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DE WITT CLAUSEN
ROTARY FLOOR POLISHER

2,540,510

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2 Sheets-Sheet 1

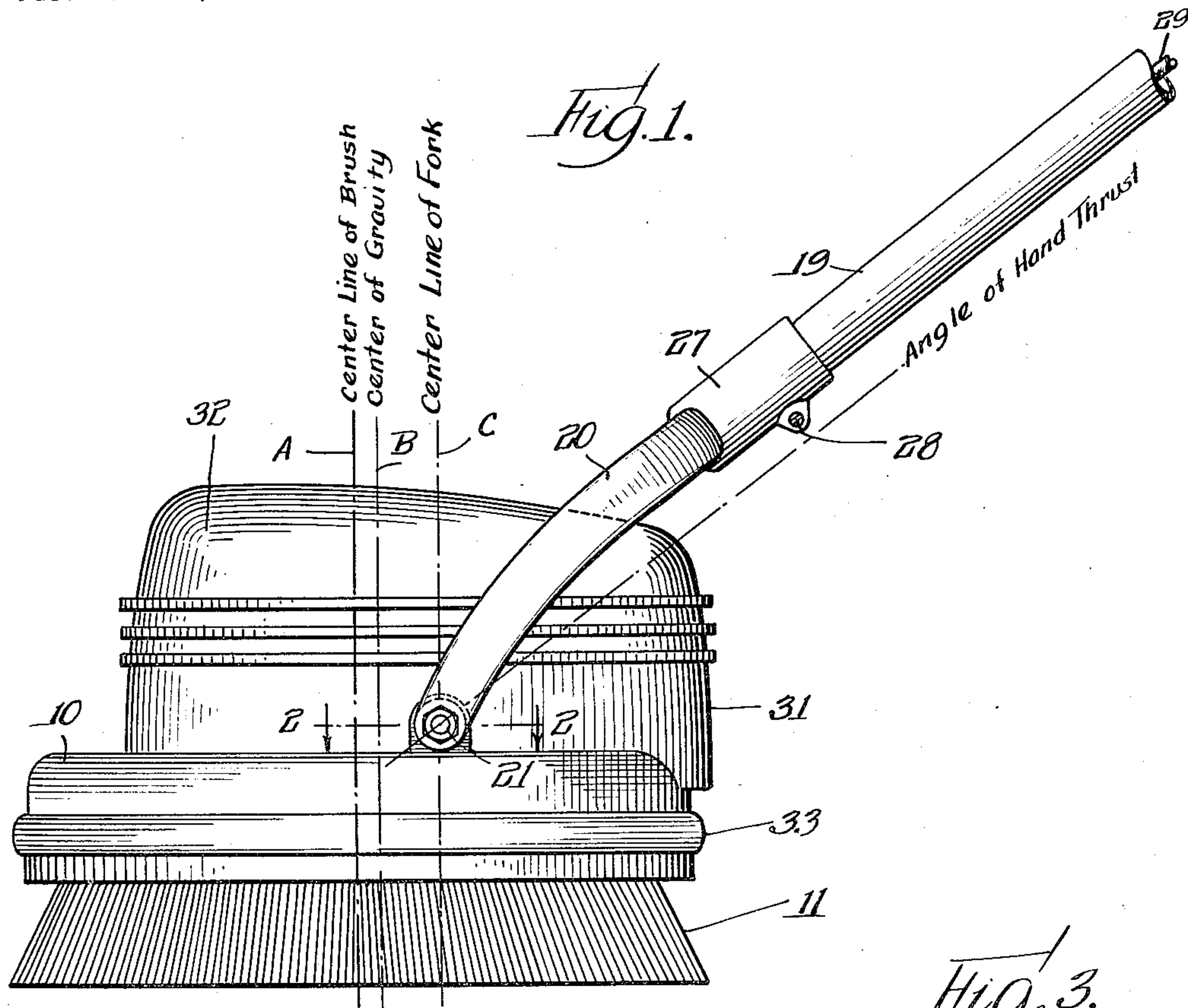


Fig. 2.

