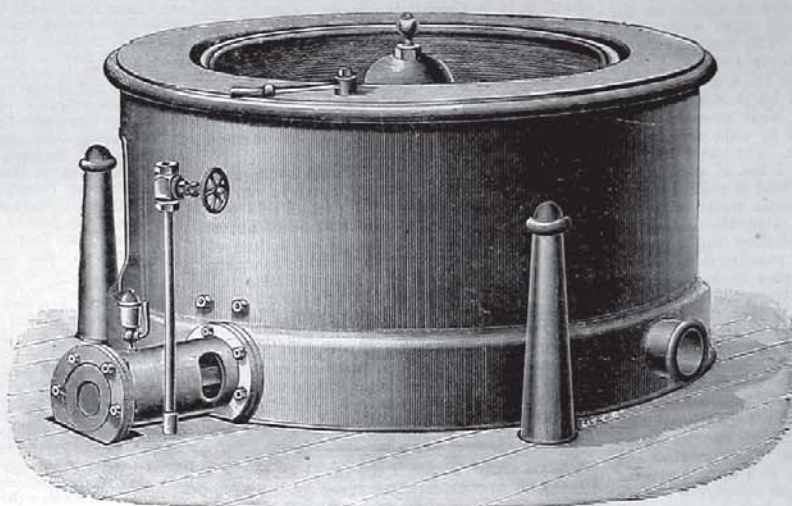
Hydro extraction has been a problem to all mankind ever since or soon after it became a custom for them to wear clothing, as none of the materials that have yet been employed for that purpose have had the quality of maintaining themselves in a condition of perfect cleanliness, or of automatically cleansing themselves. Hence the necessity of washing and afterwards drying them. No doubt the sun's rays, and the atmosphere either still or in motion, were the first hydro-extractors, and very good ones too when time could be given for the exercise of their influence. This, however, would not always occur, and various methods would be sought to hasten the attainment of the desired state. Wringing and squeezing were no doubt early resorted to, and the drying finished by exposure to the warmth of fire. All this, though

at the present moment. It will be sufficient to observe that the machine now known as the hydro-extractor, like every other machine, has attained its present degree of perfection by slow steps upward.

A few words of description may be necessary to enable our readers, who are not technically acquainted with the branch of business in which the hydro-extractor is used, to comprehend it. Generally speaking the hydro-extractor consists of the pan or outer casing containing a basket or cage for the reception of the material to be operated upon. These cages are composed of copper or galvanized steel perforated or wired as may best suit the requirements of the case. The cages are usually mounted upon vertical shafts and driven either by strap or gearing. When this is the case, however, difficulty and trouble is often experienced, especially with straps which get damp and slack, and soon render it almost impossible to run the machine at a uniform or satisfactory speed. In the ordinary machine and with the ordinary form of driving a strong foundation is required, as the speed at which the machines are run causes great vibration. The usefulness of the machine, too, is materially

reduce vibration and unequal strain to the lowest point, the several parts connecting the engine with the driven parts are compensated with a balance forged on the centre spindle, so that at the highest speed the machine runs with perfect steadiness and a surprising absence of strain and vibration. The centre spindle is constructed of forged steel and is provided with two long conical bearings inserted into the centre casting of the machine. Any wear in these parts can be easily taken up by means of the arrangement provided. The lubricating of the friction surfaces, an important matter in swiftly running machines, is accomplished from one or two places on the outside, the oil thus supplied circulating through and between every wearing surface about them. An ingenious arrangement also provides that every time the machine starts several drops of oil shall be automatically forced through the crank pin and eccentric. This keeps the necks cool and prevents the waste of oil, whilst to it in a very great measure may be attributed the durability of the machine.

