

Dec. 28, 1948.

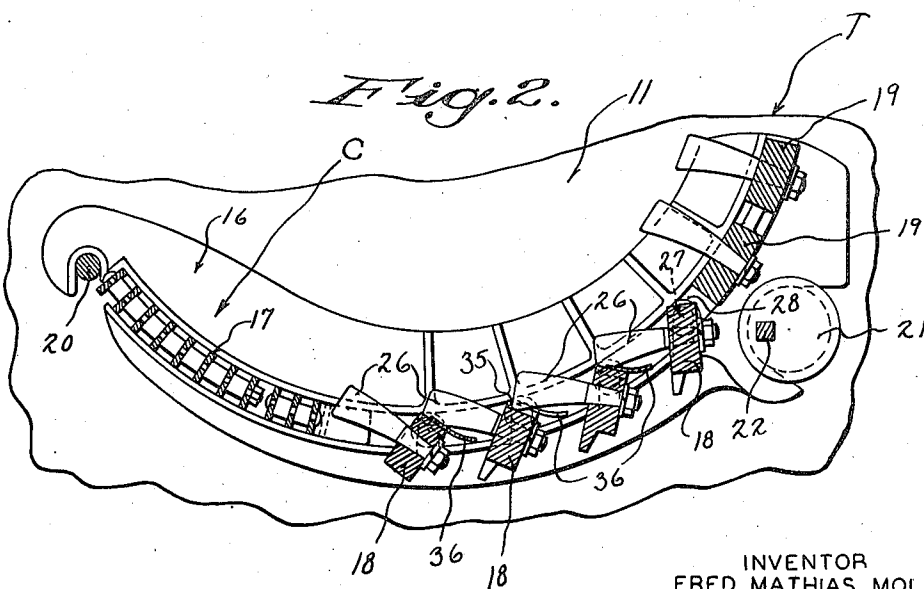
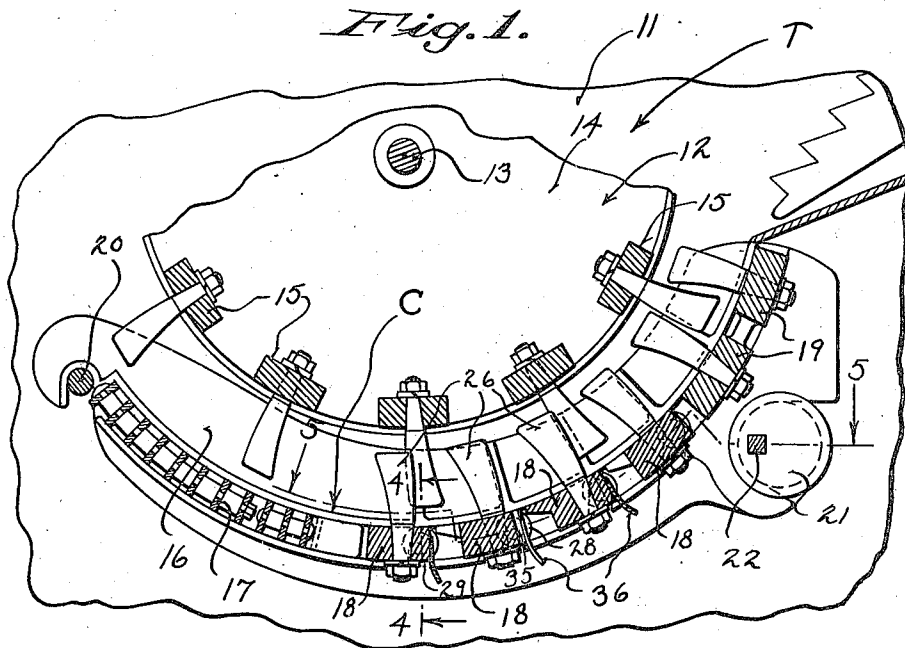
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2,457,259

DISAPPEARING TOOTH BARS FOR CONCAVES

Filed Nov. 13, 1944

4 Sheets-Sheet 1



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Fig. 3.

