No. 618,359. Patented Jan. 24, 1899.

# F. LAMBERT.

## REGISTER.

Application filed July 23, 1898.

(No Model.)

Fig. 1.

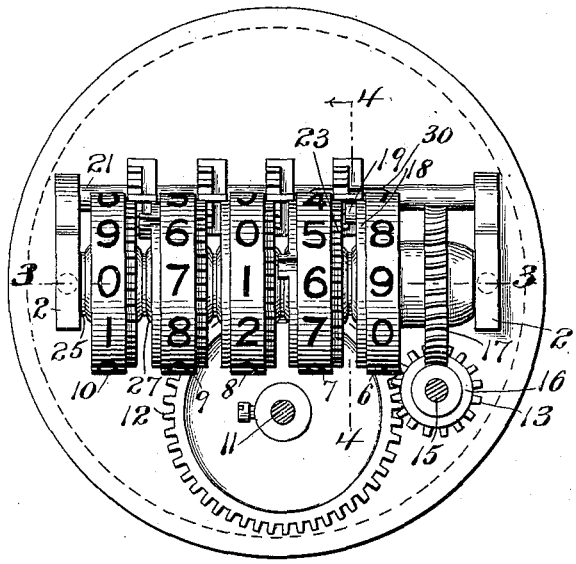



Fig. 2.

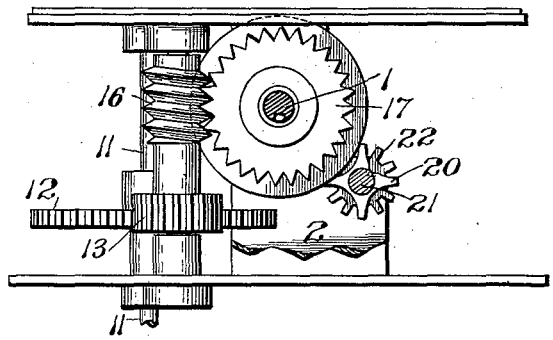



Fig. 3.

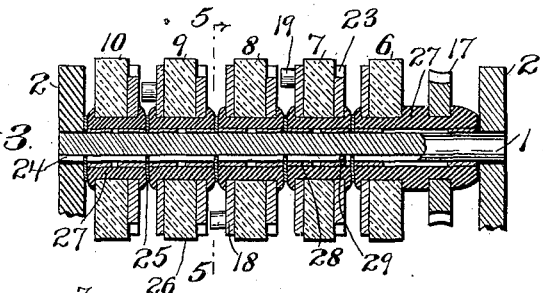



Fig. 6.

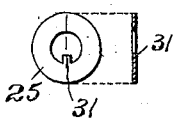



Fig. 4.

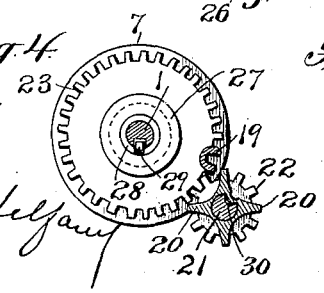
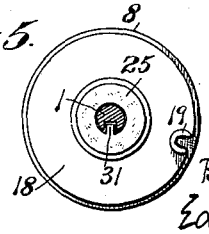



Fig. 5.

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No. 618,360. Patented Jan. 24, 1899.

