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PATENTED FEB. 19, 1907.

R. G. LATTING, JR.
MACHINE FOR TREATING COTTON SEED HULLS.

APPLICATION FILED AUG. 30, 1906.

2 SHEETS—SHEET 1.

Fig. 1-

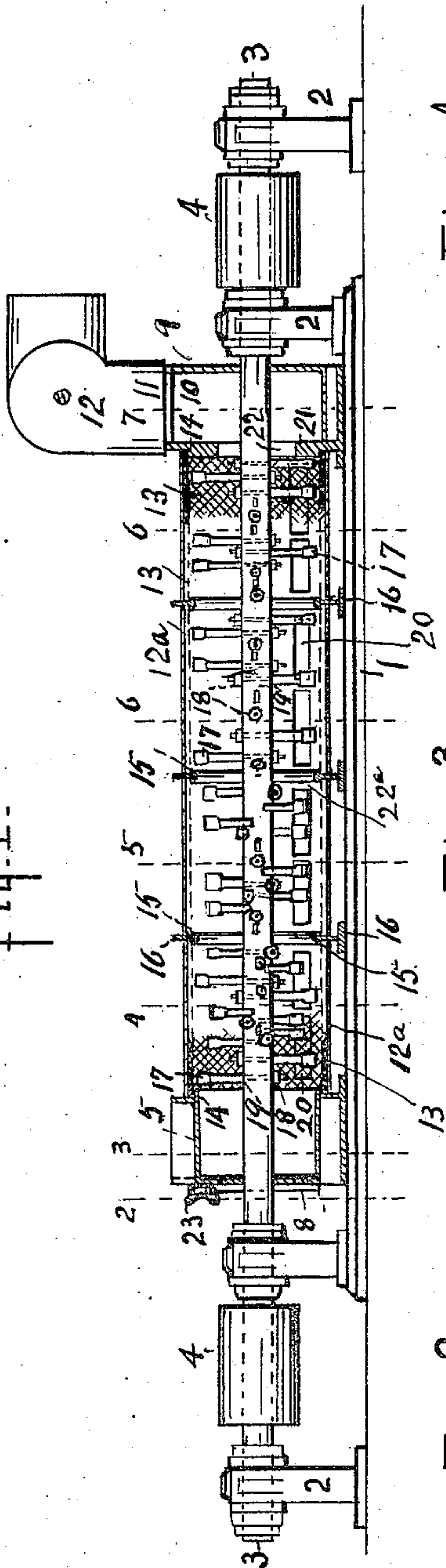


Fig. 4-

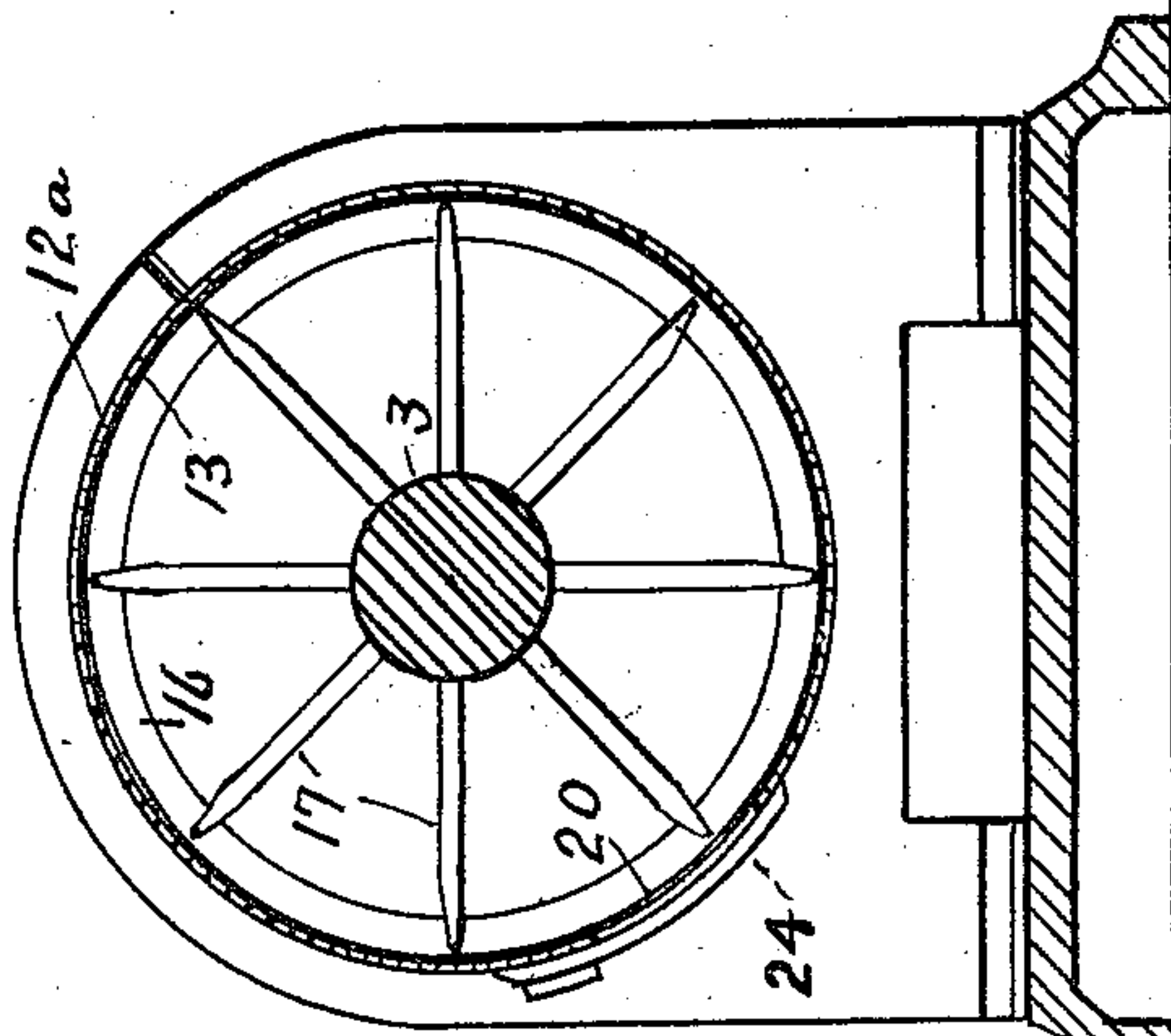


Fig. 3.