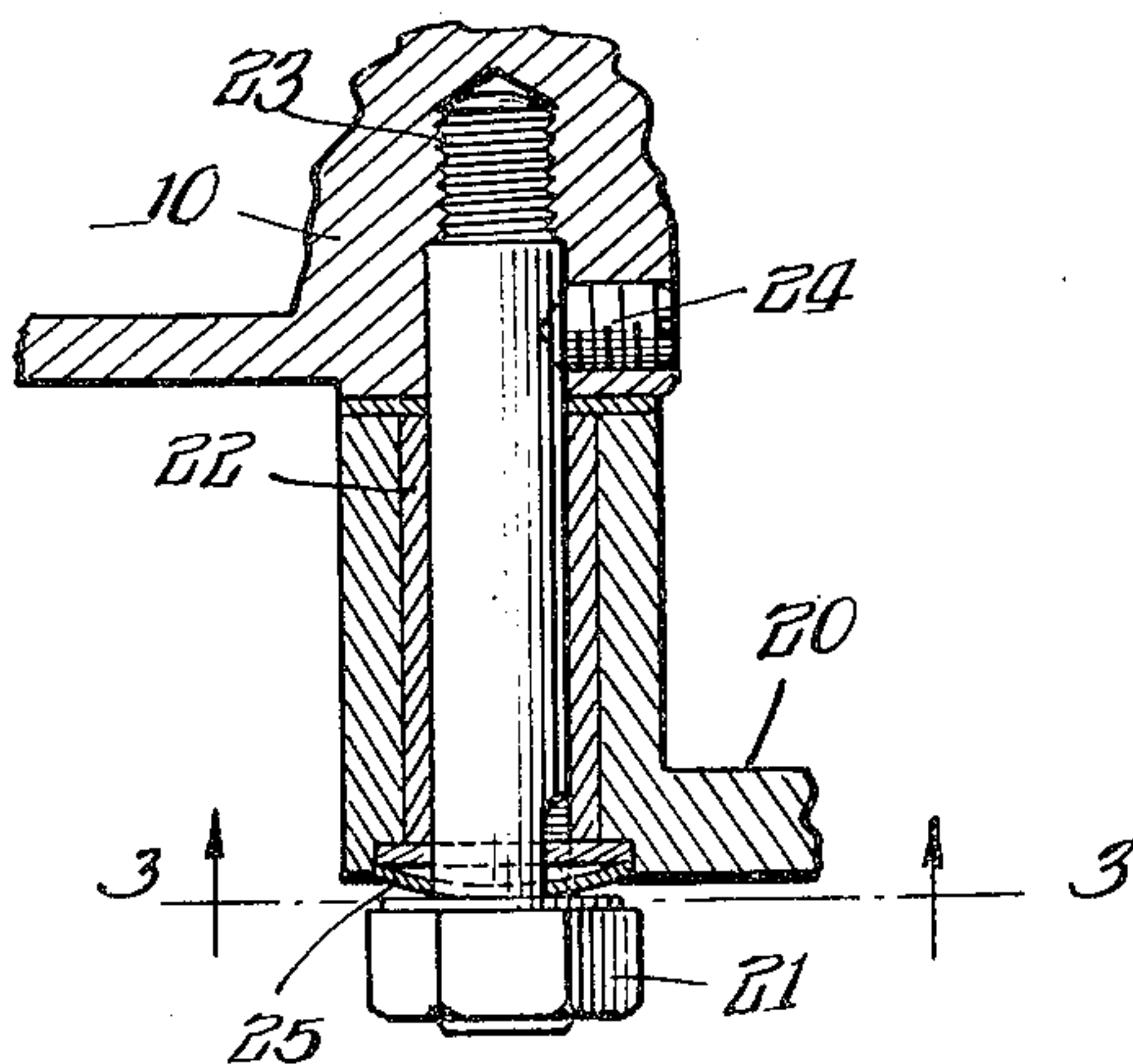
