3 Sheets—Sheet 1.

G. CAMPBELL.
Clothes-Wringers.

No. 197,095. Patented Nov. 13, 1877.

Fig. 1.

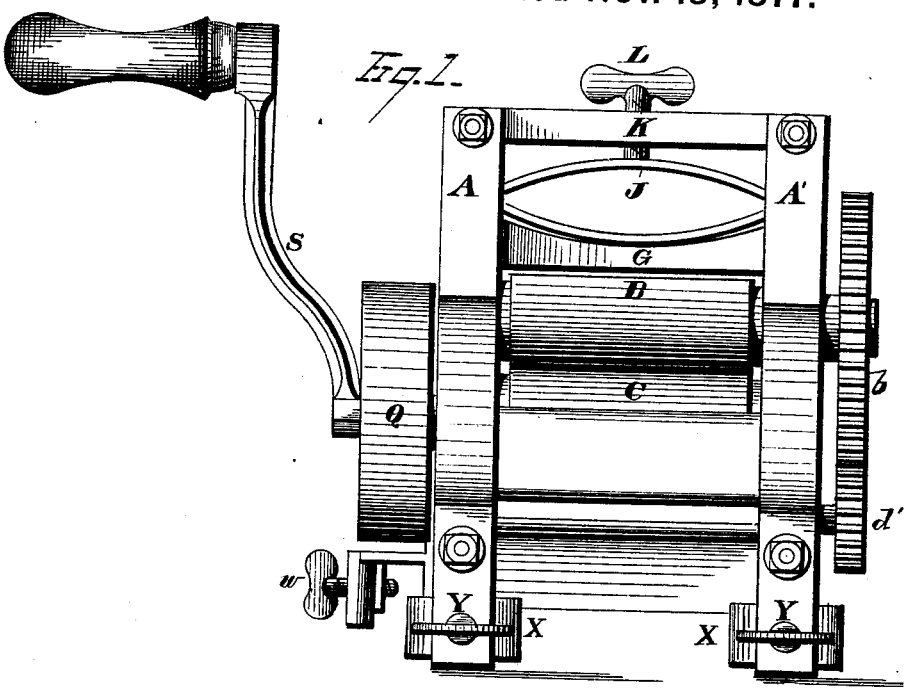
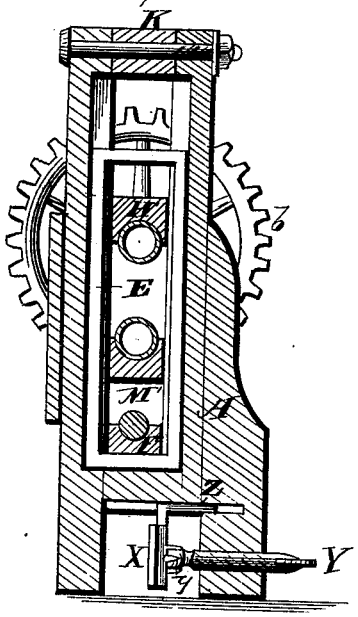


Fig. 2.



WITNESSES

Edwd. S. Nottingham

A. W. Bright

INVENTOR

George Campbell

By H. A. Seymour

ATTORNEY

3 Sheets—Sheet 2.

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Fig. 3.

