

## Machinery and Appliances.

### IMPROVED PATENT DOFFING COMB MOTION FOR CARDING ENGINES.

MESSRS. BARKER AND WILSON, MACHINISTS, PRETHEAN-STREET WORKS, BURY NEW-ROAD, BOLTON.

Another improvement in the carding engine! This time in the doffing comb. The practical reader at all familiar with the history of the development of the carding engine will be well aware of the wonderful change that has been made in the card during the past thirty years. Well within the recollection of the older generation of cotton spinners, the yield of carded cotton from one engine per week did not exceed 200 lb. The improved card of to-day easily gives 800 lb., and, pushed somewhat, turns off 1,000 lb. The means by which this great advance has been accomplished is the improved construction in all its details, and the substitution of iron for wood cylinders, thereby doing away to a great extent with the constant expansion and contraction of the wood, owing to changes in the temperature and humidity of the atmosphere. Beyond this great care is taken to turn them into a perfectly cylindrical shape, thus forming the best ground or basis for the reception of the clothing. These remarks apply equally to both the carding and doffing cylinders. The next improvement that has done much to bring the carding engine to its present degree of perfection is the introduction of the hardened and tempered steel wire clothing now almost universally used; and this along with a much better foundation than was formerly in use. The roller and clearer card has, to a great extent, disappeared, having been superseded by the revolving flat card. The flats of these cards are now greatly improved, both in the material of which they are composed and in the manner of clothing them. The flats are now made from a mixture of metal specially designed to secure the greatest rigidity, in order that the maximum of resistance may be offered to the influences that tend to produce deflection, namely, the action of the driving chain, and the weight of the flat when suspended, as in the working position, upon its extremities. The improved methods of clothing the flats are also a great advance over the old systems in the direction of securing accuracy of work. Every detail about driving, the means of setting, and securing accuracy in grinding, have all been most carefully considered and perfected by the labours of numerous inventors, who have devoted both time and ingenuity to the task. The result is the card of to-day, producing its 1,000 lb. per week. With the perfection attained in the parts to which we have referred, there really seems no reason why the production should not be considerably greater. The obstacle to this, however, has been found in the inability to strip the doffer cylinder when revolving at a higher speed than at present, owing to the incapacity to drive the doffing comb, as at present constructed, at a speed making more than 1,500 beats per minute. The liability of the bearings to heating and the great wear and tear preclude this rate being exceeded in the present arrangement.

The means of removing this obstacle to further progress in obtaining a higher production from the card has recently engaged the attention of Mr. Thomas Barker, formerly foreman in the carding engine department of Messrs. Curtis and Sons, machinists, Manchester, and who along with Mr. Wilson has recently commenced business as a machinist at

the above address. Mr. Barker is already well known as the inventor and joint patentee of numerous improvements in connection with carding engines and combing machines, and has, therefore, a most intimate practical acquaintance with both of these machines and the requirements of the trade in connection with them. Taking this problem in hand, Mr. Barker has devised an arrangement that promises to be a very satisfactory solution. This invention, which is illustrated herewith, we now proceed to describe:—

Fig. 1 represents a side view of the appliance, which is contained in a box, the side of which is removed. Fig. 2 is a plan view; the parts are lettered alike. The comb stock or shaft on which the comb is fixed is shewn at A; the comb is seen at B, Fig. 2; C, the oscillating arm screwed on the end of the comb stock; D represents a conical pivot cast on the end of

could be utilised if thought desirable. The inventor, however, does not propose to avail himself of more than 500 of these beats, thus bringing the present maximum speed of 1,500 beats up to 2,000, at which rate the inventor guarantees good work. This will enable spinners who wish to card lightly, and thus to secure the cleanest work without sacrificing any of the production, to increase the speed of the doffers fully 33 per cent., by which this end will be attained; or, on the other hand, to increase the production from each card to a corresponding extent.

Special care has been taken by the inventor to secure the most effectual lubrication, many of the bearings working immersed in oil. The crank shaft is lubricated by a special contrivance by which a constant stream of oil is poured upon it. The plan adopted has proved perfectly efficient at a speed of 3,000 beats per

