

C. SIM.

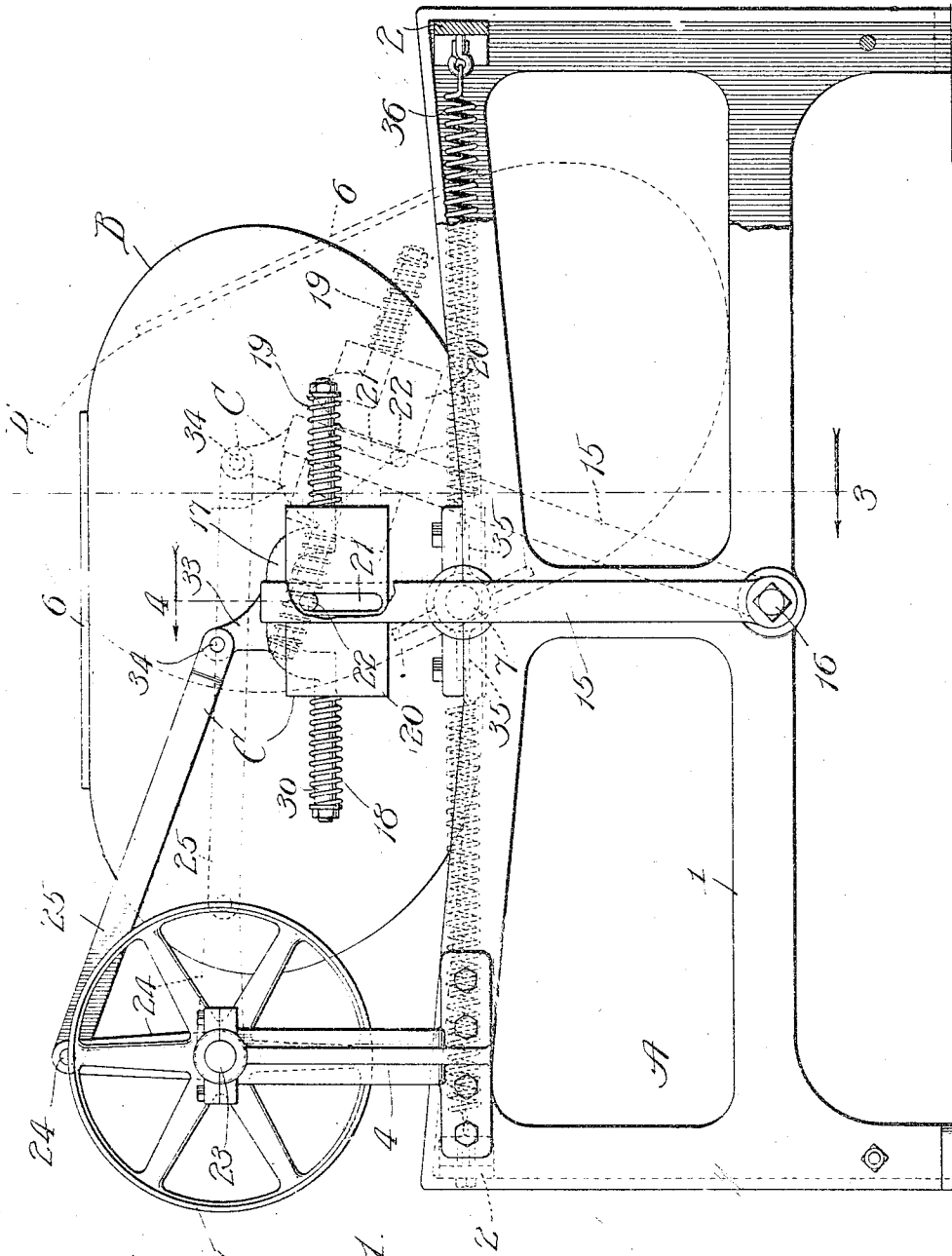
MECHANICAL MOVEMENT AND MACHINE EMBODYING SAME.

