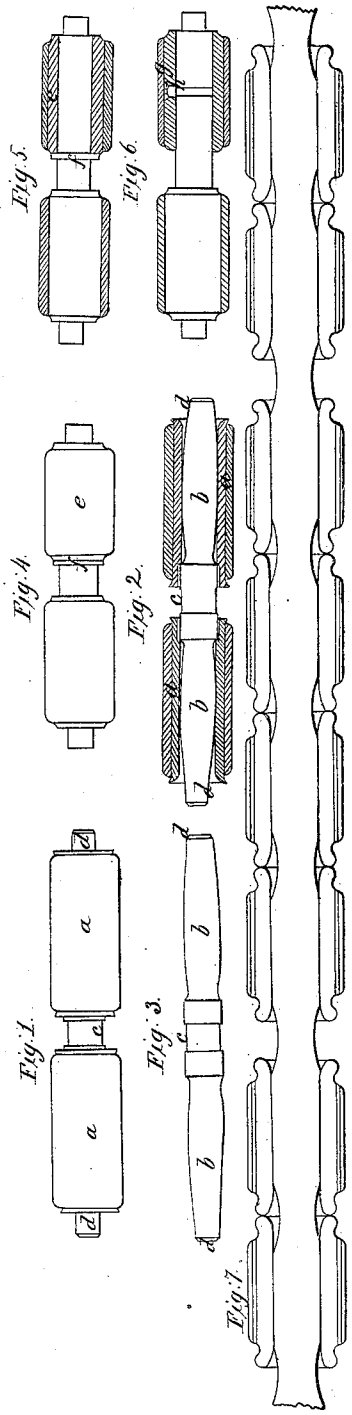
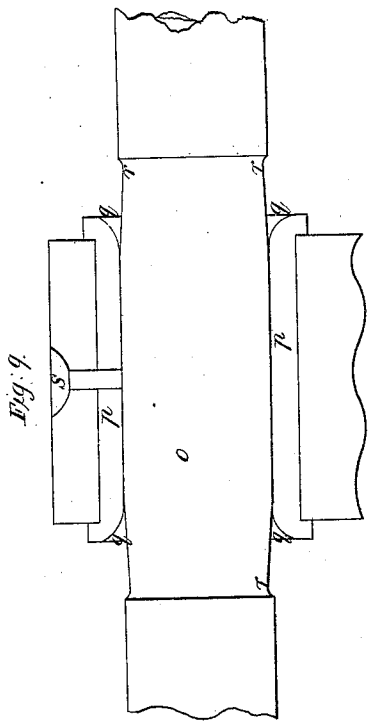
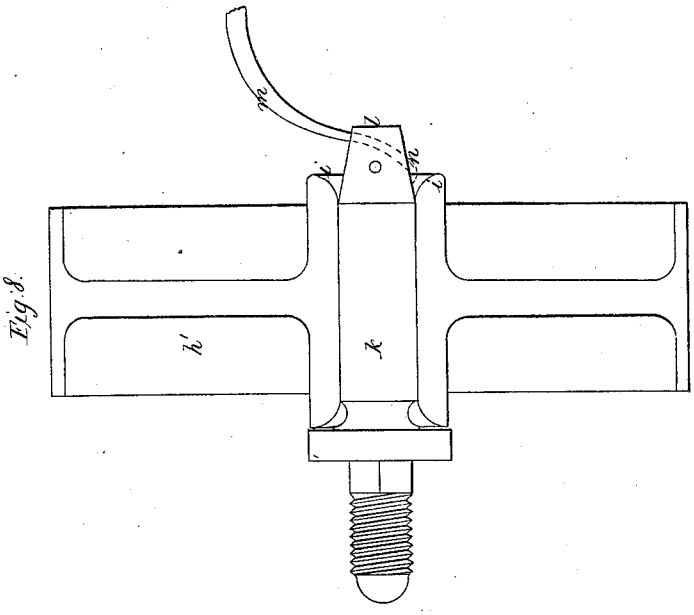
E. Leigh.
Spinning Mach.

No. 25,839. Patented Oct. 18, 1859.







Witnesses;

John Woodworth

Inventor;

Edwin Leigh

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UNITED STATES PATENT OFFICE.

EVAN LEIGH, OF MANCHESTER, ENGLAND.

COTTON-SPINNING MACHINE.

Specification of Letters Patent No. 25,839, dated October 18, 1859.