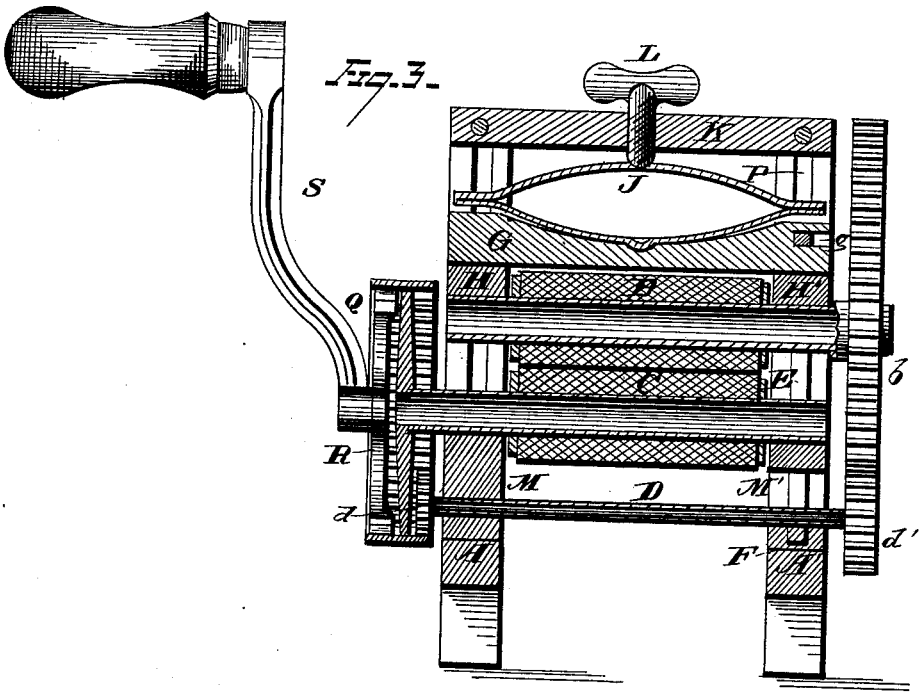


Fig. 4.

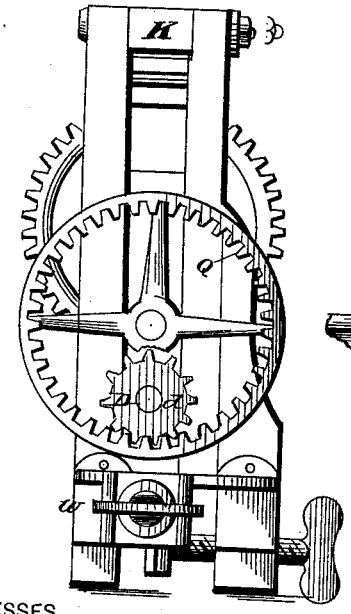
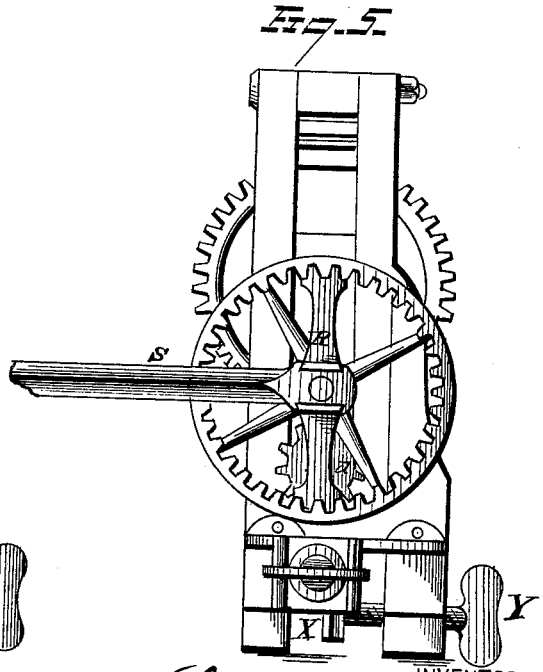


Fig. 5.



WITNESSES

Ed. L. Nottingham

A. W. Bright

INVENTOR

George Campbell

By H. A. Seymour

ATTORNEY

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Fig 6.

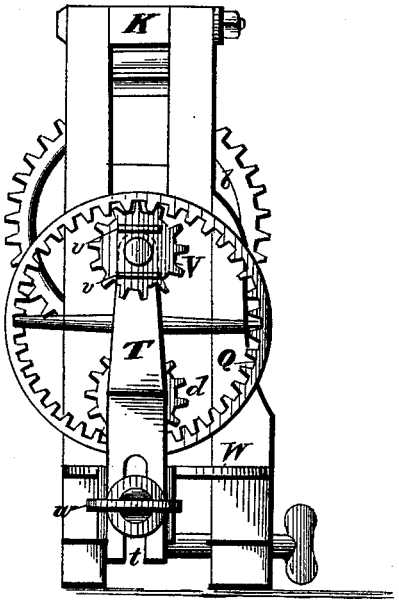
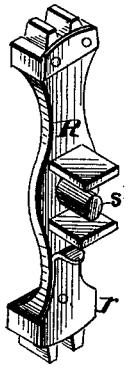
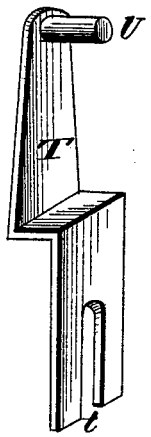


