

No. 764,669.

PATENTED JULY 12, 1904.

N. F. METZ.  
SEPARATOR GRATE.

APPLICATION FILED JAN. 11, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

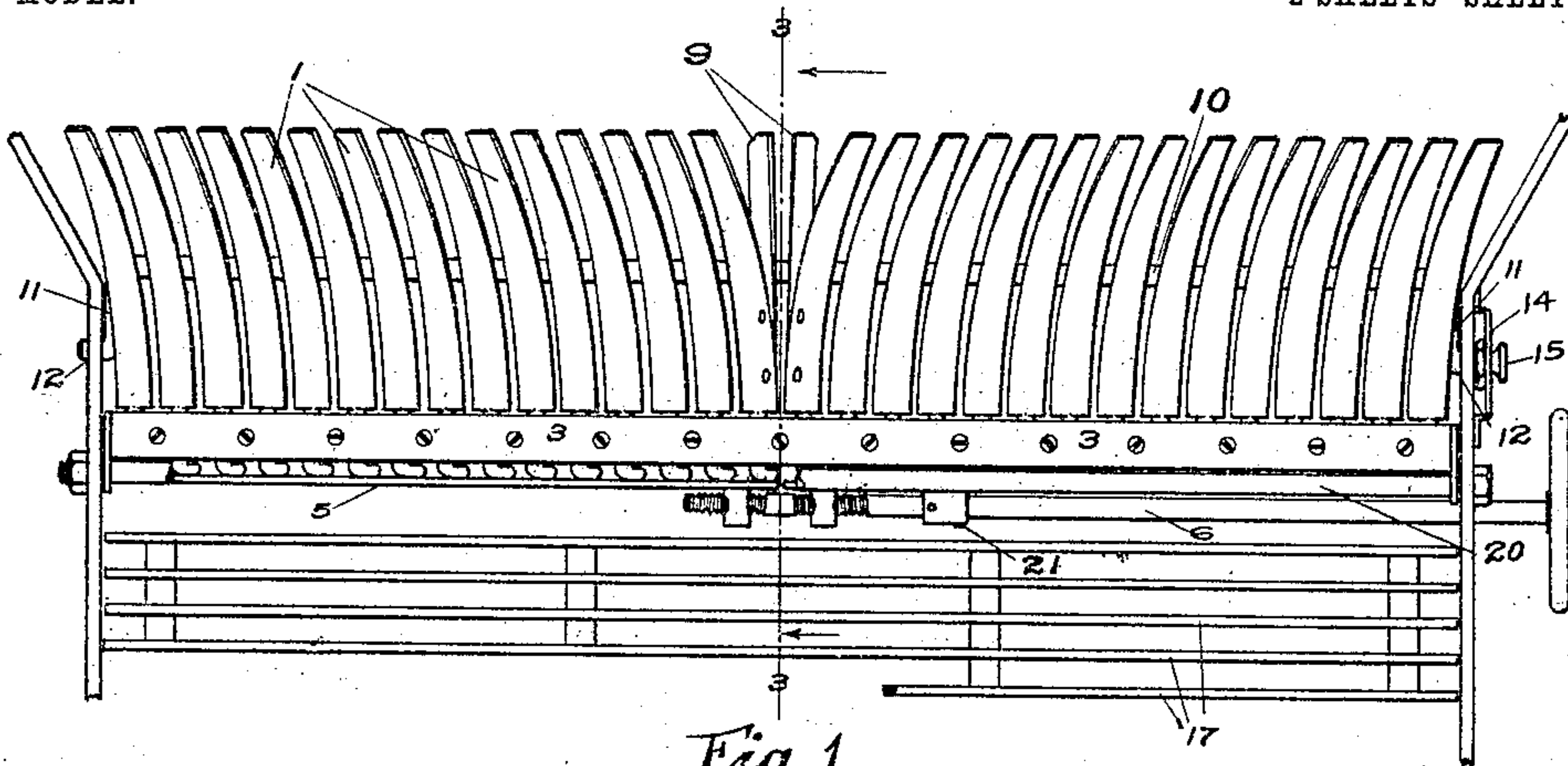