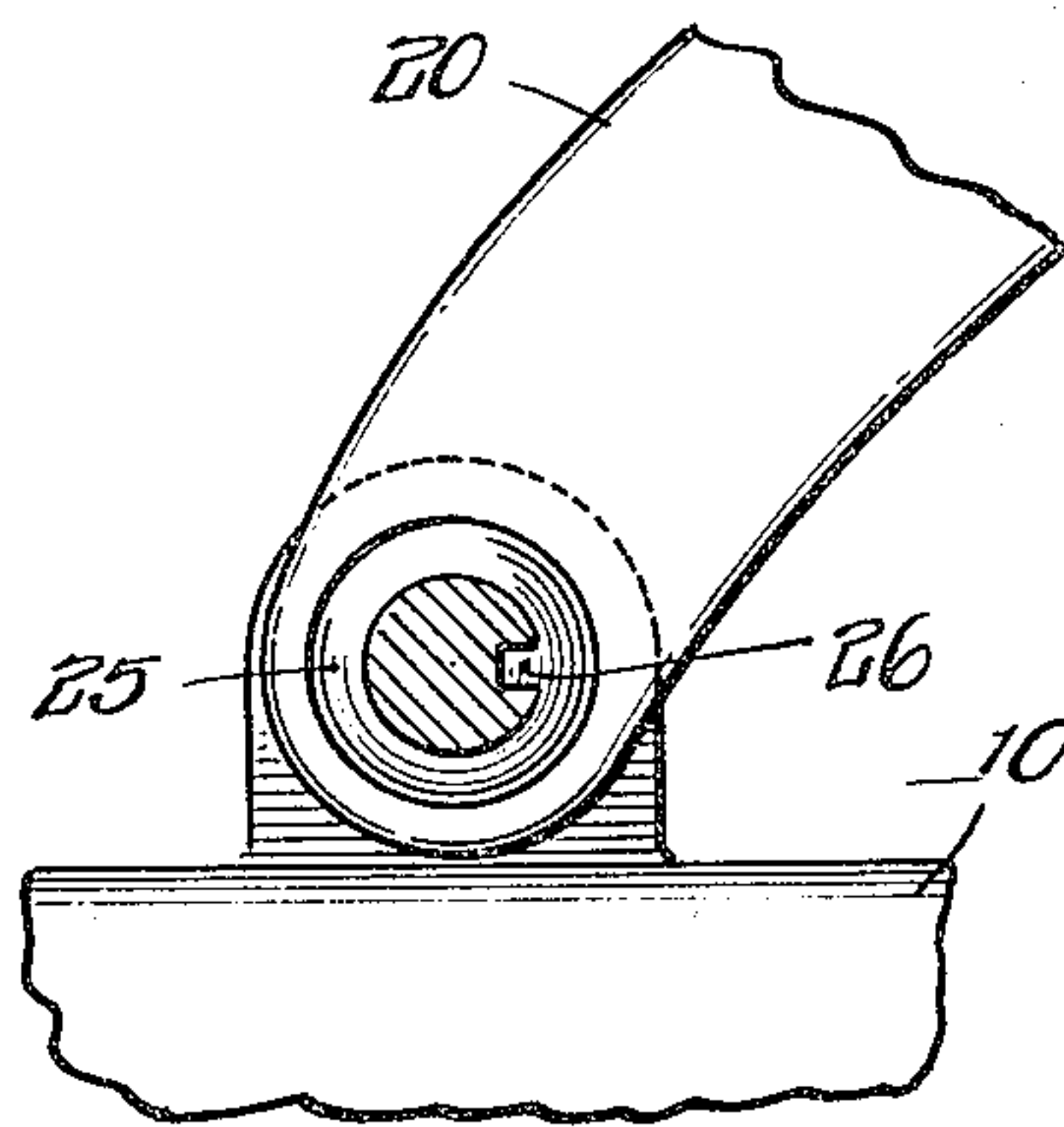


