W. Rowell.

Wringer.

No. 68,576. Patented Sep. 3, 1867.

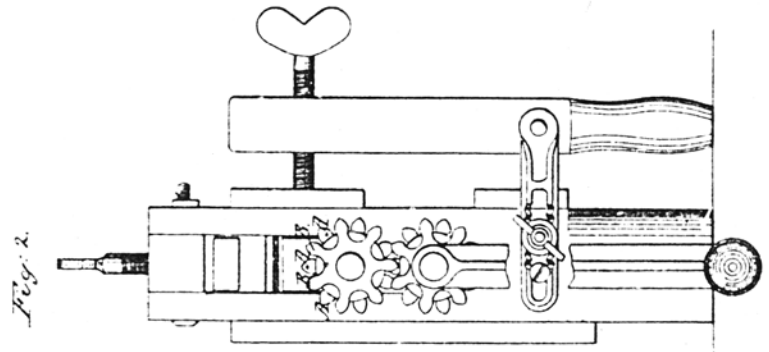

Fig. 2.

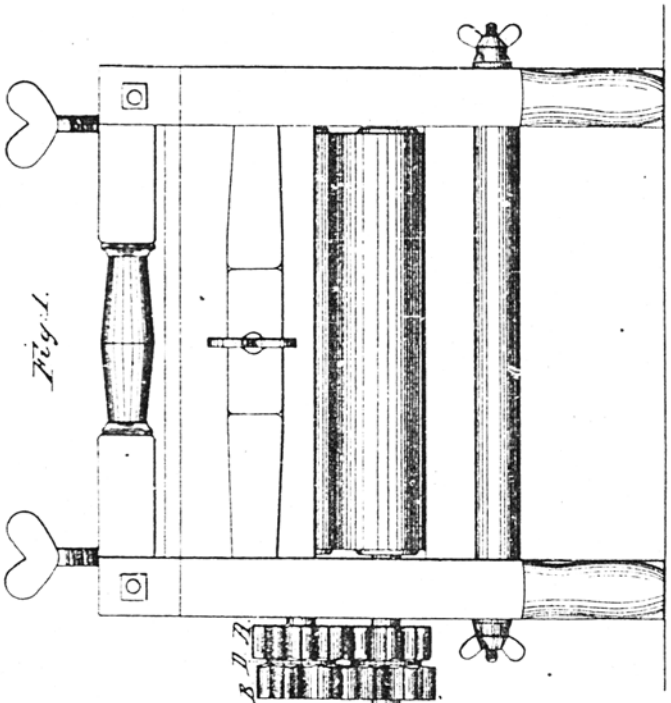

Fig. 1.

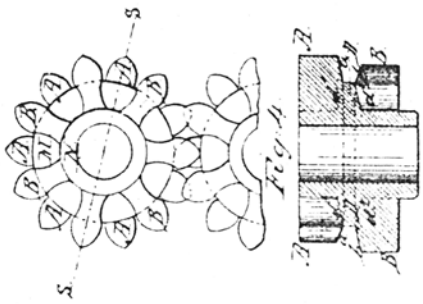

Fig. 3.

Fig. 4.

Witnesses;
C. C. Livingst.
Wm C. Dey.

Inventor
Warren Rowell.
by his attorneys Munn & Co.

United States Patent Office.

WARREN ROWELL, OF NEW YORK, N. Y., ASSIGNOR TO METROPOLITAN WASHING MACHINE COMPANY, OF MIDDLEFIELD, CONNECTICUT.

Letters Patent No. 68,576, *dated September* 3, 1867.

IMPROVED CLOTHES-WRINGER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WARREN ROWELL, of the city and county of New York, and State of New York, have invented certain new and useful improvements in Clothes-Wringers; and I do hereby declare that the following is a full and exact description thereof.

It is common in clothes-wringers to gear the rollers together, so that the turning of one roller shall cause the other to correspondingly turn, with liberty of the rollers to yield apart by the action of springs. A patent issued May 15, 1866, on the application of James N. Pease, describes what is known as step-gearing, as so applied. I employ substantially this form of wringer, modified so as to obtain important advantages over the construction described in Pease's patent.

I will proceed to describe what I consider the best means of carrying out my invention, and will afterwards designate the points which I believe to be new therein.

The accompanying drawings form a part of this specification.

Figure 1 is a side and

Figure 2 an edge view of an entire wringer on a scale half size.

Figure 3 represents the gearing on one shaft, with a portion of the similar gearing on the other shaft, and

Figure 4 is a section on the line S S in fig. 3.

Similar letters of reference indicate like parts in all the figures.

The drawings indicate the novel parts, with so much of the other parts as is necessary to indicate their relations thereto.

Confining attention to the gear-wheels, I make the lower and the upper gear-wheels exactly alike, so that a minute description of one is equally descriptive of the other.

