

J. EDENS.
GEARING.

APPLICATION FILED OCT. 21, 1911.

1,017,251.

Patented Feb. 13, 1912.

3 SHEETS—SHEET 1.

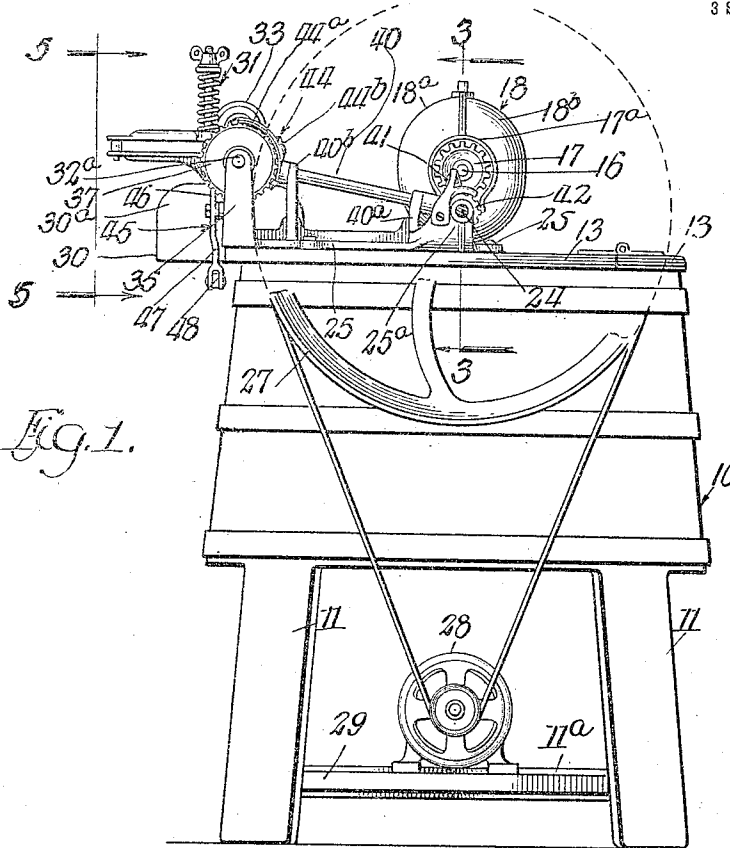


Fig. 1.

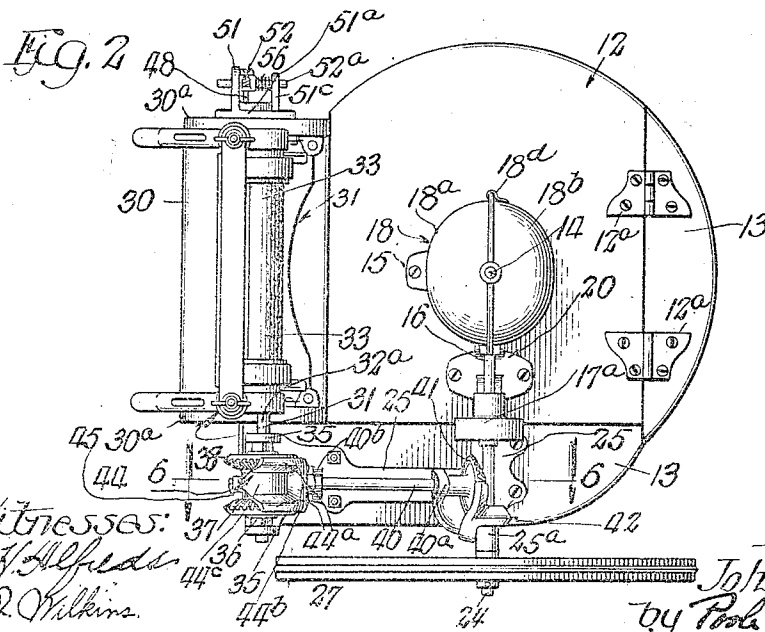


Fig. 2.

