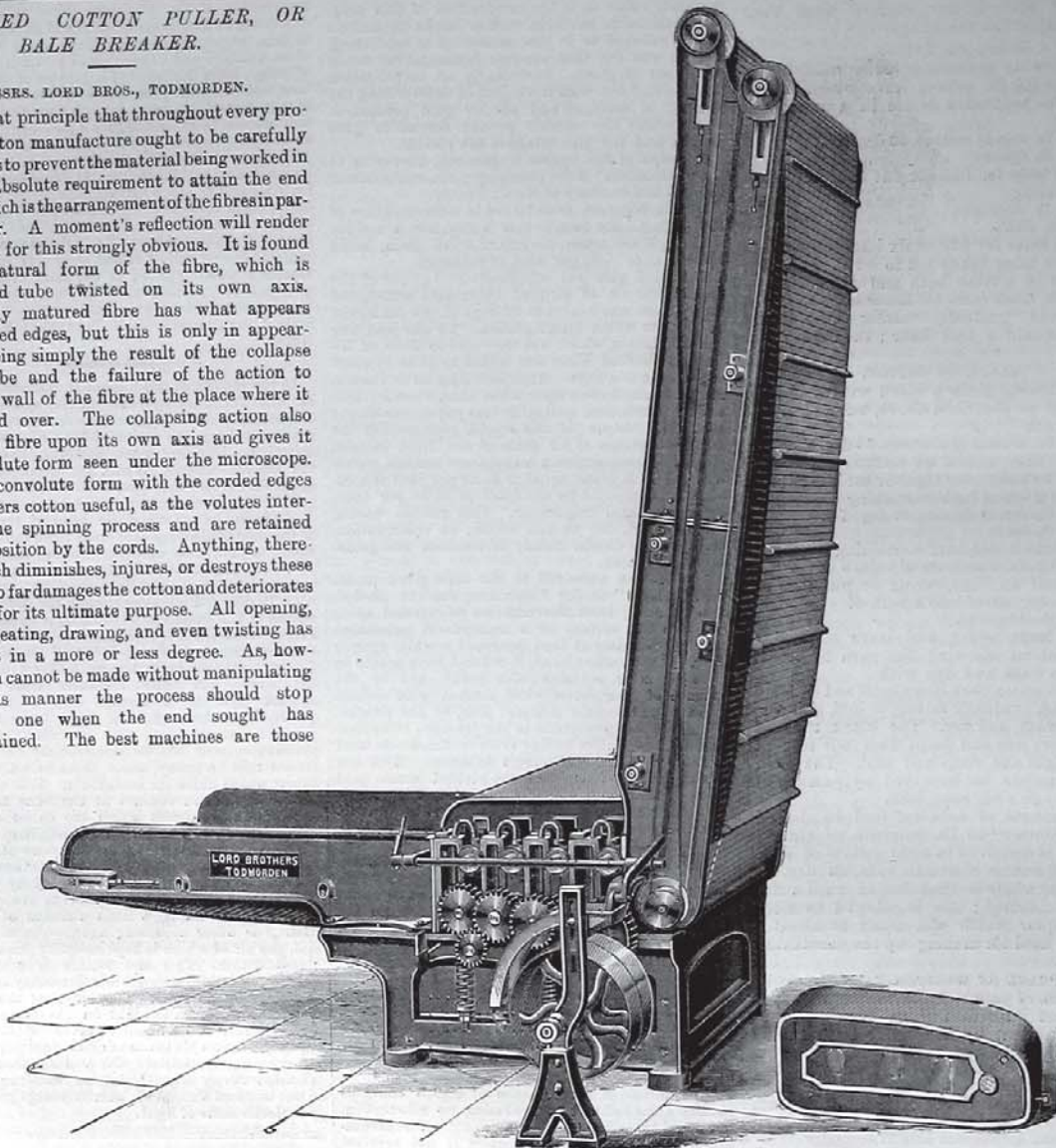


Machinery and Appliances.