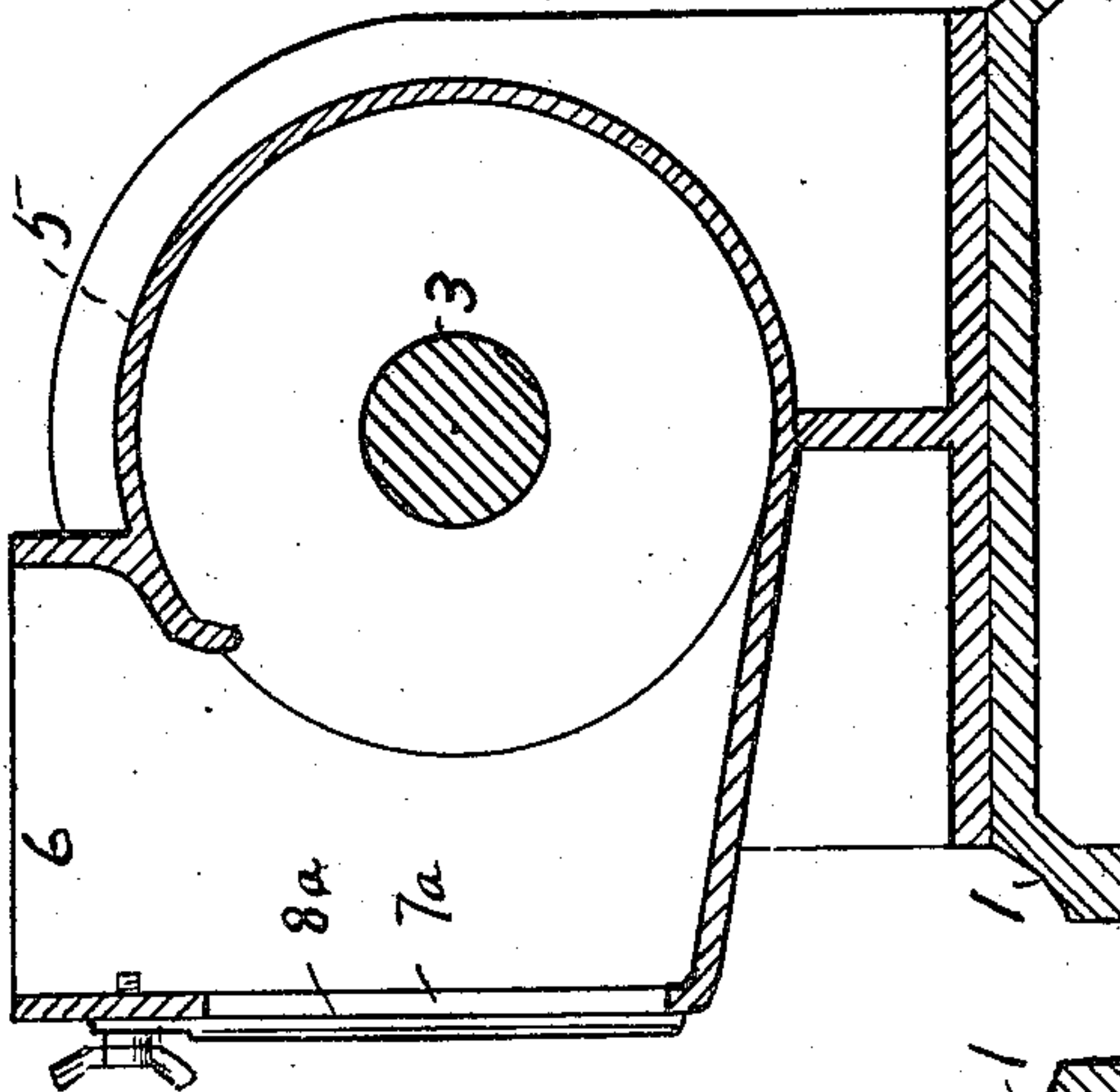
