

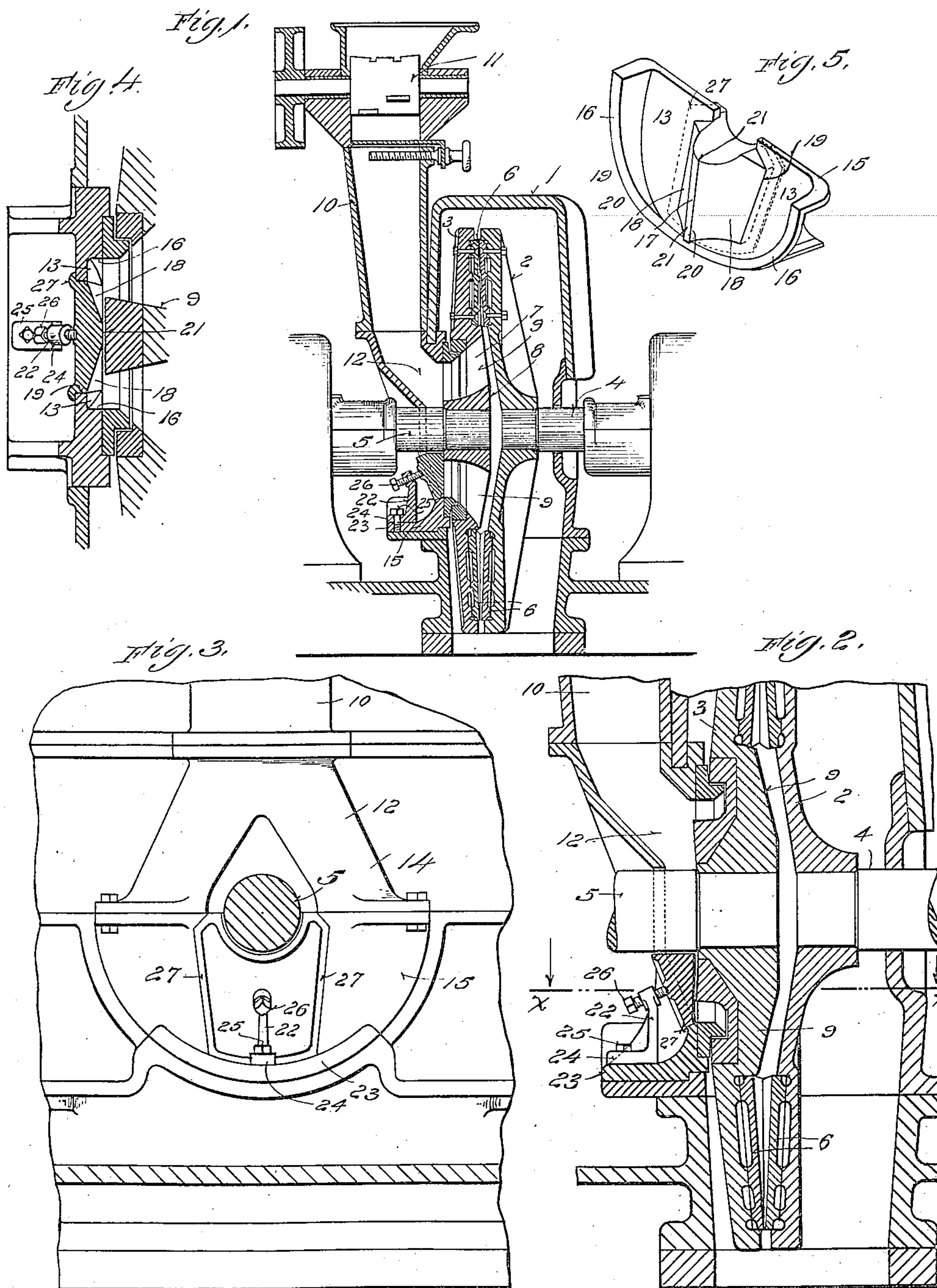
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PATENTED APR. 10, 1906.

D. L. ADELSPERGER.

MILL.

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WITNESSES:

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MILL.

No. 817,610.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DOW L. ADELSPERGER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to mills, and more particularly to that class of attrition or grinding mills in which two disks or heads are employed revolving in parallel planes in opposite directions, the material being fed in between the disks or heads through an eye or central opening in one of the heads.