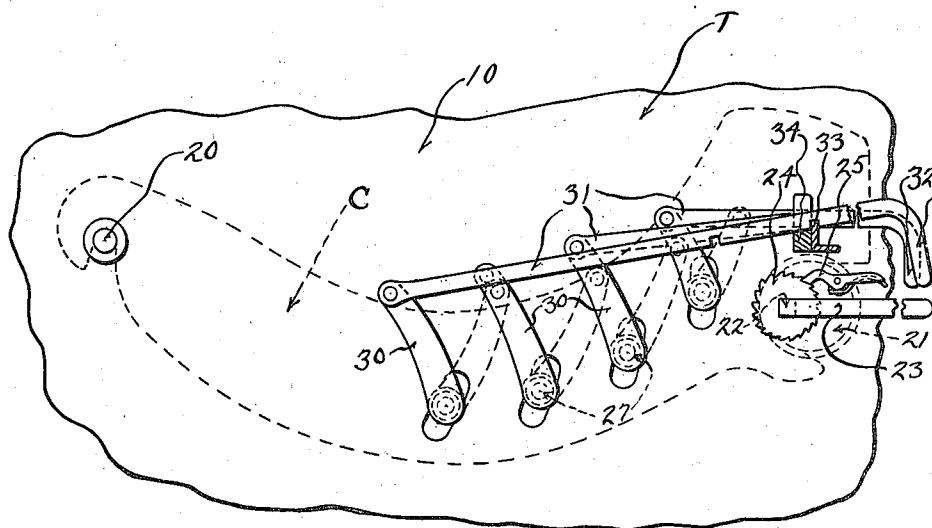
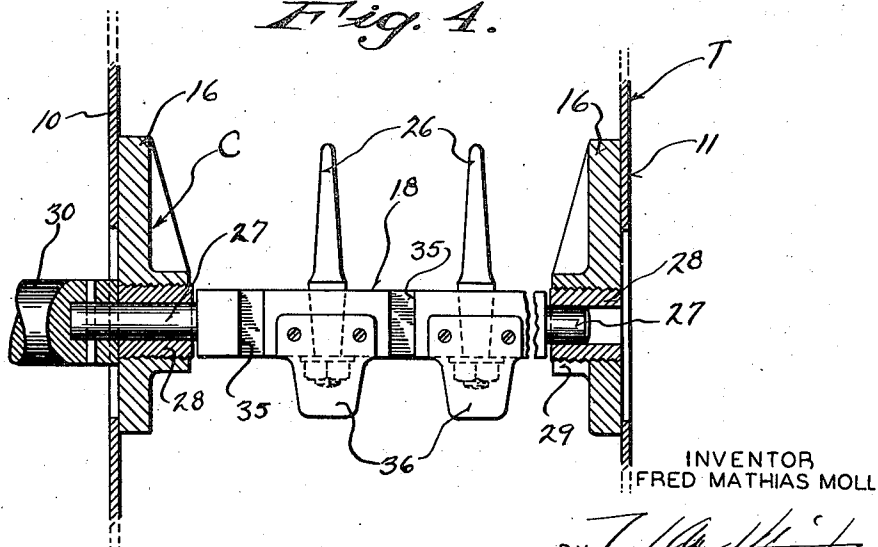


Fig. 4.