The cage being suspended the machine requires no retaining bolts or special foundations, and may



PATENT HYDRO-EXTRACTOR.—MESSRS. THOMAS BROADBENT AND SONS, HUDDERSFIELD.

describable in a few words, implies, no doubt, a considerable lapse of time before the various methods were discovered. They each, however, mark progress, and in various ways have been used from time immemorial for this purpose. Possibly it would be much later before the best of all the methods was invented. This was the discovery of the power of centrifugal force to throw off water from any article containing it when not specially impeded. The principle has been known for ages, and doubtless was playfully applied thousands of times by ancient washers when it was a common practice to resort to the brookside for the purpose of washing clothing, during which they would "whiz" or swing a wet skin or cloth horizontally over their head or vertically in front making the water fly in spray from it upon their companions. Here unquestionably was the principle of the modern hydro-extractor unconsciously evolved and repeated many a time before its value was recognized and applied as we know it to-day. The mechanical embodiment and economical application of the principle as we know and use it now is of recent date, but to trace the history of its development would take more time and space than are at our command

limited when it depends for its driving upon the main engine of the establishment, as, if wanted to be worked when the other portion is stopped, the engine must run at comparatively great expense to drive it. Experience of these disadvantages led to the invention of the machine we are now about to describe.

The patent suspended steam-driven hydro-extractor, as made by Messrs. Thomas Broadbent and Sons, Central Iron Works, Huddersfield, is remarkable in a high degree for its simplicity, perfection and durability, and above all for the ingenious manner in which the obvious disadvantages of the older type of the hydro-extractor are eliminated. All the difficulties of driving arising from belts or gearing are done away with by substituting a small steam engine, and thus driving directly. This engine is attached to the machine; it is very simple, though of peculiar construction, having been specially designed for its purpose. It is accurately balanced and well finished, rendering it possible to work at a very high speed with a minimum of liability to get out of order. The reciprocating parts are made of the most carefully selected material, and constructed as lightly as possible consistent with safety and durability; and, in order to

be placed on any ordinary floor strong enough to bear its weight without fear of damage from vibration. The engine is supplied with a steam service pipe of about one inch diameter which enables the machine to be run independently of the main engine at any time, which is an especial advantage when there is a press of work. This type of machine occupies less space than machines driven in the ordinary way, and is much less dangerous, owing to the absence of the usual accessories that are liable to entangle the clothing of attendants. It is quite noiseless, and requires no skilled labour for its superintendence. The method of direct steam driving is the only one by which the slipping of belts and wasteful friction can be avoided in starting and stopping, and which have in the older form been a large item, as may be inferred when it is stated that the weight of a loaded basket is nearly half a ton, which must be quickly raised from a state of rest to make about 1,000 revolutions per minute. From the fewness, simplicity, and excellent construction and finish of the working parts, and the provision of means by which all wear can be taken up the cost in repairs is reduced to the merest trifle, much less in fact than that of maintaining belts alone in the older system of driving. In proof

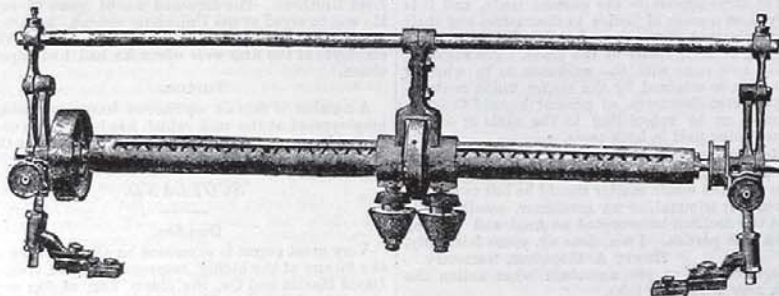
of this, it need only be stated that machines constructed by Messrs. Broadbent's on this principle, with only ordinary attention, have cost nothing in repairs during a service of from six to eight years.

The firm make them in all sizes from 30 to 60 inches diameter of basket and for all branches of manufacture in which they are a requirement; and also for laundries. Messrs. Broadbent and Sons will be pleased to give any information that users and intending purchasers may desire, and applications to them at the above address will receive prompt attention.

THE RICHMOND PATENT DOUBLE-MOTION CARD GRINDER.

