

Feb. 14, 1933.

H. C. SEITZ

1,897,624

MACHINE FOR WASHING AND SCREENING MATERIALS

Filed Jan. 14, 1930

2 Sheets-Sheet 1

Fig. 1.

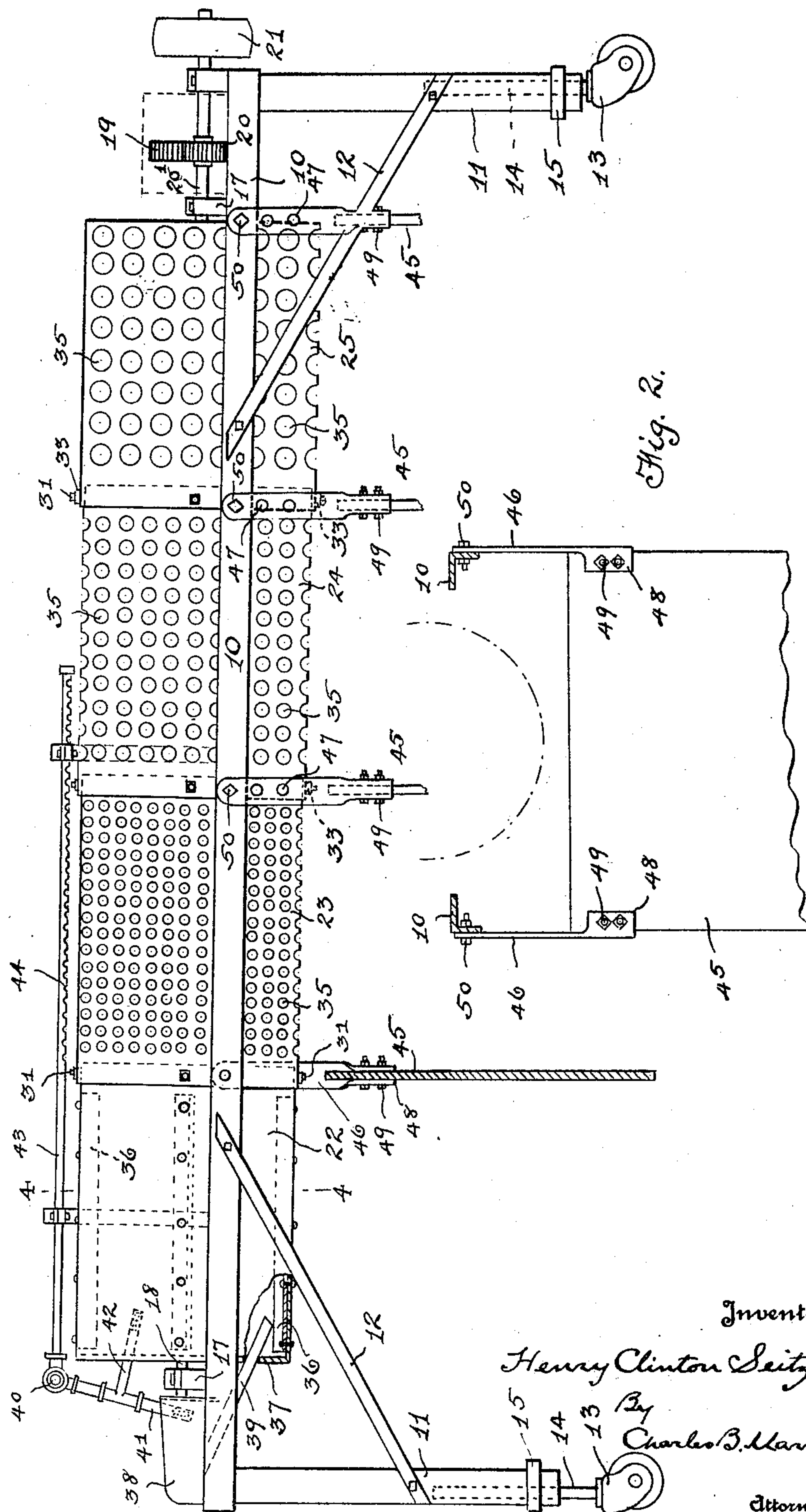


Fig. 2.