IMPROVED COTTON PULLER, OR BALE BREAKER.

MESSRS. LORD BROS., TODMORDEN.

The great principle that throughout every process of cotton manufacture ought to be carefully observed is to prevent the material being worked in excess of absolute requirement to attain the end sought which is the arrangement of the fibres in parallel order. A moment's reflection will render the reason for this strongly obvious. It is found in the natural form of the fibre, which is a collapsed tube twisted on its own axis. A properly matured fibre has what appears to be corded edges, but this is only in appearance, it being simply the result of the collapse of the tube and the failure of the action to break the wall of the fibre at the place where it is doubled over. The collapsing action also twists the fibre upon its own axis and gives it the convolute form seen under the microscope. It is this convolute form with the corded edges that renders cotton useful, as the volutes interlock in the spinning process and are retained in that position by the cords. Anything, therefore, which diminishes, injures, or destroys these features so far damages the cotton and deteriorates its value for its ultimate purpose. All opening, tearing, beating, drawing, and even twisting has this effect in a more or less degree. As, however, yarn cannot be made without manipulating it in this manner the process should stop in every one when the end sought has been attained. The best machines are those



IMPROVED COTTON PULLING MACHINE.—MESSRS. LORD BROTHERS, TODMORDEN.

which attain this end the soonest, and with the gentlest treatment of the material for the shortest time. Without further elaboration we may affirm that this is one of the most important principles to be found in the science of cotton spinning, and if due regard be paid to it by machinists and inventors in their examinations of existing machinery, they will find there is even yet room for improvement.

We have only to consider the application of this principle at present to a very limited extent, namely the opening process. Owing to cotton being the product of tropical and semi-tropical climes, it has to be transported from long distances to the great centres in which it is manufactured, and of necessity has to be heavily compressed to facilitate transport. This compression injures its structure to some extent, and when it comes to be opened out the pulling and beating carries the injury further. In the ordi-

nary manner of making a mixing of cotton the bales are opened, and their contents thrown together to form a stack, after being more or less pulled—and mostly the latter—by the men engaged in the work. From the more heavily compressed bales especially, the material is obtained in heavy matted flakes, or "caked" as it is called, and no hand pulling can properly separate it. It is fed in this condition to the opener, and, as may be expected, is subjected to very severe treatment before the matted mass can be disentangled. The machine is engaged upon this task a long time, and the cotton is damaged to a corresponding extent, as the masses are literally beaten asunder. In all cases, and especially in the more heavily compressed cotton, much damage is committed at this stage which ought in the interest of good and economical working to be avoided.

The recent introduction of the bale breaker or cotton puller which enables this to be done is a decided step in the right direction. There are several types of this machine already being made, the one illustrated herewith being that of Messrs. Lord Bros., Todmorden, a firm well known for its high-class cotton machinery, and the numerous valuable inventions it has at various times introduced to the trade in connection therewith.