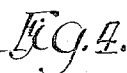
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3 SHEETS--SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

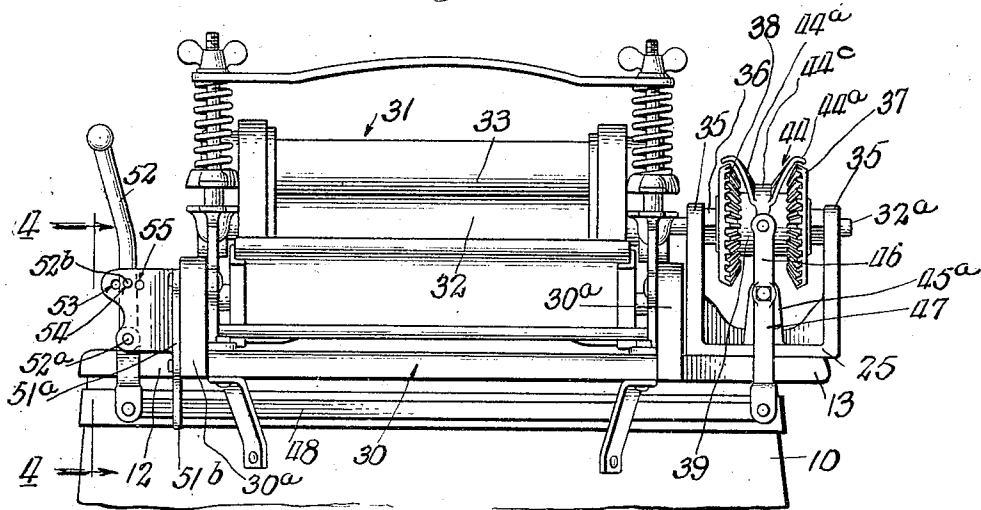


Fig. 6.

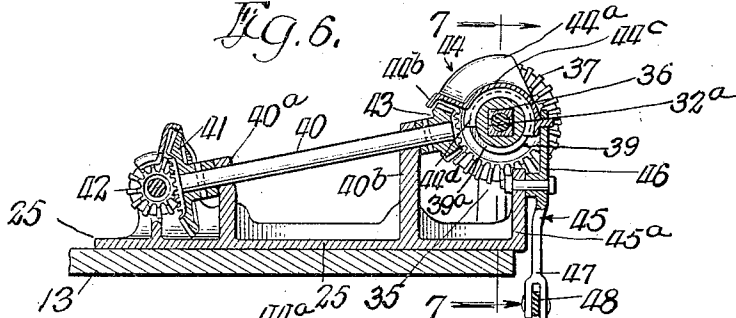
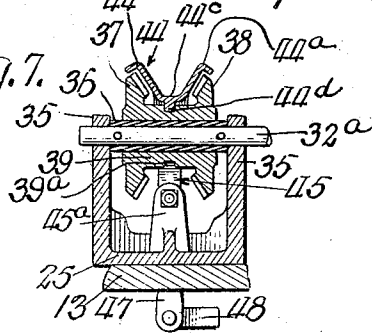


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN EDENS, OF DAVENPORT, IOWA, ASSIGNOR TO H. F. BRAMMER MANUFACTURING COMPANY, OF DAVENPORT, IOWA, A CORPORATION OF IOWA.

GEARING.

1,017,251.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed October 21, 1911. Serial No. 655,852.

To all whom it may concern:

Be it known that I, JOHN EDENS, a citizen of the United States, and a resident of Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Gearing; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in operating mechanism for wringers and the like and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The invention as shown herein is applied to a wringer attached to a washing machine of a familiar type comprising a tub or receptacle for containing the clothes and water, and provided with a beater or dolly mounted on a shaft depending through the lid into the tub and adapted to be given an oscillatory, rotary movement by means of the driving mechanism, so that the clothes are agitated by a stirring motion, first in one direction and then in the reverse direction. A wringer of familiar type is attached to the top of the washing machine tub, and my improved operating mechanism includes means for driving the operating shaft of said wringer continuously in either direction, a reversing device being provided which may be adjusted to either of three positions, in two of which continuous rotary movement is imparted to the operating shaft of the wringer while in the intermediate position of said reversing device the driving mechanism has no effect to rotate said operating shaft of the wringer.

My improved mechanism is particularly of advantage in connection with the use of power, although it may be operated by hand.