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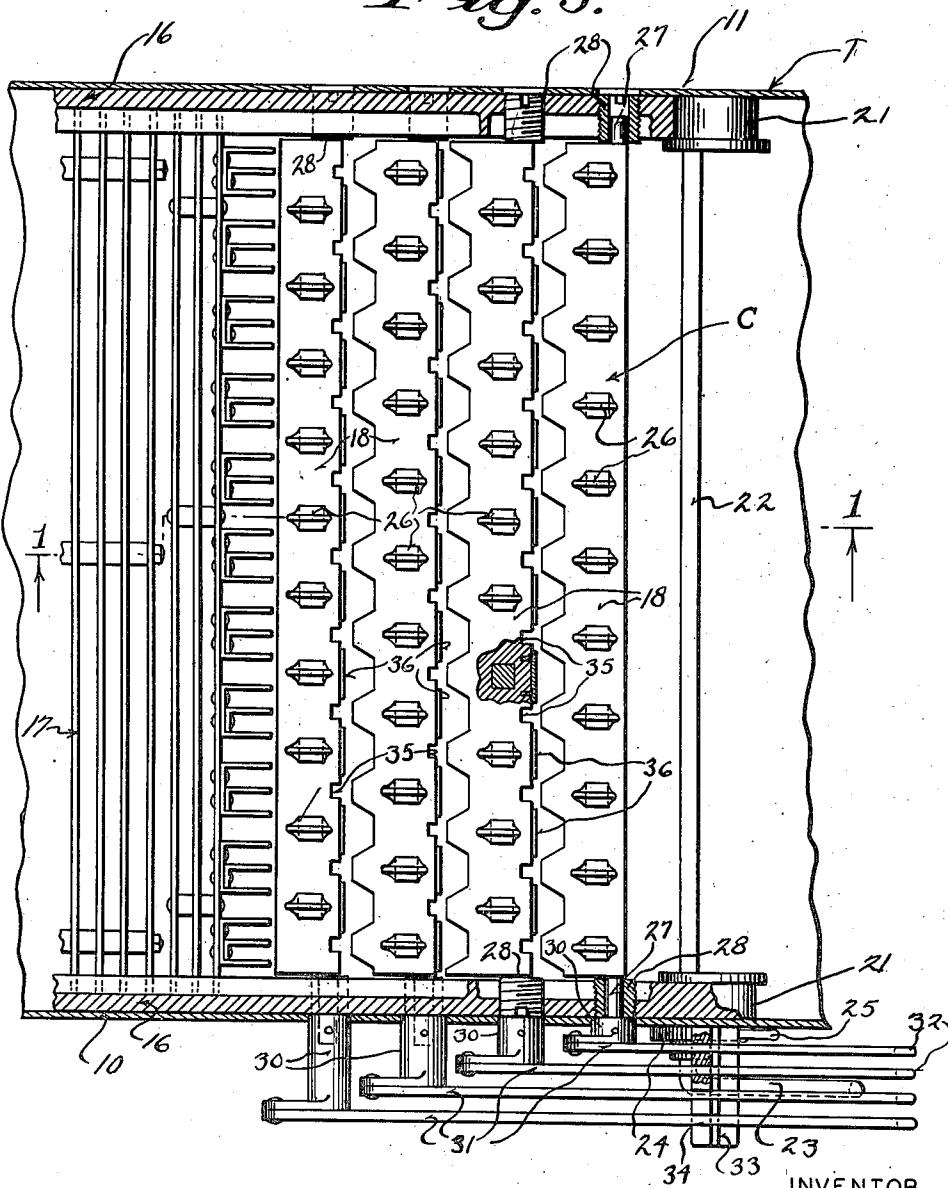
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Fig. 5.



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Fig. 6.

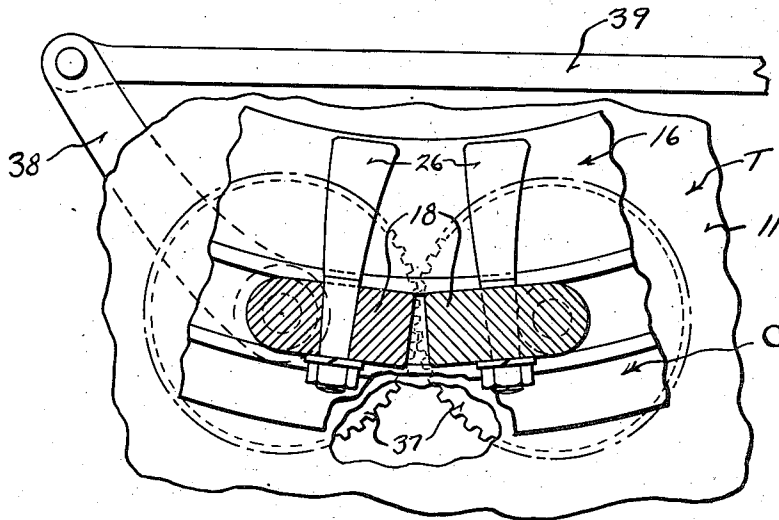
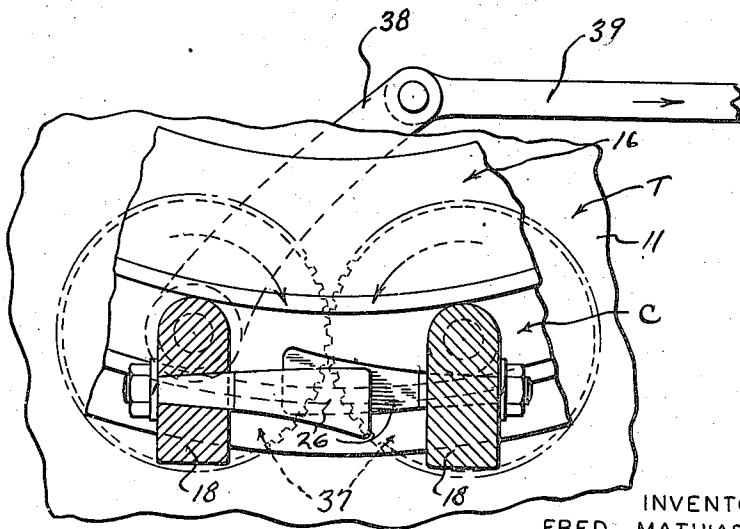


Fig. 7.