APPLICATION FILED JAN. 15, 1910.

1,051,923.

Patented Feb. 4, 1913.

2 SHEETS—SHEET 1.



Witnesses:
John Enders
Chas. H. Buell.

Fig. 1.

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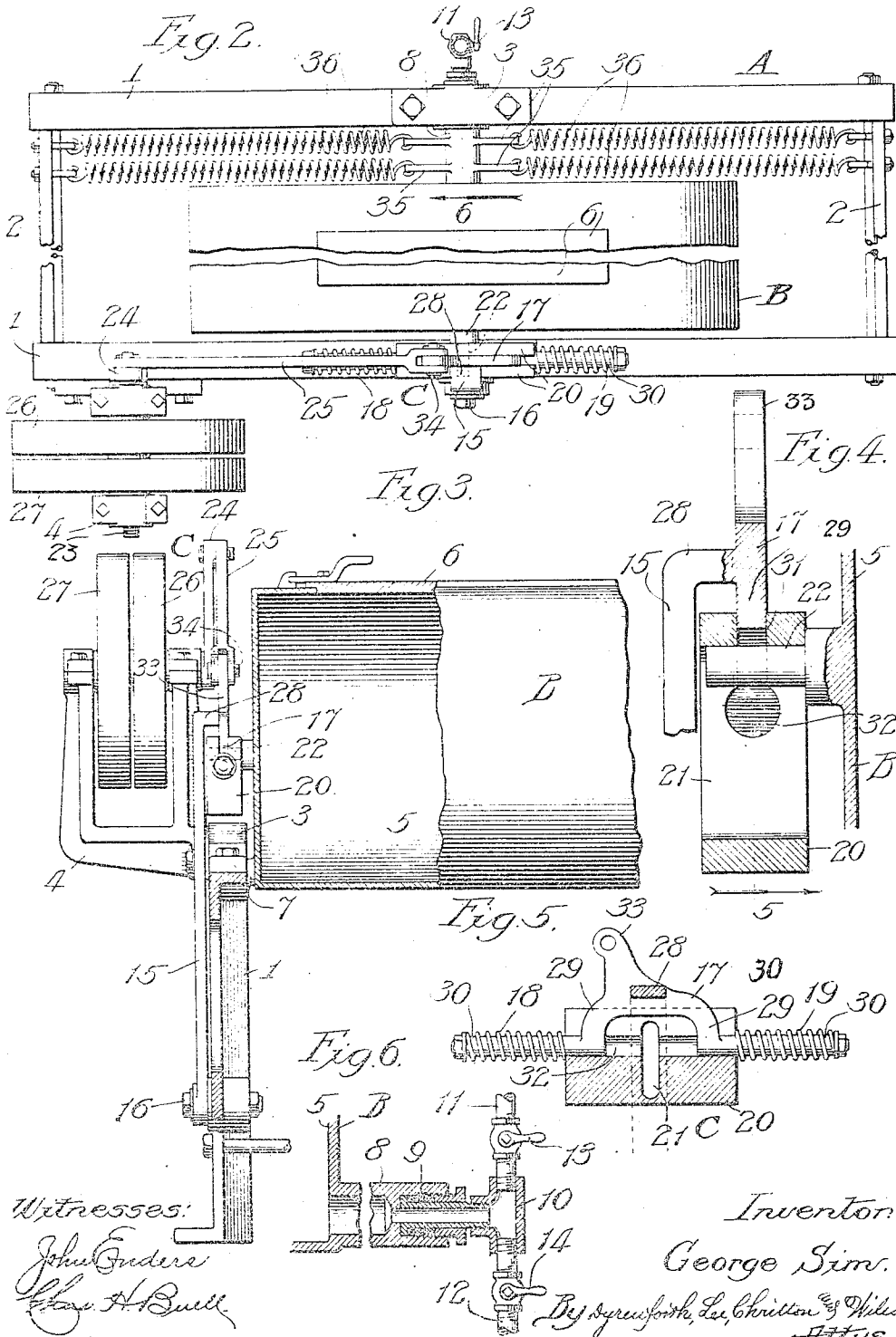
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Witnesses:

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Inventor:
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UNITED STATES PATENT OFFICE.

