# Machinery and Appliances.

## *SOME SPECIALITIES IN TEXTILE MACHINERY.*

MAKERS: MESSRS. J. H. RILEY AND CO., ELTON IRONWORKS, BURY.

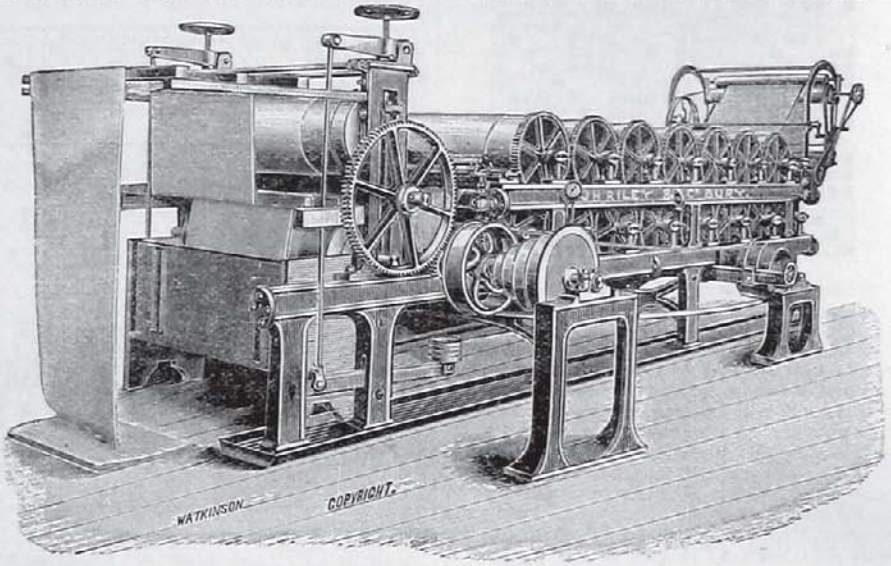
It is remarkable that in a mechanical industry so highly organised as is the cotton trade, almost a century should pass away after its foundation, during which time the machinery employed therein was carried to a high degree of perfection, before anyone seems to have thought of inventing any process or devising any machine to give a finishing touch to the fabrics after they have left the loom. That this could always have been done with advantage anyone having the slightest practical acquaintance with manufacturing will readily admit. Ever since merchants stipulated that piece goods should come up to a certain weight there has been room for a conditioning machine, as owing to the imperfections of the process of sizing, it was only with the greatest difficulty indeed, that uniformity of weight could be obtained. The writer has known more than one case in which fully 20 per cent. of an order of 10,000 or similar number of 8½lb. shirtings has had to be thrown out as "rejects" or "light weights" though they were made of 30's warp and 34's weft. This was caused by irregular sizing. These pieces were generally sold at a reduction of 3d. per piece from the "perfects," though in many cases they were actually better cloths, as the yarn contained in them was often two or three hanks coarser than in those which had been properly sized. What a boon a conditioning machine would have been in these cases in those days! But the only method available to the manufacturer was to have them laid on a damp floor, in order that they might absorb a little moisture to bring them up to 8lb. 2oz., at which they were allowed to pass. A failure such as the above to make an Indian shirting 8½lb. from the yarns mentioned, in these days would imply that the manufacturer was qualifying very successfully for the bankruptcy court. Still, even now, nothwithstanding the immense progress made during and since the American war, in the course of which necessity compelled a close study of the art of sizing, by which it has been reduced to a science, there is yet a field of usefulness for