The Richmond patent double-motion for card grinders, shown in the accompanying illustration, is a radical departure from all existing machines. It can be applied to any shell-grinder, and the builder claims that it will do as much work in three hours as can be done in ten with other grinders.

The two conical grinders revolve in opposite directions, having also the regular traverse motion. By this means the grinding surface comes in contact with all sides of the teeth equally and produces a round point instead of the ordinary chisel point. It also does away with all possibility of hooked teeth from over grinding, and of the necessity for stropping or



THE RICHMOND PATENT DOUBLE-MOTION CARD GRINDER.

stricking after grinding. When cards have been once ground by this motion, they can be kept in almost uniform condition by light and frequent grindings, and the quality of the work greatly improved.

Arrangements have not been completed for putting it upon the market, but the machines are to be seen running at the Kirk Mills, Central Village, Conn., U.S.A., where it has been in operation for over a year, and inquiries can be addressed to the same place.

STEAMING AND VENTILATION OF WEAVING SHEDS.

It is generally admitted that legislation will be the outcome of the agitation against steaming, and though nothing can now come of the bill which has been drafted this session, owing to the action of the operatives' representatives on Wednesday last in re-opening the discussion of the details, the legislative regulation of the matter is sure to be taken in hand. To this there is practically no objection on the part of any one, as steaming has been much too crudely practised in many cases without either care or discrimination. The rough and ready means used by the rough and ready people entrusted with the application must be displaced, and both scientific appliances and skilful people who are capable of dealing with such means in a proper manner must be substituted. Already the agitation is bearing fruit. The gross abuse which has been poured upon manufacturers and

spinners in East Lancashire and other districts of the county, means little more than the emphasis which ordinary people would place upon any portion of a statement which they desired to bring into prominence. Lancashire men in many cases express themselves differently, more strongly and roughly, and not comporting so well with good manners. As is well known, the internal administration of our mills and weaving sheds is almost entirely left to the managers, and the owner is seldom aware of the details of what transpires inside. This is the case in all the largest places, and partially so in medium-sized ones, while it only does not apply to the smallest. It goes without saying, therefore, that many gentlemen only needed to be convinced of the justice of the outcry that was raised in order to set about providing a remedy. As proof of this statement we need only adduce the fact that the Blackman Ventilating Company, Limited, of this city, and of London, have never been so busy in their history as they are at present, on account very largely of the influx of business from manufacturers. To show to what an extent this is so, we give the following cases where new installations have been laid down, or previous ones increased:—

During the last month Messrs W. D. Codrington and Son, Wellington Mill, Blackburn, have had an installation put down. This firm have previously had fans at their Ordinance and Crossfield Mills. At Hyde Messrs. Ashton Bros. and Co. have added to their ventilating appliances two Blackmaa fans, making six fans from this firm.

At Bolton Messrs. Dobson and Barlow have gone very thoroughly into the subject of ventilation, and have fixed no fewer than thirty of these fans, chiefly for removing dust and foul air. Messrs. John Haslam and Co., Limited; Messrs. Musgrave and Co., Limited; Messrs. Tristram and Co., Limited;

Messrs. Ormerod and Harcastle; and Messrs. James Chadwick and Bros., Eagley Mills, have all fixed Blackman fans either for the ventilation of their sheds, spinning rooms, or card rooms.

At Stalybridge Mr. Robert Byrom has fixed four 36in. Blackman fans for the ventilation of his shed. The Mill Brook Spinning Company have fixed three for the ventilation of their card room, and the Bridge Street Mill Company are fixing four, for ventilating their card rooms and spinning room.

The Manchester Technical School have had two fans erected, one each in the spinning room and engine house.

Things are also looking busy in the Rossendale Valley, one of the latest jobs being the ventilation of two weaving sheds and a sizing room for the Higher Mill Company, Limited.

It is thus obvious that a considerable improvement will be effected, whatever becomes of legislation on the subject.