The object of my present invention is to insure a positive and even feeding of the material to and through the aforesaid eye or opening; and to this end my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a view, partly in elevation and partly in central vertical section, of a mill having my improvement applied thereto. Fig. 2 is an enlarged detail view of a portion of Fig. 1, but with the feeding disk or head so turned that its spokes are in a different position. Fig. 3 is an enlarged elevation of one side of what is shown in Fig. 2. Fig. 4 is a plan section taken on the line $x-x$ of Fig. 2 and looking in the direction of the arrows, and Fig. 5 is a detail perspective view showing the interior of the lower part of the feed-throat.

In the said drawings, 1 indicates an inclosing casing, 2 the closed head, and 3 the open head, said heads being mounted, respectively, on shafts 4 and 5, rotating in opposite directions, and said heads being provided with suitable grinding-plates 6. As usual in mills of this type, the head 3 is provided with an annular opening 7 around its center, through which opening the material is fed, the hub portion 8 of the head being connected with the annular body portion by spokes or arms 9. The material to be operated upon is fed downward toward this eye or opening through a feed-spout 10 by any suitable means—such, for instance, as the feeding mechanism 11 shown. The spokes or arms 9 in mills of this type are beveled or inclined, as shown in section in Fig. 4, their

widest portions being on the outer or receiving side, so that after the material has passed the outer edge of the spokes or arms these latter will act to feed it onward into the space between the two heads. In order to conduct the material from the feed-spout to the eye or opening, there is employed a feed-throat 12, into the top of which the feed-spout discharges and which has the side thereof toward the eye or opening open or unobstructed, while its other or outer side is closed by an inclined wall 13, the inclination of which is downward and inward toward the bottom of the eye or opening. Preferably this feed-throat is made in two sections, an upper section 14 above the shaft 5 and a lower section 15 below said shaft. From an inspection of Fig. 5 it will be seen that the outer wall 13 is inclined downward and inward in the manner already described, while the side walls 16 also converge downward, so as to conduct the material toward the eye. It has been found in practice, however, that there is at times a tendency of the material to pack in the lower part of the throat, so that it does not feed properly into the eye. To overcome this objection, I locate in said throat a central rib 17, extending vertically thereof and having converging sides 18, their convergence being outward with respect to the throat or toward the discharge side thereof and their rear upright edges merging with and lying in the plane of the inclined back 13, while their front or outer edges 20 lie immediately adjacent to the path of the outer faces of the spokes 9, being preferably slightly separated, so that the rib has a flat front edge 21. It will thus be seen that the rib 17 projects considerably outward from the back of the throat at its upper part, practically merging into the back of the throat at its lower part and being of a gradually-diminishing thickness from top to bottom both longitudinally and transversely. By reason of this construction the material as it descends through the lower portion of the throat is forced outward to the eye or opening of the head not only by the inclined rear and side walls of the throat, but also by the inclined sides of the rib, and is thus more certainly and positively conducted to the point where it enters the eye and is fed forward by the spokes.

In mills of this class—to wit, those in which a revolving head is employed having a central eye surrounding its hub, through which eye the material to be operated upon is fed and in which the hub of the head is connected with the outer annular body portion by spokes extending radially across the eye—the packing of the material in the lower part of the feed-throat, hereinbefore referred to, frequently arises from the fact that the material clogs in the eye of the head and will not pass through. This is particularly the case where fibrous material of any considerable length is being operated upon. Where the wall 13 of the feeding-throat diverges from the outer edge of the eye, there is left between the outer faces of the spokes and the wall of the feed-throat an open space, and fibrous material, such as corn husks, lying partly within the eye, may extend out beyond the head into this clear space in the feed-throat and even be pressed against the outer face of the spokes or become wrapped around the same. In either case the only force acting to press this projecting material into and through the eye is the pressure exerted by the material in the feed-throat. This is sometimes insufficient to force the material thus located wholly into the eye, and the result is that said material is carried around and around without passing through the eye, thereby clogging or entirely stopping the feed. My improved construction provides a remedy for this difficulty by reason of the fact that there is in the feed-throat a projection lying close to the outer face of the head at a point inward from the outer edge of the receiving-eye, which projection positively engages with any material protruding from the eye on the feed side and compels it to enter and pass through the eye. Thus the rib 17 constitutes a scraping projection of the character just described, which independently of its function of guiding the material to the eye, which function has already been fully described herein, also serves to prevent clogging of the eye, and therefore insures proper feeding of the material operated on through the eye.

