

report

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The interface between traditional yarn production  
processes and the Future.

### MASTERSPINNER—IS IT ?

To go to an exhibition and see a totally enclosed machine surrounded by a quarantine zone, if it were not so humorous, would be suspicious.

Such has been the sad, sad story of the PSL Master Spinner which is still supposed to be shrouded in mystery.

Imagine, subsequently visiting a pilot plant and there seeing one of these units open for all to see its innermost workings!

The recurring question 'What's so secret about it?' was about to be revealed.

For several years the questions were: Is there something magical that makes it so different from everything else? Then why the flood of patents from Accrington which covered precisely this area and which are held by a 'shell (?)' company.

If there had been anything particularly secret about the technology how could the hundreds of people involved in its production have been expected to keep it all such a close confidence?

Funny thing is that the PSL customers for the new type machine tended to be mainly non-British but, even more important, not normally those people identified as clients.

How often have those once proud mill owners kept their doors firmly shut to the outside world because they would have been ashamed to 'let it all hang out'.

It is not too clever for anyone to conclude that really the MasterSpinner does not contain anything very special and most certainly nothing 'magical'. One potential magical aspect may be eventual automation.....

If it was, then, not a magical feature and if it was not that sick old syndrome then perhaps it was all a marketing ploy aimed at stimulating interest in a process which customers were asked to buy without really knowing what they were getting.

Past experience with the Anglo-American organisation

suggest that once again it might be just this with the company making the old American mistake of thinking that what works in the U.S.A. will work when transplanted.....almost inevitably it does not.

Eccentricity is far from being an English prerogative.

There was, of course, yet another possibility that only a cynic would dream up: Was the new machine in fact in infringement of other patents? Hence the shroud of confidentiality.

Clearly this prompted an examination of just what patents had already been issued in this area of friction spinning.

Seeing the box opened for cleaning/piecing it was possible to see to the left, an almost black perforated roller mounted in what looked to be a horizontal position and this continued running during cleaning. Speed prevented detailed examination of the roller but it looked to be much the same size as the opposing stationary roller to the right. This second roller was not perforated and also was apparently horizontal when running. As it was stopped it was possible to examine it in greater detail. It was warship grey and had a somewhat 'blistered' surface appearance. Its diameter was between 1.5—2 ins.

Both rollers revolved in an anti-clockwise direction which meant the perforated roller was driving into the nip between the two.

As the solid roller was rotating in the same direction this was driving out of the nip and so the flow of fibres as being fed into the nip was being given a 'Z' twist.

Feed was by sliver into a beater unit running at about the same 7,000 r.p.m. as the friction rollers.

This opening unit was positioned below and forwards towards the nip of the tow rollers at an angle one would reasonably guess to be about 30° to the two friction rollers themselves.

The exit slot from the fibre feed was visible when the

OE REPORT

right hand roller was lifted and this disclosed a slot of about 5-in. length. It was narrow, being only some 1/16-in. (say 1.5-2; mm) wide and it was positioned to be very close to the left hand roller. From this it was quite evident that any fibres emerging from the slot would be forced to pass into and collect in the nip between the two rollers.

The transfer tube to the right of the feed unit was machined away at an angle somewhat in the character of the arc of a circle. Again this was close to the right hand roller when it was lowered into the running position.

Obviously this did not show movement of fibres during yarn formation and just how the individual tufts were taken from the beater and fed through the open-end into the yarn tail.

To piece an end, the lid of the unit was opened and the roller to the right manually pivoted back to a disengaged position.

This disengaged it from a flat belt drive running to the adjoining unit and which also was driving the perforated roll.

This appeared to be a free-running roller.

When in running position spring loading against a fixed vertical plate provided adequate roller pressure.

When the unit was opened it could be seen there was a bunch of fibre, somewhat resembling a torpedo, running against the left hand roller and just above the transfer tube. Of course the perforated tube continued running and it was quite evident the suction applied through the perforations was a vital aspect of yarn formation.

This 'slub' was extracted by revolving a lever anti-clockwise which apparently served to disconnect suction from the rear of the perforated roller; this released the slub which fell away and was advanced to the front in every instance.

The right hand (solid) roller was then dropped back, the lid closed and a length of yarn withdrawn from the package.

This end was then fed into the doffing tube which was set closely against the end face of the right hand roller. This doffing tube was mounted on a bracket which also supported the roller.

