Darius Goff's Improvement in Machinery for Picking and Separating Cotton Waste.

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Fig 1

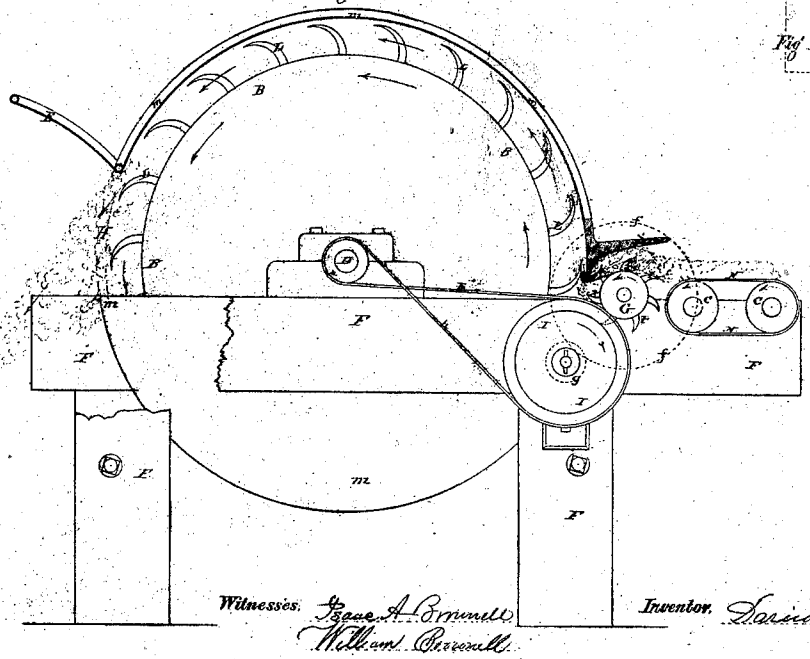
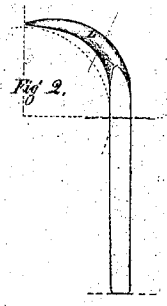


Fig 2.



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DARIUS GOFF, OF PAWTUCKET, RHODE ISLAND.

Letters Patent No. 80,724, *dated August* 4, 1868.

IMPROVEMENT IN MACHINERY FOR PICKING AND SEPARATING COTTON-WASTE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DARIUS GOFF, of Pawtucket, in the county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Machinery for Picking and Separating Cotton-Waste; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation and section of my improved machine.

Figure 2 is a full-size view of one of the "claw-hook teeth," hereinafter mentioned.

Similar letters indicate like parts in both the figures.

The material—cotton-waste—which my improved machine is designed to prepare, consists of the mass of spun cotton and thread and loose unspun cotton and roving, which accumulates in cotton-manufactories. It is collected in considerable quantities, and picked open, and the unspun cotton, or soft waste, separated from the yarn and thread, the former to be manufactured into low grades of cotton goods, wadding, and such like fabrics, and the latter to be used for cleaning machinery, and for other purposes.

And the object of my improved machine is to facilitate the picking and separating of this material, in order the better to prepare it for these purposes, and the more expeditiously.

My invention consists, first, of an enclosed cylinder, armed with stout claw-hooked teeth, so constructed and set in the periphery thereof, that when the waste is properly presented by suitable mechanism, while the cylinder is revolving rapidly, the bunches of spun yarn and thread will be caught by the revolving teeth, and disentangled, and wound upon the cylinder, while the unspun portion of the waste will be separated and thrown off from the cylinder and discharged from the machine.

My invention also consists in constructing the casing or jacket which encloses the said cylinder with an opening across its face, and a door for closing the same, for the purpose of discharging the soft or unspun waste, and of "doffing" or stripping the lap of picked waste from the cylinder when the teeth become filled.

My invention also comprehends a device for feeding the rough waste to the toothed cylinder in such a manner that, while the mass of waste is held in a sort of throat formed between the feeding-device and the cylinder, the portion of the yarns and threads which is caught by the revolving teeth may be easily drawn out of the mass, and wound parallel to each other on the cylinder, instead of breaking and tearing the mass asunder, and breaking its fibre. This device consists of a feed-roll, set with stout inclined pegs or teeth, and a shell (so called) for conducting the mass of waste to the cylinder, and a stripper or retaining-bar, (so called,) consisting of a stiff, permanent bar of metal, generally suspended between the feed-roller and cylinder, in such a manner that, by slowly revolving the feed-roller, the waste is carried under the shell and beneath the retaining-bar or stripper, where it is delivered to the cylinder-teeth, which, in revolving, catch and draw the threads or spun portion across the retaining-bar, while the mass is confined or held back by the teeth of the more slowly revolving feed-roller; and thus the portion caught is picked and drawn out of the mass, and wound upon the cylinder in the form of a lap.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same.

In the said drawings, B is the cylinder, which is mounted in a stout frame, F, to revolve on the shaft D, in suitable boxes upon each side, and *m* is the casing, in which the cylinder is completely enclosed, having an opening, H, that is closed by the door E.

The periphery of the cylinder is set with rows of stout steel hooked teeth, L, in such a manner that their points shall travel foremost in a line concentric, or nearly so, with the surface of the cylinder.