Fig. 3.

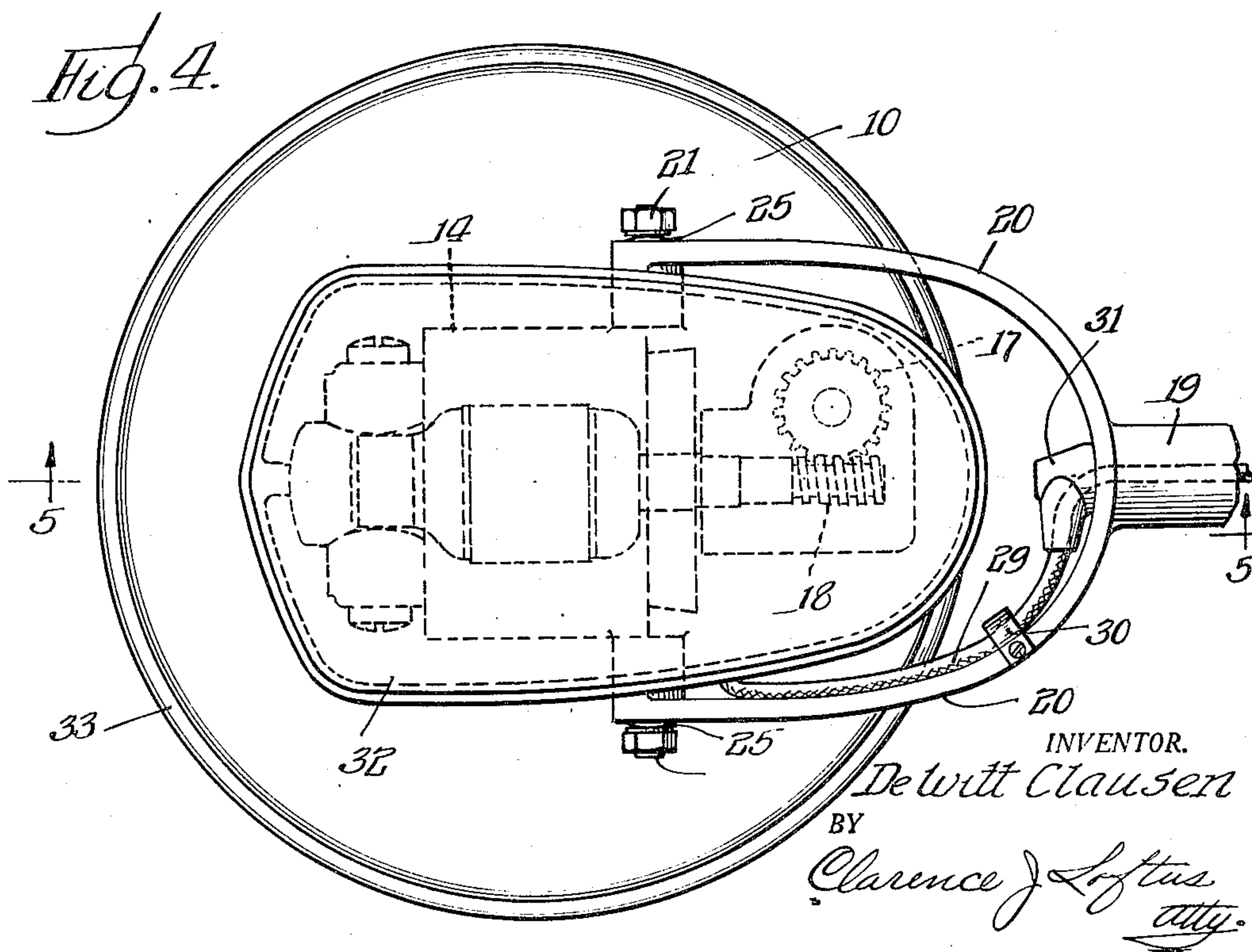
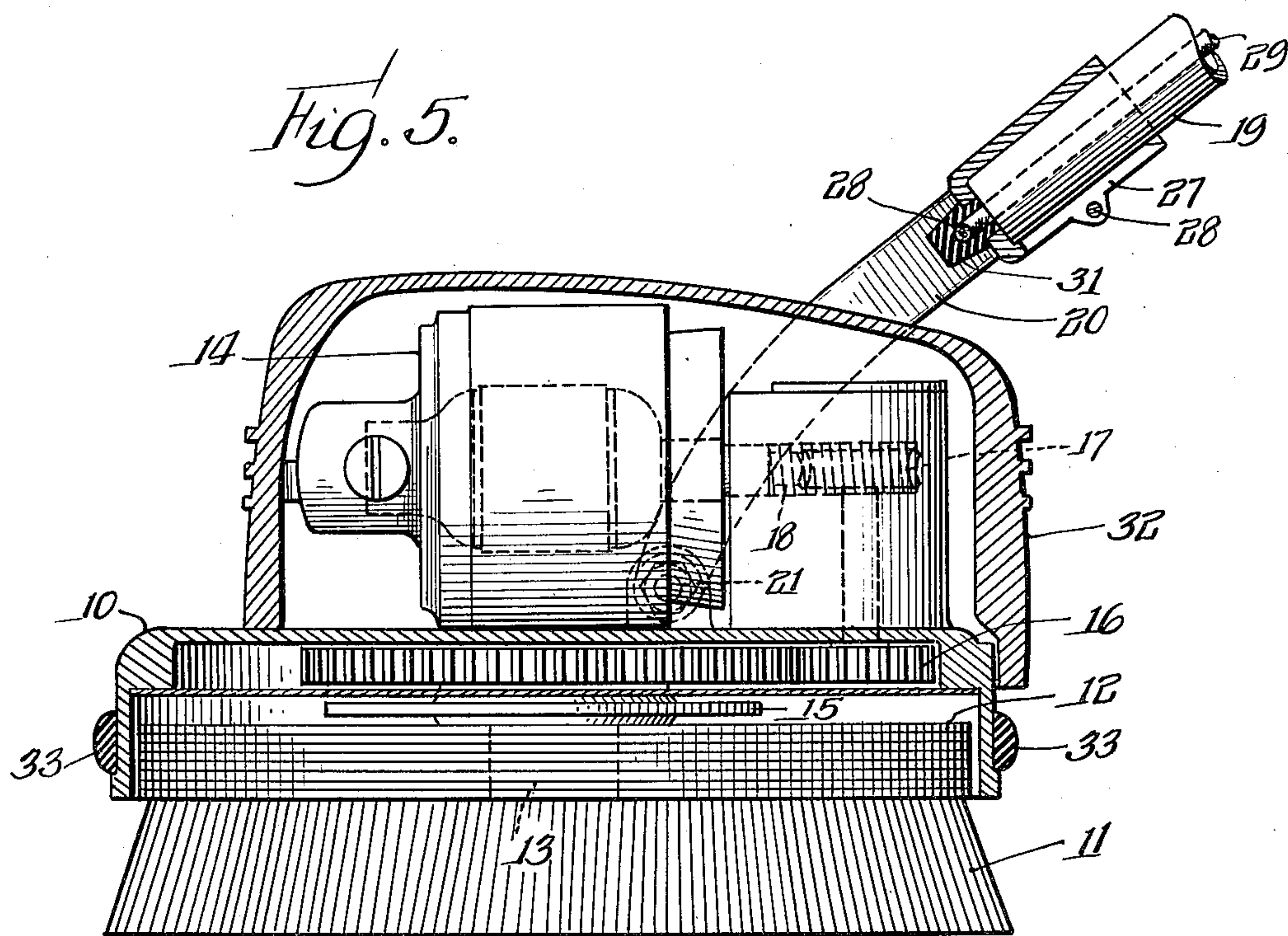


