

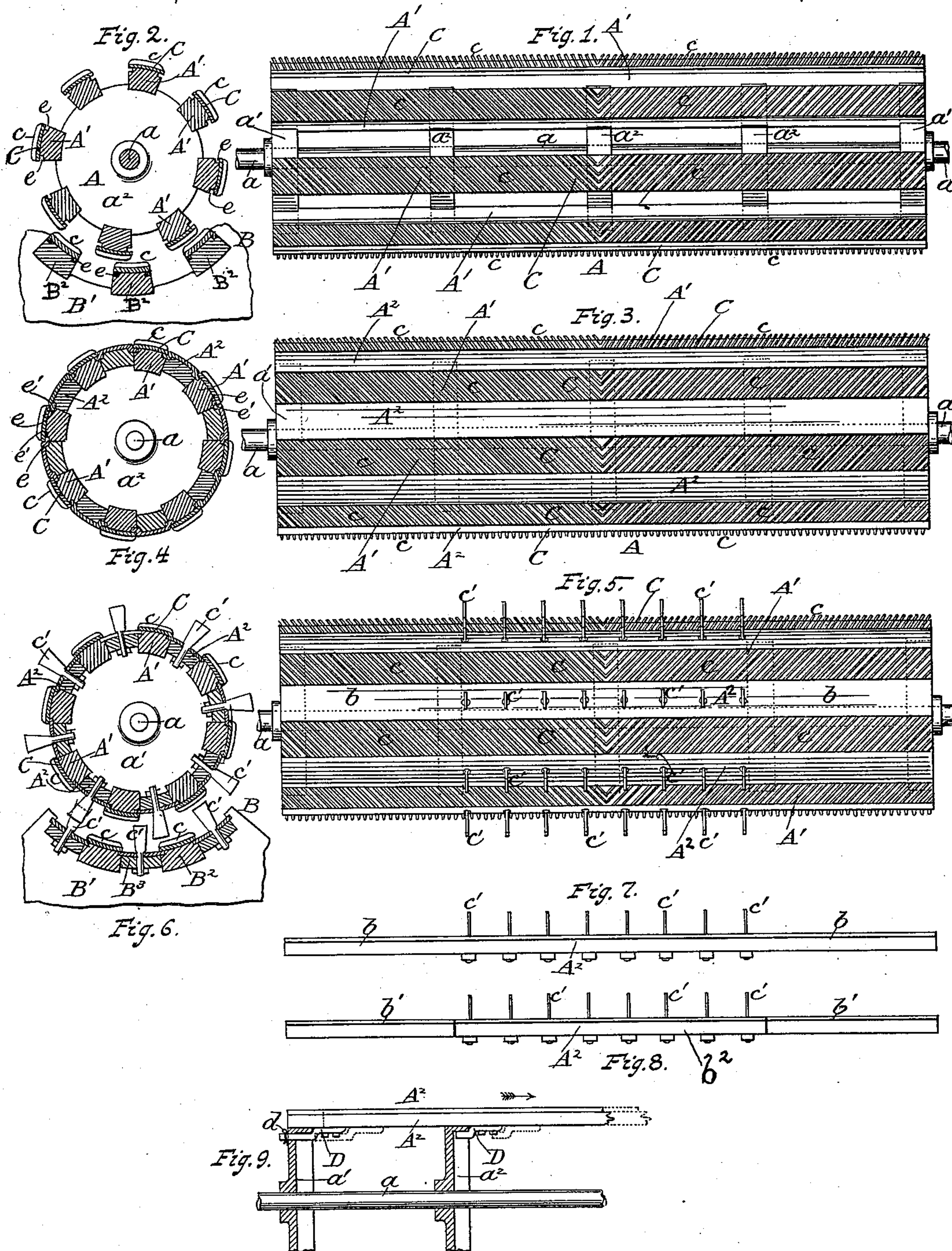
(No Model.)

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CYLINDER AND CONCAVE FOR THRASHING MACHINES.

No. 547,813.

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UNITED STATES PATENT OFFICE.

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CYLINDER AND CONCAVE FOR THRASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 547,813, dated October 15, 1895.

Application filed August 1, 1893. Serial No. 482,091. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. SNYDER, a citizen of the United States, residing at Raymertown, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Cylinders and Concaves of Thrashing-Machines; 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 improvements in cylinders and concaves of thrashing-machines; and it consists in the combination of devices and parts hereinafter described, and set forth in the claims.