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Fig. 3.

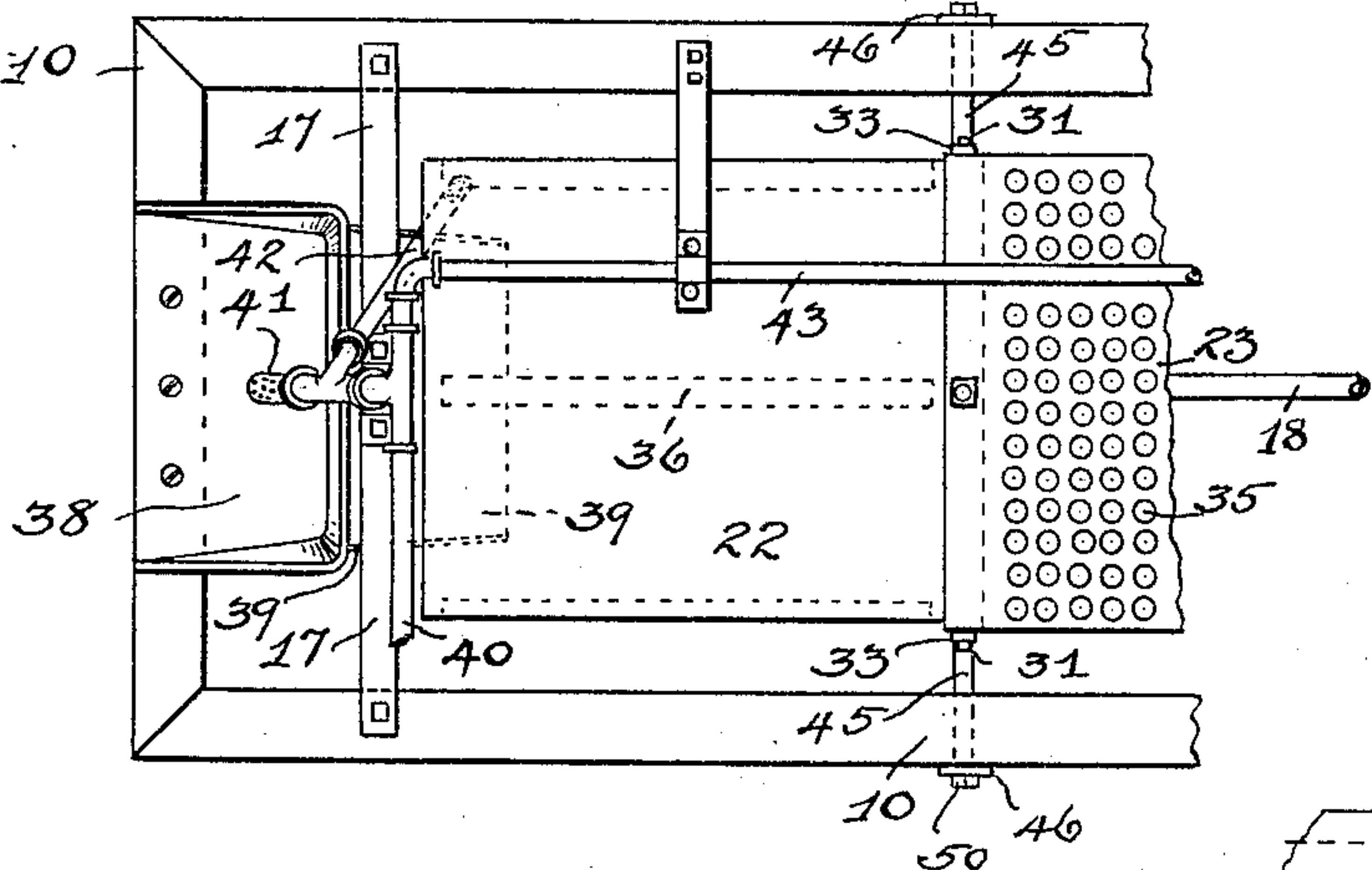


Fig. 4.