### A CONDITIONING MACHINE.

We have, therefore, much pleasure in placing before our readers a description and illustration of such a machine, made by the firm whose name heads this article. Messrs. Riley and Co. have long been well known for their specialities in finishing machinery for all classes of textiles, thus acquiring an experience peculiarly well qualifying them to take up such specialities as were desired to meet the requirements of manufacturers. The machine illustrated herewith is termed an improved damping or conditioning machine, for conditioning cotton goods immediately after they have left the loom, and its principal use or intention is to bring up light pieces to their proper weight, and thus save the manufacturer the deductions of which we have spoken above. To practical men it is well known that cotton cloth often comes out of the weaving shed hot, dry, and harsh, and would be greatly improved in appearance and handle if it could be exposed open for 24 hours in a cool, moist room before making up. This, however, is impracticable, and thus a field is at once opened, and an extensive one too, for the introduction of this machine. As will be seen from the illustration, the machine consists of a framework in the midst of which a tank is fixed. Behind the machine is a series of tension rollers; over and across the top of the tank are two rollers arranged horizontally, and beyond them, at the front, is a calender, and also a delivery roller, which may, if preferred, be substituted by a scray.

The bottom of the beck forms a receptacle for the conditioning liquor (a special composition), into which a fluted roller dips. The axis of this roller is seen at the bottom of the bracket on the side of the machine. Above this is arranged a cylindrical brush, carrying on its axle a small pulley, by which it is driven at a high speed. Above the brush are two folding boards, not shewn in the illustration, by which the amount of moisture discharged upon the piece is regulated to a nicety by opening the boards to any required extent. The wider the opening the greater the quantity of spray will be thrown upwards upon the cloth. The cloth is arranged behind the machine, passed round the tension rollers, and extended underneath the rollers upon the tank, thence to the calender, and is finally run upon the batching roller, or may be delivered by the scray.

The damping brush is arranged so that it is never in the liquor, and drains itself dry when the machine has stopped. The liquor cannot get inside the brush, so that there is no rotting of the lags or other parts. Whatever may be the density of the liquor used there is no liability of the machine becoming clogged, or its action impeded. Perfectly even damping is secured, the liquor being thrown up in a fine evenly-distributed spray. Any weight can be easily put in, from two to six ounces per piece, and a fifty yards piece can be passed through per minute. It will thus be seen that the machine, if kept in action, will serve a large weaving establishment.




IMPROVED FILLING AND SIZING MACHINE.

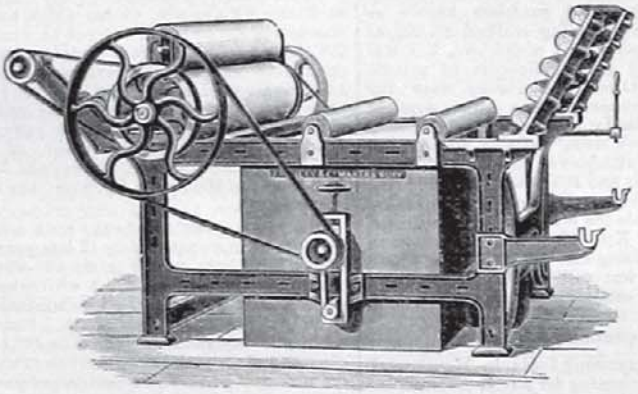
### IMPROVED FILLING AND SIZING MACHINE.

The next speciality of Messrs. J. H. Riley and Co. to which we would ask attention is the improved filling and sizing machine.

