# D. Lyman.

## Clothes-Wringer.

No. 72407 Patented Dec. 17, 1867.

Fig. 1.

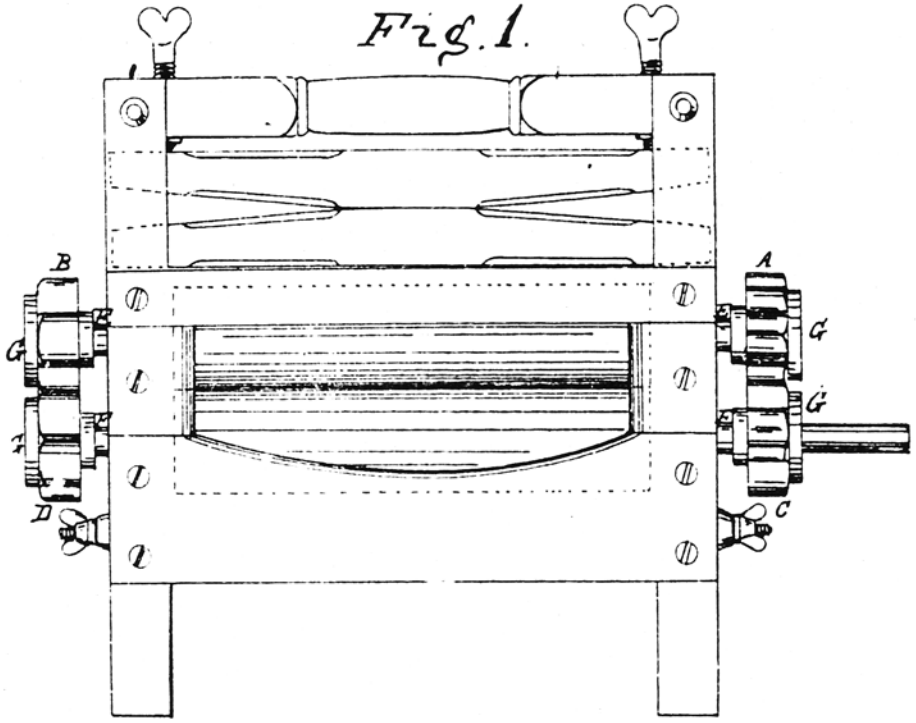



Fig. 2.

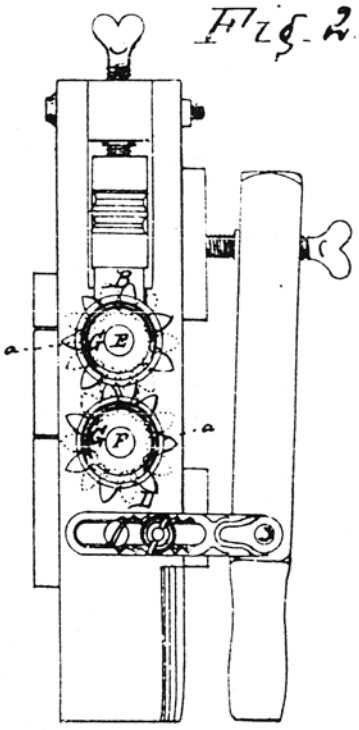
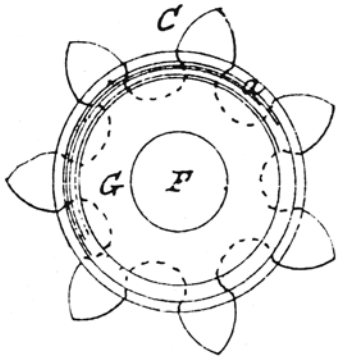



Fig. 3.



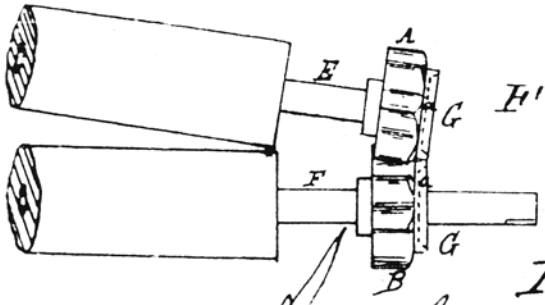




Fig. 4.

Witnesses: Wm Bailey, C. Sage jr.

Inventor: David Lyman by J. Pollok his atty

# United States Patent Office.

DAVID LYMAN, OF MIDDLEFIELD, CONNECTICUT.

*Letters Patent No.* 72,407, *dated December* 17, 1867.

## IMPROVED CLOTHES-WRINGER.

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

TO WHOM IT MAY CONCERN:

Be it known that I, DAVID LYMAN, of Middlefield, in the county of Middlesex, and State of Connecticut, have invented certain new and useful Improvements in Clothes-Wringers; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of a wringing-machine to which my improvements are applied.

Figure 2 is an end elevation of the same; and

Figures 3 and 4 are detached views of the gearing carried by the wringer-rolls.