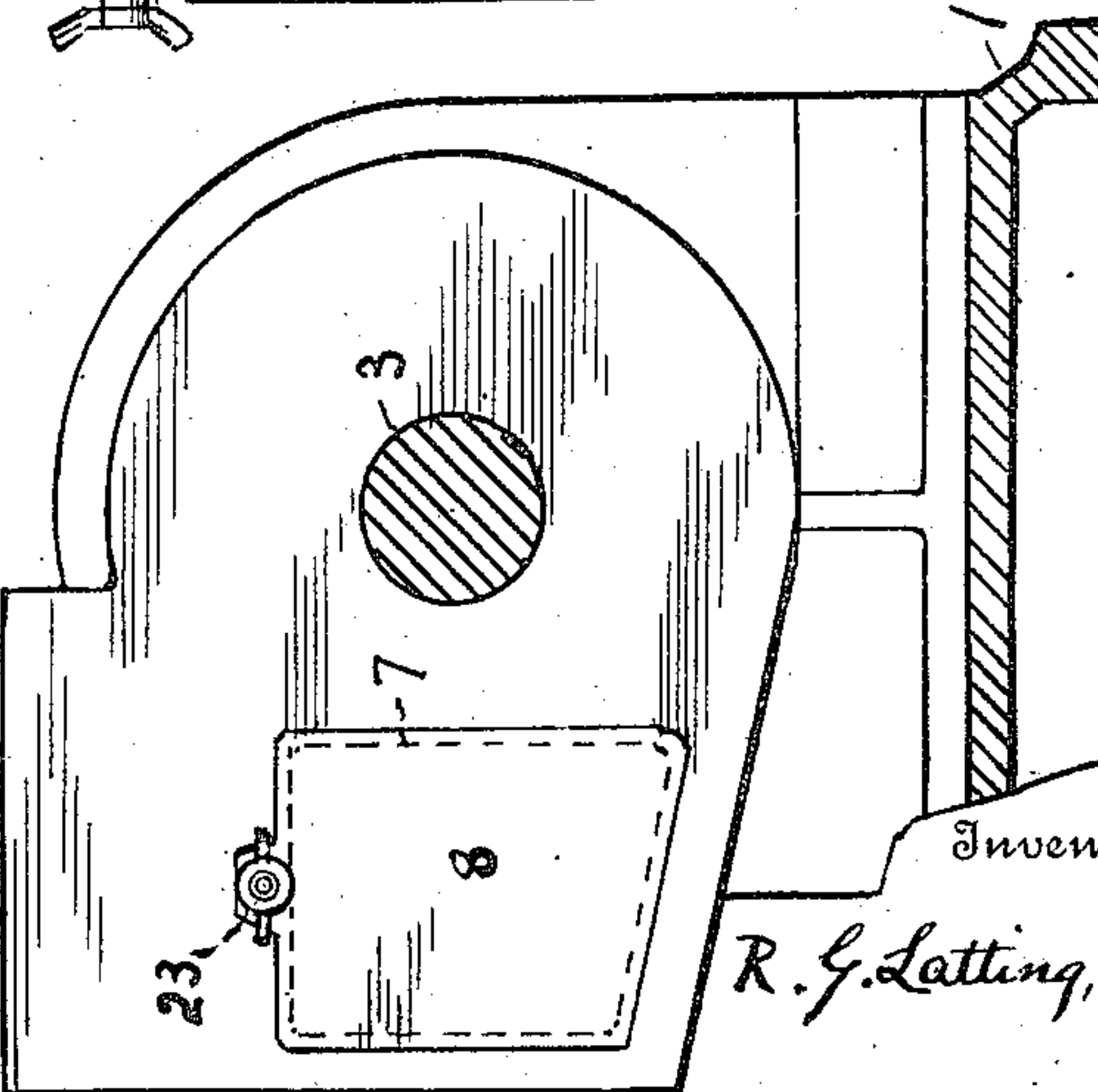