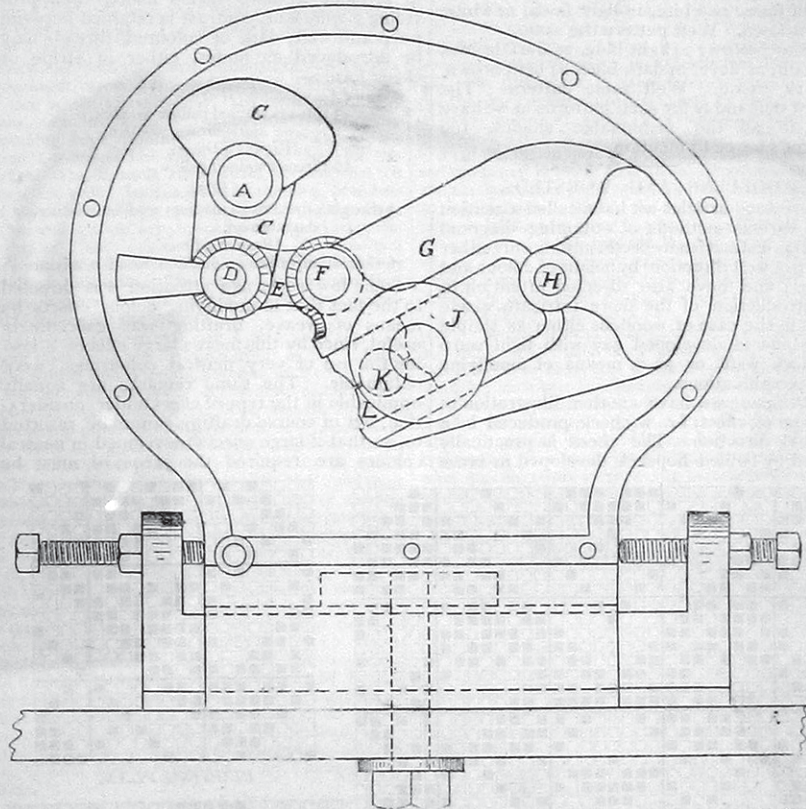


FIG. 1. SIDE VIEW OF IMPROVED DOFFING COMB MOTION.

the lever C; E is a link, having a conical socket to receive the conical pivot D; F is a conical pivot on the opposite end of the link E, fitting into a conical hole in G, which oscillates on the fixed centre H; J is a conical spindle carrying the crank pin K, which works in the taper split steps L, which are also coned to fit the lever C. It will be observed from the above that all the frictional parts are constructed to form coned pivots and sockets. This will greatly facilitate the taking up of any wear that may occur.

It will be seen from the diagrams that half a revolution of the crank K deflects the pin F to and from the straight line described between the points D, F, and H. This gives one beat of the comb. The next half of the revolution deflects the pin F to a corresponding degree in the opposite direction, thus making the second beat for one revolution of the crank. It will be seen from this that with as many revolutions of the crank shaft—which at present range from 900 to 1,500—double that number of beats can be obtained with the comb. This shews a maximum gain of 1,500 beats per minute that

minute, neither failing to lubricate nor splashing the oil out.

The invention is simple, compact, durable, not liable to get out of order, and practically noiseless. It is cheap, will soon pay for itself, and can be applied to any kind of carding engines in the cotton, woollen, or silk trades, or anywhere in which cards are used. Further particulars may be obtained on application to the makers as above.

### DECORTICATING MACHINERY.

The British Consul at New Orleans, writing under date February 3rd, 1891, says:—"An article recently published about the sisal hemp in Florida remarks that the former drawback to the use of the plant for commercial purposes was owing to there being no machine to successfully work out, in good condition, the fibre from the plant, and, in the article, a full description is given of a recently manufactured 'tropical fibre machine.' It is advanced that this is the first really successful and practical fibre machine ever produced in this or any other country, so far as known; and that it is

both successful and practical,' as stated, 'is proven by the fact that the 10 machines recently made by the manufacturer, Mr. Van Buren, were the result of the satisfactory trial of three sent to the same party ordering the 10 in Bahamas in 1888. Also, that he has recently sent three to St. Domingo to a party who had seen them in operation in the Bahamas. The other machines in use there, and in Yucatan, are of English make, and do not give satisfactory results, as they cut the fibre. The tropical fibre machine does not cut the fibre, but takes out of the leaf all there is in it. This has been proved by rotting the leaf in the old way, and then cleaning by hand, and the tropical fibre machine shews the same results. The article from which I gather the foregoing information about the fibre plant is published in 'The Florida Times Union Trade Report' for 1890, and my object is twofold in embodying these particulars in this report. In the first place I hope the subject may prove of interest to some of our agricultural people in latitudes and soils like those of Florida; and, next, that the machines referred to of 'English make,' and which, it is said, 'do not give satisfactory results, as they cut the

Petit, Dr. B. A. Spencer, Messrs J. Dosabhoj Framjee, J. P. Kapadia, E. R. Reporter, T. J. Bennett, John Marshall, I. D. Alcock, D. Gostling, J. Morris, Rahimbhoj Hubibbhoj, J. J. Guzdar, D. K. Chichgar, Rutnagar, K. M. Heeramanek, S. B. Bharucha, Maneckshaw Dadabhoj, etc.