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UNITED STATES PATENT OFFICE

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DISAPPEARING TOOTH BARS FOR
CONCAVES

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3 Claims. (Cl. 130-27)

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This invention appertains to threshing machines and more particularly to a novel concave therefore.

In threshing different kinds of grain, it is highly desirable, in order to obtain best results, to change the concave bars and teeth according to the character and type of the grain being threshed. With the modern threshing machine, the changing of the concave bars and teeth is a difficult, tedious and time-consuming job.

It is, therefore, one of the primary objects of my invention to provide rockable toothed bars for the concave with means for rocking the bars from the exterior of the threshing machine, whereby the desired number of toothed bars can be conveniently and expeditiously operated to bring the teeth into and out of play.

Another salient object of my invention is to provide novel means for forming the rocking tooth bars of a concave, so that when the bars are rocked to move the teeth to an inoperative position, the teeth of one bar will be received in grooves or notches of the adjacent bar, whereby not only will said teeth be protected, but whereby the teeth can be moved to an extreme lowered desired position to form an effective grate.

A further important object of my invention is to provide novel means for supporting the rockable bars, whereby said bars can be conveniently removed when necessary or desirable without dismantling the cylinder and concave.

A still further important object of my invention is the provision of novel plates formed on or carried by the bars adapted to be brought into an operative position toward the arcuate face of a concave, when the teeth are in their lowered position, whereby to increase the efficiency of said bars as a grate.

With these and other objects in view the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, in which drawings:

Figure 1 is a fragmentary vertical longitudinal sectional view through a threshing machine showing the cylinder and concave portion, the view being taken substantially on the line 1-1 of Figure 5, looking in the direction of the arrows.

Figure 2 is a view similar to Figure 1 with the cylinder removed and all of the rockable grate bars moved to their lowered position.

Figure 3 is a fragmentary side elevational view of a threshing machine showing the means for rocking the grate bars.

Figure 4 is an enlarged fragmentary detail sectional view taken on the line 4-4 of Figure 1, looking in the direction of the arrows illustrat-

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ing my novel mounting for the rockable grate bars and the grate plates carried thereby.

Figure 5 is a horizontal section taken substantially on the line 5-5 of Figure 1, looking in the direction of the arrows, showing my novel grate bars and the operating means therefore.

Figure 6 is an enlarged fragmentary detail sectional view illustrating a modified form of my invention showing a single means for simultaneously rocking a pair of toothed bars.

Figure 7 is a view similar to Figure 6, but showing the grate bars actuated to move the teeth to a lowered inoperative position.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter "C" generally indicates my improved concave for a threshing machine "T."

Only a sufficient portion of the threshing machine "T" has been shown to illustrate the novel features of my concave, and as illustrated, the threshing machine includes the usual side frame plates 10 and 11 which support the cylinder 12 and the improved concave "C."

The cylinder 12 includes the usual cylinder shaft 13 on which is mounted the cylinder hub plates 14 which carry the toothed cylinder bars 15.

As in the usual construction of threshing machines, the concave "C" is arranged below the cylinder and includes the arcuate side slide plates or castings 16. These castings 16 carry the grate 17 and a plurality of rockable toothed bars 18 and a pair of stationary toothed bars 19. In accordance with my invention, the rockable toothed bars 18 are arranged between the grates 17 and the stationary toothed bars 19. The castings 16 are rockably supported at one end on a cross bar 20 carried by the frame of the threshing machine and the opposite ends of the castings are supported by cams 21. These cams are keyed or otherwise secured to a transversely extending cam shaft 22 rotatable mounted on the frame of the threshing machine. By turning the shaft, the entire concave can be adjusted toward and away from the cylinder 12. One end of the cam shaft 22 extends beyond one outer side face of the threshing machine and is provided with an operating handle or crank 23. A ratchet wheel 24 and dog 25 can be provided for holding the cam shaft in a preferred adjusted position.

As brought out in the objects of the specification, the rockable grate bars 18 form the salient feature of my invention and as illustrated these grate bars are four in number. Removably, but rigidly, fastened to the grate bars 18 are the concave teeth 26, and when the bars 18 are in one adjusted position the teeth 26 extend toward the cylinder 12 in operative relation relative to the teeth of the cylinder. It is highly important to

provide means whereby these rockable bars can be quickly removed when necessary without dismantling the entire machine, and consequently I have provided novel bearing supports for the bars 18. Each of the bars 18 terminates in cylindrical bearing pintles 27, and these bearing pintles are received in bearing sleeves 28 which are threaded in the side concave casting plates 16. By this arrangement the bearings can be threaded outwardly to move the same away from the bearing pintles, so that the bars can be dropped. To facilitate the movement of the grate bars out of the side casting plates 16 said casting plates can be grooved or slotted as at 29 below the bearing sleeves.

