

May 25, 1926.

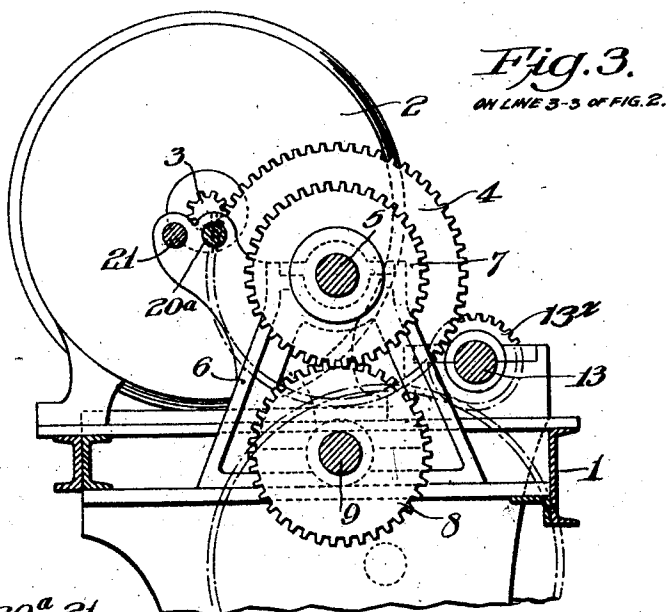
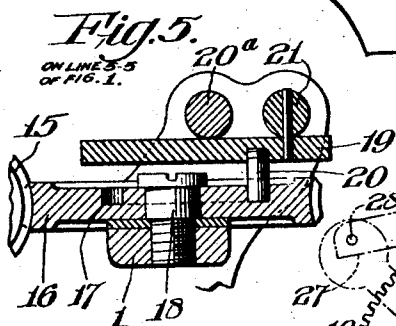
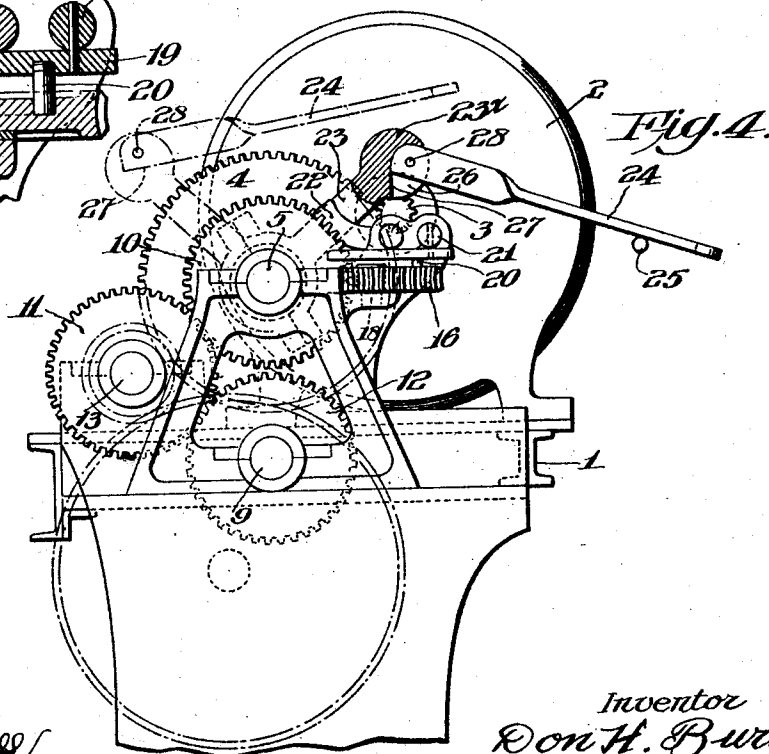
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DRIVING AND REVERSING MECHANISM

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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DRIVING AND REVERSING MECHANISM.

Application filed May 27, 1925. Serial No. 33,077.

My invention relates in general to driving mechanisms for reciprocating or oscillating machines of the type in which, for instance, a cylinder is rotated first in one direction, and then in another direction, it being desired that the revolutions in one direction shall be as nearly as possible equal to the revolutions in the opposite direction.

Although my invention may be applied in connection with planers, shapers and kindred machines, its especial application is to rotary cylinder washing machines, and it is in order to control the oscillation of these cylinders that my invention comprehends the special contrivances, and the construction, arrangement and combination of parts, herein illustrated and described.

My novel features of construction and advantage will hereinafter more clearly appear in the detailed description and the appended claim.

For the purpose of illustrating my invention, I have shown in the accompanying drawing a typical embodiment of it which in practice will give reliable and satisfactory results.

It is, however, to be understood that this embodiment is typical only and that the various instrumentalities which my invention comprehends can be variously arranged and organized, and that the invention is not, therefore, limited to the precise arrangement and organization of these instrumentalities as herein set forth.

In the drawings:—

Figure 1 is a top plan view of a machine embodying my invention.

Figure 2 is a longitudinal elevation viewed from the rear or lower side of the machine as illustrated in Figure 1.

Figure 3 is a transverse section on the line 3—3 of Figure 2.

Figure 4 is an end elevation viewed from the left hand end of Figure 1;—and

Figure 5 is an enlarged, sectional detail on the line 5—5 of Figure 1.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:—

1 designates a frame work of any preferred character. 2 is a motor mechanism or prime mover of any preferred character, such, for instance, as an electric motor or a single belt pulley, the driving shaft of which

is connected through a motor shaft pinion 3 with a driven gear wheel 4 on a driven or clutch shaft 5 mounted in bearings 6 erected from the frame work and continuously rotating in one direction.