Fig. 1

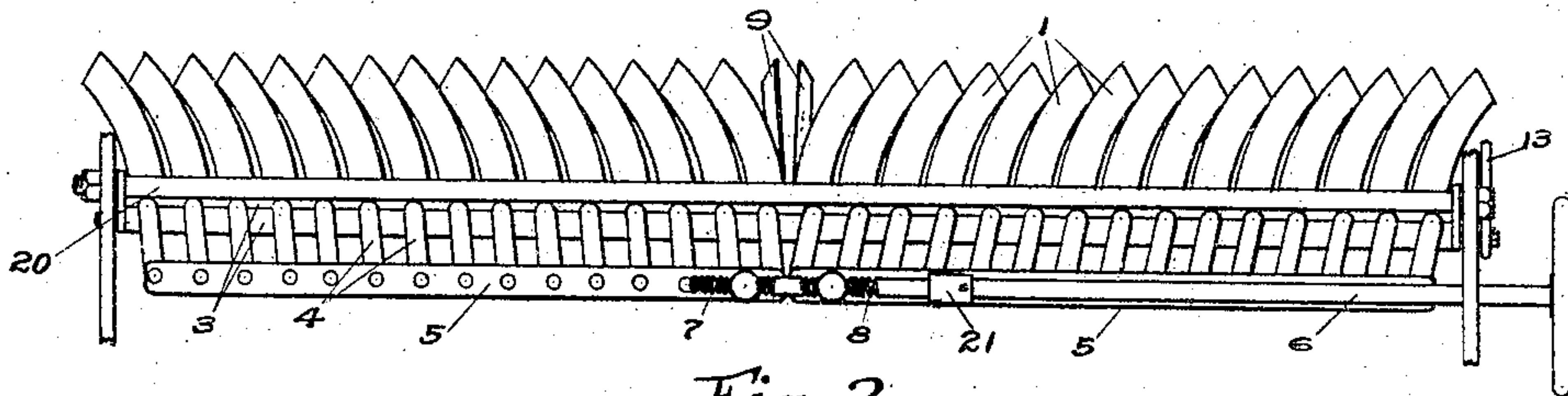


Fig. 2

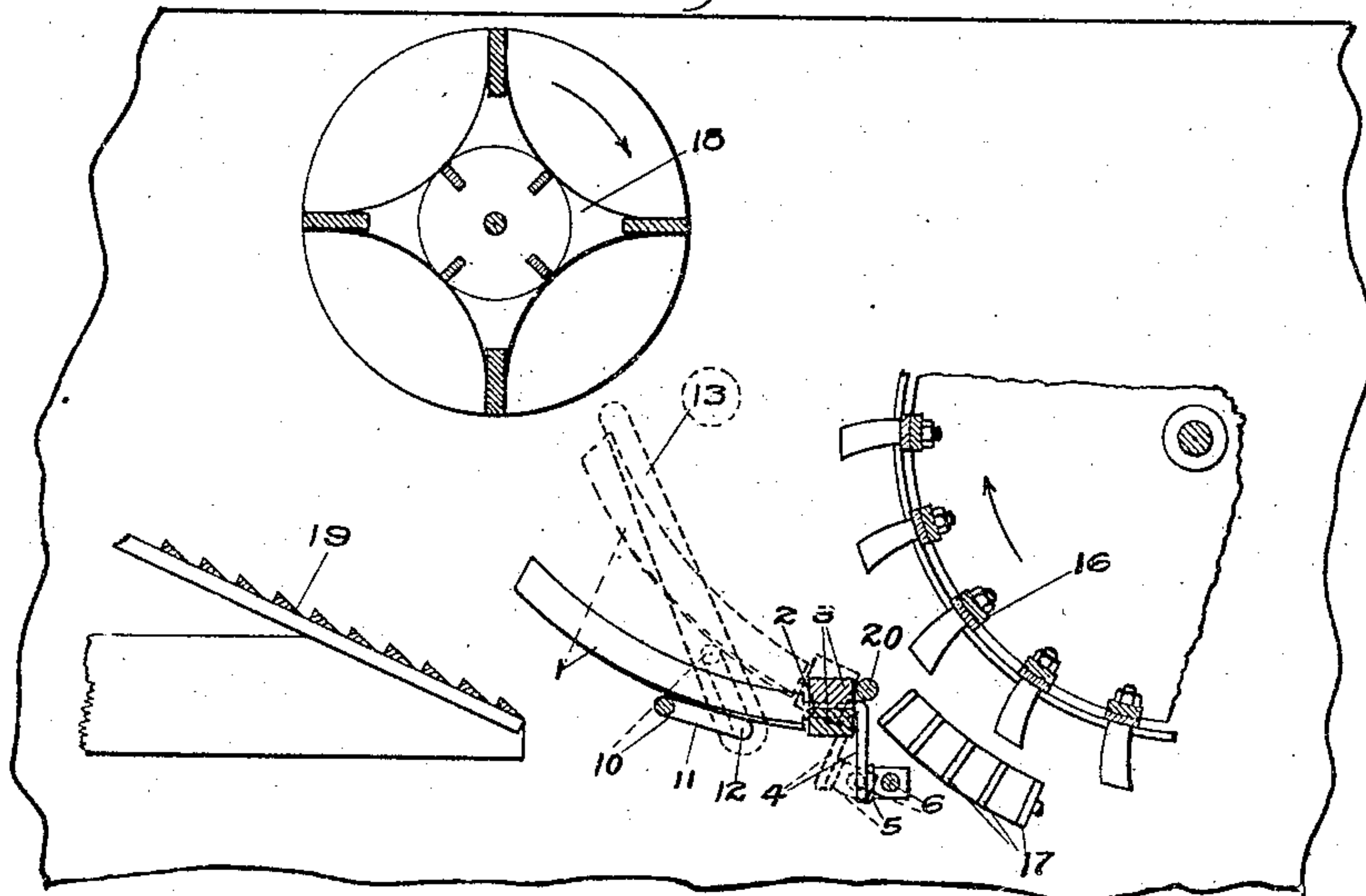


Fig. 3

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2 SHEETS—SHEET 2.

