

M. FLYNN.
THRESHER CONCAVE.
APPLICATION FILED SEPT. 23, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

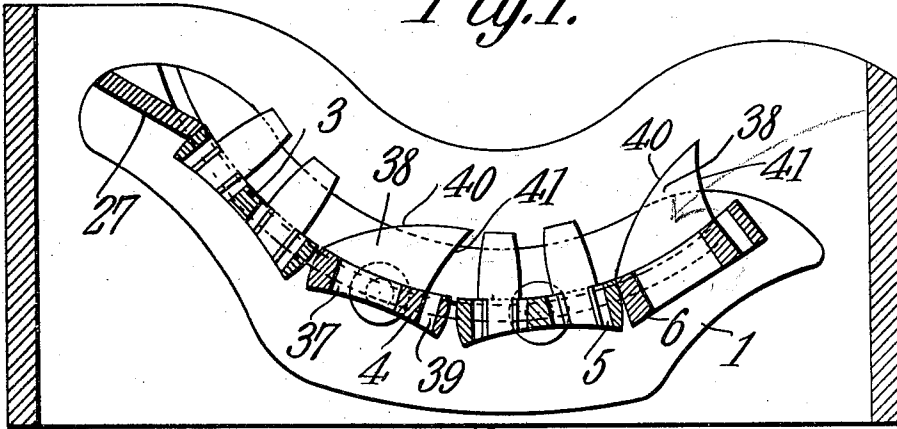
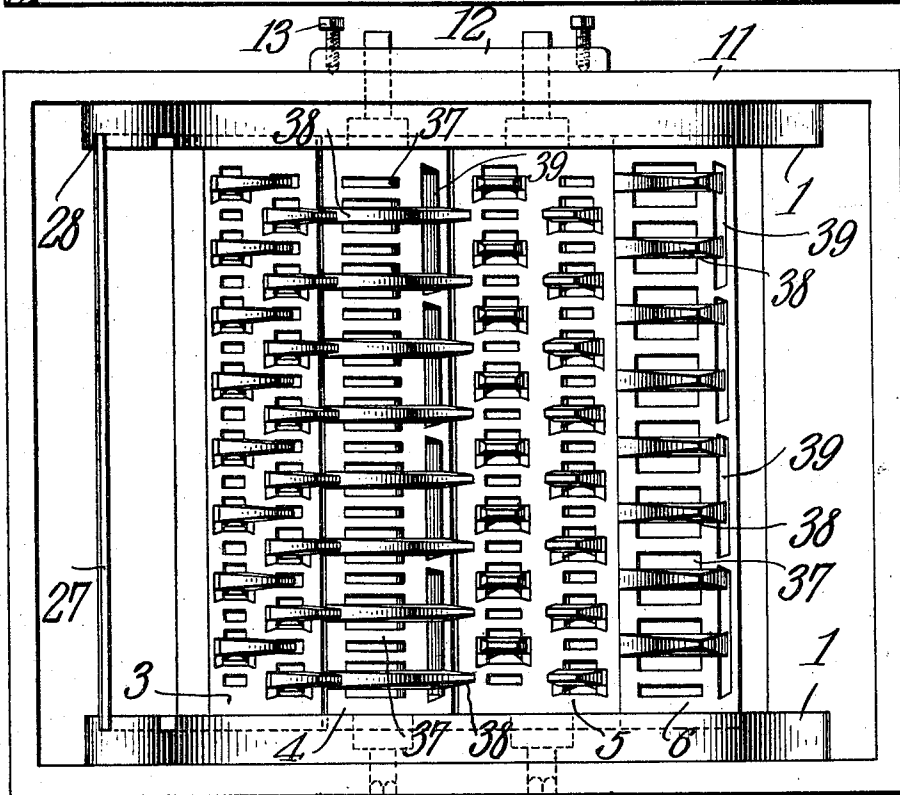
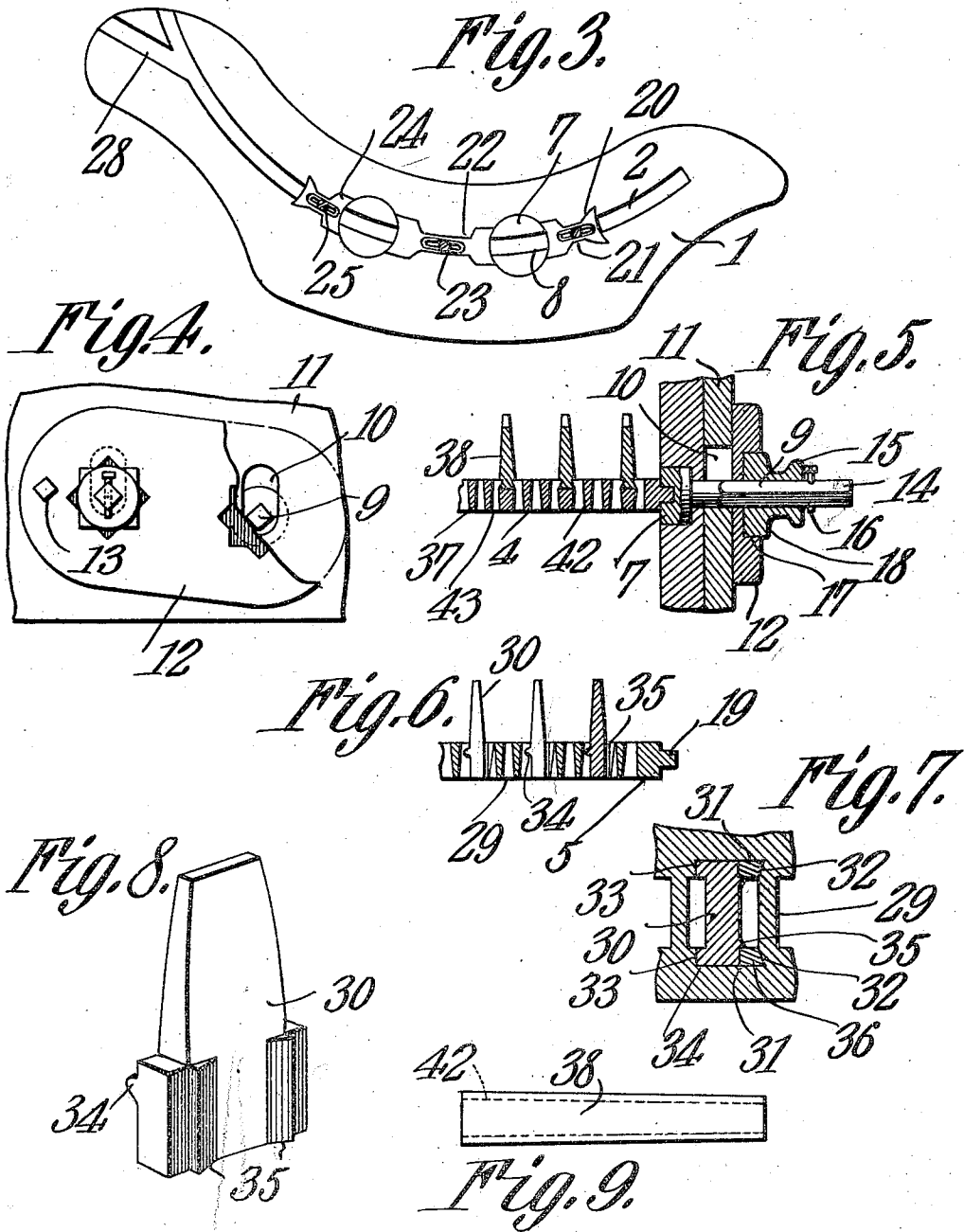