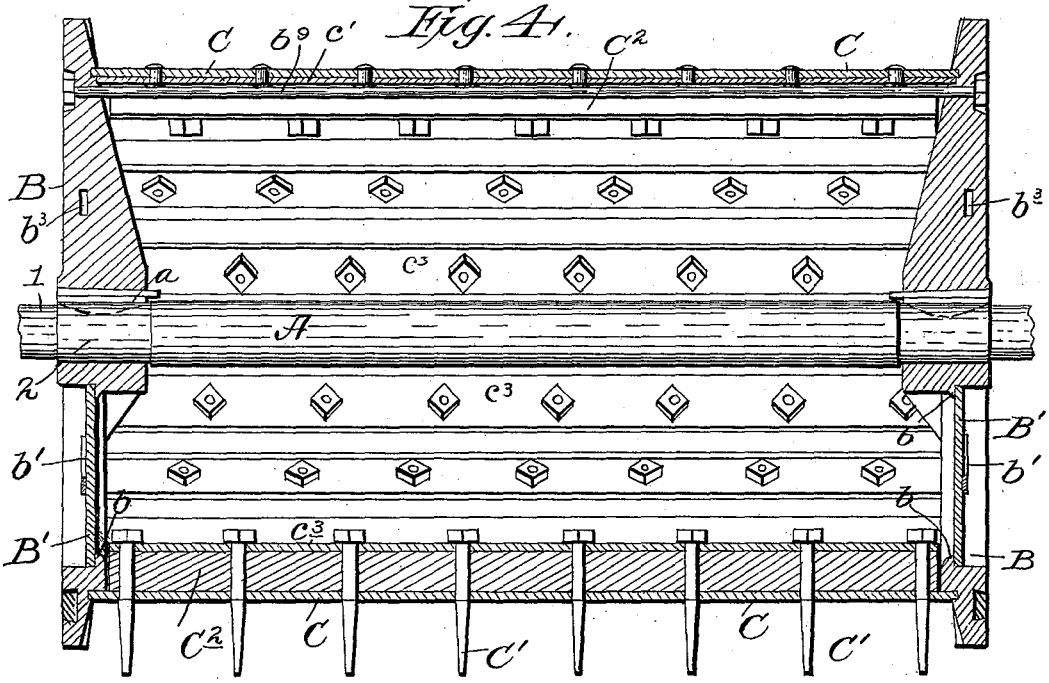
# F. F. LANDIS.

## THRESHING MACHINE CYLINDER.

(Application filed Nov. 4, 1897.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 4.



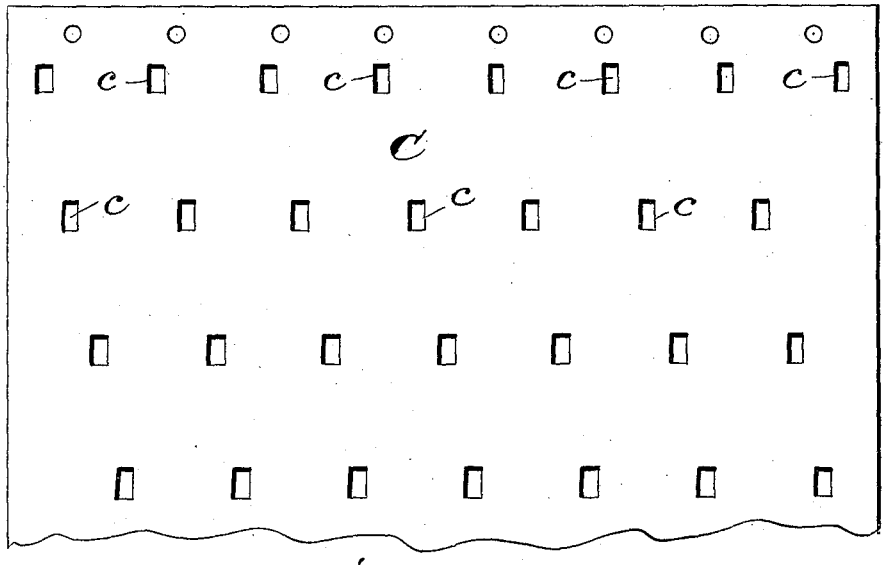




Fig. 5.

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# UNITED STATES PATENT OFFICE.

FRANK F. LANDIS, OF WAYNESBOROUGH, PENNSYLVANIA.

## THRESHING-MACHINE CYLINDER.

SPECIFICATION forming part of Letters Patent No. 618,360, dated January 24, 1899.

Application filed November 4, 1897. Serial No. 657,411. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK F. LANDIS, a citizen of the United States, residing at Waynesborough, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Threshing-Machine Cylinders; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My said invention consists in certain improvements in the construction and arrangement of parts of a cylinder for threshing or hulling machines, whereby such a cylinder is produced of a comparatively inexpensive construction by reason of saving of time and expensive parts in its manufacture and which will be of unusual strength and durability, easily taken apart and put together, easily and permanently balanced, and one in which quick and easy access can be had to all its parts when desired, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters and figures of reference indicate similar parts, Figure 1 is an end elevation of one of my improved cylinders, one of the covers being omitted; Fig. 2, an inside elevation of one of the heads separate; Fig. 3, a cross-section through said cylinder; Fig. 4, a longitudinal section through the same on the dotted line 4 4 in Fig. 3; Fig. 5, a portion of the sheet of metal from which the cylinder-tube is made before being bent to form; and Fig. 6, a detail view, on an enlarged scale, showing the manner of connecting the heads with the cylinder-shaft.