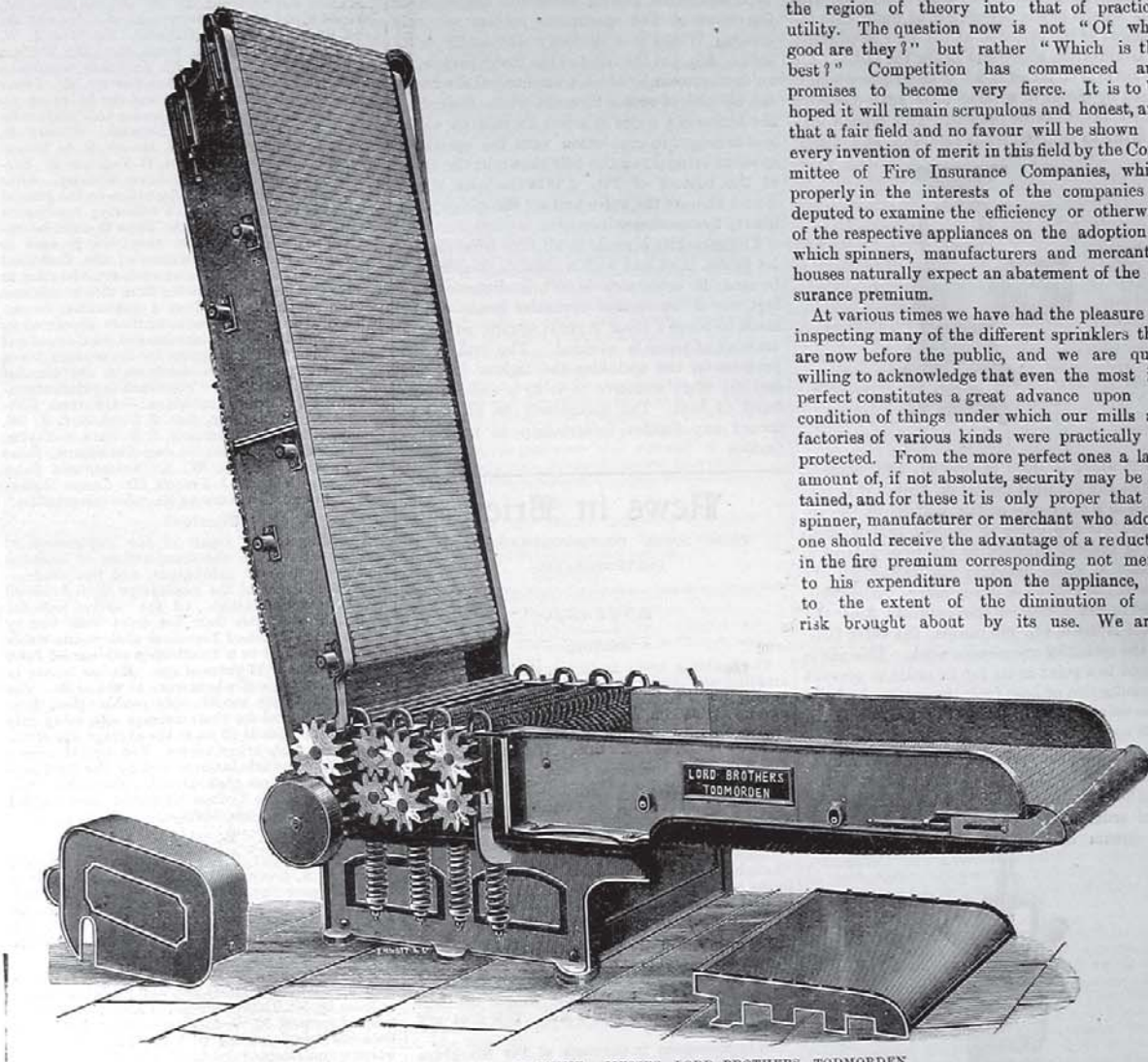
As will be observed the machine is very simple, consisting merely of a feed lattice and four pairs of rollers, three of the upper ones having a spiked periphery whilst the back one is fluted. The three front lower ones are all of iron and fluted, the fourth being of wood and plain. The several pairs revolve at different speeds, gradually increasing from the first pair. The spiral springs show that they are arranged to be self-adjusting. We show two views of the

THE "CROWN" SPRINKLER: A NEW
FIRE EXTINGUISHER.

MR. AARON BRADSHAW, GRIFFIN WORKS,
WILLOWS LANE, ACCRINGTON.

The progress of invention has brought fire extinguishing appliances of the sprinkler type from the region of theory into that of practical utility. The question now is not "Of what good are they?" but rather "Which is the best?" Competition has commenced and promises to become very fierce. It is to be hoped it will remain scrupulous and honest, and that a fair field and no favour will be shown to every invention of merit in this field by the Committee of Fire Insurance Companies, which properly in the interests of the companies is deputed to examine the efficiency or otherwise of the respective appliances on the adoption of which spinners, manufacturers and mercantile houses naturally expect an abatement of the insurance premium.