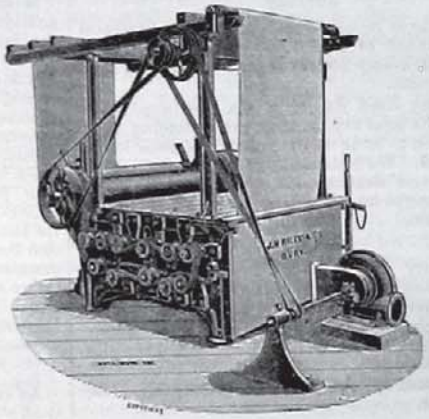
In defiance of what some persons would call all the principles of political economy, reason, and morals, the practice of heavy sizing sprang up, progressed, and has assumed an invincible position. All attempts to repress it, either by arguments on economic grounds or declamation against it on the score of its being immoral, have totally failed of effect. This being the case, it is pertinent to ask in what the inherent strength of the practice consists? The reply is simply that there exists a permanent demand for heavily sized cotton cloths. Originating in a temporary necessity caused by the scarcity of cotton during the American Civil War, when heavy sizing was resorted to in order to comply with the requirements of trade in giving the usual body and weight to the fabric, though a large proportion did not consist of cotton, it was found when the necessity no longer existed that the demand continued. Heavily sized fabrics were formed to meet satisfactorily a requirement that previously had been served by a pure cloth, evidently because no other was in the field. The discovery, as it were thus accidently made, led to the foundation of an extensive trade which has been maintained ever since. These goods go to India and China and subjacent markets, and it is quite beside the mark to suppose that the natives have not learned long ago the proportions of the materials entering into their composition. When in these two countries it is considered that there is a population of 600,000,000 of people, mostly poor, whose necessities during life compel them to wear the cheapest clothing attainable, and whose custom, or at least that of a large proportion of them, is to swathe their dead in numerous folds previously to burial, it will be obvious whence the demand arises and how it is maintained. It only needs us to consider this in order to find the demonstration that the manufacture and sale of heavily sized cloth is a perfectly honest and legitimate one tried by any test to which it can be subjected. It is, therefore, quite safe to conclude that any person opposing it on these lines is either unacquainted with the facts, or is animated by an improper motive.

We may now glance at the system of heavy sizing as it is practised. This will need but few remarks. The weight is put in in the sizing process. The warp is loaded with the material it is intended to carry to the percentage of weight desired. Thus it will be seen that only one component part of the fabric can be dealt with, the weft going in quite pure. This constitutes a serious drawback, as it would be much more preferable if the weft could be made to carry its share. The warp in its passage through the healds and reed is subjected to a great amount of unavoidable friction of the threads against themselves, against the rings of the healds, and most severely against the dents of

the reed. It is impossible, therefore, to avoid rubbing off from the warp a large percentage of the size which it has been an especial object of the manufacturer to put in. The evidence of this is seen on every loom, every weaver, and every shed floor in which heavily sized goods are manufactured. This means that all the material thus thrown off is wasted; and it also means that there is an enormous wear and tear of healds, which otherwise would not take place. Steaming, with its frequently injurious consequences, is resorted to in order to prevent this, in which it is only imperfectly successful, whilst it has been demonstrated, at least to the satisfaction of the legislature, that it so far injures the health of the workers that it ought to be repressed, and has been prohibited accordingly. On the other side of the question, the filling of cloth by the sizing process is so crude and unreliable that the product is exceedingly unsatisfactory in irregularity of weight, some pieces being heavy, others light, and others again much below it. The latter in deliveries to merchants are always liable to be rejected, while their presence subjects the order to a dangerous liability of being cancelled should the market in any sense be adverse.



CONDITIONING MACHINE.



MOTE AND LEAF-CLEANING MACHINE.

These facts are known to everyone practically acquainted with the subject, and they suggest the question—Why should not the goods now heavily sized be first manufactured in a pure state, and afterwards be filled to the desired body and weight? This we conceive to be quite within the range of the practicable, and should like to see it tried. If done with skill, enormous advantages would result, and from what we have seen of the specimens of work finished on the machine we are about describing, there appears to be no insuperable difficulty in the way, or, indeed, any difficulty at all.

The machine illustrated herewith was invented and constructed with a special view to obviate the difficulties of manufacturers regarding light weights referred to above by enabling them to fill up their light-weight goods to the specified requirements. Experience, however, soon shewed its capabilities for doing the work which we have suggested, and excellently it has been done, judging from the specimens submitted to our inspection. The process is as follows:—The cloth to be treated is placed in front of the machine, and passed round three tension rails, whence it descends into the size box shewn in the front under an immersion roller, thence ascending and passing between pressure rollers. It next passes to the expansion roller, which spreads the cloth to its natural width, but does not stretch it. The fabric then passes round the series of drying cylinders, and after being dried is received by the plaiting arrangement and delivered upon a scray or low table.