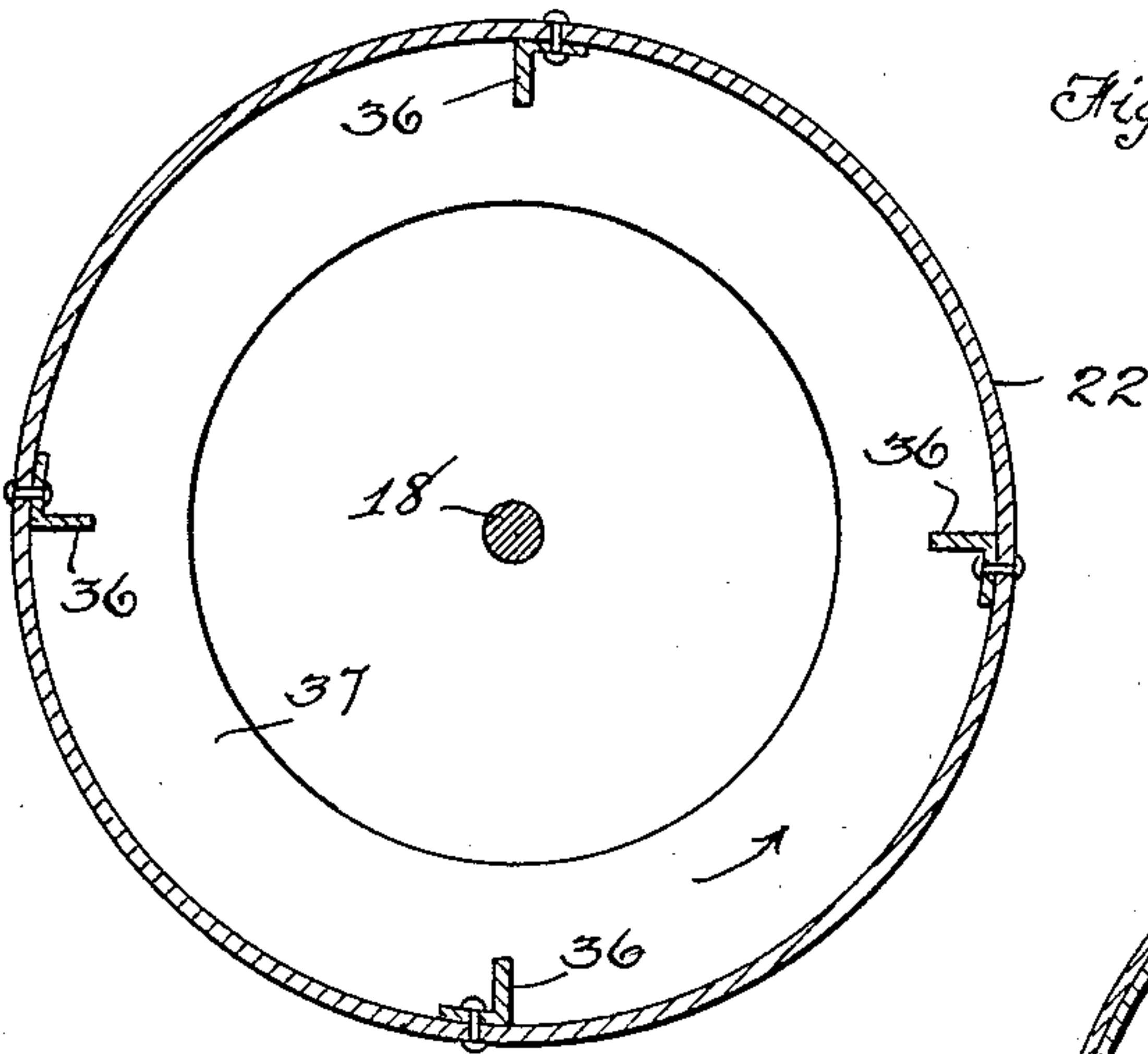


Fig. 7.

