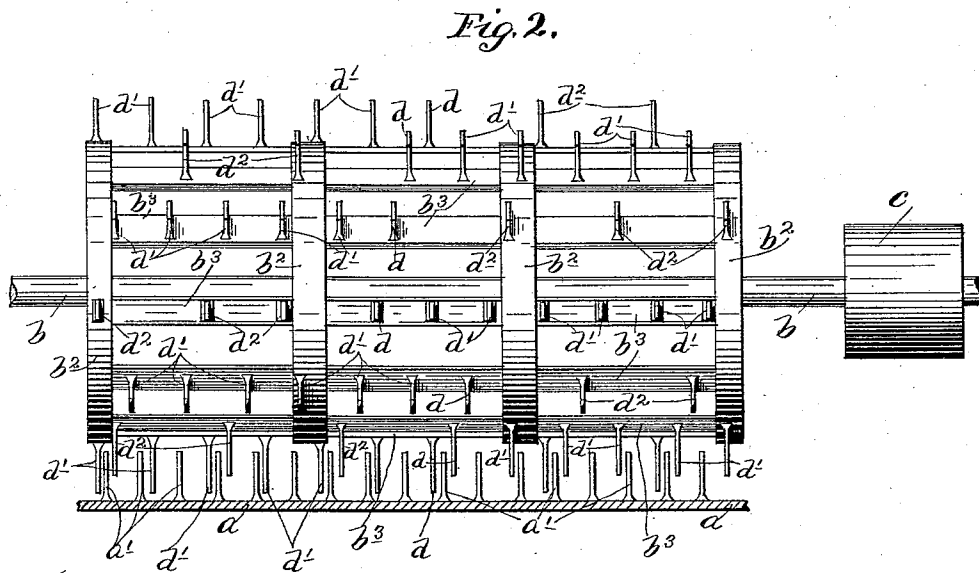
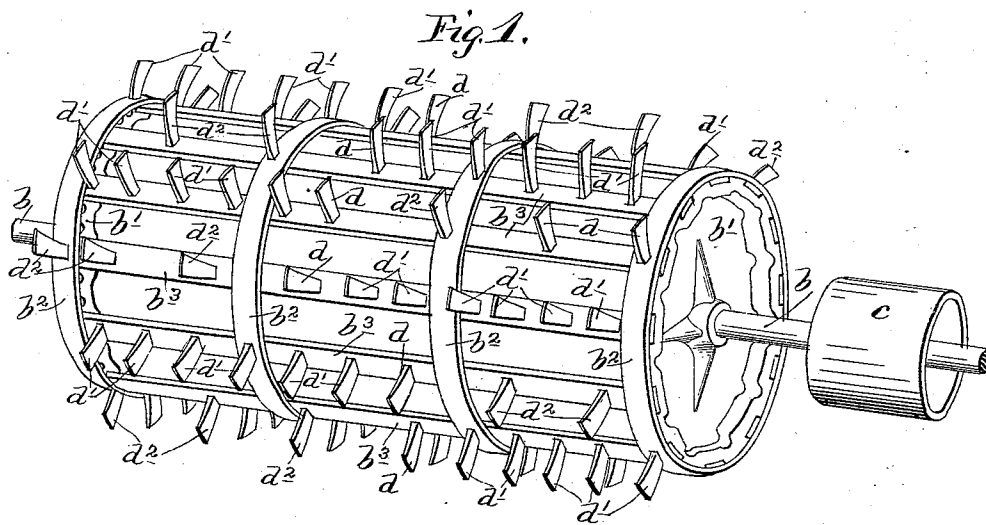


(No Model.)

P. SWENSON.
THRASHING CYLINDER.

No. 529,214.

Patented Nov. 13, 1894.



Witnesses
E. F. Elmore
Frank D. Merchant,

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UNITED STATES PATENT OFFICE.

PAUL SWENSON, OF MINNEAPOLIS, MINNESOTA.

THRASHING-CYLINDER.

SPECIFICATION forming part of Letters Patent No. 529,214, dated November 13, 1894.

Application filed August 9, 1894. Serial No. 519,848. (No model.)

To all whom it may concern:

Be it known that I, PAUL SWENSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Thrashing-Cylinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to thrashing machines; and has for its object to provide an improved thrashing cylinder.

To this end, my invention consists in the novel features of construction, hereinafter fully described and defined in the claim.

My invention is illustrated in the accompanying drawings, wherein like letters refer to like parts.

Figure 1 is a perspective view, showing my improved cylinder detached; and Fig. 2 is a view, showing the cylinder, in front elevation and a part of the concave in vertical section, with some parts broken away.