A is the innermost and B the outermost series of teeth, which may be considered each as a complete gear-wheel. The two are cast together, and between them is a ring without gear, indicated by D. The periphery of the ring D is smooth and exactly concentric with the axis; its diameter is a little less than the true pitch-line of the gear-wheel. The sides or opposite faces of the ring or smooth wheel D, which intervenes between the gear-wheels A and B, are bevelled, as indicated by d^1 d^2, the angle of the inclination being about twelve degrees. I give a corresponding bevel to the corresponding sides or edges of the teeth.

When the rollers are geared together by my arrangement, and all is in working order, the bevelled edges *a b*, of the gear-wheels A B, apply to or against the sides d^1 d^2 of the smooth ring D, on the opposite roller, and the correspondingly-bevelled edges of the teeth on the other roller apply against the bevelled faces d^1 d^2 of this ring D. When, from any cause, the rollers tend to approach too closely together, the points of the teeth do not rub against the bottoms of the cavities opposite; but the peripheries of the respective rings D come in contact, each with the other, and avoid all friction. The bevelling represented effectually avoids all risk of the corners of the teeth coming in contact with the peripheries of the rings D.

I have discovered that by reducing the number of the teeth in the wheels A and B, arranged as specified, and correspondingly increasing the spaces between the teeth, and the length of the teeth, I can materially increase the distance to which the rollers may be allowed to separate and approach without involving any corresponding evil. The drawings represent the best construction and proportions. I prefer seven teeth, but can operate successfully with six. In laying out the form of these teeth I employ two pitch-circles, M and N, striking the points of the teeth from the outer circle M, and the roots of the teeth from the inner circle N. The mode of laying out this gear will be readily understood from the drawings by those accustomed to laying out gear.

In the Pease patent, above referred to, and in all the examples known to me, eight teeth have been employed. By reducing the number, and increasing their length and distance, or "pitch," as described, I increase the range through which the rollers may approach or recede at least twenty per cent. I am able by my invention to allow ordinary rollers, two inches in diameter, to approach and recede about three-fourths of an inch. This is an extent which has never before been possible, except by means of circuitous and complicated connections. This part of my invention, the reducing the number and increasing the size of the teeth, in connection with step-gear, may be applied with success in cases where there is no ring D, or any equivalent

therefor. Thus, for example, in case the wheels A and B are widely separated, and placed at opposite ends of the shaft, so long as they are fixed, with the teeth of one opposite the spaces between the teeth of the other, on the same shaft, no matter how widely apart they may be, or what, if anything, is between them, the reduction of the number and the increase in the length of the teeth will give an important advantage, as described.

Another and important advantage, obtained by reducing the number of teeth and enlarging the spaces between them, is the increased facility of casting them, by reason of the greater body of sand which is left between the teeth in the mould. The difficulty ordinarily experienced in moulding the patterns is thus greatly reduced, if not wholly obviated.

My invention is capable of various modifications without losing all the advantages thereof. By constructing the ring D in one casting with the gears or toothed wheels A and B, I support the teeth of A and B very effectually, and at the same time form a bearing-wheel by the periphery of the ring D. In other words I cause the ring D, thus cast in one with the other parts, to perform the several distinct functions of a bearing-wheel to tread on the corresponding wheel, and thus prevent the teeth from meshing too closely together, and also of strengthening the teeth of the gear on each side, as also of usefully resisting under some circumstances the tendency of the rollers to move endwise on each other. The benefit of some portion of my invention may, however, be realized by strengthening the teeth, by connecting the teeth of one set to the teeth of the opposite set by branches or arms extending across, even if the periphery were not adapted to serve as a bearing-wheel. And again, the advantage of the bearing-wheel so situated might be obtained by introducing a ring of any suitable material to form the proper tread on the periphery of my wheel D, without connecting the same so as to support the teeth of the gears thereby. I can, for example, cast the wheels A and B in two separate pieces, and apply a separate smooth wheel between them. I much prefer the construction herein described.

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

1. I claim, in the gearing of clothes-wringing machines, having two or more sets of teeth arranged to present the teeth of one set opposite the spaces in the other set on the same shaft, as herein specified, reducing the number of the teeth, and increasing the pitch thereof, substantially in the proportion, and so as to accomplish the purposes herein set forth.

2. I claim, in the manufacture of step-gear cast in pairs, the formation of a connection or support between the teeth to strengthen them, substantially as herein set forth.

3. I claim a ring, D, between the gears A B, arranged substantially as described, so as to prevent them from meshing deeper than is desired, as herein set forth.

4. I claim, in the manufacture of step-gears, when cast double, so constructing the ring D, by casting it in one with the gears, that it shall at the same time strongly support the teeth, and prevent the gears from working deeper than desired at the nearest approach of the rolls, all substantially as and for the purpose herein set forth.

5. I claim bevelling the faces d^1 d^2 of the ring D, and the corresponding faces of the teeth which come in contact therewith, substantially as and for the purposes herein set forth.

In witness whereof I have hereunto set my name in the presence of two subscribing witnesses.

WARREN ROWELL.

Witnesses:

C. C. LIVINGS,

W. C. DEY.