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2,540,510

2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

2,540,510

ROTARY FLOOR POLISHER

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2 Claims. (Cl. 15—49)

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This invention relates to improvements in rotary floor polishers.

More particularly, it is directed to a floor polisher of the type in which a rotary brush rotates about a vertical axis, and which in operation is in direct contact with the floor and forms a support for the driving motor and its superimposed mounting structure.

It is an object of my invention to provide an improved machine of this type which overcomes the tendency to wobble when the brush is in operation on the floor, and which makes the machine readily controllable by the operator when in operation.

In the rotary brush type machines heretofore used, this tendency to wobble is particularly noticeable when working on rough floors where the brush torque is accentuated, due to the fact that the mass of the machine is above a flexible unit, such as a conventional rotary disk type floor brush, and that the working surface is continuously changing.

One of the principal features of my present invention is the arrangement of the elements of the mechanism in such a manner that a vertical plane through the center of gravity is rearward of the center of rotation of the brush. This results in a rearward thrust. This rearward thrust is easily resisted by the location of the pivot points of the arms supporting the handle. The arms of the handle are pivoted to the frame on each side at a point rearward of the center of gravity.

It is an object of my invention to provide a machine of this type, so designed and arranged that when the brush is set in operation, the thrust is rearward, so that the operator can readily control the machine.

In the preferred form, the driving mechanism, frame and mounting are so arranged as to place the center of gravity of the whole machine rearward of the center of the brush, with the handle connected to the machine at points rearward of the center of gravity. The position of the pivot point of the handle is important since the thrust being rearward but angular, the resulting thrust point on the floor is ahead of the center of rotation, which action pivots the load on the brush closer to the center of rotation.

With the foregoing novel arrangement of the respective center lines, it is easy for the operator to resist the rearward thrust, and the machine may be pushed or pulled in any direction without any appreciable effort in overcoming any

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tendency of the machine to crawl, either to the left or right.

The above and other advantages and capabilities will become apparent from a detailed description of the accompanying drawings, in which I have illustrated a preferred embodiment of my invention. The construction there shown is to be understood as illustrative only, and not as defining the limits of my invention.

In the drawings:

Figure 1 is a side elevation of a floor polisher embodying one form of my invention;

Figure 2 is an enlarged partially sectional plan view on the line 2—2 of Figure 1;

Figure 3 is an enlarged sectional elevation on the line 3—3 of Figure 2;

Figure 4 is a top plan view of the machine shown in Figure 1, with certain parts, such as the motor and mounting indicated in dotted lines; and

Figure 5 is an enlarged partially sectional view taken on the line 5—5 of Figure 4.