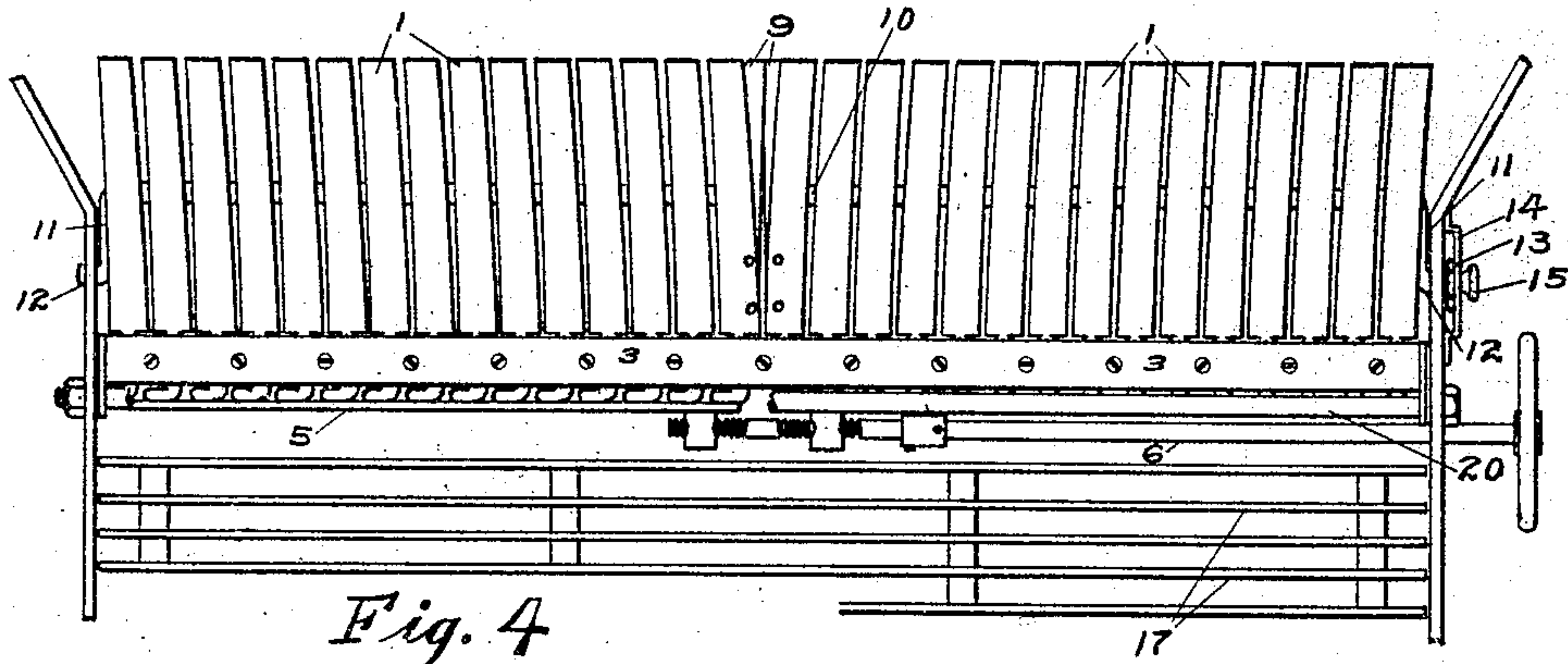


Fig. 4

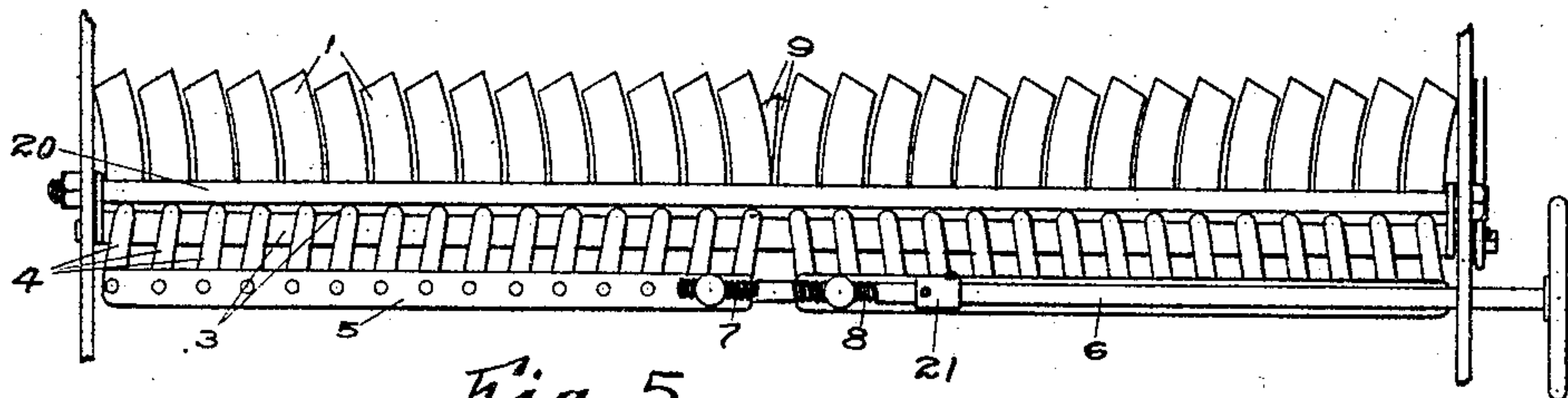


Fig. 5

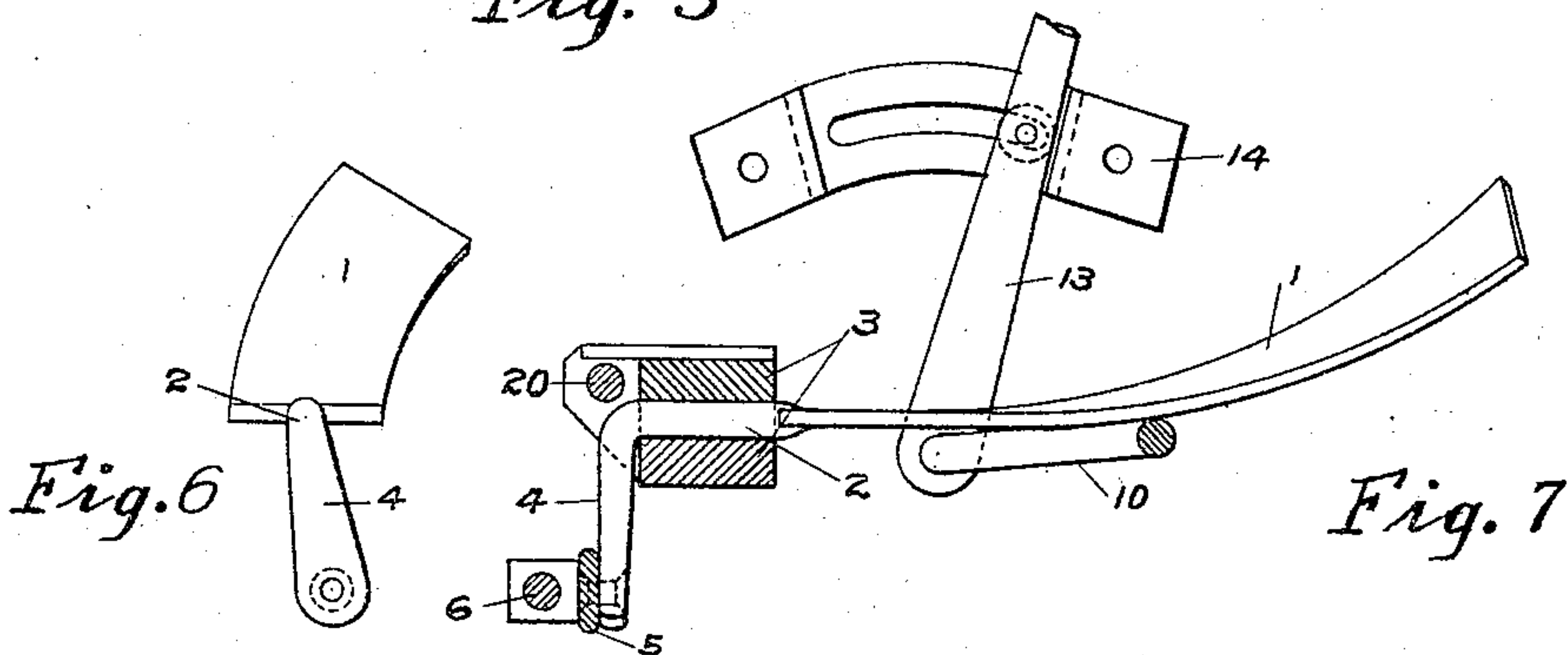


Fig. 6

Fig. 7

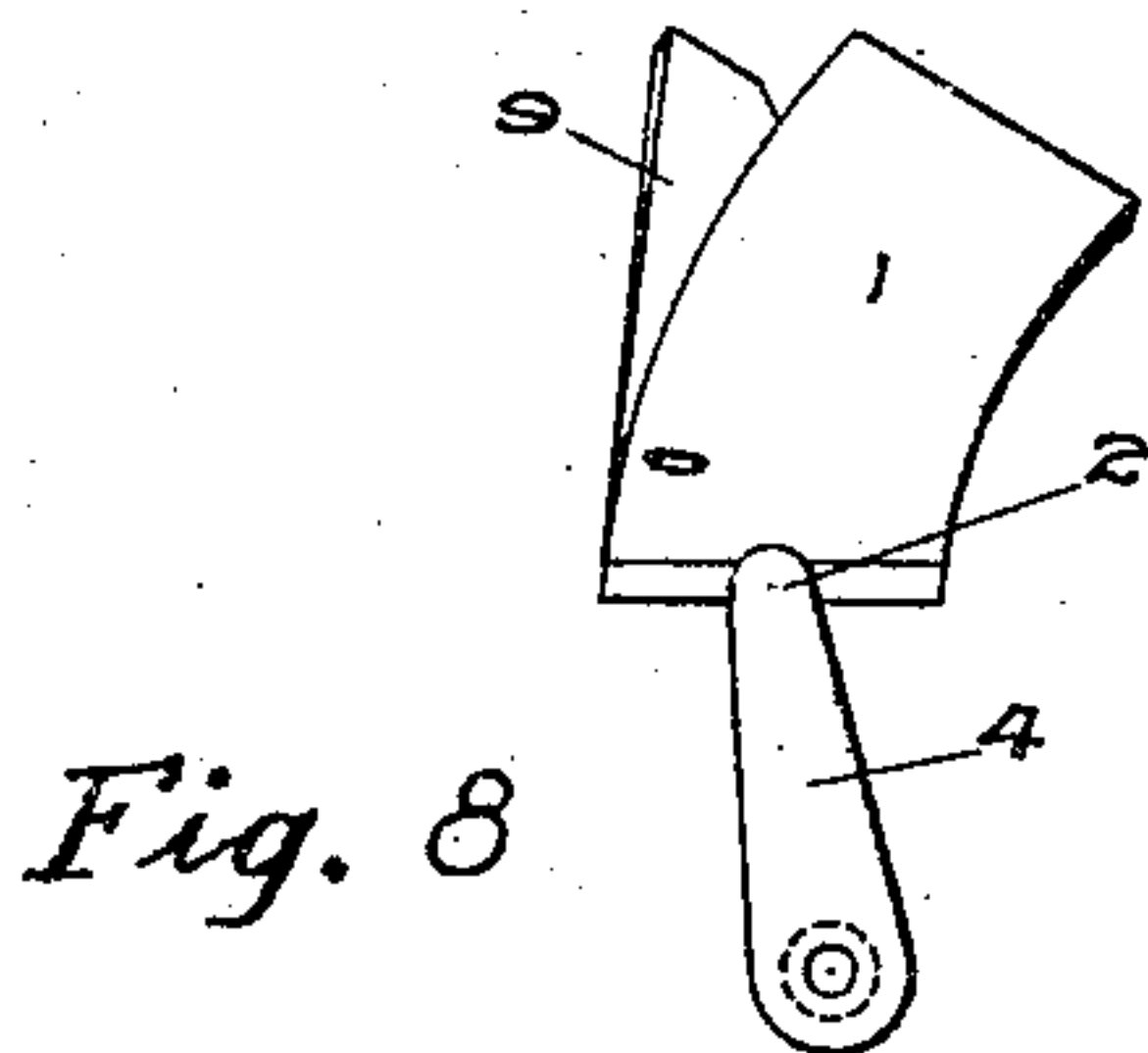


Fig. 8

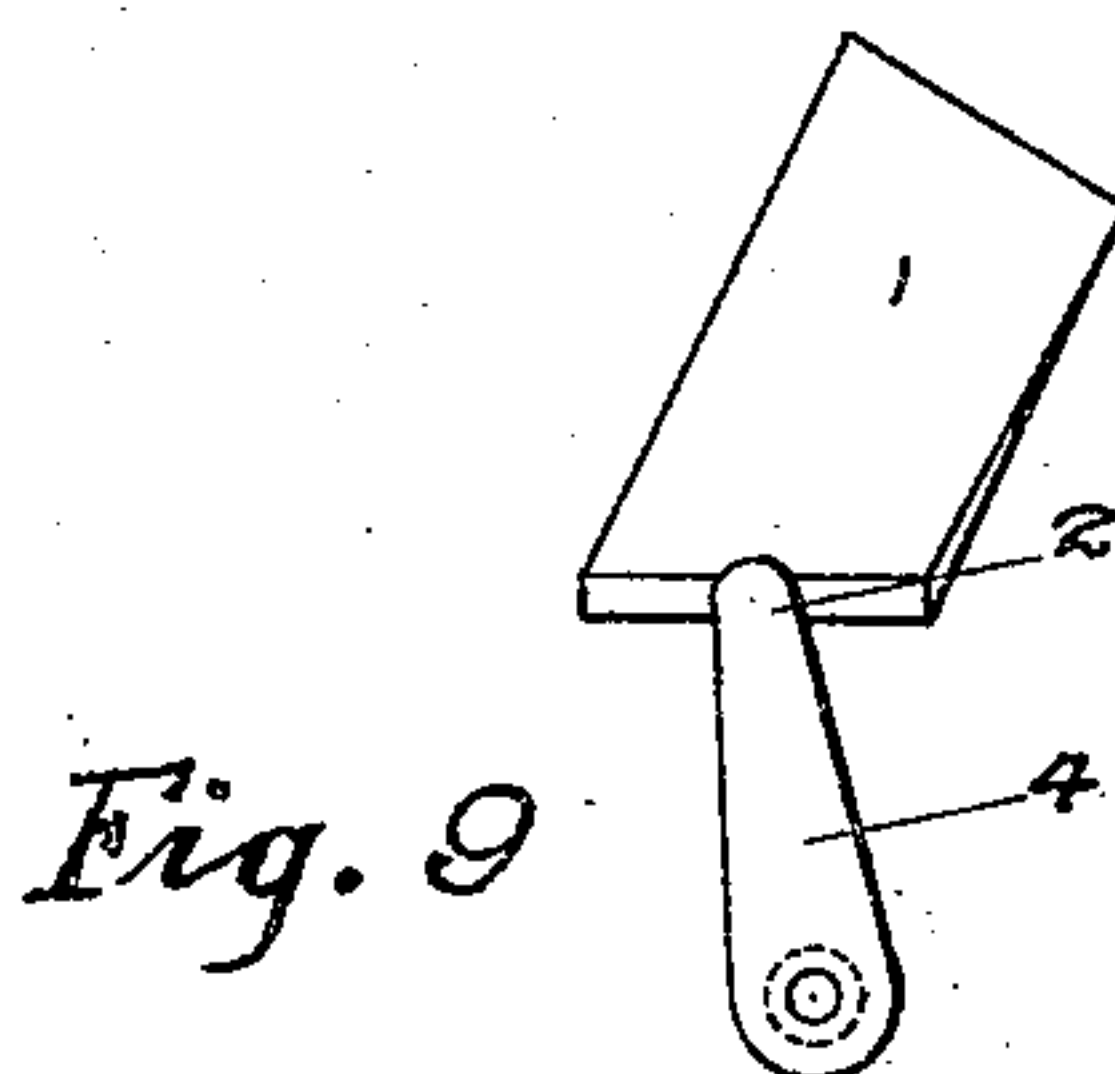


Fig. 9

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# UNITED STATES PATENT OFFICE.

NICHOLAS F. METZ, OF ASHTON, SOUTH DAKOTA.

## SEPARATOR-GRATE.

SPECIFICATION forming part of Letters Patent No. 764,669, dated July 12, 1904.

Application filed January 11, 1904. Serial No. 188,446. (No model.)

*To all whom it may concern:*

Be it known that I, NICHOLAS F. METZ, a citizen of the United States, and a resident of Ashton, county of Spink, and State of South Dakota, have invented certain new and useful Improvements in Separator-Grates Used in Grain-Threshing Machines, Separators, and the Like, of which the following is a specification.

My invention relates to that part of a threshing-machine or separator commonly called the "grate" and lies adjacent to the toothed cylinder and near the beater.

The object of my invention is to provide an adjustable grate so arranged that the space between the several members may be adjusted and also so constructed as to tend to spread the grain and distribute the same over the entire width of the machine and eliminate any tendency of the straw to clog on the grates.

