

G. BINDER.
REVERSING MECHANISM.
APPLICATION FILED APR. 5, 1911.

1,001,339.

Patented Aug. 22, 1911.

Fig. 1.

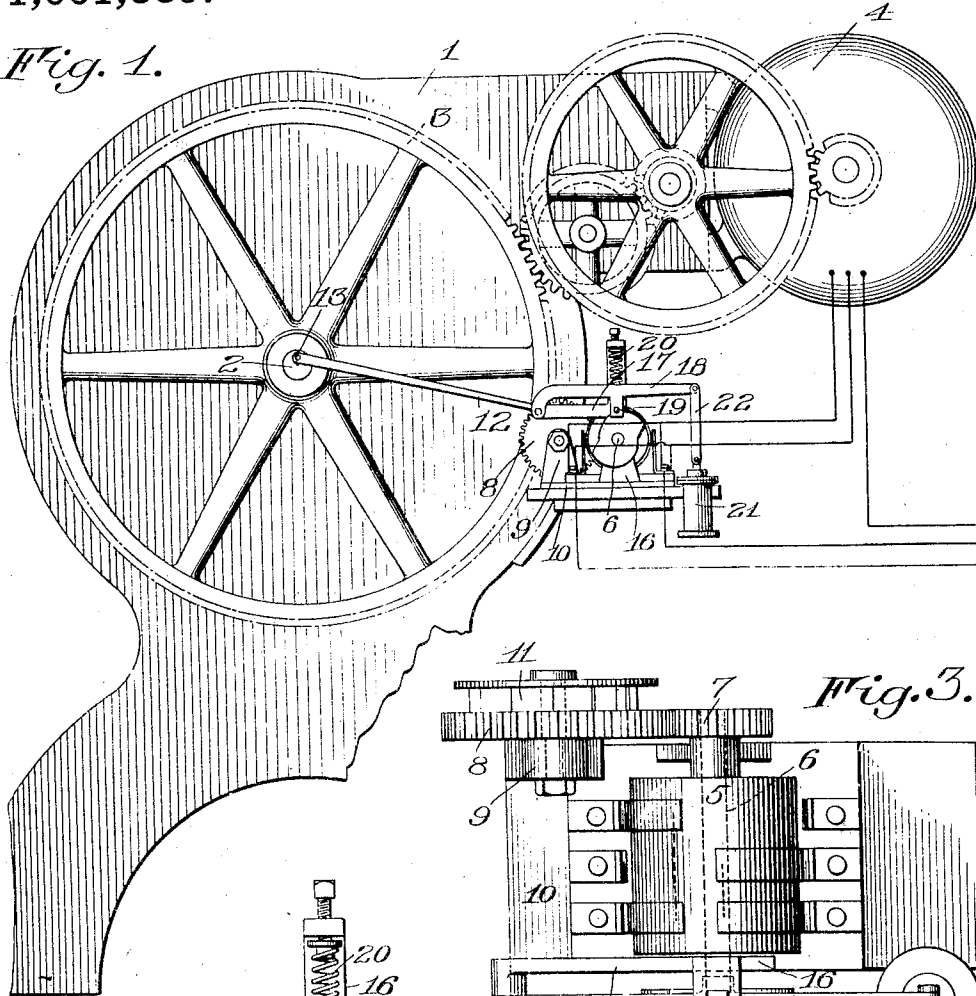


Fig. 3.

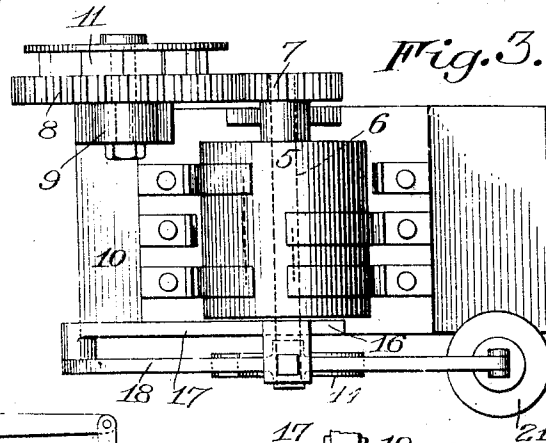


Fig. 2.

