

A. LIESE.
GEARING.

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907,063.

Patented Dec. 15, 1908.

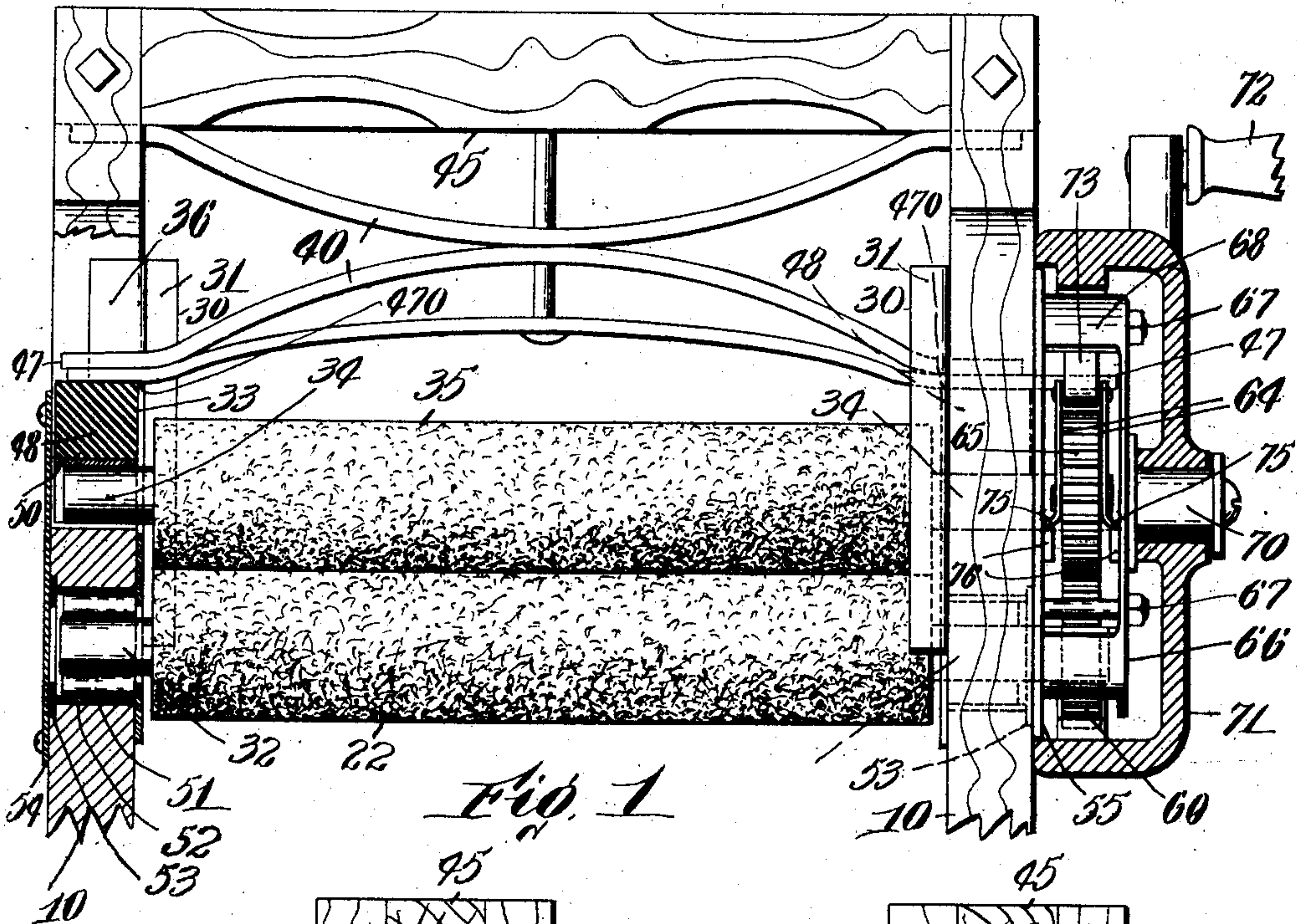


Fig. 1

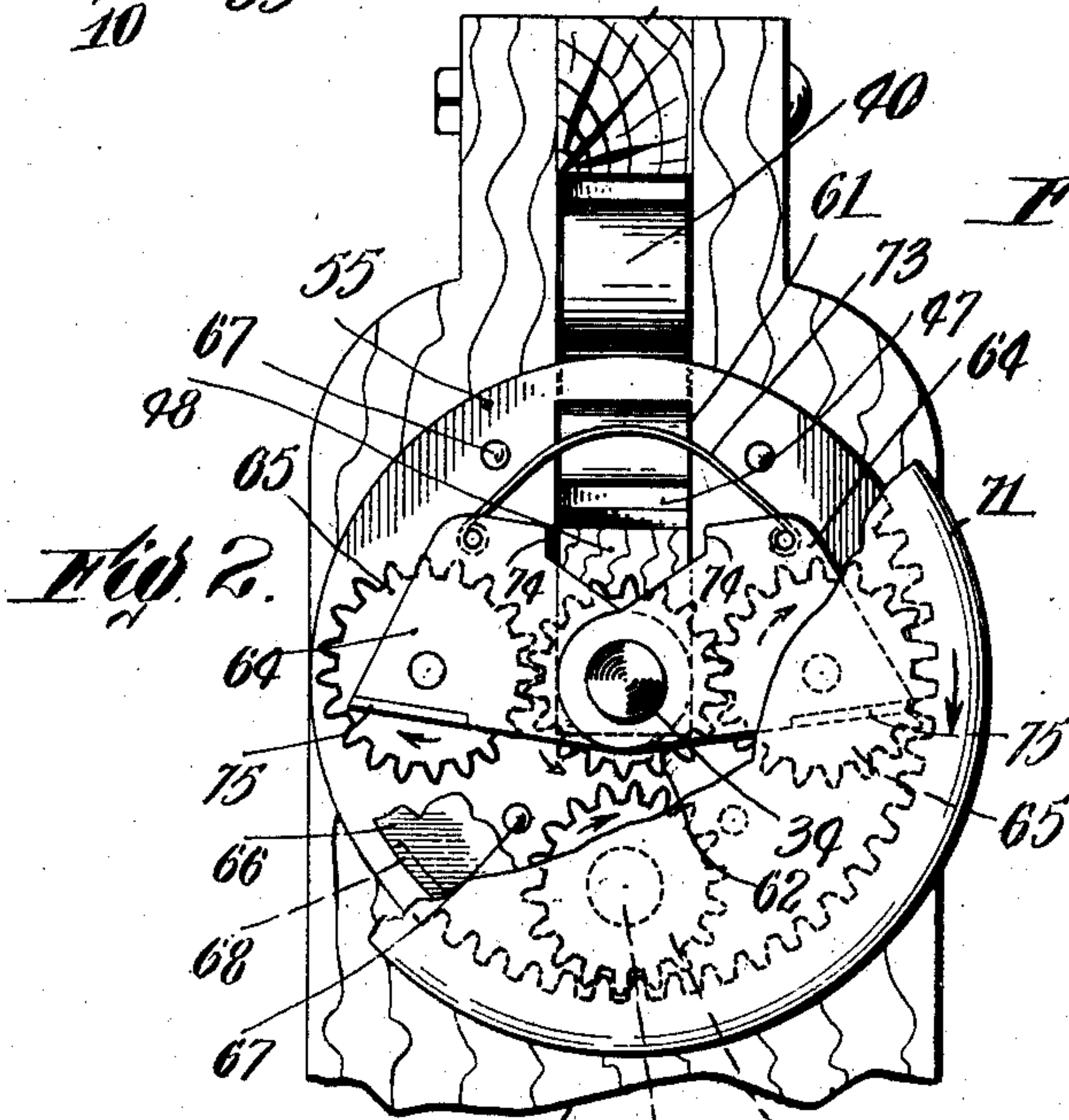


Fig. 2

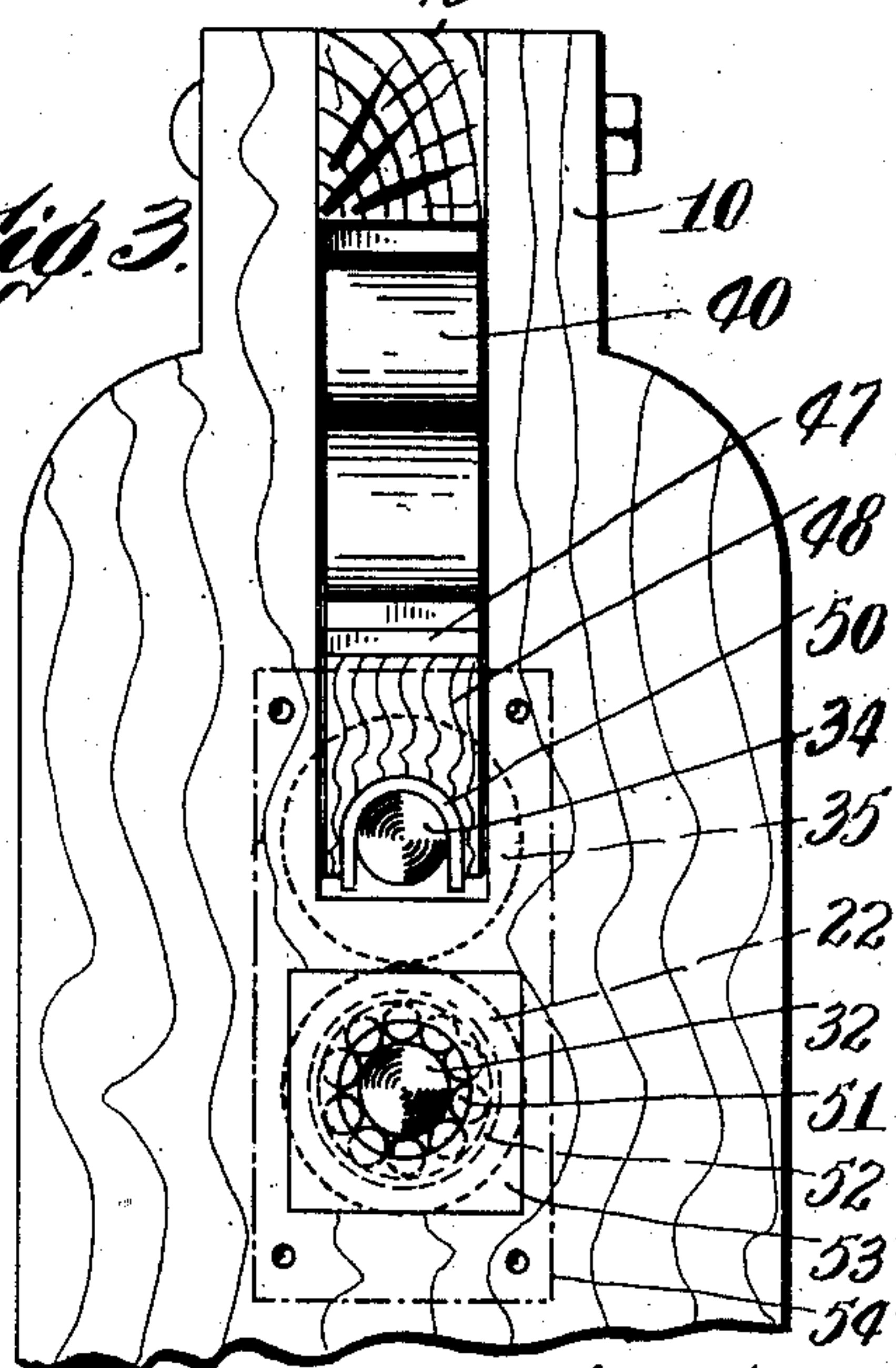


Fig. 3

Witnesses: 10 32 60

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UNITED STATES PATENT OFFICE.

AUGUSTUS LIESE, OF SOUTH LANCASTER, MASSACHUSETTS.

GEARING.

No. 907,063.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, AUGUSTUS LIESE, a citizen of the United States, residing at South Lancaster, in the county of Worcester and State of Massachusetts, have invented a new and useful Gearing, of which the following is a specification.

This invention relates to gearing which is capable of general use, but which is especially applicable to that class of machines in which a pair of shafts are mounted in such a way that the distance between them varies during the operation of the machine.

One application of the invention is to clothes wringers, and the invention is herein illustrated as applied in that way.

The principal objects of the invention are to provide a construction of gearing in which the multiplication of power can be secured in a simple and convenient manner, at the same time inclosing all the gearing so that it may not project in a position where it can catch in the clothing of the operator or the articles passing through the machine; also to provide means whereby one of the shafts or rolls thereon may move away from the other without interfering with the positive and constant transmission of power to both of them; to provide means for positively driving both shafts at a constant speed irrespective of their position; to provide an improved construction and location of bearings for the shafts; and generally to simplify and improve the construction of machines of this character.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings which show a preferred form of the invention, and in which—

Figure 1 is a front elevation of a portion of a wringer showing one way in which the invention may be applied thereto, parts appearing in section. Fig. 2 is an end elevation of the same; and Fig. 3 is an elevation at the opposite end of the machine.