PRICES OF SILK ONE HUNDRED YEARS AGO.—
The following table gives the prices of raw and thrown silk in Lyons in 1789, the prices being changed to francs per kilogram so as to permit comparisons with present prices:

	Francs per kilo.
Organzines, Piedmont and Italy.....	54@64
Organzines, France.....	50@50
Trams, from Naples, Milan, Parme et Venice.....	44@52
Trams, France.....	46@56
Groges, Italy and the Levant.....	32@40
Groges, France.....	34@42
Groges, Nankin, China.....	40@46
Waste.....	12@14

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Ashton.

The three mills, together with the warehouses, belonging to Mr. Abel Buckley, at Ashton, and named the Rycroft mills, are to be protected with the Grinnell Sprinkler. The work is being carried out by Messrs. Dowson, Taylor and Co., of Salford.

Bolton.

Mr. Allsopp has severed his connection with the firm of Messrs. Jabez Johnson, Allsopp, Son and Co. Moor Mills. The business will probably be carried on by Mr. Johnson-Ferguson (son of the founder), under the title of Jabez Johnson and Son.

Burnley.

Most of the mills in Burnley ceases work on Thursday evening, and resume on Tuesday morning, which is the usual length of midsummer holidays.

Although the weavers' officials say that the strike still exists at Mount Pleasant Mill, Messrs. Dilworth Harrison and Co., have, we believe, all the looms running.

Matters are said to be, unfortunately, not very prosperous at another Self-Help Company in this town—The Oak Mount. In the present state of trade there is only a dull outlook for the shareholders (the operatives) in these companies.

As regards the affairs at Victoria Mill Company, the spinners have returned to work, after several weeks of a stoppage, on the understanding that the masters "look matters up within a fortnight." The men struck against alleged bad work (and consequently low wages) and fines.

Church.

The Globe Manufacturing Co. have "woven up" and closed their shed of 720 looms owing to bad trade.

We understand that Mr. John Haworth is working the material out of his looms with the intention of closing for a time owing to the unsatisfactory state of trade. The mill contains about 600 looms.

Farnworth.

Mr. John Hindley's Egerton-street mill still remains closed.

In consequence of slackness of trade, a number of the coloured mills here have commenced to run four days per week only.

Since taking over Hope Mills, Swinton, Mr. Thos. Bold has found it necessary to stop a portion of the machinery in his Farnworth mill.

The spinning and weaving mills in Worsley-road, belonging to Messrs. S. Hurst and Co., Limited, and which have been standing for about two years, are now being painted, in view of putting them up for sale.

Haslingden.

Several of the large weaving concerns in the Haslingden district are running short time.

Heywood.

A meeting was held on Monday night, at the Free Masons' Arms Hotel, Heywood, to take into consideration the advisability of forming a company to erect a mill of a capacity of about 100,000 spindles, on the site of the Britannia Mills, Heywood. Alderman Isherwood, who presided, advised his townspeople to adopt the policy of "Self-help." If they had done that ten or twelve years ago, Heywood would have been more prosperous than it was at present. Abundance of money was going out of the town by investment in Oldham and other towns, and he asked that they should look after their own interests a little more than they had done. The site, in his opinion, was a very good one. His advice was that they should get a substantial number of shares taken up before they embarked in the enterprise—Mr. J. W. Heywood stated that a little over 3,000 shares were already promised to be taken up, and gentlemen in the town had expressed their willingness to help the project all they could. Mr. Massey (of Bamford Hall) had stated that he would take up from £3,000 to £4,000 worth of shares, and would, if necessary, find a mortgage of £20,000 to £25,000. Councillor R. Bell had offered the site, which was freehold, and consisted of 14,504 square yards, together with three water lodges, mill chimney, &c., for £1,500. He (Mr. Heywood) calculated that the buildings were worth £750, so that the land would cost about 7½d. per yard at twenty-five years purchase. Mr. Bell had also said he would take up £500 worth of shares. He added that there was a good supply of water on the land.—It was resolved to endeavour to form a company with the object