In view of the fact that the toothed bars 18 are rocked from the exterior of the threshing machine, it is necessary to have the bearing pintles 27 on one side relatively longer than the bearing pintles on the other side and the longer bearing pintles extend slightly beyond one side face of the threshing machine and have removably keyed thereto operating cranks 30.

In removing the rockable grate bars, the cranks 30 are first taken off of the pintles and bearing sleeves are threaded outwardly on both sides until the shorter bearing pintles can be slid downwardly and out of the bearing sleeves after which the longer pintles are slid from out of their bearing sleeves.

Any preferred means can be provided for operating the rock bars, but as shown in the drawings, I provide operating levers 31 for the cranks 30. Each of the levers can terminate in an operating handle 32 and obviously by pulling the levers back and forth the bars can be rocked. In order to hold the levers in an adjusted position with the rock bars either in their operative or inoperative position the lower edges of the levers 31 are provided with notches 33, and these notches can be moved into engagement with a lock angle bar 33 carried by the frame of the machine. A slotted guide bar 34 can also be provided for facilitating the correct movement of the levers.

When the levers 31 are pulled forwardly with the cranks in their dotted line position shown in Figure 3, the rock bars 18 will be so positioned that the teeth 26 will be in a raised operative position. Hence, the teeth will project toward the cylinder 12. When the levers are positioned rearwardly, the cranks 30 will be moved to the full line position shown in Figure 3 and the bars 18 will be rocked for moving the teeth 26 to a lowered position as shown in Figure 2 of the drawing.

In order to permit the teeth to be lowered to an extreme out-of-the-way position, the edges of the rock bars are notched as at 35 for the reception of the forward ends of the teeth as is clearly shown in Figure 2. Hence, the bars 18 can be of the usual width and still permit the effective lowering of the teeth. The grooves 35 also form a protection for the said edges of the teeth.

In order to further aid the bars 18 to act as an efficient grate when the bars are in a lowered position, the notched edges of the bars also carry depending fingers or arcuate plates 36. These fingers can be formed on the bars or made as separate elements as shown and then attached to the bars. When the bars are rocked so that the teeth are in their lowered position the fingers 36 will be raised to an operative position.

In some instances it may be advisable to operate pairs of the bars 18 in unison and to only provide one operating lever for two bars. In Figures 6 and 7 I have shown such an arrangement. As illustrated, adjacent bars can have secured to their bearing pintles sector gears 37. These gears intermesh so that movement of one bar will be transmitted to an adjacent bar. In this arrangement the rock bars move toward and away from one another and one of the rock bars of a pair of rock bars can be provided with an operating crank 38 and this crank has pivotally connected thereto the operating lever 39.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable concave for threshing machines in which the toothed bars thereof can be quickly and easily adjusted to bring the teeth thereof into and out of play.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

1. In a threshing machine, a concave including a plurality of pivotally supported toothed bars, the teeth of said bars being of a greater length than the distance between the bars, means for rocking said bars, and said bars having grooves for receiving teeth of adjacent bars when the bars are rocked to move the teeth to a lowered position to form a support and stop for said teeth.

2. In a threshing machine, a concave including a plurality of pivotally supported bars, teeth projecting outwardly from said bars, the teeth being of a greater length than the distance between the bars, means for rocking said bars to move the teeth thereof to a raised operative position and to a lowered inoperative position, one edge of the bars being provided with grooves for receiving the leading edges of the teeth when the bars are rocked and the teeth are in their lowered position to form a support and stop for said teeth.

3. In a threshing machine, a concave including a plurality of pivotally supported rock bars arranged in relatively close proximity to one another, teeth carried by and projecting outwardly from the upper faces of the rock bars, said teeth being of a greater length than the distance between the bars, means for rocking said bars for moving the teeth either to a raised operative position or to a lowered inoperative position, one edge of either of said bars being provided with grooves for receiving the leading edges of teeth of adjacent bars, when the bars are rocked to move the teeth to a lowered position to form a support and stop for said teeth, and grate fingers carried by the mentioned edges of the bars and extending in an opposite direction to the teeth movable to a raised position when the teeth are in their lowered position.

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