In the drawings—Figure 1 is a view representing in side elevation my improved operating mechanism when applied to the tub of a washing machine; Fig. 2 is a view representing a top plan view of the parts shown in Fig. 1; Fig. 3 is a view representing on an enlarged scale, a partial vertical section through Fig. 1, in a plane indicated by the line 3—3 of Fig. 1; Fig. 4 is a detail side elevation of a part of the mechanism

as looked at in the direction of the arrows 4—4 as shown in Fig. 5; Fig. 5 is a view in elevation representing, on an enlarged scale, a part of the mechanism as viewed in the direction of the arrows indicated by 5—5 in Fig. 1; Fig. 6 is a detail sectional view taken in a plane indicated by the line 6—6 of Fig. 2; Fig. 7 is a view representing a transverse section through the part shown in Fig. 6, in the plane indicated by the line 7—7 of Fig. 6.

Referring now to that embodiment of my invention illustrated in the drawings, 10 indicates a tub of familiar construction supported on upright legs 11, 11. Said legs are rigidly braced apart near their lower ends by diagonally arranged bars 11^a, 11^a, which also, as will presently appear, act to support the base board of a motor for driving the operating mechanism. The tub has a hinged lid 12 connected by hinges 12^a, 12^a, to a horizontal board 13 forming a part of the top closure of the tub. The top of the tub provides a support for the improved operating mechanism.

13^a indicates the usual beater, fixed to the lower end of a vertical shaft 14, which depends through an aperture in the hinged lid and is rotatively suspended from a bearing formed in a base plate 15 secured to the hinged lid of the tub. Above the tub-lid is rotatively supported a horizontal, auxiliary driving shaft 16 having rigidly connected at one end a spur-gear 17 and projecting at its other end into a spherical shell or casing 18 within which it has fixed to it a gear 19. A bearing member 20 rises from the base-plate 15 and provides bearing for the shaft 16 at a place spaced from the shell 18. As shown in the drawings, the bearing member 20, the bearing plate 15 and one-half of the spherical shell 18^a are made in one casting. The other half of the shell 18^b is punched from sheet metal and is adapted to be sprung upon an annular flange 18^c formed in the cast-section of the shell and is hinged thereto by means of a loop 18^d which is inserted through a slot 18^e in the cast shell.

The vertical dolly shaft 14 extends through the casing 18 and the gear 19 at that end of the shaft 16 which projects into the casing 18, is adapted for engagement with radial teeth 20 on a vertically movable sleeve 21 feathered on said dolly shaft. Two

of said pins are provided with prolongations 22 adapted when said sleeve reaches the limits of its intended amplitude of oscillation to engage with curved guide-plates 23 made rigid with the casing so as to hold said pins in engagement with the teeth of the gear 19. Thus the gear 19, though rotating continuously in one direction engages first the upper sides of the pins 20 and then on account of the endwise movement of the sleeve 21 on the dolly shaft, brought about by the engagement of the pin prolongations 22 with the curved guide plates 23, engages on the lower side of said pins, so that a rotary oscillatory motion is imparted to the sleeve 21 and through it to the dolly-shaft 14. This construction is familiar and needs no further description.

24 indicates a short horizontal driving shaft located in the same vertical plane as the shaft 16 but at a level below said shaft and having bearing in upright arms 25^a, 25^a, rising from a base-plate 25 secured to the fixed top of the tub. A pinion 26 rigidly secured to one end of said shaft 24 meshes with the gear 17 at the outer end of the auxiliary driving shaft 16. To the other end of said shaft 24 is secured a large fly-wheel 27 having a grooved periphery so that it may act as a pulley. As shown in the drawings, said pulley 27 is driven by an electric motor 28 mounted on a board 29 rigidly secured in the angle of the cross bars 11^a. The motor drives the fly-wheel and its shaft 24 continuously in one direction, and the shaft 24 in turn drives the shaft 16 continuously in one direction, and the continuous rotation of the latter shaft is converted into a rotary, oscillatory movement of the dolly-shaft, as above explained.

30 indicates the usual wringer board secured to the fixed top of the tub and provided with upright end boards 30^a 30^a, to which the ends of the wringer are clamped in a familiar manner. As shown herein, said wringer extends in a direction parallel to the driving shaft 24.

31 indicates the wringer, as a whole, and 32, 33, the rolls thereof. One of the wringer rolls, in this case, the lower roll, has a shaft 32^a which projects beyond the wringer frame, as clearly shown in Fig. 5. The shaft 32^a beyond the wringer is journaled in upright spaced arms 35, 35, rising from the base-plate 25. On said shaft between the upright bearing arms 35 and abutting at either end against the inner faces of said arms, is rigidly secured a square bushing 36.