The parts *a a'* of the concave; and the body portions *b b' b² b³* of the cylinder, are all of the ordinary standard construction, and require no special notice for the purposes of this case. The cylinder shaft *b* is also provided with the ordinary driving pulley *c*.

My invention consists in the distribution or relative arrangement of the teeth or spikes of the cylinder; and, in order to render the description more distinct, it will be convenient to designate the teeth by the three letters *d d' d²*. The teeth *d d'* make up what is herein designated the thick groups of teeth; and the teeth *d d²* make up what is herein designated the thin groups of teeth.

By reference to the drawings, it will be seen, that the teeth are distributed into adjacent thick and thin groups in each transverse or longitudinal row, and that the thick and thin groups are arranged in staggered relation to each other circumferentially of the cylinder. As shown in the drawings, each tooth bar *b³* has one thick group of teeth *d d'* and one thin group of teeth *d d²*, extending in opposite directions from the tooth *d*, or a point near the central line of the bar *b³*; and it will also be seen, that on successive bars

b³, the thick and thin groups change places. This of course gives the adjacent thin and thick groups of teeth on each bar *b³*, or in each longitudinal or transverse row of teeth, and brings the circumferentially successive thick and thin groups into staggered relation, in respect to each other. It will, however, be understood that there might be more than two groups in each transverse or longitudinal row of teeth, as long as the adjacent sections were thick and thin, and as long as the thick and thin groups were arranged in staggered relation circumferentially of the cylinder.

The purpose of the above described construction, in the distribution and arrangement of the cylinder teeth, is to obtain the best possible results in the thrashing action.

Experience has shown that it is best to take an alternately tight and loose bite on the stock at the concave; and this has hitherto been obtained by having the teeth on successive bars, or in successive rows in the ratio say of one to two. If one bar, for example, had twelve teeth, the next succeeding bar would have six; but experience has also shown, that this arrangement gives rise to another obstacle to the best action, to-wit: it doubles the strain or pull on alternating tooth-bars, thereby tending to produce an inequable motion on the cylinder; and that it also tends to produce an unequal feed and an unequal effect on the stock. That this would be so, is obvious from a consideration of the fact, that when a twelve tooth-bar was running through the concave, supposing the amount of stock to be the same, the strain thereon or work which it was called upon to do, in the pulling action, would be just double that on the six tooth-bar, when passing the same point in the concave; and hence, with equal power on the shaft, the extra pull on the twelve tooth-bar will slow up or tend to slow up the cylinder, and of course, the thrashing action or number of strokes at the concave on the twelve tooth-bar, will be just double those on the six tooth-bar; and, moreover, when the six tooth-bar is making its strokes at the concave, the stock will be moving most freely and most rapidly. Moreover, this old arrangement made it possible to pull in whole bundles sidewise, or large masses of stock, at the comparatively clear openings, afforded

by the thin tooth-bar, tending to slug the machine, as quick as met at the concave by the thick tooth bar.

My invention, as above described, over-
5 comes all of the above noted defects, while retaining all the advantages of the old cylinder, in respect to the alternately tight and loose bite on the stock. The teeth in each bar or transverse row are substantially the
10 same in number—although they will differ by, say, one tooth, in virtue of the positions required for clearance, in respect to the teeth *a* of the concave. The strain, therefore, on every bar, or in every transverse line or longitudinal row of teeth, is substantially the
15 same. The motion on the cylinder will therefore be uniform and equable, so far as determined by the work or pull at the concave. Inasmuch, as all the bars have substantially
20 the same number of teeth, there is no more chance for an unopen bundle or a thick mass of stock to be drawn in by one bar, than by another; and if so drawn in, which is not nearly so likely to occur as with the old construction, every bar will meet the same with
25 equal force at the concave. The thrashing action or strokes will also be substantially the same, on all the stock; inasmuch, as it will be impossible for portions of the same
30 mass to move at materially different speeds.

On the other hand, the tight and loose bites will follow on the stock, in alternate order, as hitherto noted; which will not only give the same advantages as with the old construction, but the further advantage of an increased stripping action of one section of the stock in respect to the other, lengthwise of the line of travel, in view of some portions of the same transverse row, being occupied by the thick group and other portions by the thin group of teeth. Taken as a whole, it may be seen therefore, that the improved cylinder, above described, is extremely efficient in its action.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

A thrashing cylinder having its teeth distributed into adjacent thick and thin groups in each transverse or longitudinal row and having said thick and thin groups arranged in staggered relation to each other circumferentially of the cylinder, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL SWENSON.

Witnesses:

JAS. F. WILLIAMSON,
EMMA F. ELMORE.