At various times we have had the pleasure of inspecting many of the different sprinklers that are now before the public, and we are quite willing to acknowledge that even the most imperfect constitutes a great advance upon the condition of things under which our mills and factories of various kinds were practically unprotected. From the more perfect ones a large amount of, if not absolute, security may be obtained, and for these it is only proper that the spinner, manufacturer or merchant who adopts one should receive the advantage of a reduction in the fire premium corresponding not merely to his expenditure upon the appliance, but to the extent of the diminution of the risk brought about by its use. We are a



IMPROVED COTTON PULLING MACHINE.—MESSRS. LORD BROTHERS, TOMMORDEN.

machine. The inclined lattice is an elevator. This point has just been slightly modified, the elevator having been brought down and had its base placed upon a "fender" or bracket attached to the front of the frame where it has been arranged vertically. The cotton after being carried up on the elevator, is delivered upon an arrangement of lattices by which it is carried in the desired direction, and formed into stacks according to quality or requirement. Usually, however, the machine is placed in an upper room, and the course of the cotton is downwards.

The capacity of work of one of these machines is one bale of American, say 450lb. in 15 minutes. The cotton is delivered in a very loose condition much more fit for the next machine or the first opener than when prepared on the old plan. Being sent forward in this state it is much more quickly got through the

proper opener, and is consequently much less damaged than before. This is a great advantage, and one worth all the outlay required to obtain it. Also, with this machine, as a preliminary breaker, any type of opener will do much more work than before. There is, again, the additional recommendation of economy as it soon pays for its cost in the saving of labour. The machine under notice has met with a specially good reception at the hands of the trade, both at home and abroad, although it is of quite recent introduction.

The makers will be pleased to afford any other information that may be desired.

The Committee of the jute spinning and weaving factory of Kassel has decided on the distribution of a dividend of 10 per cent., an advance of 1 per cent. on the dividend of the previous year.

little inclined to think that these benefits have not been accorded to the proportionate extent by the Insurance companies. If denied, however, the injustice will work its own cure, as should they very generally secure the safety of mills after being thoroughly tested by the outbreak of fire in mills in which installations of sprinklers exist, it will be a great argument indeed to induce the discontinuance of the practice of insurance altogether, and the payment of the very heavy tax upon the trade in the shape of insurance premiums. This, however, is speaking in advance of facts.

We have much pleasure in calling the attention of our readers to one of the last new candidates for their favour in this field of usefulness. This is the Crown Sprinkler, the invention of Mr. Aaron Bradshaw, Accrington. Our illustrations show its general structure. It consists of a water-tight body upon which the

inlet orifice is cast. In fig. 1 on the top of this body the discharge orifice is shown. Into its bottom a cylinder is screwed, containing a piston and having a round rollingfrictionlessvulcanised rubber ring forming the packing. Through this piston is a small perforation of a diameter that will about admit the point of a pin, and which a common pin pressed forward would close. This hole admits of the percolation of water into the chamber of the cylinder, and is done to establish an equilibrium above and below the piston. On the bottom of the cylinder is an orifice which is closed by means of a valve held against it with fusible non-metallic cement. This cement may be made to suit the temperature of any condi-

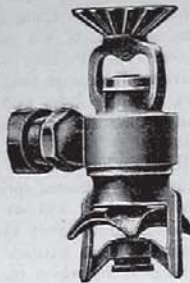


FIG. 1.

tion in which it may be placed, and made to melt at any required degree of heat. It is contained in a small cup at the bottom of the appliance, the cup being so formed that a small disc of cement inserted in its base retains in position a small metallic pin supporting the valve at the bottom of the cylinder. When subjected to the action of the requisite heat the cement is fused, the pin drops, the valve falls, and the sprinkler commences work. This pin is reduced to a point at its top in order to prevent the conduction of heat from the cup to the body of the valve and so to delay the prompt action of the sprinkler.