To this end my invention consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts, Figure 1 is a plan view of my grate arranged to give the greatest space between adjacent members. Fig. 2 is an elevation taken from immediately back of the finger-rotating mechanism of Fig. 1. Fig. 3 is a partial sectional view of a separator equipped with my invention and taken substantially on line 3-3 of Fig. 1 and shows the relative position of the grate with the toothed cylinder and beater. Fig. 4 is a plan view of my grate arranged to give the least space between adjacent members. Fig. 5 is an elevation taken from immediately back of the finger-rotating mechanism of Fig. 4. Fig. 6 is an end elevation of one of the members or fingers detached. Fig. 7 is a side elevation of the member or finger shown in Fig. 6 in combination with the supporting and elevating mechanism. Fig. 8 is an end elevation of one of the central members with the supplemental member attached. Fig. 9 is an end elevation of one of the members or fingers of a modified form.

As shown in the drawings, my improved

grate comprises two sections, each beginning at substantially the center of the machine and extending to the adjacent side. Each section is provided with a plurality of bars or fingers 1, extending in a direction longitudinal of the machine and slightly diverging toward the adjacent side. In the preferred form shown each finger is provided with a rounded shank 2, rotatably mounted in a transverse bar 3, which is itself pivotally supported to permit the free ends of the fingers 1 to be vertically adjusted, for a purpose hereinafter explained. The shank 2 has its end 4 bent at an angle thereto, and suitable means are provided to engage the ends 4 and by moving them in unison rock the fingers on the shanks 2, and thus control the adjustment of the several fingers, and consequently the space between them. As the several fingers are adjusted toward a position arranging them upon their edges, as shown in Figs. 1 and 2, the space between them will be increased, and the effect of directing or throwing the straw toward the side of the machine will also be increased. As they are adjusted in the opposite direction, as shown in Figs. 4 and 5, the part of the fingers adjacent to the shank may be laid practically flat, and the space between them is reduced. Obviously the two sections should be operated in opposite directions, and any suitable means may be employed for that purpose. In the preferred form shown the extensions 4 in each section are attached to a bar 5, while a rod 6, extending to the exterior of the machine and there provided with a hand-wheel or equivalent means for convenience in operating the same, is provided with right and left threaded portions 7 8, engaging similarly-cut nuts secured to the bars 5. By rotating the rod 6 in either direction the bars 5 will be moved longitudinally, partially rotating the fingers 1, as set forth, and adjusting them as desired. The fingers on the ends of the sections near the center of the machine may be provided with supplemental parts 9, so that as the free ends of the center fingers are separated by the operation of the device the supplemental fingers will sufficiently fill the space to insure the proper operation of the grates at that point. Suitable



means may be provided for supporting and vertically adjusting the free ends of the fingers. As shown, a transverse bar 10 is passed beneath the fingers, said bar being offset at the ends 11, pivotally supported, as at 12, and provided with a lever 13, by means of which the bar 10 may be vertically adjusted as desired, thus providing for the vertical adjustment of the free ends of the fingers 1 forming the grate. Any suitable means may be provided for securing the lever 13 and the connected parts in their adjusted position. As shown in the drawings, a guiding-segment 14, provided with a clamp-screw, is provided for the purpose.