Fig. 2-



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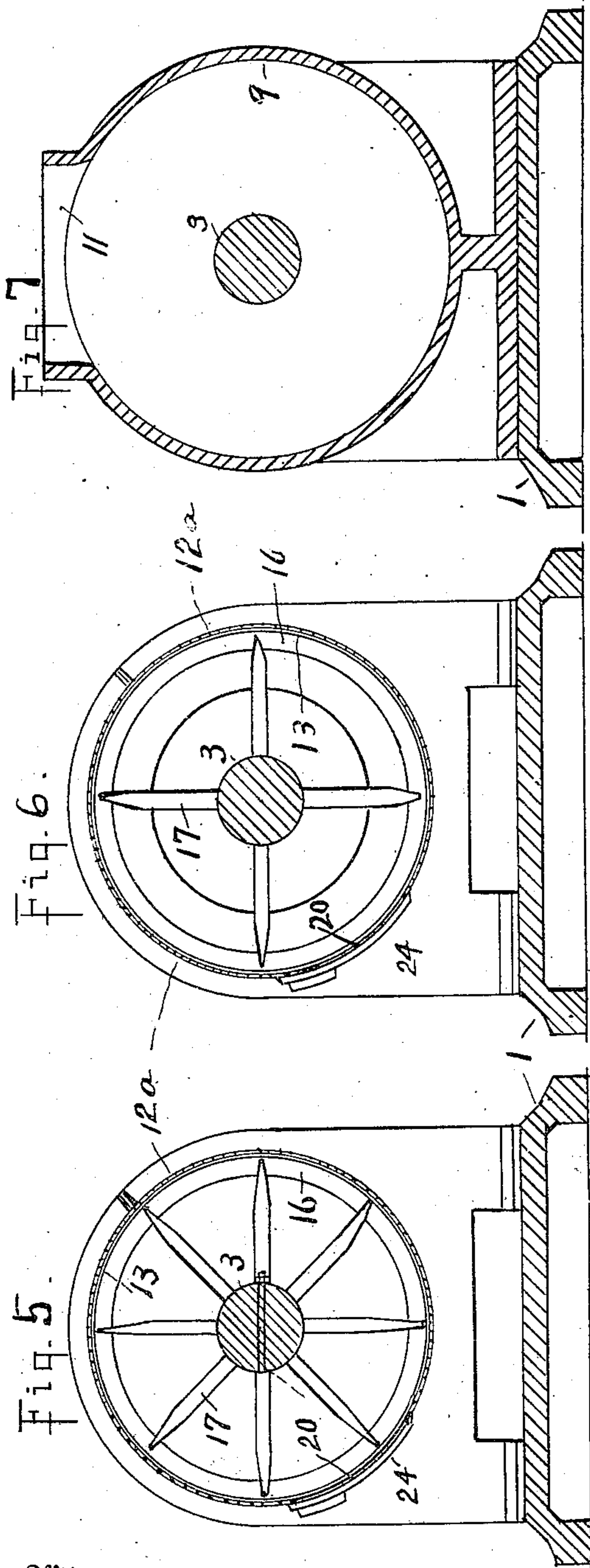
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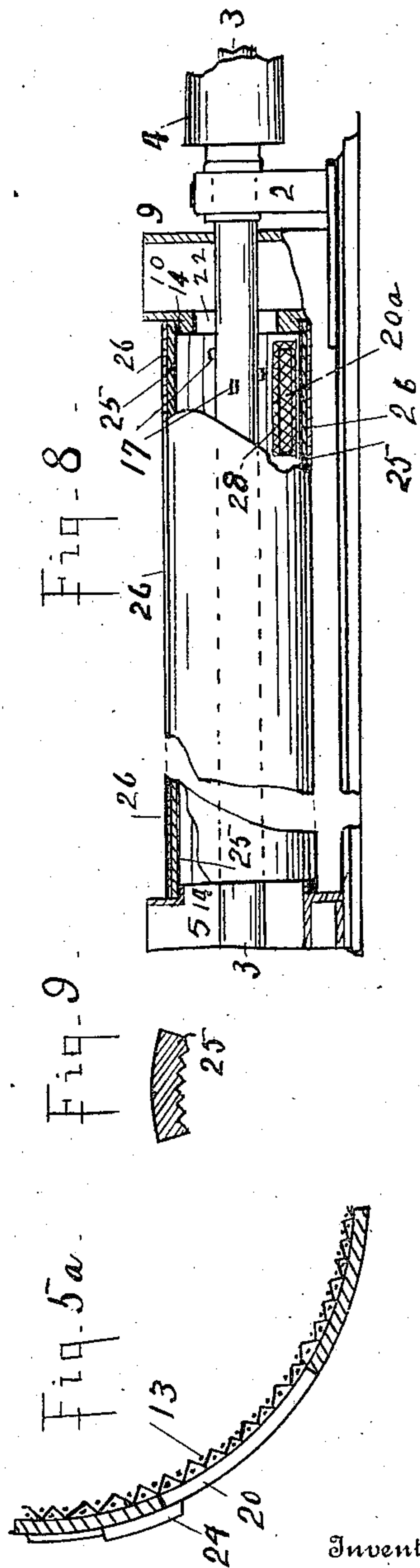
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR TREATING COTTON-SEED HULLS.

No. 844,371.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed August 30, 1906. Serial No. 332,632.

To all whom it may concern:

Be it known that I, RICHARD G. LATTING, Jr., a resident of Chickasha, Indian Territory, have invented certain new and useful Improvements in Machines for Treating Cotton-Seed Hulls; and I do hereby 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 pertains to make and use the same.

This invention relates to machines for disintegrating materials such as cotton-seed hulls or the like and separating their components, and has for its object to increase the efficiency and capacity of such machines and to decrease relatively their cost of construction and operation.

The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawings, which illustrate the invention and form a part of the specification, Figure 1 is a longitudinal section of the machine. Figs. 2 to 7 are enlarged transverse sections on lines 2, 3, 4, 5, 6, and 7, respectively. Fig. 5^a is an enlarged partial section of the cylinder, showing an opening in its lower side covered with reticulated material. Fig. 8 is a partial longitudinal section of a modification, and Fig. 9 is an enlarged cross-section of one piece of ribbed lining.

Numeral 1 denotes a base, and 2 a plurality of posts or standards in which are provided bearings for a shaft 3, having driving-pulleys 4.

5 denotes a housing supported on the base and surrounding the shaft.

6 indicates an inlet to the interior of the housing for material to be treated, and 7 an air-inlet provided with an adjustable cover 8.

9 indicates a housing of the same general character as that denoted by 5. It has a discharge-opening 10 for air and the lighter portions of the disintegrated materials. 11 denotes a conduit by which said opening communicates with an exhaust-fan, (indicated at 12.)