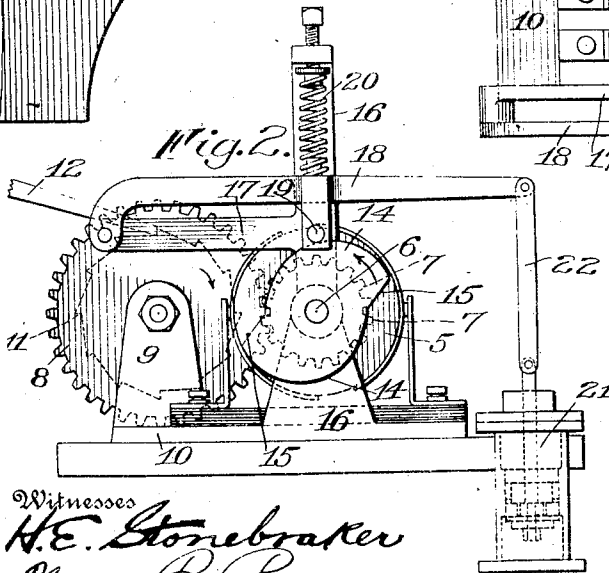
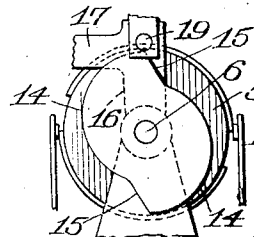


Fig. 4.



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REVERSING MECHANISM.

1,001,339.

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To all whom it may concern:

Be it known that I, GOTTLÖB BINDER, of Rochester, in the county of Monroe and State of New York, have invented certain
5 new and useful Improvements in Reversing Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of
10 this specification, and to the reference-numerals marked thereon.

The present invention relates to a mechanism for reversing the movement of machinery and is particularly adapted for use
15 in connection with machines such as washing machines which embody a member or part arranged for movement first in one direction, and then in the opposite direction, the present arrangement of parts being such
20 that the reversing mechanism is actuated by the driven member, and is continually operated in one direction, while the operating member moves alternately in opposite directions.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the
30 specification.

In the drawings: Figure 1, is a view in elevation, illustrating one embodiment of my invention, as applied to a washing machine embodying a member moving alternately in opposite directions; Fig. 2 is a
35 view in enlarged elevation, of the reversing mechanism; Fig. 3 is a plan view of the parts appearing in Fig. 2, and Fig. 4 is a detail view in elevation, showing the position of the parts as one circuit is about to be broken.

Similar reference numerals throughout the several figures indicate the same parts.

The invention as disclosed in the present
45 embodiment, is illustrated in connection with a washing machine of a common type, comprising a frame or casing 1 and shaft 2 which is connected to a movable part the direction of whose movement is reversed at
50 regular intervals. Mounted on the shaft 2 is the gear wheel 3, connected to the motor 4 by a train of gears, or otherwise. The movement of the operating device 4, which is preferably an electric motor, is governed
55 by a controlling device, which consists, in

the present embodiment, of a rotary switch 5, arranged for coöperation with suitable contacts, so that the motor is reversed at predetermined intervals, and the member or part of the machine is driven first in one
60 direction and then in the opposite direction.

In machines of this general type, it is desirable to have means for rotating the controlling switch continually which shall be of simple construction and of ready operation,
65 and to this end, I connect the alternately reversible, or oscillatory member or part such as the shaft of the machine to the controlling device, or switch, in such a manner that the latter is constantly actuated in one direction by the member or part of the machine,
70 the direction of movement of which is alternately reversed. The controlling device, or switch, in the present embodiment, is in the form of a drum, which is mounted on the shaft 6, to one end of which is secured a pinion 7, and a gear 8 is suitably mounted for engagement with the pinion 7, the gear 8 preferably being pivoted to the standard
75 which is arranged on the base 10. Secured to one side of the gear 8 is a ratchet wheel 11, which may be integral with the gear wheel, or separate therefrom and mounted in any suitable manner. Arranged for engagement with the teeth of the ratchet wheel 11
80 is a pawl at one end of the connecting rod 12, the opposite end of which is pivoted eccentrically of the shaft 2 as indicated at 13. It is to be noted that no matter in which direction the shaft 2 may be rotating, the gear 8 will be moved in one direction and at each revolution of the member or part of the machine, as the pawl on the connecting rod 12 engages, successively, with the teeth of the ratchet wheel 11. The ratchet teeth in
85 the present embodiment are so arranged that the gear 8 makes one-fourth of a revolution to every three revolutions of the shaft 2, and the teeth on gear 8 and pinion 7 are so proportioned that the latter makes two
90 while the former is making one revolution, so that the reversing switch completes a half turn for each one-fourth of a revolution of the gear 8. In other words, at the completion of every three revolutions of the member or part of the machine in one direction, the controlling device, or switch, has been advanced to a point where it moves from one set of contacts breaking the circuit and completes a circuit through another set.
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of contacts, reversing the motor, and likewise the movement of the shaft 2.