Fig. 2.

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UNITED STATES PATENT OFFICE.

MICHAEL FLYNN, OF SUPERIOR, WISCONSIN.

THRESHER-CONCAVE.

No. 896,097.

Specification of Letters Patent.

Patented Aug. 18, 1908.

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To all whom it may concern:

Be it known that I, MICHAEL FLYNN, a citizen of the United States, residing at Superior, in the county of Douglas and State of Wisconsin, have invented a new and useful Thresher-Concave, of which the following is a specification.

This invention has relation to a concave for threshing machines and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide a concave for threshing machines which is made up of a series of sections which are adapted to be adjusted and shifted with relation to each other so as to be advantageously arranged to meet conditions to which they are subjected.

The concave consists of side bearers which are adapted to be secured to the opposite sides of the thresher, and which are provided with grooves adapted to support the sections of which the concave is made up. Rotatable blocks are journaled in the bearers and have shanks which project through the sides of the thresher. Said blocks are provided upon their inner faces with grooves that register in alinement with the grooves of the bearers. The grooves in the said blocks are adapted to receive lugs located at the ends of the intermediate concave sections, thus, affording means whereby the said intermediate concave sections may be turned axially. The shanks of the said blocks are non-circular and pass through elongated openings in the sides of the thresher and through openings provided in side plates mounted upon the exterior of the thresher. Said plates may be adjusted so that the said shanks may be moved longitudinally along the openings in the side of the thresher so that the cylinder concave may be moved toward or away from the threshing cylinder. Means is provided in combination with one of the side plates for locking the intermediate concave sections in their adjusted positions. The concave sections are of such construction as will hereinafter appear.