Fig. 1 shows the sprinkler with a fixed radiating distributor. This being cast upon the top of the body of the sprinkler it is never liable to get out of order or to become clogged with dust. The stream of water rushing upward from



FIG. 2.

the vent with great force impinges against the distributor, and by its grooves is scattered far and wide in every direction over a large area, falling in a drenching spray both near and far. In Fig. 2 the revolving distributor is represented. This has two branches, the ends of which constitute vents, and the impact of the streams of water rushing from them against the atmosphere, causes it to revolve with great velocity, making it a most efficient distributor. With each of these distributors the inventor claims that the new sprinkler will cover a greater area of space, given equal pressure of water, than any other existing sprinkler. Permanency of condition and freedom from derangement through the substitution of cement for a

fusible metal, is one of its claims to merit. Fusible metals which expand and contract with alterations of temperature are constantly liable to set the extinguisher in action when not wanted, as the different degrees of expansibility constitute a force which is incessantly tending to tear them asunder. The result sometimes is their separation, and an undesired drenching of the material and machinery subject to their action. Whilst it is perfectly automatic in its action, Fig. 2 at the front of the lower part shows an arrangement by which a mechanical discharge can be secured at any moment when desired by the action of a series of levers carried on a bar and arranged in connection with the sprinkler, so as to bring down the belt shown in the front at the bottom of Fig. 2 into the hook, which would liberate the valve and set the sprinkler at liberty to commence its action.

The sprinkler is made in all sizes from $\frac{1}{4}$ in. inlet to 2 in. inlet, and with a suitable pressure can be made to cover a circle 60ft. in diameter. In fact, one of the smaller sprinkler heads can be made to cover a room 8 yards square, so that a network of pipes is avoided. The greater the pressure on the sprinkler the tighter it closes, and the more sensitive is it to a sudden outburst of heat. The maker will be pleased to accord any further information to interested parties.

News in Brief,

FROM LOCAL CORRESPONDENTS AND CONTEMPORARIES.

ENGLAND.

Ashton.

The doubling trade in this town is slightly increasing, and in addition to the Tame Valley Thread Works in this borough there are the firms of Cooper and Co., Walk Mill, and Dodd and Co., North Mill, and we are informed that the mill formerly worked by Peter Leigh, at Alma Bridge, has been converted into a thread works.

Barnoldswick.

The works of the Calf Hall Shed are rapidly approaching completion. The chimney is finished and the boiler has arrived.

Some of the operatives at Long Ing and Clough Sheds have been stopped for wett during the week, owing to the stoppage of the mills in the Oldham district for the holidays.

Blackburn.

The members of the Blackburn Weavers' Association have sent £20 to the strike fund of the London dock porters.

Messrs. E. and G. Hindle have bought the large weaving shed at Nova Scotia Mill. This shed will hold over 900 looms.

No improvement in the state of the Blackburn trade can be reported, and it is feared that unless a change for the better is made within the near future, mills which are only partially running will be compelled to cease work altogether. Both in the weaving and spinning departments what work there is in hand is being done at ruinous prices. It is somewhat difficult to form a proper estimate of the extent to which the production is being curtailed, or what additional looms are being stopped, but the figures we gave last week with regard to the number of looms and spindles idle may be regarded as rather under than over the mark.

Bolton.

Mr. John Barrett, cotton waste dealer, who at present occupies the mayoral chair in the Bolton Town Council, has been asked by the Conservative party to take office for a second year.

Messrs. Horrocks, Crowdsen and Co. are still running short time. The German Mill commenced to run full time a fortnight ago. The position still remains a critical one, and it is very likely there will be a more general resort to short time, or a stoppage for a week or two.

Mr. Daniel Hampson, of the Withins, Brightmet, near Bolton, died suddenly on Tuesday morning from apoplexy. He was 55 years of age. The deceased gentleman, who had retired from active

business, was connected with the large spinning and manufacturing concern known as Oakenbottom Mills, Brightmet, and was also an extensive landowner, possessing what is known as the Brightmet Hall estate and also a large amount of property at Summerseat.