Secured between the housings 5 and 9 and communicating with their interior and their openings is a cylinder, preferably made in a plurality of sections, four sections being illustrated in the present instance. Each section by preference comprises an outer cylindrical shell 12^a, of galvanized iron, and a lining of

reticulated material, such as wire-cloth 13. The outer ends of the sections are fitted to and supported upon a ledge 14 of the proximate housing. The other section ends are fixed to similar ledges 15 on the interior of cylinder-supporting ring-standards 16, fixed to the base by suitable feet.

17 denotes rubbing blades or beaters extending from the shaft to the cylinder for disintegrating, mainly by friction, material passed into the cylinder. These are fixed to the shaft by means of nuts 18, drawing the shoulders 19 against said shaft. The construction provides that, if desired, the beater may be adjusted, so that the face will be situated in a plane cutting the shaft obliquely. Heretofore in machines of the same general character such beaters of the particular character shown have been arranged on diametrically opposite sides of the shaft, little or no conveying action being thus secured. The beaters herein illustrated are spirally disposed about the shaft and extend to near the cylinder and are in such numbers and such relation that they act as conveyers for the beaten material, their numbers and arrangement being variable, as will be described.

The metal cylinder-sections 12^a are provided on their lower part with discharge-openings 20, which together extend approximately the whole length of the sections. These are covered by the perforated lining 13, which may be supported between the openings by narrow parts 22^a of the outer cylindrical wall. This lining may cover the entire inner surface of the cylinder, as indicated in Fig. 1 by the cross-lines at each end and by the broken lines lengthwise the cylinder-wall between said cross-lines, all being marked 13, said cross-lines showing the lining partially and the broken lines indicating its length.

In operation material such as cotton-seed hulls is supplied by any usual or known means to the feed-opening 6 and air admitted to the inlet 7. Thereupon the air and portions of the hulls are drawn through the cylinder and among and past the beaters, which latter being rapidly rotated break up the hulls and also convey or push along the material being beaten toward the discharge. The heavier portions of the disintegrated hulls are by centrifugal action thrown toward the cylinder and are carried by this action and by gravity to the openings 20 and

delivered from the machine to be collected and cared for in any desired manner. Such heavier material as is not beaten out, and thus separated in the first section, receives similar treatment in succeeding sections, except that by preference the beaters are not arranged in the last section to convey the material, the exhaust action being sufficient to remove the lighter material, which at this part of the cylinder has been practically separated from the heavier, which latter escapes through openings 20.

To vary the action of the beaters in the several sections, their spiral arrangement is varied—in the present instance the section nearest the inlet end of the cylinder. Eight beaters make a complete circuit of the shaft, the next section six beaters, in the third four beaters, and in the last there is no spiral arrangement. The sections each contain twelve beaters. The precise numbers are not material. The conveying action of the beaters is not essential in the last section, and it may be omitted to avoid crowding the escaping material against the shoulder 21, that surrounds the contracted discharge-cylinder outlet 22. The effect of this comparatively small outlet and this shoulder is to concentrate about the shaft the exhaust-current and leave adjacent the cylinder-wall a zone relatively unaffected by the exhaust to facilitate the centrifugal and gravitating action before referred to.

The rings having ledges 15, against which the cylinder-sections abut, retard the conveying action of the beaters, and thus facilitate escape of the heavier portions of the separated material through the openings 20.

The air-inlet 7 in housing 5 has an adjustable cover 8. 23 denotes a set-screw for fixing it after adjustment. The situation of the air-inlet back of or behind and closely adjacent the opening for charging material into the cylinder promotes the feeding of such material by exhausting from the opposite end of the cylinder in a loose and agitated state, whereby it is evenly exposed to the action of the beaters. 7^a is a second opening and 8^a its cover. The openings 20 in the lower part of the cylinder also have adjustable covers 24. The air-inlet covers and the covers for the cylinder-openings can be adjustably supported to slide in ways. (Not shown.)