In the accompanying drawings:—Figure 1 is a sectional view of the thresher concave. Fig. 2 is a top plan view of the same. Fig. 3 is a side elevation of one of the bearers of the concave. Fig. 4 is a side elevation of one of the side plates showing a portion of the thresher side with an elongated opening therein. Fig. 5 is a transverse sectional

view of a portion of the thresher side and one of the bearers and a sectional view of a portion of one of the intermediate concave sections. Fig. 6 is a sectional view of a portion of one of the intermediate concave sections of different construction from that shown in Fig. 5. Fig. 7 is a horizontal sectional view of a portion of the concave section shown in Fig. 6 illustrating the manner of securing the teeth therein. Fig. 8 is a perspective view of a tooth used in the form of the concave section illustrated in Figs. 6 and 7; and Fig. 9 is a plan view of the lower edge of a riser used on the concave section as shown in Fig. 5.

The thresher concave consists of the side bearers 1, 1, each of which is provided with a curved groove 2. The concave proper is made up of a series of sections which are supported at their ends by the bearers 1. As the said sections differ slightly in construction and operation they are designated as 3, 4, 5 and 6 in order that they may be properly distinguished from each other throughout the description. The blocks 7 are substantially circular and are provided upon their inner faces with grooves 8 which are adapted to register in alinement with the grooves 2. Each said block is provided with a shank 9 which passes through an elongated opening 10 provided in the thresher side 11. The plates 12 are mounted upon the exterior of the thresher side 11 and the said shanks 9 pass through the said plates. The plates may be moved laterally and secured in their adjusted position by means of set screws 13 or other securing devices, whereby the concave sections may be moved toward or away from the thresher cylinder (not shown). The shanks of the blocks 7 which are located at one side of the thresher are non-circular as at 14 and the collars 15 are located upon the said non-circular portions 14 and are adapted to slide thereon but are held against movement longitudinally of the non-circular portions 14 by means of pins 16 which pass transversely through the said portions. The outer face of the plate 12 is provided with star-shaped recesses 17, which are adapted to receive the enlarged squared portions 18 of the collars 15. Each of the concave sections 3, 4, 5 and 6 is provided at its opposite ends with lugs 19. The said lugs are adapted to slip longitudinally through the grooves 2 of the bearers 1 and the grooved edge of the blocks 7. When the section 6 is

in position between the bearers its lugs are at the ends of the grooves 2 when the blocks 20 are inserted in the said grooves and secured therein by set screws 21, thus, the concave section 6 is fixed with relation to the bearers 1. The concave section 5 is then placed in position between the bearers 1 by sliding its lugs 19 through the grooves 2 until they enter the grooves 8 of the blocks 7 adjacent the blocks 20. The blocks 22 are then inserted laterally in the grooves 2 and are secured therein by means of set screws 23. The lugs of the concave sections 4 are then slipped along the grooves 2 until they enter the grooves 8 of the blocks 7 at the opposite end of the blocks 22. The blocks 24 are then placed laterally in the grooves 2 and are secured therein by means of set screws 25. The lugs 19 of the concave sections 3 are then slipped along the grooves 2 until they come in contact with the end of the block 24. The board 27 is then inserted in the groove 28 provided in the bearers 1 and the parts of the thrasher concave are assembled.

It will thus be seen that the ends of the concave sections 4 and 5 are supported by rotatable blocks and that the said sections may be turned axially into a great variety of positions or combination of positions into which the said sections may be turned in order to advantageously perform their functions when subjected to unusual or peculiar conditions of the grain being threshed. It will also be observed that the concave sections 3 and 6 are held in fixed positions between the bearers. As the sections 3 and 5 are of the same construction a description of one will answer for both. The said sections differ only in the manner in which they are mounted between the bearers. As illustrated, in Figs. 6, 7 and 8, the said sections are provided with the transversely disposed grates 29 with the transversely disposed teeth 30 located at intervals between them. Special provision is made for mounting the teeth 30 in the said sections. The recesses 31 (see Fig. 7) are cut at the opposite sides of the opening for the reception of the tooth 30 and the said recesses 31 are provided at one end with the inclined walls 32. In the opposite walls of the recesses notches 33 are provided and are adapted to receive the lugs 34 formed at one side of the shank of the tooth 30. The opposite side of the shank of the tooth 30 is provided with ribs 35 and the cuneate blocks 36 are adapted to be driven between the shank of the tooth 30 and the ribs 35 thereof and the inclined side 32 of the recesses 31 for the purpose of holding the tooth 30 in position and forcing the lugs 34 into the notches 33. Thus the tooth is firmly held upon the concave section in parallel relation with the grate portions thereof.