Once the yarn was in the doffing tube a lever at the front of the machine was turned clockwise and spinning resumed with this end of yarn being fed back into the spinner.

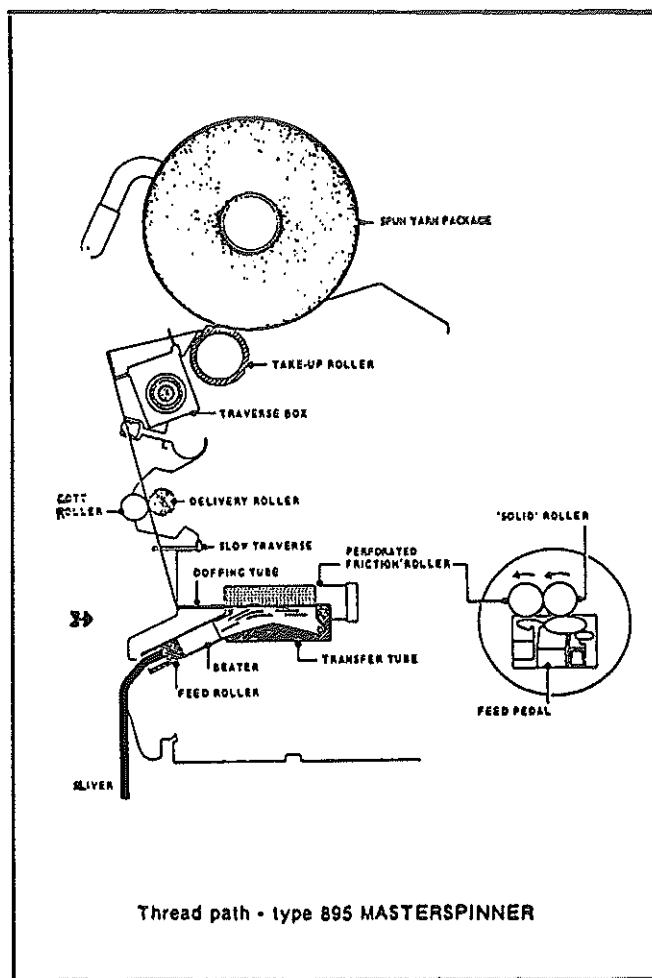
When the lever was then turned anticlockwise to its original position the take-up package was lowered into drive position and spinning was resumed.

As with so many manual joining techniques it was common for the operative to make several attempts before effecting a restart as entering the yarn end into the tube was deceptively simple as, it appeared, so was piecing.

It is now predicted in trade circles that by ITMA we may expect to see an automated version of the unit, though just how complex this task is likely to prove can only be answered by those responsible for the task in PSL, and presumably Loughborough Technical University.

The system of piecing looks to be more fully described in Europatent 0 034 427, except that a button suggested in the patent has become a lever, while the slub or "torpedo" removal is described in Europat 0 052 412.

The design of the transfer tube appeared to follow the curvature of the right hand roller as mentioned in GB 2 094 843, but it is not really possible to comment on the left



hand side which was not visible. The fibre feed is interesting, for the beater roller is mounted in front of the perforated roller and assuming the fibre flow is at about 30° to the face of this roller, they will be turned into a far shallower angle before impingement and, by the time they reach the roller they are virtually flowing parallel to the roller surface and the axis of the yarn as it is withdrawn as described in GB 2 042 599 and GB 2 062 023.

Just what are the surfaces of the rollers it is hard to say, but the perforated roller must be in some way coated with a tough treatment (such as perhaps is described in GB 2 074 071) that will not obscure the apertures in the surface while presumably that of the solid roller will be designed to provide a high friction surface and so impart added twist to those fibres coming to form the yarn surface.

Typically such a coating could well be something like chrome oxide. What is very clear from the 'magical' machine is that it is not really so much different from what might be expected. It is, though, enclosed in a nice smooth, easy-to-clean protective casing which must also contribute to sound reduction.

Most of what was seen can be visualised in the Hollingworth (UK) British, American and European patents taken out by Alan Parker and his colleagues over the last decade.

The implication is that really this has probably been a marketing gambit or the assumption that by looking at patents people would not really understand what was being attempted. Whether there is some inbuilt aspect of the machine that infringes other people's earlier patents is quite another matter. It is something on which it would be foolish to comment, let alone speculate.