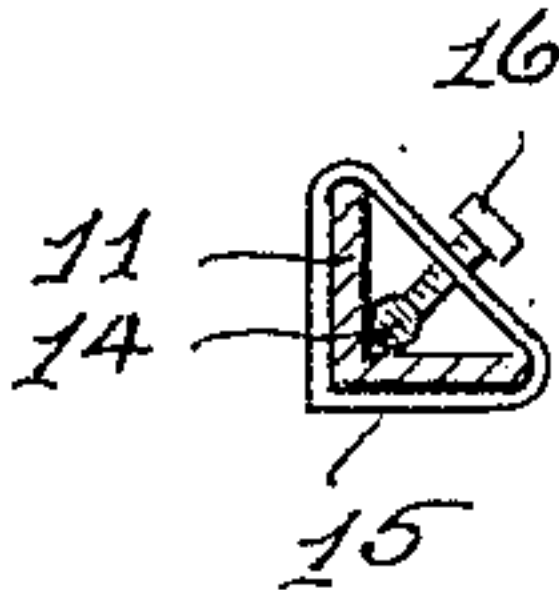


Fig. 8.

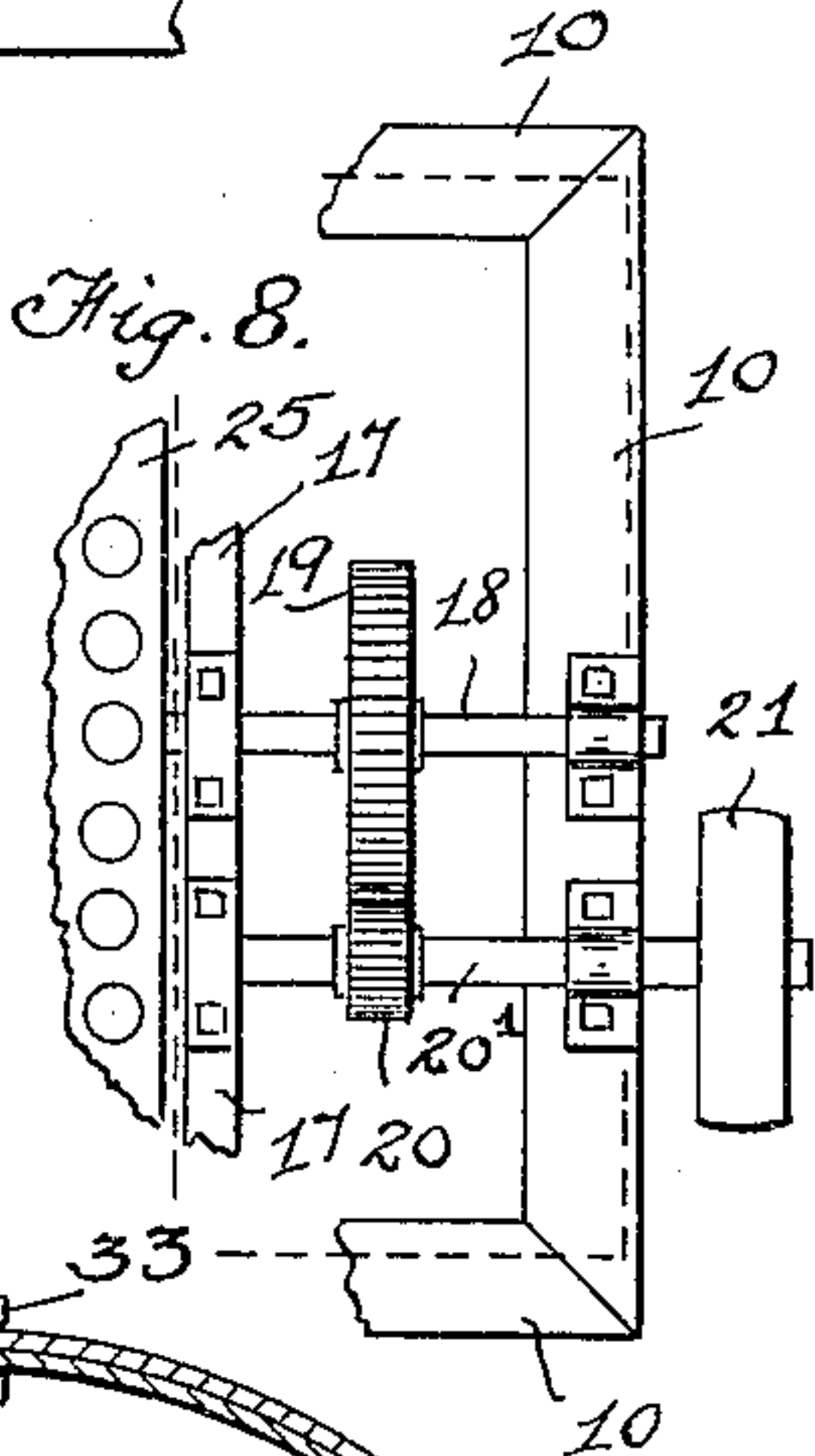


Fig. 5.