The object of my invention is to provide means by which a single cylinder and concave of a thrashing-machine may be changeable in character, so that at will the cylinder and the concave may be changed into a spike-cylinder and spike-concave for coaction for thrashing one or more kinds of grain, and then subsequently be changed into a rubbing-cylinder and a rubbing-concave for coaction for thrashing another kind of grain, and vice versa, thereby obviating the necessity of providing a thrashing-machine with two or more differing cylinders and concaves, as heretofore. I attain these objects by the means illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a thrashing-cylinder which embodies the permanent staves of the same and when they are provided with rubbing thrashing devices. Fig. 2 is a transverse sectional view of the same and a concave embodying the same features. Fig. 3 is a side elevation of a thrashing-cylinder with permanent staves for a rubbing-cylinder and blank-staves fixed in place between. Fig. 4 is a transverse sectional view of the same. Fig. 5 is a side elevation of a thrashing-cylinder having in it permanent staves and removable staves provided with spike or tooth form thrashing devices for constituting the cylinder a spike-cylinder and illustrating the peculiar features of this invention. Fig. 6 is a sectional transverse view of the same and the coacting concave used with it. Fig. 7 is a side view of a stave of full length at the cylinder with its middle

portion provided with spike-form thrashing devices. Fig. 8 is a view of a cylinder-stave made sectional with the middle section provided with thrashing devices; and Fig. 9 is a detail view, part in section, illustrating a means by which the removable staves may be held in place in the cylinder.

The same letters of reference refer to similar parts throughout the several views.

In the drawings, A represents a thrashing-cylinder, and B is the concave for coaction with the same. This cylinder and concave are each suitably arranged in the thrashing-machine in the manner practiced by the trade, with the concave above the cylinder, if preferred, or below, as shown in the drawings, and with the shaft *a* of the cylinder running in suitable bearings and having fixed to one end a suitable drive-pulley. (Not shown.) All parts of the thrashing-machine other than this cylinder and concave are omitted, as those making and using the same are familiar with them and no particular description is required.

The cylinder A is made with a length preferably corresponding with the length of a rubbing thrashing-cylinder and is composed of the head-end-supporting disks *a'* *a'* and intermediate disks *a²* *a²*, secured to the shaft *a*, so as to revolve with the same, and a series of permanent staves *A'* and removable staves *A²*, all constructed, arranged, and secured together in a suitable manner, so that the removable staves may be interchangeable with the permanent staves at will and replace the same when it is preferred or is more advantageous to make the cylinder differ in its thrashing devices carried by the staves of the cylinder for adapting the cylinder for best operations with particular kinds of grains or grasses, as may be required.

In Figs. 1 and 2 the permanent staves *A'* are shown to have secured on them plates C, provided with inclined or angularly-arranged rubbing-ribs or thrashing devices *c*, which have heretofore been used in thrashing grain the straw of which was desired should be unbroken; but, if preferred, the permanent staves may be simply plated from one end to another to preserve them from wear when the cylinder is in use and to produce, by the margin side or edge portions overhanging the

grooves *ee* of the said permanent staves, a holding device for holding the removable or interchangeable staves in place. In such a case these permanent staves will have omitted from them the thrashing devices and serve simply as permanent blank-staves, between which removable or interchangeable thrashing-staves may be placed and secured at will.

In Figs. 3 and 4 the permanent staves *A'* are shown to be thrashing-staves provided with the angularly-arranged rubbing-ribs, (shown in Figs. 1 and 2,) while the removable staves *A²* are shown to be blank-staves and are in place between the permanent staves *A'*. In Fig. 4 these removable staves *A²* are shown to alternate with the permanent staves *A'* and are held securely in the cylinder *A* by the operations of the tongues *e' e'*, provided with said removable staves *A²* and entering into the grooves *ee*, provided with the permanent staves *A'*.

In case the blank staves shown in Figs. 3 and 4 and marked *A²* are preferred to be used as permanent staves, the staves carrying on their outer sides the thrashing devices or ribs *cc* may be removable at will and be made to be interchangeable with staves having a different form of thrashing devices.

In Figs. 5 and 6 the cylinder is shown to have between the permanent staves *A' A'*, which are shown to be provided with a rubbing form of ribs or thrashing devices *c*, the removable staves *A² A²*, shown to be provided with thrashing spikes or teeth *c'*, occupying the middle portions of the said staves. These middle portions, provided with the thrashing spikes or devices *c'*, are shown to be continuous in the staves *A²* with the blank portions *bb*, as shown in Figs. 5 and 7—that is to say, the blank portions *bb* of the removable staves *A²* in Figs. 5 and 7 are integral with the portion carrying the thrashing devices *c'*; yet they may be separate from the same and consist of independent pieces, as *b' b'*, (shown in Fig. 8,) which, together with the thrashing-section *b²* in Fig. 8, form an entire staff.