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MECHANICAL MOVEMENT AND MACHINE EMBODYING SAME.

1,051,923.

Specification of Letters Patent.

Patented Feb. 4, 1912.

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To all whom it may concern:

Be it known that I, GEORGE SIM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Mechanical Movements and Machines Embodying Same, of which the following is a specification.

This invention pertains particularly to power-actuated washing-machines of the oscillatory type; and the primary object of the invention is to provide improved actuating mechanism for a machine of this type.

Further objects of the invention will appear from the description hereinafter given.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 represents a broken side elevational view of an improved washing-machine embodying the invention herein set forth and claimed; Fig. 2, a broken plan view of the same; Fig. 3, a broken transverse sectional view of the machine; Fig. 4, an enlarged broken sectional view taken as indicated at line 4 of Fig. 1 and showing a detail of a resiliently mounted transmission member interposed between the oscillatory tub and an oscillatory lever employed; Fig. 5, a section taken as indicated at line 5 of Fig. 4, but on a reduced scale, and Fig. 6, a broken sectional view taken as indicated at line 6 of Fig. 2 and showing a detail of the inlet and outlet connections of the tub.

In the preferred construction which is here illustrated, A represents a frame; B, a tub, drum or washing-chamber which is preferably mounted to oscillate on a horizontal pivot; and C, actuating mechanism for said tub.

The frame A may be of any suitable construction. As shown, it comprises side frames 1 joined by end members 2. Said side frames are equipped on their upper portions intermediate of their lengths with bearings 3 adapted to receive trunnions of the tub; and one of said side frames is equipped near one end with a bracket 4 adapted to support the crank-shaft of the driving mechanism.

The tub or drum B may be of any suitable form and construction. As shown, the

tub comprises a cast metal body 5 equipped with a removable top portion 6, the body being provided at its lower portion with laterally projecting trunnions 7 and 8 which are journaled in the bearings 3. As shown in Fig. 6, the trunnion 8 is tubular and has connected therewith, by means of a suitable gland, a pipe 9 with the outer end of which is connected a T 10 to which is joined an inlet pipe 11 and an outlet pipe 12. The pipes 11 and 12 are equipped with stop-cocks, or valves, 13 and 14 respectively, and it will be understood that water or suds may be introduced into the tub through the pipe 11 and withdrawn through the pipe 12.

The mechanism C preferably comprises an oscillatory lever 15 adapted to oscillate about a pivot 16 whose axis is located some distance beneath the axis of oscillation of the tub; a head or spring-carrier 17 rigidly carried by the upper end of the lever 15 and which may be formed integrally therewith; springs 18 and 19 mounted upon the head or carrier 17 in alignment with each other; a block 20 interposed between said springs and slidably mounted with relation to the head or carrier 17, said block having a vertically disposed slot 21 therein which receives a pin or stud 22 with which the adjacent end of the tub is provided some distance above its axis of oscillation; and a crank-shaft 23 journaled in the bracket 4 and equipped with a crank 24 which is connected by a rod 25 with the head or spring-carrier 17, said crank-shaft 23 being equipped with tight-and-loose pulleys 26, 27.