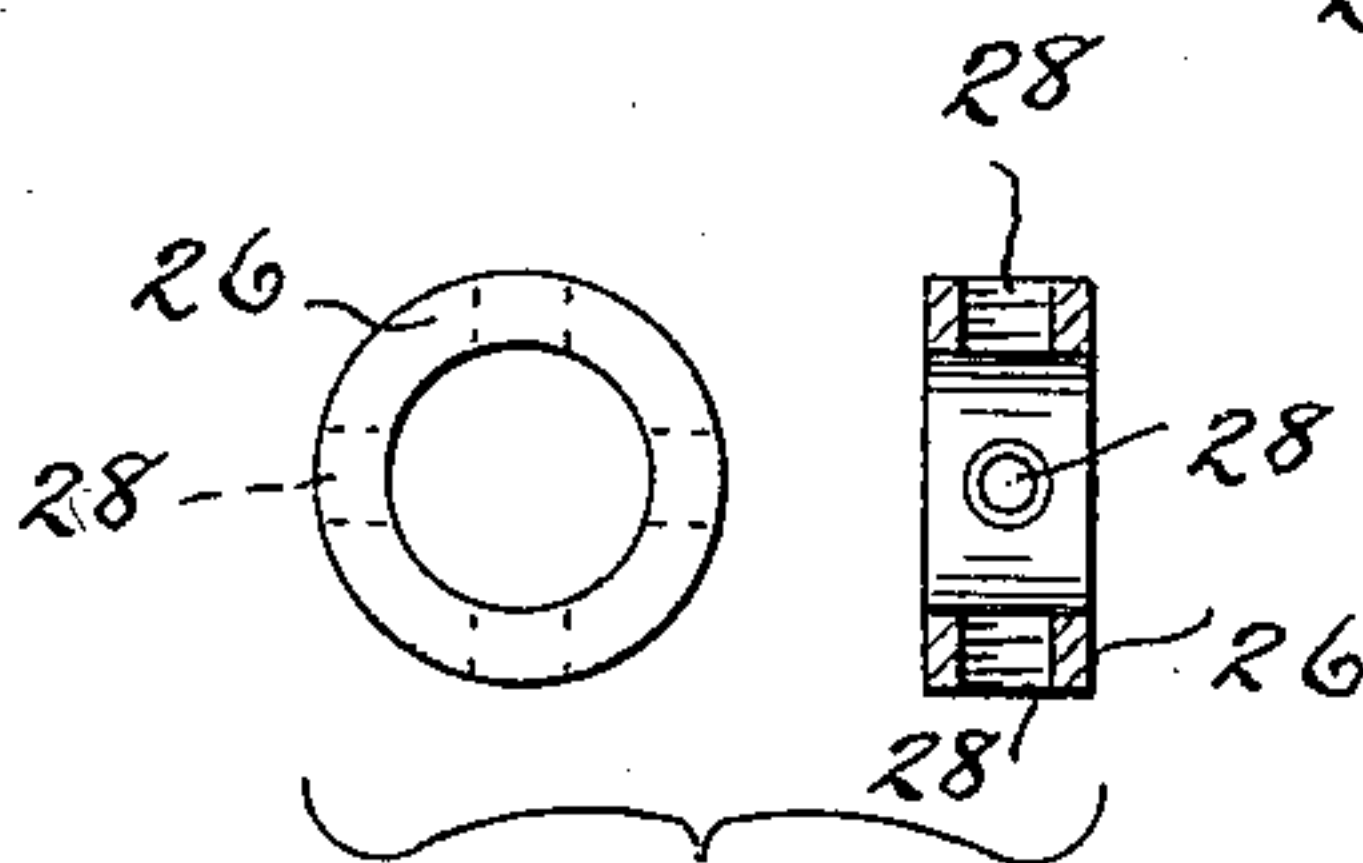