As shewn in our illustration, the machine is fitted with a driving arrangement, consisting of a step-speed pulley and two taper pulleys. If preferred, however, the mangle in front can be driven positively by a small steam engine, while the drying cylinders can be driven by a friction disc and bowl, the speed being easily adjusted to that of the mangle to a nicety by the hand-wheel in front. The machine is generally worked with a steam pressure in the cylinders of about 10lb., and is supplied with an indicator. It may be made with any number of cylinders.

We have only left ourselves space to very briefly summarise the merits of the machine. By its use a great saving is effected in healds and reeds; warps need only be sized for weaving, as the weight desired can easily be put into the piece afterwards, both warp and weft receiving the sizing material. This quite obviates the discharge of dust into the atmosphere of the weaving shed, and consequently does away with all necessity for steaming. The feel of the cloth is greatly improved, a full body being given to it along with any required weight. Any desired feel can be produced by modifying the size. The colour of the cloth can be made anything that is wished for. The machine requires only one man to attend it, and it easily turns off from 50 to 70 yards per minute. The size used is a powerful antiseptic, so that no fear of mildew of any kind need be entertained. The use of the machine is a great economy upon finishers' charges, and it also obviates the annoying delay that so often arises when goods are sent out of an establishment. The maker gives full instructions for using it, and all necessary recipes for the class of work for which it is required. Arrangements can be made for treating sample pieces for intending customers. We feel assured a large number of our readers will avail themselves of the opportunity of inspecting samples, which the makers will be pleased to shew on application to them as above.

### THE MOTE OR LEAF CLEANER.

This is another speciality of Messrs. J. H. Riley and Co. In times gone by, before the cleansing powers of the opening machinery and the modern card had been carried to their present high degree of perfection, there would have been an enormous field for its use. But notwithstanding this there is still room for its application. Wherever leafy or moty cottons are used and worked upon the roller and clearer card the yarns produced will inevitably retain a considerable proportion of these unsightly and undesirable matters. As in the spinning of the yarn, the centrifugal force throws them to its surface, they are all bound to be seen when in the cloth. This is especially the case in the weft, which gets no brushing as does the warp yarn in the preparatory processes. To those spinners and manufacturers who find it desirable to buy such cotton and yarns, and yet wish a clean and sightly looking cloth, we commend an examination of this machine as offering an easy means of greatly improving the appearance of their productions.

The cloth to be brushed is placed at the left hand of the machine, and is conducted over the top of the frame, descending on the right, and then passing between a series of brushes under and over them in a wave-like line. The axes of the brushes and the method of driving them are shewn on the side of our illustration. Both sides of the cloth are thus brushed at the same time, and cleared of nearly all the leaves, motes, loose threads, and loose foreign matter that may be present. The speed of the brushes is arranged according to requirement, and any desired pressure can be put upon both faces of the cloth by means of the handle shewn on the right hand of the machine.

All the brushes are cased in, in order to prevent the discharge into the atmosphere of the room the dust and dirt produced; to prevent its falling back upon the cloth the machine is furnished with a fan as shewn on the right hand, which has a pipe attached to it, through which the dust is discharged outside the room.

Cloth treated by this machine, as may be expected, has the appearance of having been made from much better and cleaner cotton than is actually the case. There is very little of the size brushed from it, while 75 per cent. of the motes and leafy specks disappear under the operation.

Messrs. Riley and Co. will be pleased to give intending purchasers of any of these machines any information that may be desired and shew samples of their work, on application being made to them at the above address.

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In the House of Commons, on Monday, in reply to Mr. Sexton, Mr. Matthews said he was informed that the Registrar of Friendly Societies in England nor the Assistant-Registrar for Ireland had any information as to whether any steps had been taken by the late trustees on the late secretary or chairman of the Belfast Linen Lappers' Friendly Society, or otherwise to recover money which by annual statement of accounts of the society to 31st December, 1888, appeared to have been misappropriated, Not being in possession of any information the registrar had taken no steps, and was not in a position to take any. He (Mr. Matthews) suggested that the hon. member should be good enough to communicate with the registrar so that whatever action was necessary might be taken.