7 is a driving gear wheel first on the clutch shaft 5, which meshes with a driven gear wheel 8 fast on a connecting or pinion shaft 9 suitably housed in the frame work, and in the mounting of the parts lying in parallelism with and below the clutch shaft.

10 is a gear wheel mounted and fast upon the clutch shaft 5 at the end beyond the mounting of the gear wheel 7, and in mesh with a gear wheel 11 mounted upon a supplemental or driven shaft 13, through a pinion 13* on the outer end of which the washer or element to be reciprocated is driven.

The gear wheel 10, is, as stated, in mesh with a gear wheel 11 on said supplemental shaft 13, in turn in mesh with another gear wheel 12 on the connecting shaft 9, so that, as is obvious, the gears 10 and 11 drive the supplemental shaft 13 in one direction, and the gears 7, 8, 12 and 11 drive the shaft 13 in the opposite direction.

The supplemental shaft 13, as above mentioned, is a driven shaft for the purpose of effecting the reversing rotation of the washing cylinder or other driven element which is to be alternately moved first in one direction and then in the opposite direction.

Intermediate of the gear wheels 7 and 10, there is mounted upon the clutch shaft a clutch unit composed of clutch elements 14 and 14'; both fast upon the clutch shaft, respectively connectible with gear wheels 7 and 10, and both adapted to be alternately thrown into operation by a sliding clutch sleeve 14*; the clutch unit as an entirety embodying, for instance, such a well-known construction as is set forth in U. S. Letters Patent No. 1,011,355, issued December 12th, 1911, and in U. S. Letters Patent No. 1,235,561, issued August 7th, 1917; which being well known to those skilled in the art requires no detail of description herein.

A clutch unit of the foregoing construction is an article of commerce and I prefer to employ it, although, as is obvious, other clutch constructions may be mounted upon the clutch shaft, it being only essential that

it be a double clutch unit so mounted upon the clutch shaft 5, as through the medium of a sliding or longitudinally-reciprocable clutch sleeve 14* to be adapted to be shifted end-wise in either direction upon said clutch shaft 5, to effect the alternate operation of the clutch elements 14 and 14', and the gear wheels 7 and 10.

For the purpose of putting into operation a clutch unit of the character illustrated I resort to the following construction:—

15 15 is a worm on the clutch shaft 5, which is in mesh with a horizontally disposed worm wheel 16 on a pivot shaft 18 mounted in the framework.

The upper face of the worm wheel 16 is formed with a cam groove 17, see Figure 5, in which travels an off-centre roller pin 20 extending downward from the under surface of a horizontal or cross plate 19, fixedly connected with a longitudinally-extending operating rod 21 housed in bearings 21* in the frame and adapted to be longitudinally reciprocated by the travel of the roller pin 20 within the cam-way 17.

Paralleling the operating rod 21 is a fixed guide rod 20* directly supporting the bearings 21* in the framework.

22 is a recessed or channeled shifter arm extending inwardly from and right angularly to the operating rod 21 to which it is fixed. This shifter arm is adapted to receive the clutch arm 23 within its preferably upturned divided inner end.

25 This shifter arm serves to occasion the longitudinal reciprocatory movement of a clutch arm 23 extending radially from the clutch sleeve 14* and connected therewith.

24 is an operating handle pivoted at 28 within a slot or channel 26 formed in the outer end of the clutch arm 23 and so formed as to embody a stop 27 against which the operating handle rests and is self-supported when the clutch arm is thrown into its inner or non-operative position or that represented in dotted lines in Figure 4.

When the clutch arm is in its forward or operative position its handle rests and slides upon a check rod or stop 25, as shown in Figure 4. This stop is supported in any convenient manner which, for clearness, is not illustrated.

I prefer to form the clutch arm with a weighted head 23*.

The operation of my mechanism so far as it may be useful further to describe it, is as follows:—

The reciprocatory clutch sleeve 14*, as explained, is locked and operative according to its temporarily locked position, with either the right hand member 14 or the left hand member 14' of the clutch unit.

The reciprocation of the clutch sleeve 14* after the clutch arm 23, has been thrown into engagement with the shifter arm 22, as shown in full lines in Figures 1 and 4, is occasioned by the reciprocation of said shifter arm 22, due, as explained, to the reciprocation of the operating rod 21 under the throw of said rod through the reciprocation of the plate 19 occasioned by the travel of the roller pin 20 in the cam groove 17 in the worm wheel 16, which latter is constantly in operation through the worm 15 on the constantly rotating clutch shaft 5.

In the neutral position of the parts and when the mechanism is at rest, the clutch arm 23 is thrown over into its rear position as illustrated in dotted lines in Figure 4.

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

A driving and reversing mechanism comprising a motive mechanism, a clutch shaft, clutch elements upon said shaft, a shifting and oscillatory clutch sleeve having a radial arm also upon said clutch shaft, gearing connective of the motor and the clutch shaft to rotate said shaft constantly in one direction, a supplemental driven shaft, gearing connective of the clutch shaft and the supplemental shaft to rotate said supplemental shaft alternately in opposite directions,—with which are combined a means to shift the clutch sleeve comprising an operating rod having a shifter arm mounted upon it and adapted to engage a clutch arm extending radially from the clutch sleeve, and means comprising a worm wheel having a cam-way in its face, and a cross plate having a roller travelling in the cam-way of the worm wheel and connected with the operating rod to continuously reciprocate said operating rod.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 23rd day of May, 1925.

DON H. BURT.