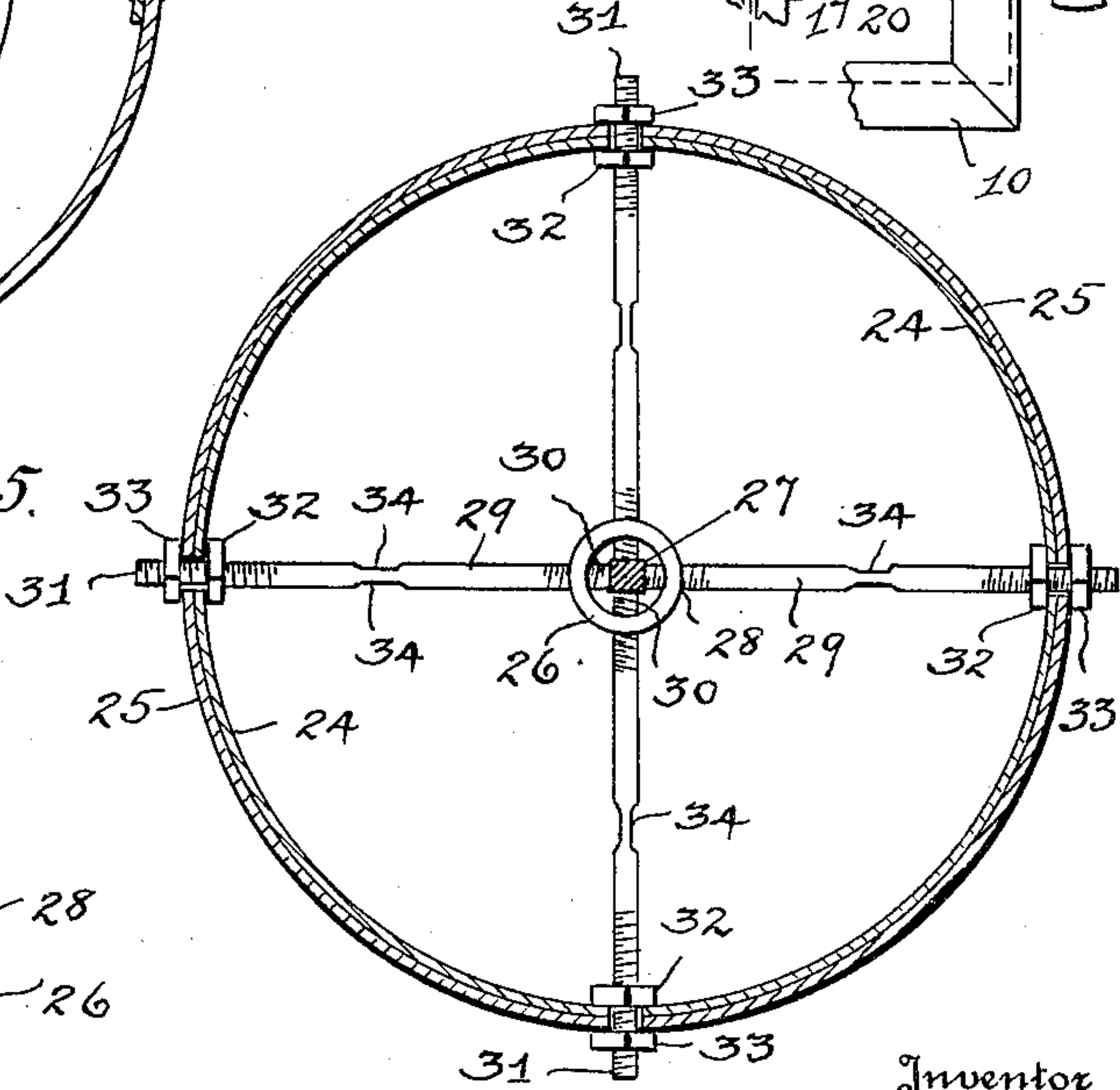