In disintegrating cotton-seed hulls the fiber and bran are separated by repeated action of the rubbing-beaters. A part of the bran is separated and escapes through the openings 20 near the inlet end of the cylinder, and the remainder is drawn along with attached and detached fiber and further beaten. Bran thrown or dropped to the cylinder-wall that does not at once escape is conveyed by the spirally-arranged beaters, having broad blades moving in close proximity to the reticulated

lining. The friction of the lining and the obstructions of the rings 16 promote separation of bran and fiber. The action of these parts tending to retard the passage of the heavier components of the material lengthwise of the cylinder is more than balanced by the spiral arrangement of the beaters, whereby packing of material and choking of the cylinder is prevented, and the use of a cylinder of much larger capacity and a more thorough separation of bran and fiber made possible.

The improvements are not limited to a cylinder made in sections except as herein pointed out. Neither is the invention limited to any particular form or kind of cylinder-lining material, provided that a part that covers the lower outlets or outlet is perforated in manner to permit the escape of bran. A piece of gauze 28 may cover the outlet, the lining being cut away. The use of ribbed lining 25, such as heretofore employed, or of a lining of emery or other material is contemplated under suitable circumstances.

It is obvious that the covers can be used to close one or more of the outlets 20, and in some cases an integral cylinder 26 with all outlets closed, except one or more near the delivery end, as at 20^a, will be operative and useful in carrying out the general purposes of the invention.

It is not essential that the cylinder be strictly horizontal, and it may be inclined toward either end, as desired, either to quicken or retard the movement of the material passing therethrough.

Having thus described the invention, what I claim is—

1. In a machine for disintegrating cotton-seed hulls or other substances and separating their components, a cylinder comprising a plurality of longitudinal sections, supporting standards comprising rings separating the sections, and ledges on the rings and within the sections, means for passing air and the substance to be disintegrated through said cylinder, a shaft situated in the cylinder, and beaters fixed to the shaft.

2. In a machine for disintegrating cotton-seed hulls or other substances and separating their components, a cylinder comprising a plurality of longitudinal sections, supporting standards comprising rings separating the sections, and ledges on the rings and within the sections, means for passing air and the substance to be disintegrated through said cylinder, a shaft situated in the cylinder, and beaters fixed to the shaft a part of the beaters being spirally arranged about the shaft, and a part arranged in rows in planes parallel to the axis.

3. In a machine for disintegrating cotton-seed hulls or other substances and separating their components, a cylinder comprising a plurality of longitudinal sections, supporting

rings separating the sections, means for passing air and the substance to be disintegrated through said cylinder, a shaft situated in the cylinder, and beaters fixed to the shaft and arranged spirally about it and the length of the spirals thus formed varied in the sections to vary the conveying effect of the beaters.

4. In a machine for disintegrating cottonseed hulls or other substances and separating their components, a cylinder comprising a plurality of longitudinal sections, supporting-rings separating the sections, means for passing air and the substance to be disintegrated through said cylinder, a shaft situated in the cylinder, and beaters fixed to the shaft and spirally arranged about the shaft and situated entirely within the rings, said rings extending within the cylinder to oppose the passage of the heavier components lengthwise thereof adjacent its inner surface.

5. In a machine for disintegrating cottonseed hulls or other substances and separating their components, a cylinder having perforate and non-perforate sections, a shaft, beaters at the inlet end of the cylinder fixed to the shaft spirally about the same, and beaters fixed to the shaft in rows parallel therewith and situated adjacent an exit from the cylinder, and perforations in said cylinder covered by reticulated material.

6. In a machine of the character described, the open-ended cylinder having a reticulated

lining, said cylinder being provided with openings or perforations situated in its bottom and covered by said reticulated lining and together extending the major part of its length, means including beaters to force air and light material through the cylinder, and means to obstruct passage of comparatively coarse and heavy material lengthwise the same, said means being situated between the said openings and outside the circumferential path of the beaters.

7. In a machine of the character described, the open-ended cylinder having a reticulated lining, said cylinder being provided with openings or perforations situated in its bottom and covered by said reticulated lining and together extending the major part of its length, means including beaters to force air and light material through the cylinder, means to obstruct passage of comparatively coarse and heavy material lengthwise the same, said means being situated between said openings and outside the circumferential path of the beaters, and adjustable covers for the openings to vary the sifting operation.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

RICHARD G. LATTING, JR.

Witnesses:

J. D. YOAKLEY,
C. M. CATLIN.