The premises in which the mills are located form a double-storied building, which has been but recently erected. Wherever possible, masonry and iron have been used in the construction in order to minimise as far as possible danger by fire. The spinning machinery has been specially imported from Messrs. Dobson and Barlow, of Bolton, whilst the engines and boilers have been manufactured by Messrs. Daniel Adamson and Co., of Dukinfield, near Manchester. The engines have been stated to be 1,500 H.P. and capable of working 50,000 spindles, which is nearly 17,000 more than the number the mill is furnished with at present. On the ground floor of the premises are situated the blowing-room, the card room, and the frames, whereas the first storey holds mules and reels, and the second one mules only. The machinery is declared capable of turning out yarn from No. 6's upwards to No. 30's; but the directorate contemplate paying greater attention to turning out No. 20's, reputed to be mostly in demand in the Chinese and Japanese markets. Messrs. James H. Latimer and Co., who have constructed of late years a number of new mills on contract work here, had also the construc-

in accepting the handsome present, thanked the chairman and directors, and Mr. Shapoorjee Burjorjee, of the firm of the contractors, responded to the toast. The chairman next gave the toast of the health of Sir Dinshaw Maneckji Petit amid loud applause, Sir Dinshaw responding in cordial terms. After some time being spent in discussing the dainties on the table, the company separated.

A NEW SWIVEL POWER LOOM.

Messrs. John Birchenough and Sons, silk manufacturers, of Macclesfield, have just patented a new swivel power loom for weaving figured goods, which is likely, in course of time, to revolutionise this branch of the trade, and to place upon the market a class of goods that will be acceptable to and purchasable by the million. In weaving a flowered or figured swivel China cloth in a power loom, the minimum space between the adjacent flowers or figures has hitherto been necessarily governed by the space required for the toothed rack and pinion employed to give the swivel shuttles their motion. The object of the invention is to swivel a flower or figure of a closer setting than it has hitherto been possible to produce by a power loom, and Messrs. Birchenough effect this object by the application of a modified form of handloom swivel rack. In carrying out the invention they dispense with the toothed racks and pinions for driving the swivel shuttles, and in their stead they mount the swivel shuttles in slide ways, connected to the swivel rack, attached as usual to the reed cap. They actuate the swivel shuttles intermittently from the crank shaft, and by a clutch mounted upon the tappet shaft as usual, or in some other convenient manner, and they govern the position of the levers which act upon the studs of the swivel motion tread es by a scroll fixed upon the tappet shaft, in place of by eccentrics as now used in swivel looms. In order to change the position of the swivel rack and shuttles after weaving one set of swivel figures, they employ only one hole in the first ground card instead of several holes as hitherto, so as to bring the shuttles into position for the next set of swivel figures, and this they effect by means of a swell secured to the side of the loom and a suitable connection to the jacquard machine in place of a scroll attached to the lathe as hitherto customary. Although the loom for the present is only applied to silk goods, the improvements are applicable to swivel looms for weaving other figured fabrics.

EGYPT has a silk manufacture, though hardly as old as the pyramids, or as its ancient flax industry. Still it is there, and it is an interesting fact, being neither destitute of vitality nor enterprise, though, like the silk trade of other countries, it has its ups and downs. Chinese wild silk is much employed in the manufacture. Before being delivered to the factories it is sent to Syria, where the women separate the fine from the coarse threads, after which process it is returned to Alexandria. Syrian silk is in general too fine for the Egyptian market, and only a very insignificant quantity of the coarsest quality is imported for Cairo. Italian silk is in great demand, being cheap and suitable to the requirements of the market. During recent years the manufacture of silk fabrics in Egypt has increased, and there are now factories at Edu, Mehallah, Cairo, and Damietta.