Fig. 6.

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UNITED STATES PATENT OFFICE

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MACHINE FOR WASHING AND SCREENING MATERIALS

Application filed January 14, 1930. Serial No. 420,648.

My invention relates to an improved machine for washing and screening sand and gravel and is especially adapted for use in washing and screening materials used in filter beds of water filtration plants.

The object of the invention is to provide a novel construction of machine which may be rolled from one place to another; which is simple in construction; which may be adjusted to regulate the flow of material there-through and which will wash and grade the material according to size.

The invention is illustrated in the accompanying drawings, wherein,—

Fig. 1 shows the machine in side elevation.

Fig. 2 illustrates a cross-sectional detail through the two side bars of the frame with the pendant partitions sustained therefrom to keep the grades of material separated.

Fig. 3 shows the feed end of the machine in top view.

Fig. 4 illustrates a vertical cross-section through the first section of the cylinder, as though viewed on the line 4—4 of Fig. 1.

Fig. 5 shows a vertical section through the cylinder at the joint of one section with another to illustrate the internal brace from the central shaft.

Fig. 6 illustrates two views of the detached brace collar.

Fig. 7 shows a cross-sectional detail through one of the legs illustrating the vertical adjustment device, and

Fig. 8 illustrates the driving gears in top view.

In the drawings the numeral 10 designates a rectangular frame having vertical legs 11 at its corners which legs are formed of angle-iron and are preferably braced by inclined bars 12, extending to the side bars of the frame.

Casters 13, are provided on the legs and each caster has a post 14, which extends up at the inner side of the leg while a metal bracket 15 extends about the leg and carries a set bolt 16, whose end engages the post 14 of the caster and binds it in the angle of the leg to hold it in vertical adjustment.

By thus adjusting the caster posts in the legs, the frame 10 may be made to assume a

more or less inclined position from end to end and by this means control the flow of material that is being washed and screened, as will presently be better understood.

On the top of the frame, near each end thereof, I provide crosswise horizontal bearing bars 17 which support a shaft 18 that extends lengthwise of the frame.

This shaft 18 may be driven at one end by any suitable means but in the present instance, I show suitable gearing 19 and a pinion 20 on a pinion-shaft 20¹ with a pulley 21 on said latter shaft and all of which are located at the discharge-end of the machine.

A suitable housing, shown in broken lines in Figs. 1 and 8, may be used to protect the driving means from dust and dirt.

On the shaft 18, I mount a series of cylindric sections 22, 23, 24 and 25 respectively,—the number of sections however being immaterial and may be varied.

These sections are supported from the central shaft by means such as is illustrated in Figs. 5 and 6 and as many of these supports as desired may be employed.

The supporting means however consists of a collar 26 loosely surrounding the shaft, which latter at the place where the support is located, is squared as shown at 27 in Fig. 5. The collars therefore surround the squared portions of the shaft 18.

Each collar 26 has a plurality of radial openings 28 therethrough and each opening is screw-threaded. In the present instance, four openings are shown in each collar.