In said drawings the portions marked A represent the cylinder-shaft, B the cylinder-heads, and C the cylinder-body.

The shaft A is any suitable shaft for the purpose, with journals 1 turned thereon at each end, and seats 2 for the cylinder-heads alongside said journals, in each of which is formed a gib-seat of the form of the segment of a circle, being formed with a mill-wheel of appropriate size. A gib $a$ of the same width and with its bottom of corresponding shape is mounted in each of said seats. Said gibs project above the surface of the journals and have straight top edges.

The cylinder-heads B are each composed of a circular rim with a spider-like interior having a hub at its center. The open spaces between the arms of said spider have covers B′, of corresponding shape, fitted thereto, a flange $b$ being formed around said spaces for said covers to rest against. A batten is preferably secured to the inside of each cover, and a light iron bar $b'$ is pivoted on the outside of a bolt $b^2$, which extends through said batten, cover, and bar. Mortises or pockets $b^3$ are formed in the sides of the portions surrounding the openings at points adapted to receive the ends of said pivoted bars. Said pivot-bolts are preferably located nearer the inner than the outer ends of said bars, the outer end of each of which is arranged to enter its pocket in the direction of rotation, thus insuring that they will be retained in said pockets by the centrifugal force of the cylinder in case the bolts $b^2$ should become loose, and thus always keep said covers securely in place, while permitting their quick and convenient removal when it is desired to have access to any part of the interior of the cylinder to tighten a tooth or for any other reason. The eye of each head has a keyway $b^4$ formed in one side of the exact width of the gib $a$, and a key $b^5$ is adapted to exactly fit therein. When the parts are assembled, each head is mounted on its appropriate seat 2, with the upper edge of the gib $a$ projecting into the keyway $b^4$. The key $b^5$ is then driven into the way above said gib, thus securing said head firmly to the shaft. The bottom edge of the gib being a segment of a circle of the same size as the bottom of its seat in the shaft, it is allowed to adjust itself so that the upper edge will have a uniform bearing its entire length against the bottom of the key, and said key is allowed to adjust itself to a uniform bearing against the bottom of the keyway in the cylinder-head. As will be seen, this method of keying will prevent all liability of the head being canted or out of line with the shaft, as one end of the key cannot be made to exert more pressure than the other. It also permits the ready removal of the key and avoids the necessity of a keyway

in the shaft extending outside the seat for the head, leaving the journal solid and smooth, with no portion of the keyway therein. Around the rim of each head, in its face, is preferably formed a series of pockets $b^6$ in a circle outside the face of the cylinder, the bottoms being preferably slightly wider than their tops. In these are mounted the material to balance the cylinder, as will be presently described. On the inside of each head is formed a circular groove $b^7$ to receive the end of the drum or tube, being of the same diameter and of a width corresponding to the thickness of the material of which said drum is made, insuring a close joint. Said grooves are formed by keying both said heads to the shaft, placing it in a lathe, and turning them while thus assembled. This insures that they will be exactly true with the axis of said shaft and that the taking apart and putting together of the parts will not disturb the balance of the cylinder or of the true relations of all the parts.