The usual position of the adjacent cooperating parts is shown in Fig. 3, in which 16 represents the cylinder, 17 the usual transverse grates or concaves, (shown also in Figs. 1 and 4,) 18 the beater, 19 a part of the straw-racks, and 1 to 13 is my grate showing in its normal position and in broken lines the manner in which the free ends of the fingers may be elevated to throw the straw higher into the beater. In the preferred form of the fingers 1 (shown in Fig. 7) they are also given a slight twist to more thoroughly direct the straw toward the two sides of the machine, and thus equalize the distribution of the straw over the grate. If desired, a similar operation may be secured by forming the finger and its shank at a slight angle, as shown in Fig. 9.

The bar 3 may be pivotally supported in any suitable manner. As shown in the drawings, it is secured to a rod 20, extending transversely across the machine and supported in the outer walls thereof.

As the free ends of the fingers are vertically adjusted as described, the bars 5 5 are swung in the arc of a circle, and the rod 6 is provided with a flexible coupling 21 of any preferred construction to readily permit of such a movement.

It is obvious that after having thus described my improvement various immaterial modifications may be made without departing from the spirit of my invention. Hence I do not wish to be understood as limiting myself to the exact form and construction shown.

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

1. In a device of the kind described, a separator-grate comprising a plurality of members extending substantially longitudinally of the machine and diverging from the point of their supports, in combination with means for adjusting said members to vary the space between them.

2. In a device of the kind described, a separator-grate comprising a plurality of curved members extending longitudinally of the machine, in combination with means for adjust-

ing said members to vary the space between them; substantially as described.

3. In a device of the kind described, a separator-grate comprising a plurality of members extending longitudinally of the machine, each member consisting of a curved plate pivotally supported at one end, in combination with means for partially rotating each of said members to regulate the space between them and means for vertically adjusting the free end of said members; substantially as described.

4. In a device of the kind described, a separator-grate comprising a plurality of members extending longitudinally of the machine, each member consisting of a slightly-twisted plate, in combination with means for adjusting said members to vary the space between them; substantially as described.

5. In a device of the kind described, a separator-grate comprising a plurality of members extending longitudinally of the machine, each member consisting of a slightly-twisted plate pivotally supported at one end, in combination with means for partially rotating each member to regulate the space between them; substantially as described.

6. In a device of the kind described, a separator-grate comprising a plurality of members extending longitudinally of the machine, each member consisting of a curved and slightly-twisted plate, in combination with means for adjusting said members to vary the space between them; substantially as described.

7. In a device of the kind described, a separator-grate comprising a plurality of members extending longitudinally of the machine, each member consisting of a curved and slightly-twisted plate pivotally supported at one end, in combination with means for partially rotating each member to regulate the space between them; substantially as described.

8. In a device of the kind described, a separator-grate comprising a plurality of series of members extending longitudinally of the machine, each member consisting of a plate pivotally supported at one end, the members of a series on opposite sides of the center of the machine, diverging toward their free ends, in combination with means for partially rotating the members of opposing series in opposite directions whereby the space between the members may be adjusted; substantially as described.

9. In a device of the kind described, a separator-grate comprising a plurality of series of members extending longitudinally of the machine, each member consisting of a plate pivotally supported at one end, the members of the series on opposite sides of the center of the machine, diverging laterally outward toward their free ends, in combination with



means for simultaneously partially rotating the members of the opposing series in opposite directions, whereby the space between the members may be adjusted; substantially as described.

10. In a device of the kind described, a separator-grate comprising a plurality of series of members extending longitudinally of the machine, each member consisting of a curved plate pivotally supported at one end, the members of a series on opposite sides of the machine diverging toward their free ends, in combination with means for partially rotating the members of opposing series in opposite directions, whereby the space between the members may be adjusted; substantially as described.

11. In a device of the kind described, a separator-grate comprising a plurality of series of members extending longitudinally of the machine, each member consisting of a slightly-twisted plate pivotally supported at one end, the members of the series on opposite sides of the machine outwardly diverging toward their free ends, in combination with means for partially rotating the members of opposing series in opposite directions, whereby the space between the members may be adjusted; substantially as described.

12. In a device of the kind described, a separator-grate comprising a plurality of series of members extending longitudinally of the machine, each member consisting of a curved and slightly-twisted plate pivotally supported at one end, the members of the series on opposite sides of the machine outwardly diverging toward their free ends, in combination with means for partially rotating the members of opposing series in opposite directions, whereby the space between the members may be adjusted; substantially as described.

13. In a device of the kind described, a separator-grate comprising two series of members extending longitudinally of the machine, each member consisting of a curved plate pivotally supported at one end, the members on opposite sides of the machine outwardly diverging toward their free ends, in combination with means for partially rotating the members of each series in opposite directions, whereby the space between the members may be adjusted; substantially as described.

14. In a device of the kind described, a separator-grate comprising two series of members extending longitudinally of the machine, each member consisting of a plate pivotally supported at one end on the line of its length, the members of the series on each side of the machine outwardly diverging from their supports toward their free ends, the inner member of each series being provided with a supplemental member carried thereby adapted as the members are rotated to suitably close the occurring space, in combination with means for partially rotating the members of

each series in opposite directions, whereby the space between the members may be adjusted.