The invention is illustrated herein as applied to a wringer comprising a frame 10 provided with a pair of guard plates 30 having flanges 31 on their front and rear edges extending inwardly. These plates are provided with perforations for receiving the spindle 32 of a roll 22 and with slots 33 for receiving the spindle 34 of an upper roll 35, to permit the upper roll to move vertically.

It will be seen that the flanges 31 extend inwardly in such position as to prevent articles passing through the wringer from being drawn toward the ends of the rolls and coming into the space between them and the sides of the frame.

The side plates 30 are also provided with larger slots 36 above the slots 33 for receiving the ends of the springs 40 for holding the upper roll yieldingly in position against the lower roll. The ends 47 rest on blocks 48 which reciprocate in the end frames and the upper part of the spring bears on a top cross-bar 45.

It will be understood that the blocks rest on bushings 50 carried by the spindle 34 and rise and fall with the roll 35, the springs operating to hold the roll down. The downward motion of the ends of the springs is limited by projections or shoulders 470 on the guards 30, so as to prevent excessive pressure on the lower roll.

The spindle 32 is mounted to turn in anti-friction bearings shown in the present instance as consisting of rollers 51 which are mounted in the casing 52. This casing is provided with a cover plate 53 which in turn is covered by a plate 54 on one end of the machine. On the other end of the machine the corresponding plate 53 is covered by a larger plate 55 which is preferably substantially circular in form, and is fixed to the end of the frame so as to be able to support the operating mechanism which will now be described. The spindle 32 at this end of the machine extends through the plate 55 and has a pinion or gear 60 thereon. The plate 55 also has a slot 61 therein through which projects the spindle 34 at this side of the machine, which spindle is also provided with a pinion or gear 62. It, of course, being understood that the upper roll has vertical motion, it will be seen that this gear or pinion also will move vertically when the article to be wrung is especially thick or heavy.

In order that the two pinions 60 and 62 may be driven constantly and uniformly independently of the position of the upper roller, the following mechanism is provided.

Pivotally mounted on the spindle 34 are two pairs of frames 64 each having a slight oscillating motion. Each of these frames has bearings in which are mounted gears 65. As these frames swing about the axis of the upper roll, it is obvious that the gear 65 may

be made of such size as always to mesh with the pinion 62 whatever the position of the frames 64. In order to drive the gears an outside plate 66 is mounted over the plate 55 so as to cover the mechanism thereon, this plate being held in position by screws 67 passing from the end piece of the frame through both plates, and having nuts thereon for fixing the outer plate in position. This outer plate has flanges 68 for engagement with the plate 55 to define and limit its position, and it is provided with a stud 70 on which is rotatably mounted an internal gear wheel 71. The stud, of course, is concentric with the roll 35 when in its lowest position. The gear wheel is provided with a handle 72, and when rotated its teeth constantly mesh with the pinion 60 and also with both of the gears 65 independently of their position.

The rise of the upper roll will raise the pivot on which the frames 64 swing. In order to provide for forcing the two gears outwardly to keep them in mesh with the teeth of the internal gear wheel, a spring 73 is mounted above the two frames 64 and formed into a bow-shape so as to yieldingly force them away from each other. It will be observed also that the end of the spring 40 projects through the slots 61 and 36, and that the frames 64 have upwardly extending projections 74 which engage the projecting end of the spring 40 so as to prevent the frames from rising above a certain point when the rolls are operating on thick cloth. It will also be observed that these frames have outwardly extending projections 75 at their lower ends which bear on lugs 76 on the inside of the frame 66, and on the outside of plate 55 so as to limit the motion in that direction. It will be seen, therefore, that the frames 64 while free to have a certain motion, are constrained to move within certain limits so that the pinions which they carry will always remain in mesh with the internal gear wheel, and that the rotation of the same independently of the position of the upper roll will be transmitted at all times to both of the rolls to rotate them constantly at the same speed.