In order to prevent breakage of the parts when a hard body of sufficient size is accidentally present in the material operated upon, I prefer to construct the rib 17 in a separate piece from the remainder of the throat and to hold it in position by a frangible supporting-arm, which will break and permit the rib to yield outwardly under undue pressure. To this end I prefer the construction shown, in which the rib 17 is constructed in a separate piece, fitting an opening in the rear wall of the throat, and supported by an arm 22 of frangible material secured to any suitable portion of the casing—as, for example, the base-flange 23 of the throat-section 15. In this construction the frangible arm 22 has a

foot 24, secured in position by a bolt 25, and is provided with a screw-bolt 26, passing through a threaded aperture in its upper end and bearing against the rear face of the rib 17. Said rib is provided with marginal flanges 27, which bear against the outer surface of the rear wall 13 of the throat and limit its motion toward the eye under pressure of the screw 26, which thus holds it securely in position within the throat. Undue pressure on the inclined walls of the rib will cause the arm 22 to break and permit the rib to yield outward, thus preventing any permanent damage to the mill and permitting the objectionable object to pass out of the opening thus provided.

It will be observed that the central inclined rib is of equal efficiency in whichever direction the open head may be revolved and will effectively prevent any clogging of the lower portion of the throat. It will also be understood that although I prefer to construct the rib of a separate piece yieldingly supported my invention is not limited to such preferred construction, since the automatic relief feature may be dispensed with in the broader form of my invention. Furthermore, where the mill is designed to run in one direction only one of the inclined sides of the rib is necessary, so that the rib might be divided longitudinally into two parts, either or both of which might be used, as desired. Moreover, various modifications in the details of construction will readily suggest themselves to one skilled in the art, and I therefore do not wish to be understood as limiting myself to the precise details hereinbefore described, and shown in the accompanying drawings.

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

1. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, and a central rib or projection extending longitudinally within said throat, the central plane of said rib being coincident with the vertical plane in which the axis of revolution of the head or disk lies, and the free edge of the rib being substantially in the vertical plane of the discharge-mouth of the throat, substantially as described.

2. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, and a central rib or projection extending longitudinally within said throat and having a side wall inclined from the back

of the throat toward the opening, the central plane of said rib being coincident with the vertical plane in which the axis of revolution of the head or disk lies, and the free edge of the rib being substantially in the vertical plane of the discharge-mouth of the throat, substantially as described.

3. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, and a central rib or projection extending longitudinally within said throat, and having side walls converging from the back of the throat toward the opening, the central plane of said rib being coincident with the vertical plane in which the axis of revolution of the head or disk lies, and the free edge of the rib being substantially in the vertical plane of the discharge-mouth of the throat, substantially as described.

4. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, and a central rib or projection extending longitudinally within said throat, and having side walls converging from the back of the throat toward the opening, said rib tapering or decreasing downwardly both in thickness and in width, the central plane of said rib being coincident with the vertical plane in which the axis of revolution of the head or disk lies, and the free edge of the disk being substantially in the vertical plane of the discharge-mouth of the throat, substantially as described.

5. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, and a central rib or projection extending longitudinally within said throat, and having its free edge located in close proximity to the path of the adjacent faces of the spokes of the head, substantially as described.

6. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, and a central rib or projection extending longitudinally within said throat, and having side walls converging from the back of the throat toward the opening, the free

edge of said rib being located in close proximity to the path of the adjacent faces of the spokes of the head, substantially as described.

7. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, said feeding-throat being provided with an opening in its rear wall, and a central rib or projection extending longitudinally within said throat and having side walls converging from the back of the throat toward the feeding-eye, said central rib or projection being formed in a separate piece from the throat, and a frangible arm supporting said rib in position to normally close the opening in the rear wall of the feeding-throat, said rib being adapted to yield outwardly when said arm is broken, substantially as described.

8. In a mill of the character described, the combination, with a head or disk revolving in a vertical plane and having a feeding eye or opening near its center, and a shaft, of a feeding-throat having walls converging downwardly toward said opening and open on the side adjacent thereto, said feeding-throat being constructed in sections lying above and below the shaft respectively, the section below the shaft being provided with a central rib or projection, extending longitudinally thereof from the shaft to the bottom of the opening, and having side walls converging from the back of the throat toward the opening, substantially as described.

9. In a mill of the character described, the combination, with a revolving open head having an eye and spokes connecting the hub and annular body of the head, of a casing having a feed-throat provided with a scraping projection located at the receiving end of the eye, and adapted to loosen and force the material through the eye, substantially as described.

10. In a mill of the character described, the combination, with a revolving open head having an eye and spokes connecting the hub and annular body of the head, of a casing having a feed-throat the wall of which diverges from the outer edge of the eye, said feed-throat being provided with a scraping projection located at a point radially inward from the junction of the feed-throat wall and eye, substantially as described.

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

DOW L. ADELSPERGER.

Witnesses:

E. O. HAGAN,
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