In Fig. 6 the removable staves *A²*, having the spike-form thrashing devices *c'*, are shown to alternate between the permanent staves *A'* and are secured with the latter in the cylinder by tongues *e' e'*, working in grooves *ee*. The permanent staves are securely fixed with the head-disks *a' a'* and intermediate disks *a² a²* by suitable bolts, screws, rivets, or other suitable known devices, while the removable staves *A²* may be securely held in place by tongues provided on the edges of the same and working in grooves provided in the edges of the permanent staves *A'*, as shown, or the tongues and grooves may be reversed in their order, so that the grooves *e* may be in the edges of the removable staves and the tongues in the edges of the permanent staves. If preferred, these tongues and grooves may be omitted, and the removable staves *A²* may be provided on their lower sides, as in Fig. 9, with locking devices *D*,

which work against the lower side of a flange made on the disks *a' a²*, as shown in Fig. 9, or work through perforations made in the body of the same at near its periphery, when by a simple key, as key *d*, Fig. 9, the staves may be held from moving lengthwise, so as to draw the holding devices out of a holding with the said disks. By removing key *d* and moving the staff endwise in direction of arrow in Fig. 9 to a short distance, so as to carry the holding devices *D* from full lines to dotted lines, the staff can be removed out of place between two neighboring permanent staves, to be replaced with a removable staff having a different kind of thrashing devices. Any other suitable devices calculated to securely hold these removable staves in place and alternating with the permanent staves may be employed.

The concave *B* is shown in Fig. 2 to be wanting in intermediate removable staves and to have secured with the concave supports or plates *B'* only the permanent concave staves *B²*, which bear on their sides facing the cylinder *A* the rubbing form of thrashing ribs or devices *c*, similar to ribs *c* on the permanent staves *A'* of the cylinder *A* in Fig. 1.

In Fig. 6 the concave *B* is shown to have with its permanent staves *B²* the removable staves *B³*, having thrashing devices *c'*, of spike or tooth form, and corresponding with the thrashing devices *c'*, of spike or tooth form, and corresponding with the thrashing devices *c* provided with the removable staves *A²* for coaction with the same. If preferred, the blank staves may be permanent staves in this concave and the removable and interchangeable ones may be provided with thrashing devices, as *c* or *c'*, or any other form which will correspond with those of the removable staves in the cylinder, for coaction with the same. These staves in the concave are made of a length corresponding with those in cylinder *A*, and the removable or interchangeable ones may be secured in place in the concave by substantially the same means as are employed to hold the removable or interchangeable staves in place in cylinder *A*. The concave-supporting plates *B'* are preferably made of iron and employed in the number in the concave of three or more, two outer or head-plates, and one or more intermediate plates, with which the permanent staves are secured by any preferred suitable known means—such as bolts, screws, or other holding devices. This concave is to be elastically supported in any suitable manner and by any suitable means as now practiced by the trade, and which are so familiar to manufacturers and users of thrashing-machines that a particular description is wholly unnecessary.

By my above-described improvements the cylinders and concaves of thrashing-machines may be provided with interchangeable sets of staves, each set being provided with thrashing devices differing in size or form or both

and in degree of closeness or nearness to each other in the staves as may be advantageous for use in thrashing different kinds of grains or grasses, so that a single thrashing-machine
5 may have its thrashing mechanism suitable for the best operation with each kind of grain.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

10 1. A cylinder, for thrashing machines, which is changeable at will from a spike-tooth cylinder to a rubbing cylinder and the reverse, formed by the combination with a revolving shaft, supporting disks securely fixed thereon,
15 a series of staves secured to said supporting disks and alternating with openings of width about equal to the width of said staves and rubbing plates C secured to the outer sides of said fixed staves, of a corresponding number
20 of removable staves provided with outwardly projected spike form teeth *c' c'* and filling said openings and temporarily secured in the cylinder so that the latter may be adapted to operate solely as a spike-tooth thrashing cyl-
25 inder, and when removed allow the cylinder to operate solely as a rubbing cylinder, substantially as described.

2. The combination with a thrashing cylinder having its peripheral wall composed of a

series of staves having rubbing plates secured 30 thereto and a series of removable staves alternating with those of the first series and provided with spike form teeth and secured to temporarily form a part of the cylinder so as to adapt the cylinder to operate as a spike- 35 tooth cylinder and when removed operate as a rubbing cylinder, of a changeable concave comprising a series of staves having rubbing plates secured to their concave sides and alternating with removable staves pro- 40 vided on their concave sides, each with spike form teeth and secured temporarily, whereby said concave may be changeable, at will, from a spike tooth concave to a rubbing concave to be in correspondence with the said 45 thrashing cylinder when the spike tooth staves of the latter are removed, and when replaced cause the concave to serve as a spike tooth concave corresponding to the said cylinder when it operates as a spike tooth cyl- 50 inder, substantially as set forth.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JOHN G. SNYDER.

Witnesses:

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A. SELKIRK, Jr.