An advantageous arrangement of the driving parts with relation to the tub and frame is illustrated, and will be more readily appreciated by reference to Fig. 3. According to this arrangement, the trunnion 7 is comparatively short, and the block 20 is located immediately above the corresponding bearing 3 of the main frame. The lever 15 is pivoted outside the corresponding side frame 1 and projects some distance above the side frame, said lever 15 having at its upper end an intumed portion 28 which carries the head 17. The head 17 is in the form of a yoke shown formed integrally with the intumed portion 28 of the lever 15. The form of said yoke appears most clearly from Fig. 5, from which it will be seen that

the yoke has depending arms 29 which flank the slot 21 and have their extremities equipped with oppositely extending stems or shaft-sections 30 upon which the springs 18 and 19 are mounted. The upper portion of the block 20 is provided with a longitudinal slot 31 in which the arms 29 are adapted to move, said slot 31 intersecting the transverse slot 21 and also the longitudinal perforations 32 which receive the stems or shaft-sections 30. It thus appears that the block 20 is suspended from or supported on the stems or shaft-sections 30 of the head 17, the block being confined between the coiled springs 18 and 19. The head 17 is equipped with an arm or lug 33 which is connected by a pivot 34 with the connecting-rod 25. It will be noted from Fig. 3 that the arrangement is such that the crank 24, connecting-rod 25 and spring-carrier, or head, 17 lie in substantially the same vertical plane.

The tubular trunnion 8 is shown formed integrally with one side or end of the tub and is provided with arms 35 to which are attached counterbalancing springs 36 which extend in opposite directions from said arms and are connected with the end members 2 of the main frame. Said springs 36 tend to cushion the tub at the ends of its movement of oscillation and also aid in righting the tub.

From the explanation given, the operation will be readily understood. Power is communicated through the pulley 26, thereby rotating the crank 24, actuating the connecting-rod 25 and oscillating the lever 15 on its pivot 16. When the lever 15 is oscillated, the head or spring-carrier 17 moves with it, and thereby actuates the block 20, which, through the medium of the pin-and-slot connection with the tub, actuates the tub. When the head, or spring-carrier, 17 is moved in one direction by the connecting-rod 25, say to the right from the position shown in full lines in Fig. 1, it compresses the spring 18 (while sliding somewhat with relation to the block 20), and the actuating force is transmitted through the spring to the block 20 and through the pin-and-slot connection to the tub. When the spring-carrier reaches the end of its throw, the tub continues to move somewhat under its own momentum, so that when the head 17 is in the position indicated by the dotted lines in Fig. 1, the tub will move somewhat farther and occupy the position shown by the dotted lines in said figure, the spring 19 being somewhat compressed at this time, while the tension upon the spring 18 is relieved. In the reverse movement, the resilience of the spring 19 cushions the shock which would otherwise result from reversal of movement of the head 17; and when the head 17 reaches the other limit of its throw, the spring 18 operates to cushion the tub at the

limit of its movement and to prevent undue shock in the next reversal of movement of the head 17. The action of the springs 18 and 19 is supplemented by the action of the springs 36, as above described.

An analysis of the movement of the tub with relation to the movement of the actuating lever 15 shows that the tub oscillates through an arc of a greater number of degrees than does the lever 15. This is a desirable feature, inasmuch as it enables a crank-arm of moderate length to be employed in the driving mechanism, while the effect upon the movement of the tub is such as to throw the clothes and washing fluid from one side of the tub to the other as the oscillation proceeds. In practice, the result is that the washing fluid and clothes encounter each other and the washing fluid is forced through the clothes, thereby securing the maximum of efficiency in the cleansing operation.

The machine employing this invention is simple of construction, may be manufactured at moderate cost, is very durable, being free from violent shocks on its driving mechanism, and is most efficient in operation.

The foregoing detailed description has been given for clearness of understanding only. Hence, no undue limitation should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

The improved actuating mechanism may be employed to actuate other oscillatory bodies, such as churn-bodies, etc.