As will be seen from Fig. 2, the teeth as above described are arranged in two rows

lengthwise of the sections but either one of the rows of teeth may, if desired, be removed from the sections and shanks without teeth may be inserted so as to increase the grate area of the sections, if desired, or, the section 3 may be slipped out of the grooves of the bearers and turned upside down and replaced between the bearers when its entire surface will be taken up by a grate area, devoid of teeth extending toward the threshing cylinder. The position of the concave section 5 may be reversed by turning the blocks 7 which support the same. The concave section 4 is provided with the grates 37 and the risers 38 located at intervals between said grates. The grates 37 are transversely disposed with relation to the section 4 and at their ends are located grate sections 39 which are disposed longitudinally along the section 4. The risers 38 are curved along their upper edges as at 40 and are provided with the rear edges 41. The lower portions of the risers 38 are provided with grooves 42 which are adapted to receive shoulders 43 formed in the upper surface of the concave section 4. As shown in Fig. 9, (which is a bottom plan view of one of the risers) the forward end of the riser is of greater breadth than the rear end thereof. Consequently the said riser is forced more securely in place upon the section 4 as the thrasher cylinder rotates as the strain is first exerted against the broader end of the riser. The said risers gradually diminish in thickness toward their upper edges. The function that the risers perform is to lift the butt end of grain passing through the thrasher so that the grain falling from the heads of subsequent bundles may have a chance to fall through the grate sections 37 or 39 into the grain pan of the thrasher (not shown). The object of disposing the grate sections 37 and 39 at a right angle to each other is to facilitate the passage of the grain through the concave, for the grain that will roll down the grate sections 37, in transverse relation thereto, will enter and pass through the grate section 39 in longitudinal relation thereto.

The concave section 6 is similar in construction to the concave section 4, with the exception that the transversely disposed grate sections 37 are not so numerous and that the spaces between the grate bars are of greater area. This is owing to the fact that the section 4 is downwardly inclined with relation to the course taken by the grain and straw while the section 6 is upwardly inclined. Therefore greater space is provided between the grate bars of the concave section 6 to catch the loosened grain remaining in the straw without detaining the chaff as the chaff, being lighter than the grain, will follow the straw up the incline, while the grain will fall by gravity through the spaces between the said grate bars.

It will be observed that the concave section 4 may be turned upside down when its upper surface will be converted into a grate area only. Also, the concave section 6 may be reversed in its position in the grooves of the bearers should more grate area be desired at the point occupied by the said section. It will also be observed that any one or several of the teeth 30 and the risers 38 may be removed from the concave without necessitating that the parts of the concave be taken apart to remove the teeth 30 as the wedges 36 may be knocked out of position when the said teeth may be readily taken from the concave section. To remove any one of the risers 38 the particular riser is struck upon its rear edge 41 with a hammer or other implement and the said riser is forced from between the shoulder 43 of the concave sections.

Having described my invention what I claim as new and desire to secure by Letters-Patent is:—

1. A concave for threshing machines comprising bearers, concave sections supported thereby, blocks rotatably mounted in said bearers and having grooves for the reception of end portions of the concave section, said blocks having shanks which pass transversely through the frame of the thresher and plates located upon the exterior of the thresher and in which the said shanks are journaled.

2. A concave for threshing machines comprising bearers having grooves and rotatable blocks journaled therein with grooved faces adapted to register in alinement with the grooves of the bearers and concave sections having at their ends flanges adapted to enter the grooves of the bearers and the grooves of the blocks.

3. A concave for threshing machines comprising bearers having grooves, blocks journaled for rotation in said bearers and having grooved faces adapted to register in alinement with the grooves of the bearers, con-

cave sections having flanges at their ends adapted to pass through the grooves of the bearers and the grooves in the blocks and blocks inserted in the grooves of the bearers between the flanges of the adjacent concave sections.

4. A concave for threshing machines comprising bearers, concave sections mounted therein, some of the said sections being supported by rotatable blocks having shanks, a perforated plate receiving said shanks and having star-shaped recesses upon its outer face, said shanks being non-circular, sleeves slidably mounted upon the shanks and having enlarged portions adapted to enter the recesses of the plate and means for holding the enlarged portions of the sleeves in the recesses of the plates.

5. In a concave for threshing machines, bearers, concave sections supported thereby and having grate openings, some of the sections having straw risers and other sections having threshing teeth with shanks seated in recesses and having lateral lugs disposed in notches and ribs with cuneate blocks inserted between the walls of the recesses the side of the shanks and the said ribs.

6. A concave for threshing machines comprising bearers, concave sections supported thereby, some of which are provided with threshing teeth and the others having transverse grooves provided at their edges with shoulders, straw risers having recesses in their sides adapted to receive the shoulders of the groove, said risers being of greater breadth at one than the other end and gradually diminishing in thickness toward their upper edges.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MICHAEL FLYNN.

Witnesses:

A. R. COLE,
H. FORSLUND.