G is the feed-roller, which revolves quite slowly, by motion communicated by the band *h*, from the pulley on the cylinder-shaft D, to the pulley I, and thence, through the pinion *g*, to the gear *f* (represented by dotted lines) on the end of the feed-roller shaft.

The surface of the feed-roller is set with rows of short, inclined pegs or teeth, *t*, which are inclined in the opposite direction from that in which the said roller revolves, as indicated by the arrow marked thereon.

The shell S is arranged over the feed-roller throughout its length, affording a suitable space between it and the roller, for the passage of the mass of the waste by the action of the roller, and extends down between the feed-roller and the cylinder, to form the stripper or retaining-bar R, which extends into the throat or space between the cylinder and roller, midway between each, along the entire face of the same.

The rough waste is spread evenly on the endless apron N, that is stretched over the two rollers C, which revolve slowly in the direction indicated, which movement, being imparted to the apron, moves the waste thereon forward, and delivers it to the feed-roller G. Here the waste is brought into contact with the pegs or hooks *t*, which carry the waste under the shell S, and thence into the throat T, beneath the stripper R. Here the waste is presented to the action of the cylinder-hooks L, by which portions of the waste are caught and drawn, by a short turn round the stripper R, which, together with the inclined pegs or hooks *t*, detains the mass of the waste, and holds it with sufficient firmness to permit the hooks L, with their more rapid movement, to draw out the yarn and thready waste in the manner shown at A, fig. 1, and strip it upon the hooks, and finally wind it upon the cylinder as it revolves.

It will be readily understood that the method employed or described, of holding on to the waste by means of the hooks *t*, and the sharp turn or bight formed in the waste by the stripper R, while it holds the mass firmly, it permits the shreds or strings of the waste to render around the hooks *t* and the stripper R, and as well around the hooks L of the cylinder, and that in this way the shreds or threads are drawn out, or, as it were, disentangled, instead of being torn asunder and broken into short stuff; and it is this peculiarity of the operation of the feeding-device which distinguishes it from all others with which I am acquainted, and to which the desirable result of preserving the fibre or staple of the waste from being broken to any injurious extent, is mainly due.

I have heretofore employed a pair of fluted feeding-rolls, between which the rough waste passed, and was delivered to the cylinder-hooks, but it was found that such rolls so griped and confined the waste that either bunches of unpicked waste were wrested by superior force from these fluted rolls, or that the waste was broken off short, and the original length of fibre or staple destroyed, and the quality and usefulness of the waste proportionably impaired.

The unspun cotton and roving which exists in considerable quantities in "spinners' waste," so called, is in small clots or bunches, and is of a lighter or more volatile nature than the bulk of the waste; so that while the hooks L are admirably adapted to pick open and untangle the yarn and thread constituting the fibre of the waste, this soft waste escapes their action almost entirely, and, to the contrary, it is thrown by the fanning action of the cylinder against the surrounding casing, and is whirled or carried round with the cylinder until it escapes at the opening H, in the casing provided for that purpose, as shown in fig. 1.

The shape and curvature of the cylinder-hooks L are of great importance to the successful operation of the machine, as herein described, for while the shape of hook shown in fig. 2 (which is the best shape and proportion yet arrived at) will catch and draw out, with but little breaking, hanks of spun-waste, and retain and wind the threads parallel to each other upon the cylinder, a shorter hook, or one having less curvature, or being straighter, will simply scratch or beat the waste instead of retaining its hold, and draw out the threads to some length from the mass. Such hooks, also, for the same reason, are incapable of drawing away the threads and separating them from the cotton, but are rather calculated to reduce the mass of waste to short stuff and mix the tufts of cotton and unspun material with it. The hook, fig. 2, occupies, as will be seen, a little more than a quarter of a circle at its inner curvature, which is a desirable shape, and calculated to produce good results; that is, the inner surface or curve of the claw-hooks which projects from the surface of the cylinder has a true curve, or nearly so, with their points terminating in a plane concentric with the cylinder's surface, and, if continued, would describe a half circle between these two concentric planes. In making hooks to contain a lap of greater or less thickness, about this proportion should be preserved.

When this machine is used for picking and disentangling spun-waste only, as in preparing cop-waste and other kinds which are without any admixture of unspun cotton, the door over the opening in the casing or jacket *m* remains closed during the operation, whereby the shorter portions of the waste, which the hooked teeth do not catch and retain, are confined in the space between the casing and the cylinder, instead of being thrown off, and are ultimately all combined with the long waste, as it is wound upon the cylinder, and incorporated with it, and thus preserved to be used with and for the same purpose as the longer fibres.

Claims.

What I claim, and desire to secure by Letters Patent, is—

1. A cylinder, B, armed with claw-hooked teeth, L, so constructed that when set, their points shall all travel foremost as the cylinder revolves substantially in a line concentric with the surface of the cylinder, in combination with the feed-roller G, or other suitable feeding-mechanism, as described.

2. The combination of the cylinder B, as described, with a casing or jacket, *m*, constructed with a suitable opening, H, and a door for closing the same, substantially as and for the purpose specified.

3. The combination of the cylinder B, as described, with the feed-roller G and retaining-bar R, or other suitable mechanism for delivering and retaining hold of the material, substantially as described, while it is subjected to the action of the cylinder, as specified.

DARIUS GOFF.

Witnesses:

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WILLIAM BROWNELL.