Referring to Figure 1, line A indicates the center line of rotation of the brush, B is the center of gravity of the machine, and C indicates the axis of the pivots; that is, the points where the handle is pivotally attached to the machine. The points where the handle is pivotally attached to the machine are in a vertical plane rearwardly of the axis of rotation of the brush a distance of approximately one-fourth of the radius of the brush, as shown in Figure 1.

As shown in Figures 1, 4 and 5, the device includes a housing 10, a disk type rotary brush 11 provided with a rigid supporting block 12 disposed within the housing 10, and a shaft 13 (Figure 5) carried by the block 12, said shaft being connected to motor 14 through suitable driving mechanism indicated at 15 and 16 (Figures 4 and 5) and reduction units 17 and 18.

As shown by Figures 1, 4 and 5, the handle 19 is supported by yoke arms 20 which are pivotally attached to the housing 10 by stud bolts 21, said stud bolts being shown in detail by the sectional plan view shown in Figure 2.

In Figure 2, stud bolt 21 is supported in the oppositely projecting end of the yoke arm 20 by a sleeve 22, preferably constructed of bronze. This stud is held to the housing 10 by threads 23, and prevented from working loose by a set screw 24. To provide a slight friction between the yoke arm 20 and the housing 10, spring washer 25 is provided, as best shown in Figure 2.

As shown in Figure 3, the spring washer 25 is

provided with tooth 26 to prevent the washer from turning.

Figures 1 and 5 also show a split sleeve 27 held in place by the screw 28 for attaching the handle 19 to the yoke arms 20. As shown by Figures 4 and 5, the electric cable 29 which supplies current to the motor 14 is passed through the hollow handle 19 and is then led through the split sleeve 27 and carried on the inside of one of the yoke arms 20 and there supported by spring clips 30. At the point where the cable 29 emerges from the split sleeve 27, it is protected by a rubber housing 31.

For easy access to the motor 14, as shown by Figures 1 and 5, the removable housing cover 32 is provided. To protect furniture and other such objects, the machine is provided with a bumper 33, preferably constructed of rubber.

In addition to the basic feature of providing a machine in which a vertical plane through the center of gravity is rearward of the center of rotation of the brush, best results are obtained when the center of gravity in the horizontal plane is as close to the floor as possible, since a high weight center accentuates the wobbling action which may develop in passing over uneven surfaces.

The amount of friction between the yoke arms and the housing at the pivot points is an important factor in reducing the tendency to wobble. However, this friction must be carefully controlled, since it has been found that it can be increased to such a degree that the movement of the handle reacts on the brush to such an extent that the beneficial effect of medium friction is lost.

From the foregoing description, it will be seen that I have provided a high speed floor polisher of the rotary brush type, which in operation affords a rearward thrust, thus making it easy for the operator to control the machine at all times, even notwithstanding the machine is operated on a rough or uneven floor surface.

In the preferred form, particularly as shown in Figure 1, the center of gravity of the machine as a whole is slightly rearward of the center of the rotating brush, that is, in the direction towards the operator, and the points where the operating handle is connected to the machine as a whole are rearward of the center of gravity of the machine as a whole.

Having thus described my invention, I claim:

1. In a floor polisher, the combination of a single relatively flat circular polishing element

rotatably mounted on a single vertical axis of rotation and adapted to bear directly on a surface to be polished to define a circular polishing area thereon; a frame supported solely by the polishing element; a handle secured to the frame by a pair of coaxing pivots one on each side of said frame and having a common axis transversely disposed and located in a vertical plane rearwardly of the axis of rotation of the polishing element yet forwardly of the rear edge of the polishing element so as to be directly above the polishing area, and driving means for the polishing element mounted on the frame at a point to locate the center of gravity of the polisher between the axis of rotation and said vertical plane of the handle pivots.

2. In a floor polisher, the combination of a single polishing element rotatably mounted on a vertical shaft and adapted to bear directly on a surface to be polished to define a circular polishing area thereon; a frame supported solely by the polishing element; a handle pivoted to the frame by a pair of horizontal pivots one on each side of said frame and in a vertical plane rearwardly of the shaft of the polishing element yet forwardly of the rear edge of the polishing element so as to be directly above the polishing area; with friction means comprising resilient springs between the handle and the frame, and driving means for the polishing element mounted on the frame at a point to locate the center of gravity of the polisher between the center of the shaft of the polishing element and said vertical plane of the handle pivots, but closer to the center of the shaft.

DE WITT CLAUSEN.

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