The Committee appointed to further the movement for the proposed technical school for Bolton, held a meeting at the Bolton town hall, on Monday night. The chair was occupied by the deputy-mayor (Alderman Fletcher), and there were also present the town-clerk (Mr. R. G. Hinnell), the Rev. J. W. Cundey, M.A., the Rev. S. Bond, M.A., Mr. William Brimelow, Mr. J. B. Gass, Mr. J. Leach (chairman of the School Board), Mr. Isaac Barrow, Mr. Jabez Broadbent, Mr. G. J. French, and the following representatives of the different trades and handicrafts of the town:—Messrs. J. Beswick, William E. Foster, John Thorneycroft, T. Moores, T. A. Shacklady, Ed. Fisher, W. Emmett, R. Vanston, R. Brotherton, Samuel Taylor, and John Worsley. After the usual formalities and a discussion on the general features of the situation, the following resolutions were adopted:—1. "That the Town Council be requested to consider whether they will proceed to carry into effect the provisions of the Technical Instruction Act, 1889, and on such consideration to receive and hear a deputation from this committee on the subject." 2. "That a deputation be appointed to confer with the committee appointed by the General Purposes Committee of the Council and to urge the claims to support for the scheme for a technical school on lines laid down in the circular of November last." 3. "That such deputation consist of the following gentlemen:—Alderman Fletcher, Alderman Dobson, Rev. S. Bond, Rev. J. W. Cundey, Messrs. W. Brimelow, J. B. Gass, S. Taylor, E. Tyldesley, J. Leach, Jabez Broadbent, Isaac Barrow, J. T. Fielding, W. E. Foster, and John Worsley, with Mr. G. J. French, Mr. James Robinson, and Councillor Norman Knowles (secretaries)." Bradford.

According to the report of the Department of Science and Art, on the competitions of national scholarships, Royal exhibitions, and free studentships, the success of the candidates from Bradford has been very marked. Of the twelve national scholarships no less than five have been won by pupils of the Bradford Technical College, the whole list being headed by a Bradford youth named John W. Pickles, only 17 years of age. He has beaten in competition some of whom were as old as 26. The Bradford boys are considerably younger than those from other districts, their average age being only 16½ years as against 20 years the average age of the candidates from other towns. The actual money value of the five scholarships won by Bradford boys this year is not less than £1,400. Altogether since the opening of the College its pupils have carried off some £6,000 in scholarships.

Burnley.

At the Burnley Police Court, on Wednesday, Messrs. E. F. Bleakley and Brothers, cotton manufacturers, were fined 20s. and costs in one case, and costs in two others, for employing persons after 5-30 p.m. Messrs. Wareing and Phillips, for employing women during meal hours, were fined 20s. and costs in one case, and costs in two others.

The shed erected by Mr. George Keighley, Woodfield Mill, Trafalgar-street, and which has been taken on lease by Mr. Thomas Coupe, of Albert Shed, commenced working on Wednesday morning last. The shed has been furnished with 700 looms—winding, warping, and slashing the slashing by Messrs. Howard and Bullough, and the rest by Mr. George Keighley. The looms are the plain calico looms, 32 and 34 in. for the printing cloth trade. They are fitted up with the maker's well known iron slay, and are arranged to make about 235 picks per minute. Messrs. J. and E. Wood, of Bolton, made the engines, which are compound horizontal ones. The boilers are of steel, and made by Messrs. Tinker and Shenton, of Hyde. The shafting and all the fittings have been made by Mr. Keighley, and the transmission of the power is by gearing.

Crompton.

In consequence of the carrying out of repairs in connection with the engines of the Moorfield Spinning Company, the mill has been closed for about ten days. It is expected the work will be completed to allow of the mill to resume operations on Monday.

Mossley Mill is about to close for an indefinite period, notices having been posted signifying that this will come to pass when the cotton is worked up and the spindles are empty. It is said this is brought about by the unremunerative state of trade. The mill contains about 19,000 spindles.

The oldest operative spinner in this district, in the person of Mr. Jonathan Butterworth, of High Crompton, has passed away at the age of 79 years. For fifty years he was employed as a minder at the