What I regard as new and desire to secure by Letters Patent, is—

1. The combination with an oscillatory body adapted to oscillate about a given axis, of a lever adapted to oscillate about a different axis, and a resiliently mounted transmission element between said lever and body permitting the body to oscillate through an arc of greater degree than that through which said lever oscillates.
2. The combination of a body pivoted to oscillate about a given axis, a lever pivoted to oscillate about a different axis, means for oscillating said lever, and a spring-held slidably mounted member serving as a transmission member between said lever and body.
3. The combination of a body pivoted to oscillate about a given axis, a lever pivoted to oscillate about a different axis, a spring-carrier mounted on said lever near the free end thereof, a crank-shaft connected with said lever, a block slidably mounted on said spring-carrier, springs mounted on said spring-carrier and yieldingly confining said block, and pin-and-slot connection between said block and body.
4. The combination of a body pivoted to

oscillate about a given axis, a lever pivoted to oscillate about a different axis, a crank-shaft connected with said lever, and a resiliently mounted block interposed between
5 said lever and said body and constituting a transmission member.

5. The combination of a frame, a body pivoted on said frame, an oscillatory lever pivoted on said frame beneath the pivot of
10 said body, means for actuating said lever, and a resiliently mounted block constituting a transmission member between said lever and body.

6. The combination of a frame, a body
15 pivoted thereon, an oscillatory lever pivoted at a lower point on said frame, a spring-carrier carried by said lever and equipped with springs, a block interposed between
20 said springs and provided with a substantially vertical slot, a stud carried by said body engaging said slot, and means for actuating said lever.

7. In a machine of the character set forth, the combination of a frame, a body pivoted
25 on said frame to oscillate about a given axis, a lever pivoted on said frame to oscillate about a different axis, and pin-and-slot connection between said lever and said
30 body, whereby the body is permitted to move through a greater arc of oscillation than does said lever.

8. In a machine of the character set forth, the combination of a frame comprising side frames and means connecting them together,
35 a body pivoted on said side frames, a lever pivoted on one of said side frames beneath the axis of oscillation of said body, said lever having an intumed portion near its
40 upper end, a spring-carrier mounted on the intumed portion of said lever and equipped with springs, a block interposed between said springs and slidable with relation to
45 said spring-carrier, pin-and-slot connection between said block and body, and means for actuating said lever.

9. In a machine of the character set forth, the combination of a frame, a body pivoted thereon to oscillate about a horizontal axis, counterbalancing springs connected with
50 said body, an oscillatory lever pivoted to swing about an axis different from that of the axis of oscillation of the body, and pin-and-slot connection between said lever and said body, whereby the body is given a

greater movement of oscillation than said 55 lever.

10. In a machine of the character set forth, the combination of a frame, a body pivoted thereon, counterbalancing springs connected with said body, an oscillatory
60 lever pivoted on said frame at a point away from the axis of oscillation of said body, means for actuating said lever, and a resiliently mounted block forming a transmission element between said lever and body and
65 having pin-and-slot connection with one of said parts.

11. In a machine of the character set forth, the combination of a body, pivotal mountings for said body, a lever pivoted
70 to swing in a plane parallel to one end of said body, a spring-carrier mounted on said lever near the free end thereof, a block slidably mounted on said spring-carrier, springs mounted on said spring-carrier and
75 yieldingly confining said block, and pin-and-slot connection between said block and body.

12. In a machine of the character set forth, the combination of a body equipped near the lower portions of its ends with out-
80 wardly projecting trunnions, a frame having bearings for said trunnions, a lever pivoted on said frame beneath the corresponding trunnion and projecting above the trunnion and adapted to swing parallel with
85 the end of said body, a transmission element resiliently mounted on said lever near the upper end thereof, and pin-and-slot connection between said element and the adjacent end of said body.
90

13. In a machine of the character set forth, the combination of a body equipped near the lower portions of its ends with out-
wardly projecting trunnions, a frame having bearings for said trunnions, a lever pivoted
95 on said frame beneath the corresponding trunnion and projecting above the trunnion and adapted to swing parallel with the end of said body, a transmission element resiliently mounted on said lever near the upper
100 end thereof, pin-and-slot connection with said element and the adjacent end of said body, and actuating mechanism connected with the upper end of said lever.

GEORGE SIM.

In presence of—

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