To all whom it may concern:

Be it known that I, EVAN LEIGH, of the city of Manchester, in the county of Lancaster and Kingdom of England, have invented new and useful improvements in parts of machinery or apparatus used in preparing and spinning cotton and other fibrous substances, parts of which are also applicable to machinery or apparatus generally; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my said invention consists—

Firstly, of an improved top roller, which, instead of being made of one solid piece, as heretofore, is made with one or more loose bosses running on a dead or stationary spindle. I make the spindle taper at each end so that the ends project in a taper form from the end of each boss, the latter being well polished and countersunk by the inner edge being rounded. When oil is put on either taper end of the stationary spindle it immediately flows to the under side or edge, and the moment it comes in contact with the countersunk edge of the boss or roller it is drawn into the interior and lubricates the spindle and roller. A number of loose bosses may be placed upon one spindle sufficiently long to extend from stand to stand, which spindle may be weighted in two or more places, thereby dispensing with the ordinary cap bar and preventing the slipping and irregularity caused by the difference in diameter arising from the unequal covering with leather, cloth, or other flexible material. The ordinary roller may be altered so as to have one loose boss and obtain some of the foregoing advantages.

Secondly, of extending the principle of my said invention to horizontal shafting, on which drums or cylinders are placed to convey the motive power to the working machinery, whether the same be used for cotton spinning purposes or otherwise, to studs, bearings or journals, working in a horizontal position and also to spindles, axles, or in fact to all purposes where the lubricating matter has to be applied to machinery or apparatus working horizontally.

In the accompanying sheet of drawings Figure 1 is an external view of my improved roller complete, the bosses being covered with cloth and leather; Fig. 2 a section of the same; and Fig. 3 a view of the spindle alone. Fig. 4 is an external view of an ordinary roller altered so as to have one loose boss. Fig. 5 a section of the same; and Fig. 6 a section of another altered roller showing a different mode of keeping the boss in its place; and Fig. 7 shows a number of loose bosses placed upon one spindle extending from stand to stand.

In Figs. 1, 2, and 3, which show my improved roller and spindle, *a* represents the covered boss fitting the parallel part *b*, of the spindle *c*, the taper ends of which are shown at *d*. The ends of the bosses are countersunk or bell-mounted as before described so that if a drop of oil is put on the taper end of the spindle it is brought down at once by the power of gravitation to the underside when it flows slowly toward the boss, into the interior of which it is instantly drawn by capillary attraction.

Figs. 4 and 5 represent an ordinary roller altered so as to have one loose boss, as seen at *e*, which has a shoulder lift at *f* to prevent the boss moving inward, it being kept tight in its place at the outside by the ordinary cap bar.

In Fig. 6 the loose boss or shell *g* has in the center a screw *h* working in a groove cut in the roller, thereby keeping the boss in its place.

In Fig. 7 I show a number of loose bosses placed upon one spindle so as to dispense with the ordinary cap bar.

In Fig. 8, *h*, represents a section of a wheel or pulley having its boss rounded or bell-mouthed as at *i*. The said pulley works upon a stud *k* tapered at its end *l*, thereby employing the peculiar character or principle of my improved top rollers, and producing the same remarkable result. If oil is dropped on the end of the stud from an oil can spout *m* it immediately flows by the effect of gravitation to the under side, as shown by the dotted lines *n*, and flows down the inclined or tapered end of the stud toward the rounded, countersunk, or bell-mouthed end *i*, of the boss of the pulley, and the moment it comes in contact with the boss it is drawn in by capillary attraction, at the same time having no tendency to work out again even if the stud be held in a vertical position, thereby causing the

necessary result that a very small quantity of oil sufficies, the stud and pulley being perfectly lubricated for a long time.

In Fig. 9, *o* is a part of a horizontal shaft taken at the bearing and placed in bell metal or other steps *p*, the ends of which are dished or bell mouthed as at *q* similar to the boss of the wheel or pulley in Fig. 8. The shaft on each side is turned down so as to form the inclines *r* tending inward toward the middle of the bearing, or a bush put on tapered at the ends so as to increase the diameter at the bearing. If oil is put in the ordinary oil hole *s* through the top cap and step it will have no tendency whatever to escape at the sides or ends of the bearing, but will be maintained in its proper place by means of gravitation, centrifugal force (when the shaft is in motion), and capillary attraction, thereby keeping the shaft in a more certain state of lubrication and saving a large percentage of the consumption of oil at the same time dispensing with the usual oil drippers, dirt and waste.

I claim—

1. The construction of top rollers and spindles with the arrangement of one or more of the bosses loose revolving thereon.

2. The application of a journal for all kinds of shafting, spindles, studs, or axles, having the bearing part of the shaft, spindle, axle or stud larger in diameter than the part immediately outside the bearing.

3. The rounding out or dishing the edges of steps or bosses in combination with the tapering of journals or axles of all kinds by which I obtain the action of capillary attraction for the purpose set forth.

4. I also claim the application of a top roller of a spinning machine to its spindle in such manner as to enable such top roller to rotate on the spindle and to rock in a longitudinal direction thereon in order that it may properly adjust itself to the under roller while the two may be in use.

Dated at Manchester this 26th day of August, 1858.

EVAN LEIGH.

Witnesses:
E. J. HUGHES,
JOHN BLOODWORTH.