By the construction thus far described, the movement of the conducting points of the switch from one set of contacts to another is so slow that it might cause serious arcing or a stoppage of the machine, which is, of course, undesirable, and I have devised a means for effecting a quick movement of the switch between successive contacting positions. The speed increasing means, in the present embodiment, operates on a double cam 14 which is fixed to one end of the shaft 6 and is provided with beveled portions 15 for a purpose which will presently be made clear. A standard 16 is mounted on the base 10, and carries an arm 17 to which is pivoted a lever 18, the latter carrying a roller 19, arranged for engagement with the cam 14 and mounted preferably in a yoke formed on the lever. The roller 19 is held in constant engagement with the cam by means of a spring 20 positioned between the top of the standard 16 and the lever 18, and provided with means for adjusting the tension thereof. The cam 14 is so arranged that the roller 19, riding upwardly on the same, reaches the highest point immediately prior to the breaking of the circuit by the switch, and just as the circuit is broken, the roller engages the beveled surface 15 and is forced downwardly by the action of the spring 20, causing the shaft 6 to be quickly turned a distance corresponding to the circumferential distance between the limits of the beveled surface 15, thus causing a sufficiently quick movement of the switch between successive contacting positions. In this manner, reversal of the motor is quickly obtained at the proper time and any serious arcing between the contacts of the switch or possible stoppage of the machine is obviated.

In order to prevent too sudden lowering of the lever 18 or an overthrow of the ratchet wheel, there is provided a dashpot 21 of any suitable construction, the same being connected to the lever 18 at the free end of the latter by the link 22.

By the construction and arrangement described, there is afforded a mechanism of very simple construction, and extremely efficient in its operation for effecting a progressive movement of a controlling device by an alternately reversing member or part which is operated by a motor, the reversing of which is accomplished by the controlling device, and it will be understood that the invention is susceptible of use in any machine embodying a movable part which is actuated alternately in opposite directions.

I claim as my invention:

1. The combination with a driven member and a motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, and connections between the driven member and the controlling device for effecting operation of the latter, and

nately reversing the direction of movement of the motor and connections between the driven member and the controlling device for effecting operation of the latter.

2. The combination with a driven member and a motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, and a member connected to the driven member and adapted to actuate the controlling device.

3. The combination with a driven member and a motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, and a reciprocatory member connected to the driven member and arranged to operate the controlling device continuously in one direction.

4. The combination with a driven member and a motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor and a reciprocatory member operated by the driven member and arranged to actuate the controlling device continuously in one direction.

5. The combination with a driven member, and a motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor and a movable member operated by the driven member and operatively connected to the controlling device for actuating the latter continuously in one direction.

6. The combination with a driven member and an electric motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, connections between the driven member and the controlling device for actuating the latter, and a speed increasing device operating to accelerate the movement of the controlling device at predetermined intervals.

7. The combination with a driven member and an electric motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, connections between the driven member and the controlling device for effecting operation of the latter, and a speed increasing device arranged to accelerate the movement of the controlling device at predetermined intervals and operating on a movable member having connection with the controlling device.

8. The combination with a driven member and an electric motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, connections between the driven member and the controlling device for effecting operation of the latter, and

5 speed increasing device for accelerating the movement of the controlling device at predetermined intervals and operating on a movable cam surface connected to the controlling device.

10 9. The combination with a driven member and an electric motor for operating it, of a progressively movable controlling device for alternately reversing the direction of movement of the motor, connections between the driven member and the controlling device for effecting operation of the latter, and a speed increasing means for accelerating the movement of the controlling device at predetermined intervals consisting of a spring-controlled member in engagement with a movable cam surface having connection with the controlling device.

10. The combination with a driven member and an electric motor for operating it, 20 of a progressively movable controlling device for alternately reversing the direction of movement of the motor, connections between the driven member and the controlling device for effecting operation of the latter, and a speed increasing means for accelerating the movement of the controlling device at predetermined intervals consisting of a member in engagement with a cam surface movable with the controlling device 30 and adapted to exert pressure on said cam surface.

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