The cylinder body or drum C is made from a sheet of steel or suitable material cut of the required size and its longitudinal edges planed true and parallel. From these edges the rectangular holes $c$ for the teeth C′ are punched while the plate is yet flat. It is then bent to a true circle until said edges abut together, and a joint-plate $c'$ is then riveted under the joint, with a row of rivets in each edge, thus making a complete tube with a seam, but in all respects answering the purpose of a seamless tube and produced at much less expense. Diametrically opposite said joint a plate $c^2$, in dimensions and weight corresponding to the plate $c'$, is riveted, thus balancing the tube, which is then rounded to a true mandrel and the ends turned true one with the other. As shown, (see Fig. 2,) the grooves $b^7$ in the heads are formed of a width at two opposite points $b^8$ sufficient to receive the ends of the plates $c'$ and $c^2$, the length of said wider portions being just equal to the width of said plates, thus forming a secure driving contact between the drum and heads and preventing any liability of said drum turning in the grooves. Wood staves $C^2$ are arranged around the inside of the tube, one to each row of teeth C′, the shanks of which extend through the opening $c$, and said staves are secured by nuts, as is usual, a strip of metal $c^3$ being mounted under said nuts to serve as a washer.

In assembling the parts the drum is placed over the shaft, the heads put in place, the ends of the drum put into the grooves $b^7$, so that the plates $c'$ and $c^2$ will fit into the wide portions $c^8$ and lock the parts together, and the parts are then drawn together and held while the keys are being driven to place by small rods or bolts $b^9$ with nuts. After the keys are driven to place and while they remain there these rods perform no function. To balance the cylinder, it is run at a working speed and the discrepancy between its weight at its ends and sides determined. Weights of lead or other suitable material are then put in holes $b^6$, where it is needed to secure the balance. When so balanced, it is permanently balanced to run at any speed. The ends of the cylinder being closed, dust and other material is not allowed to accumulate therein to roll from side to side and disturb the balance, as is usual.

By this construction it will be seen that a cylinder for the purpose is secured which is not only comparatively inexpensive, but one of great strength, durability, and superior merit. The parts are secured without unequal strain upon the shaft or other parts and are not susceptible to be thrown out of balance by any sudden or severe jars or work. Ready access to all parts is provided, and it can be assembled and disassembled conveniently without disturbing any of the adjustments or relations between the parts.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a threshing-machine cylinder, the combination, of the shaft formed with journals at the ends and seats for the cylinder-heads alongside said journals, a gib-seat being formed in each of said cylinder-head seats extending longitudinally of the shaft and in the form of a segment of a circle, a gib mounted in each and formed with its lower edge to fit therein and with a straight and square outer edge, the cylinder-heads mounted on said seats and formed with grooves extending longitudinally of their eyes and of a depth greater than the distance which said gibs project above the surface of the shaft, and a key driven between the outer edge of each of said gibs and the bottom of said groove in the eye of the cylinder-head, and the cylinder mounted on said heads, substantially as set forth.

2. A threshing-machine cylinder composed of a shaft, heads mounted thereon and formed with a true groove in the adjacent face of each near its periphery, a tube formed of a single sheet of metal with its edges joined by a butt-joint and its ends mounted in and supported by said grooves, a balancing-plate riveted to the inside of said tube diametrically opposite said joint, wooden strips for supporting the teeth mounted inside said tube, and said teeth mounted in apertures in said tube and wooden backing-strips, substantially as set forth.

3. A threshing-cylinder composed of a shaft, heads and a drum formed of sheet metal bent to form a tube, a plate secured over the joint between the edges of said plate when brought together, a similar plate secured opposite thereto, grooves being formed in the cylinder-heads to receive the end of the drum, which grooves are formed of a sufficient width for a sufficient distance to also receive the ends of said plates, whereby said drum and heads are locked from separate rotary movement, substantially as set forth.

4. A threshing-cylinder having openings in its ends provided with covers, which covers are secured by pivoted bars, which engage portions alongside said openings and are pivoted at one side of their centers with the heavy end adapted to be held in a locked position by centrifugal force, substantially as set forth.

5. A threshing-machine cylinder having openings in its ends provided with covers, which covers are secured in place by pivoted bars heavier on one side of their pivots than on the other, and arranged to be held locked by centrifugal force, substantially as set forth.

6. A threshing-machine cylinder comprising a shaft, heads mounted thereon formed to receive balancing-weights near their peripheries and with circular grooves in their adjacent faces within the line of said balancing-weights, a tube with its ends mounted in said grooves and having balancing-weights or plates on its inside, and teeth mounted in said tube, all substantially as set forth.

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

FRANK F. LANDIS.

Witnesses:
A. O. FRICK,
T. S. CUNNINGHAM.