37, 38 indicate oppositely disposed beveled gears which, as will appear, are the reversing gears and which are made rigid with a sleeve 39 mounted on the square bushing 36 and capable of endwise movement thereon.

40 indicates an auxiliary driving shaft extending at right angles to the wringer oper-

ating shaft 32^a and extending between the main driving shaft 24 and said shaft 32^a. Said shaft 40 has bearing in arms 40^a, 40^b, rising from the base-plate 25. A beveled gear 41 fixed to one end of the shaft 40 meshes with a beveled pinion 42 keyed to the main driving shaft 24. A beveled pinion 43 secured to the other end of said shaft 40 is adapted for engagement with either of the beveled gears 37 and 38.

44 indicates a gear casing comprising shields 44^a, 44^a, for covering and protecting the reversing gears 37, 38, and a shield 44^b for the beveled pinion 43 which is adapted for driving said reversing gears, said shields being connected by an annular web 44^c, provided on its inner surface with a radial, annular flange 44^d. Said flange 44^d engages within an annular groove 39^a formed in the cylindric surface of the sleeve 39. A lever 45 (see Fig. 5) is fulcrumed on an upright lug 45^a rising from the base-plate 25. The upper end 46 of said lever has pivotal connection with the web 44^c of the gear casing 44 and its lower end 47 has pivotal connection with a link or bar 48 extending parallel to the wringer to a point beyond its right hand end, as shown in Fig. 2.

To impart longitudinal movement to the sleeve 39 on its bushing 36 so as to bring either of the beveled gears 37, 38 into engagement with the beveled pinion 43 on the auxiliary driving shaft 40 or into neutral position and to lock it in any one of these three positions, the following mechanism is provided: 51 indicates a plate extending in a vertical plane parallel to the link 48 and made integral with a vertical base plate 51^a secured to the end board 30^a of the wringer board 30 which is farthest removed from the reversing gears and in this case at the right-hand end of the wringer. A lever 52 is pivotally connected to said plate 51 and its lower end has pivotal connection with the link-bar 48. The base-plate 51^a has a slotted depending projection 51^b which provides a guide for the link 48 adjacent the lever 52. It is apparent that by swinging said lever 52 toward or away from the wringer, the desired movement of the sleeve 39 carrying the beveled gears 37, 38 may be brought about. The plate 51 is provided with three holes 53, 54, 55, arranged in the arc of a circle and corresponding in position, respectively, with a position of the sleeve when the gear 38 is in mesh with the pinion 43, with a neutral position of said sleeve and with a position of said sleeve when the gear 37 is in mesh with said pinion. The lever 52 is made rigid with a short shaft 52^a (see Fig. 4), which has bearing at one end in an aperture in the plate 51 and at its other end in a lug 51^c rigid with the base-plate 51^a and spaced from said plate 51. A coiled spring 56 is mounted on said

shaft intermediate the lug 51^c and the lever 52, said spring acting to hold said lever against the plate 51. Above the shaft 52^a the lever 52 is provided with a laterally projecting pin 52^b which is adapted for engagement with either of the holes 53, 54, 55. By a slight pressure of the hand, the lever may be pushed away from the plate 51 against the action of the spring 56 so as to disengage the pin 52^b from the hole within which it is engaged whereupon said lever may be swung to bring the pin opposite either one of the other holes corresponding to the desired position of the sleeve carrying the reversing gears 37, 38, whereupon the pressure of the hand on the lever is released and the pressure of the spring against the lever causes the pin to engage in the hole opposite to which it is placed, so as to lock said sleeve in either of the desired positions.

The gear 17 is covered by means of a shield plate 17^a secured to the top of the bearing member 20. The beveled gear 41 is likewise covered by a shield plate suitably formed to inclose it on top, said plate being secured to the upright bearing arm 25^a rising from the base-plate 25.

It will be noted that in the arrangement of the device for shifting the reversing gears, the lever for operating the same is located at the right-hand end of the wringer, as is shown in Fig. 2, so that when the tub lid is open, the person using the washing machine naturally stands on the right-hand side of the tub in a position more or less facing the driving pulley and the wringer, and the right-hand is in position to reach the operating lever with ease in order to stop the wringer or to start it into operation in either direction.