Brace bars 29 having inner and outer screw-threaded ends 30 and 31 have their inner ends 30 screwed through the openings in the collar and these inner ends of the brace-bars are screwed through the collars until they seat against the squared faces of the shaft. By this means, the collars may be centered about the shaft.

The outer ends 31 of the radial brace-bars are passed through the cylindric sections and by means of adjusting nuts 32 and 33 are engaged with the inner and outer sides of the sections,—thereby locking the sections in a circular form about the shaft.

By extending the brace-bars from the shaft

out through the sections where adjacent sections are lapped, as for example, sections 24 and 25, the bars will also serve to lock the lapped sections together, as shown in Figs. 1 and 5.

Each brace bar has two directly-opposite flattened surfaces 34 by means of which a wrench may be readily applied thereto for adjusting and tightening purposes.

The cylindric sections 23, 24 and 25 are each provided with perforations 35,—the perforations in one however differ in size from those in the section preceding it, so the materials passing through the section will be graded during such passage.

The feed-in section 22 differs from the others in that it preferably has no perforations through its wall because it is this section which receives the material together with a supply of running water so that the sand and gravel may be washed or scrubbed.

The interior of this section 22 is provided with a series of angle-iron flights 36 which effect a tumbling and agitation of the material to effectively clean the same.

The entrance end of the section 22, has an inturned flange 37, as shown in Figs. 1 and 4, through the center of which the material is fed.

At the feed-end, the frame 10 carries a hopper 38 from which a chute-plate 39 inclines forwardly and downwardly and extends through the central opening of the section 22, projecting over the inturned flange 37.

Water is supplied through a pipe 40 from which there is a perforated branch 41 which depends over the hopper to sprinkle water over the material in the hopper as it moves down the chute-plate.

A second branch 42 extends through the central end-opening of the section 22 and delivers water to the interior of that section, and a third branch 43, extends over the exterior of several of the sections and has perforations 44 for directing water against the perforated sections and into the interior thereof.

It will thus be seen that as the materials are tumbled in the section 22, they are washed and scrubbed and then advanced through the several sections where they are further washed and graded.

In order to keep the graded materials separated as they discharge through the perforations 35 of the several cylindric sections, I preferably provide depending partitions 45, which latter are hung from vertical arms 46, that are adjustably attached to the side bars 10 of the frame.

Each arm 46, has a plurality of perforations 47 in different vertical planes in order that they may be raised or lowered to suit the inclination of the cylinder.

These arms 46, have inturned flanges 48 at their lower ends between which the side

edges of the partitions are fitted and bolts 49 secure the flanges to the partitions.

The partitions are therefore pendantly hung from the frame by the bolts 50 and may be swung toward one end of the machine to elevate their lower edges from the ground when moving the machine from one place to another.

Having described my invention, I claim,—

1. In a screening machine the combination with a frame, of a shaft extending lengthwise of the frame and having squared faces at spaced-apart intervals, a series of cylindric screen sections one in advance of another and about the shaft with the end of one section lapping the end of the next adjacent section and the lap being located in a plane that passes through a squared face on the shaft, a collar spaced from but surrounding the shaft at each squared face portion thereof, brace-bars having threaded inner ends which screw through said collars and butt against the squared faces of the shaft to hold the collars about but spaced from said shaft and to lock both the collars and the brace-bars to the shaft and means at the outer ends of the brace-bars for engaging the same with the screen-sections.

2. In a screening machine the combination with a frame, of a rotatable shaft extending lengthwise of the frame and having flat faces, a plurality of cylindric screen-sections one in advance of another and spaced from and about the shaft,—the end of one screen-section lapping the end of the next adjacent section, collars around but spaced from the flat faces of said shaft and a plurality of radial bars having their outer ends passing through the lapped joints of adjacent sections to lock the sections in lapped condition,—said radial bars having their inner ends threaded through said collars and butted against the flat faces of the shaft whereby to center the collar about and lock the same and the inner ends of the bars against the flat faces of the rotatable shaft.

In testimony whereof I affix my signature.

HENRY CLINTON SEITZ.