While I have illustrated and described a preferred form of the invention, I am aware that many modifications may be made therein by any person skilled in the art without departing from the scope thereof as expressed in the claims. Therefore, I do not wish to be limited to the particular form shown, but

What I do claim is:—

1. The combination with two spindles one being mounted in movable bearings, of pinions on said spindles, a gear adapted to mesh with one of said pinions, and means for driving the movable pinion from said gear independently of the other pinion.

2. The combination with two spindles one

mounted in stationary bearings and the other in movable bearings, of pinions connected with the ends of said spindles, an internal gear journaled concentric with the movable pinion when the latter is nearest to the other pinion, and means inside said internal gear for driving the movable pinion therefrom independently of the other pinion.

3. The combination with two shafts each having a spindle, one of said shafts being bodily movable toward and from the other, of pinions connected with said shafts, a gear meshing with one of said pinions, and a second gear meshing with the first named gear and with the movable pinion for driving the latter.

4. The combination with two shafts one being mounted to move toward and from the other, a pinion connected with each shaft, an internal gear meshing with one of said pinions, and a bodily movable gear constantly meshing with the movable pinion and with the internal gear.

5. The combination with two shafts, one of which is adapted to move toward and from the other, of a pair of pinions one connected with each of said shafts, an internal gear meshing with one of said pinions, a pair of frames mounted to swing, and a gear mounted on each of said frames and constantly meshing with the movable pinion and with the internal gear.

6. The combination with two shafts, one of which is adapted to move toward and from the other, of a pair of pinions one connected with each of said shafts, an internal gear meshing with one of said pinions, a pair of frames mounted to swing, a gear mounted on each of said frames and constantly meshing with the movable pinion and with the internal gear, and a spring for normally holding said frames in such position as to project the gears carried thereby toward the teeth of the internal gear.

7. The combination with two shafts, one of which is adapted to move toward and from the other, of a pair of pinions one connected with each of said shafts, an internal gear meshing with one of said pinions, a pair of frames mounted to swing, a gear mounted on each of said frames and constantly meshing with the movable pinion and with the internal gear, and stops for limiting the swinging motion of said frames.

8. The combination with a pair of shafts one of which is bodily movable, of pinions connected with said shafts, a pair of frames mounted to swing about the axis of the movable one of said shafts, a gear mounted on each of said frames and constantly meshing with the movable pinion, each of said frames having projections at its opposite sides, stops for engaging said projections and limiting the swinging motion of said frames in both direc-

tions, and an internal gear meshing with the stationary pinion and with both of said movable gears.

9. The combination with a pair of shafts, one of which is bodily movable, of pinions connected with said shafts, a pair of swinging frames, a gear mounted on each of said frames and constantly meshing with the movable pinion, each of said frames having projections at its opposite sides, stops for engaging said projections and limiting the swinging motion of said frames in both directions, an internal gear meshing with the stationary pinion and with both of said movable gears, and a bowed spring connected with the upper ends of both of said frames and normally tending to swing them downwardly about their pivot to keep said gears in mesh with the internal gear.

10. The combination with two shafts, one of which is adapted to move toward and from the other, of a pair of pinions one connected with each of said shafts, an internal gear meshing with one of said pinions, a pair of frames mounted to swing, a gear mounted on each of said frames and constantly meshing with the movable pinion and with the internal gear, and a plate mounted over said pinion and movable gears, said plate having a spindle projecting therefrom constituting a bearing for said internal gear, and means for removably holding said plate in position.

11. The combination of a pair of shafts,

one of which is movable toward and from the other, of pinions connected with said shafts for rotating them, a pair of gears movable with the movable shafts and adapted to swing about the axis thereof, said gears meshing with the pinion on the movable shaft, means for operating said gears and pinions, means for limiting the swinging motion of said gears comprising a plate adapted to cover said swinging gears and pinions and having stops thereon adapted to limit the motion of the gears in one direction, and a spring adapted to force the movable shaft toward the stationary shaft and projecting into position to limit the motion of said gears in the opposite direction.

12. The combination with a pair of shafts, one of which is bodily movable toward and from the other, of means for operating said shafts comprising a frame pivoted on the axis of the movable shaft and a gear on said frame, and a spring for forcing the movable shaft toward the stationary shaft, said spring projecting in position to engage said frame and limit its swinging motion.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

AUGUSTUS LIESE.

Witnesses:

LOUIS W. SOUTHGATE,
C. FORREST WESSON.