15. In a device of the kind described, a separator-grate comprising two series of members extending longitudinally of the machine, each member consisting of a plate pivotally supported at one end on the line of its length, the members of the series on each side of the machine outwardly diverging from their support toward their free end, and means for properly closing the occurring central space between the two series, in combination with means for partially rotating the members of each series in opposite directions, whereby the space between the members may be adjusted.

16. A grate-bar for separators and the like, comprising a bar laterally diverging from its center of support with means at one end for securing the same in position, and adapted to be assembled with other bars of like construction to complete the grate; substantially as described.

17. A grate-bar for separators and the like, comprising a curved bar laterally diverging from its center of support with means at one end for securing the same in position, and adapted to be assembled with other bars of like construction to form a complete grate; substantially as described.

18. A grate-bar for separators and the like, comprising a slightly-twisted bar laterally diverging from its center of support with means at one end for securing the same in position; substantially as described.

19. A grate-bar for separators and the like, comprising a curved and slightly-twisted bar laterally diverging from its center of support with means at one end for securing the same in position; substantially as described.

20. A grate-bar for separators and the like, comprising a bar laterally diverging from its center of support with means at one end for rotatably securing the same in position, and adapted to be assembled with other bars of like construction to complete the grate.

21. A grate-bar for separators and the like, comprising a partially-rotatable bar laterally diverging from its center of support and means at one end for securing the same in position, in combination with a supplemental wing carried by the bar and adapted upon the partial rotation of the bar to be positioned in the space caused by the divergence of the bar.

22. A grain-separator and its associated parts including the beater, in combination with a separator-grate arranged in proximity to the beater, comprising a plurality of members extending longitudinally of the separator, means for adjusting said members to vary the space between them and means for vertically adjusting the grate with relation to the beater.

23. A grain-separator and its associated parts including the beater, in combination with a separator-grate comprising a plurality of



members extending substantially longitudinally of the machine and diverging from the point of their support, and means for adjusting said members to vary the space between them.

24. A grain-separator and its associated parts including the beater, in combination with a separator-grate in proximity to the beater comprising a plurality of members rotatively supported at one end and extending substantially longitudinally of the machine and diverging from the point of their support, and means for partially rotating said members to vary the space between them.

25. A grate-bar for separators and the like, comprising a bar laterally diverging from its center of support, provided with a cylindrical portion at one end for pivotally securing the same in position, and a bell-crank extension formed on said cylindrical part, adapted in its operation to partially rotate said bar and retain the same in its adjusted position.

26. A grate-bar for separators and the like, comprising a curved bar laterally diverging from its center of support, provided with a cylindrical portion at one end for pivotally securing the same in position, and a bell-crank extension formed on said cylindrical part, whereby said bar may be partially rotated and retained in its adjusted position.

27. A grate-bar for separators and the like, comprising a slightly-twisted bar, laterally diverging from its center of support, provided with a cylindrical portion at one end, for pivotally securing the same in position, a bell-crank extension formed on said cylindrical part adapted to partially rotate said bar and retain the same in its adjusted position.

28. A grate-bar for separators and the like, comprising a curved and slightly-twisted bar laterally diverging from its center of support, provided with a cylindrical portion at one end, for pivotally securing the same in position, a bell-crank extension formed on said cylindrical part adapted to partially rotate said bar and retain the same in its adjusted position.

29. A grain-separator and its associated parts including the beater, in combination with a separator-grate arranged in proximity to the beater comprising a plurality of members rotatably supported at one end, extending substantially longitudinally of the machine and diverging from the point of their supports outward toward their free ends, means for partially rotating said members to vary the space between them, and means for

vertically adjusting the free ends of the members.

30. A grain-separator and its associated parts, including the beater, in combination with a separator-grate arranged in proximity to the beater comprising a plurality of curved and twisted members rotatably supported at one end, extending substantially longitudinally of the machine, means for partially rotating said members to vary the space between them, and means for vertically adjusting the free ends of the bars or members.

31. A grain-separator and its associated parts including the beater, in combination with a separator-grate comprising a plurality of series of members extending longitudinally of the machine each member consisting of a plate rotatably supported at one end, the members of the series on opposite sides of the center of the machine diverging laterally outward toward their free ends, means for simultaneously partially rotating the members of the opposing series in opposite directions, means adapted upon the rotation of said members to partially close the occurring space between the two series, and means for vertically adjusting the free ends of the members.

32. A grain-separator and its associated parts including the beater, in combination with a separator-grate comprising two series of members extending longitudinally of the machine, each member consisting of a curved and slightly-twisted plate rotatably supported at one end, the members of the series on opposite sides of the machine outwardly diverging toward their free ends, means for partially rotating the members of opposing series in opposite directions to vary the space between them, supplemental means for closing the central space between the two series of members as they are outwardly rotated, and means for vertically adjusting the free ends of the members.

33. A separator-grate comprising a plurality of series of members extending longitudinally the machine, the members on each side of substantially the center of the grate being slightly twisted outward to direct the passing material toward the sides of the machine.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NICHOLAS F. METZ.

Witnesses:

BURTON U. HILLS,  
CHARLES I. COBB.