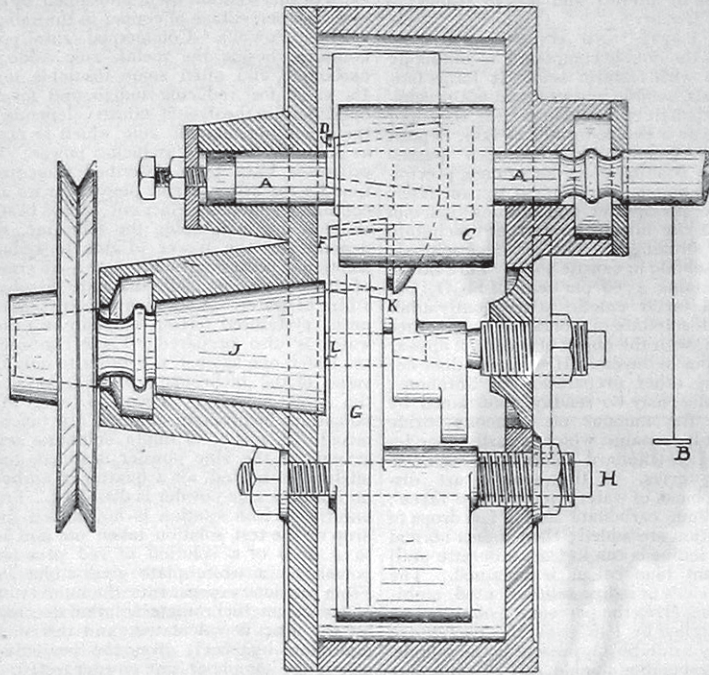


FIG. 2. PLAN VIEW OF IMPROVED DOFFING COMB MOTION.

fibre,' will be looked into by the English manufacturers and improved upon, if it be really the fact, as regards the detrimental remarks to the English manufacture. When praising or 'booming' the American machine, the report on the fibre machine further states that 'one advantage of the Van Buren machine is that, when the fibre leaves it, it is ready for market, except drying; and that in all other machines the fibre has to be washed after leaving them,' and that 'this injures the colour, and, therefore, the sale.'

OPENING OF A NEW MILL IN BOMBAY.

The latest addition to the industrial establishments of Bombay is the Peeroo Mahomed Manufacturing Company, Limited, the new mills of which Company were opened on Saturday, March 7th. They are situated at a distance of about fifteen minutes' easy walk from the B. B. and C. I. Railway Mahaluxmi Station. The directors of the mill—Messrs. M. M. Bhowngree, C.I.E., Chairman, Nensay Peeroo Mahomed, Peeroo Mahomed, R. A. Spencer, A. Breul, Henriques, and H. M. Chichgar—had issued invitations to a number of ladies and gentlemen to be present at the ceremony, and in response a large company assembled. Among those present were noticeable, beside the directors already mentioned, Sir D. M. Petit, Messrs. Dosabhoj Framjee, F. D. Petit, B. D.

tion of the present mills entrusted to them, and are admitted to have fulfilled the conditions and stipulations made with them in a manner entirely satisfactory to those who were responsible for the correct supervision of their work.

Messrs. R. Wood and J. F. Vajifdar, manager and spinning master of the mills, had left nothing undone for the convenience and comfort of their guests. The proceedings commenced by Mr. Bhowngree calling upon Mr. R. A. Spencer, a member of the firm of Messrs. Nensay, Spencer, and Co., secretaries, treasurers, and agents of the mills, to state a few particulars regarding the mills to the audience. This being done, Mr. Bhowngree escorted Mrs. Breul, the wife of one of the directors, to the engine-room, where she turned the machinery amid the cheers of the assemblage, christening one of the engines after her daughter's name. The company then went over the different departments of the mills, after which an adjournment was made to a well-stocked refreshment table. Here Mr. Dosabhoj Framjee proposed in a few well-chosen words "prosperity to the mills," coupling with it the names of the chairman and directors and the agents. Mr. Bhowngree, in responding, thanked the assembled ladies and gentlemen, and especially Mrs. Breul, for having kindly performed the ceremony that evening. He said it was his pleasing duty to ask Mrs. Breul to accept a silver sugar basin and spoon, which the directors had resolved to present her with, as a souvenir of the occasion, and in handing her the same he begged to propose Mrs. Breul's health and that of the other ladies who had graced the occasion with their presence. The presentation was made amid loud cheers. Mrs. Breul,

Bleaching, Dyeing, Printing, etc.

PAPERS ON BLEACHING.—X.

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One of the difficulties of the market bleacher is to retain the colour of any headings that may be woven into the goods, which is the case with towellings and many other classes of goods. An alizarine red is the colour that will stand the bleaching process best, and should always be used when a red heading is required. The alizarine red must be well dyed or it will not resist the action of the bleaching agents, and even the best loses a little in intensity and brightness during the process; no other red will stand—except possibly it be one of the azo reds produced direct on the fibre by Holliday's process, and with these the writer has had no experience. Aniline black will resist the process and is the only black that will do so. No blue will stand satisfactorily; indigo blue gives the best results, and when headings of this colour are in the goods the liming should be omitted. No green will resist the process; if a pure chrome green could be produced on the fibre that would do very well. Sometimes greens dyed with