It is apparent from the construction described, that when the lid is open, the gear 17 is disengaged from the pinion 26, which drives it so that the continued rotation of the fly-wheel pulley and the parts driven thereby will have no effect on the dolly-shaft which remains at rest until the lid is again closed.

The bearing arms for the main driving shaft, the auxiliary driving shaft and the driven shaft of the wringer are all, as shown in the drawings, made integral with a common base-plate 25 supported on the top of the tub. By reason of this construction, the alinement of the several shafts is always maintained, and there is no danger of the gears becoming disengaged or inoperative by reason of the warping or other deformation of the top of the tub.

I claim as my invention:

1. An operating mechanism for wringers and the like comprising a driving shaft, a driven shaft adapted to be rotated in either direction, an endwise movable sleeve mounted on said driven shaft and rotatable there-

with, said sleeve having an annular groove in its outer surface, oppositely placed reversing gears made rigid with said sleeve, a pinion rigidly secured to said driving shaft and adapted for engagement with either of said reversing gears, a gear casing having a part engaging within the groove of said sleeve, means for imparting endwise movement to said sleeve in either direction and a locking device adapted to lock said sleeve with either of the reversing gears in engagement with said beveled pinion or in a neutral position at either side of said pinion.

2. An operating mechanism for wringers and the like, comprising a driving shaft, a driven shaft adapted to be rotated in either direction, an endwise movable sleeve mounted on said driven shaft and rotatable therewith, oppositely placed reversing gears made rigid with said sleeve, a pinion fixed to said driving shaft and adapted for engagement with either of said reversing gears, a gear casing having rotative bearing on said sleeve but being fixed against movement on said sleeve in a direction endwise thereof, and means acting on said gear casing to move it in either direction parallel to the longitudinal axis of said sleeve.

3. An operating mechanism for driving a wringer and the like comprising a driving shaft, a driven shaft, an endwise movable sleeve mounted on said driven shaft and rotatable therewith, said sleeve having an annular groove in its periphery, oppositely placed reversing gears made rigid with said sleeve, a pinion secured to said driving shaft and adapted for engagement with either of said reversing gears, a gear casing adapted for the protection of said reversing gears and provided with a radial flange on its inner surface engaging within the groove of said sleeve, a lever fulcrumed to swing in a plane parallel to the direction of movement of said sleeve, said lever having pivotal connection with said gear casing, a hand lever located a distance from said first lever, a link operatively connecting said two levers, and means adapted to lock said hand lever in either of its positions corresponding to the two operative positions and the neutral position of said reversing gears.

4. An operating mechanism for driving a wringer and the like comprising a driving shaft, a driven shaft, a bushing of rectangular cross section fixed to said driven shaft, a sleeve having endwise movement on said bushing provided with an annular groove in its periphery, oppositely placed reversing gears made rigid with said sleeve, a pinion secured to said driving shaft and adapted for engagement with either of said reversing gears, a gear casing adapted for the protection of said reversing gears and provided with a radial flange on its inner surface engaging within the groove of said sleeve, a

lever fulcrumed to swing in a plane parallel to the direction of movement of said sleeve, said lever having pivotal connection with said gear casing, a hand lever located at a distance from said first lever, a link operatively connecting said two levers, and means adapted to lock said hand lever in either of its positions corresponding to the two operative positions and the neutral position of said reversing gears.

5. An operating mechanism for wringers and the like comprising a main driving shaft, an auxiliary driving shaft at right angles thereto and driven thereby, a driven shaft parallel to said main driving shaft adapted to be rotated in either direction, an endwise movable sleeve mounted on said driven shaft and rotatable therewith, oppositely placed reversing gears made rigid

with said sleeve, a pinion rigidly secured to said auxiliary driving shaft and adapted for engagement with either of said reversing gears, means for imparting endwise movement to said sleeve in either direction, a locking device adapted to lock said sleeve with either of the reversing gears in engagement with said pinion or in neutral position at either side of said pinion, and a common base-plate provided with upright bearing arms for said several shafts.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 17th day of Oct. A. D. 1911.

JOHN EDENS.

Witnesses:

H. G. BRAUNLICH,
OTTO RIECHE.