This invention relates to gearing known as "step-gear," *i. e.*, gear consisting of two or more cog-wheels mounted on the same shaft, and in parallel planes, in such manner that the teeth of the one wheel shall be opposite the spaces or intervals between the teeth of the other; and it has more particular reference to the gearing of wringing and other like machines in which the toothed wheels composing each set of step-gear are mounted one upon each end of the same shaft. As, for instance, in fig. 1 of the accompanying drawings, the shaft of the upper wringer-roll carries on one end the cog-wheel A, and on the other a like wheel, B, the two being so placed with relation to each other as to constitute step-gear, under the Pease Patent, No. 54,764, of May 15, 1866.

These gears mesh with like cog-wheels similarly mounted upon the ends of the lower wringer-roll shaft, which, when revolved, will, through the medium of the gears, effect the rotation of the upper roll. The rolls are, as is well known, so arranged that the distance between them may be increased or lessened, to conform to the varying thickness of the clothes passing through the machine. Under this arrangement of the rolls, it often happens that, owing to the inequalities in the clothes, the upper roller is lifted or tilted up at one end, so as to throw the cogs at that end of the machine quite out of gear, causing at the same time the teeth of the gears at the opposite end to mesh so deeply with one another as to perceptibly retard if not entirely arrest the revolution of the rolls.

One of the objects I have in view in this invention is, to afford a ready means of remedying this difficulty, and of preventing the teeth of the one wheel from entering the spaces or intervals between the teeth of the other beyond the proper depth.

In step-gear in which the wheels are mounted separately and upon opposite ends of the shaft, it is also of considerable importance that the cogs should be suitably strengthened and supported, to resist any strain brought to bear upon them, so as to impart to the whole wheel the necessary solidity and strength to endure the constant wear and pressure to which it is subjected. This is more especially true when the number of cogs on the wheel is reduced, as illustrated in the drawings, in accordance with the method described and claimed in the patent recently granted Warren Rowell for improved gearing for wringing-machines.

My object, in addition to the one stated above, is also to afford this increased strength and stability to the cogs; and to this end my invention consists principally in providing each of the cog-wheels which form the step-gear of a machine, such as described, with a ring or circular plate applied to or formed upon the face of the wheel in the manner hereinafter specified, so that while serving to limit the penetration of the cogs of one wheel into the spaces or intervals between the cogs of the other, it shall at the same time serve to support the cogs and give additional strength to the wheel to which it is applied. The diameter of this supporting-ring or plate, (which may be either cast in one piece with the toothed wheel, or formed separately, and afterwards secured upon the wheel by suitable means,) should bear such relation to that of its wheel, that when two of said wheels are in gear, the peripheries of their respective rings or plates, after the cogs have meshed to a certain depth, will be in contact, so as to prevent the further penetration or engagement of the cogs. Thus, when the upper or driven roll is tilted so as to cause the wheels on one side to mesh more deeply with one another, after the cogs have engaged to a certain extent with one another, the supporting-rings or flanges upon the wheels will meet and prevent the nearer approach of the wheels and consequent jamming or locking of their cogs. It is manifest that if the supporting-flanges or plates of the wheels on one side of the machine were of unequal diameters, the ring or plate having the greater diameter would move with a correspondingly increased circumferential speed, and consequently, that if the two rings or plates, from the causes hereinbefore mentioned, were brought

into contact, the difference in their speed at the circumference would produce a sliding friction which in time would cause them to become worn and unfitted for use; and moreover, in event of contact between such rings, the dragging or sliding of the one upon the other would increase the resistance, and therefore require a greater expenditure of power to operate the rolls. I therefore prefer to make these rings or supporting-disks of equal diameters, so that they shall move with the same circumferential speed, thus preventing the dragging or attrition of the one surface upon the other, and enabling them to operate under the best conditions for success.

In the accompanying drawings, the step-gears A B and C D are shown as mounted upon the ends of their respective shafts E F, the former of which is the shaft of the upper wringer-roll, the latter the shaft of the lower roll. Upon the exterior face of each cog-wheel, as seen in fig. 3, is a ring or flange or plate, G, whose diameter is less than that of the wheel, the two diameters bearing the relation to each other hereinbefore explained. The plates or rings G have equal diameters, in order to prevent the sliding friction which, as above set forth, would, in event of their being in contact, result if one were greater than the other. The action of the flanges or rings G, in preventing the cogs from meshing too deeply when the upper roll is tilted, is seen clearly in fig. 4, where the wheels and their flanges or plates are represented in elevation. The teeth or cogs of the wheels have their faces which are contiguous to the plates bevelled, so as to escape all danger of the cogs meeting with or catching upon the plate of the opposite wheel.

Instead of having a contiguous plate, G, the ring or flange *a* upon the periphery of said plate may alone be employed, though I much prefer to use the plate, which should be cast in one piece with its wheel.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. In wringing or other like machines, having cog-wheels on each end of the roller-shafts, I claim providing said cog-wheels with flanges or circular plates upon their exterior faces, as herein described, so that while preventing the meshing of the cogs beyond a certain limit, they shall afford additional support and strength to said cogs, substantially as set forth.

2. In wringing or other like machines, having flanged or disked cog-wheels upon each end of the roller-shafts, I claim making all said disks or flanges with equal diameters, so that when the disks or flanges of the contiguous cog-wheels are in contact, they shall move with a rolling in contradistinction to a sliding friction, as and for the purposes set forth.

In testimony whereof, I have signed my name to this specification before two subscribing witnesses.

DAVID LYMAN.

Witnesses:

LYMAN A. MILLS,

F. G. SHERWIN.