Fig. 7.





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Ed. L. Nottingham

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ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE CAMPBELL, OF PITTSFIELD, MASSACHUSETTS.

IMPROVEMENT IN CLOTHES-WRINGERS.

Specification forming part of Letters Patent No. **197,095**, dated November 13, 1877; application filed February 24, 1877.

To all whom it may concern:

Be it known that I, GEORGE CAMPBELL, of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Clothes-Wringers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in clothes-wringing machines; and consists in having its rubber-roll shafts and a countershaft operating intermediate of the rolls made of metallic tubing, the same being provided with mechanism, to be described, whereby the gears actuating the rolls may be kept in engagement under the relative vertical displacement of the rolls.

My invention further consists in detachable gear-connections, whereby the speed of the rolls may be varied under the same time revolution of the actuating crank-shaft; also, in removable mechanism for supporting and vertically adjusting the several different pinions meshing with the main spur-gear; also, in a peculiar clamping device having a universal-joint motion.

Referring to the drawings, Figure 1 is a view in side elevation; Fig. 2, a vertical cross-section through the end frame opposite to that at which the power is applied; Fig. 3, a vertical longitudinal section through the wringer, complete; Fig. 4, an elevation view of the end at which the power is applied. Fig. 5 shows the same with a removable gear attachment and crank attached. Fig. 6 shows the removable gear-supporting standard, with pinion meshing in the internally-toothed spur-gear. Fig. 7 shows the different gear connecting devices in detail.

A A′ are the end frames of the wringer, in which the shafts of the rubber-rolls B C and countershaft D have bearing. These three shafts are made of tubing or hollow cylindrical metal, so that they may be as light as possible, while at the same time the rubber rolls may present a large frictional surface for operating upon the material passing under their joint operation. While the shafts are shown as plane curves, yet it is apparent that they may be also corrugated or roughened so as to hold the rubber the better to their surfaces.

E is a metallic stirrup or close-looped strap fitting into vertical grooves in the end A′ of the frame opposite to that at which the power is applied to the machine. Its lower extremity passes under a loose journal-box, F, in which one end of the shaft D has bearing, from which it passes up on either side of the journals of the two rubber-rolls, and its upper cross extremity engages in an open slot, *g*, recessed in the end of the cross-bar G. This cross-bar extends across the upper part of the main frame, and its two end extremities have bearing upon the loose upper journal-boxes H H′, which in turn seat upon the journals of the top roll B. An elliptic metallic spring, J, is located between this loose cross-bar G and the upper fixed piece K, the latter securing rigidly the upper extremities of the end frames A A′, and, by means of the set-screw L, any desired tension of spring-pressure can be brought to bear upon the cross-bar G, which in turn bears down in vertical line upon the roll B.

The journal-box M′, rigidly secured to the frame A′, bears one end of the lower roller-shaft C, while its opposite end has adjustable bearing in the loose box M, which journals also the corresponding end of the counter-shaft D. The upper sectional journal-boxes H H′ of the top roll B, and the lower sectional journal-box F of the counter-shaft D are also made loose and vertically adjustable within the grooves P, cut in the sides of the two end frames A A′. They are provided with tenoned extremities, corresponding to the said grooves, and are bound about by the metallic stirrup E, at the end frame A′, while they are free and independently movable at the opposite frame A. By this mechanism the gears actuating the upper roll are kept in mesh, notwithstanding the separation of the rubber rolls during passage between them of heavy fabrics, and the stirrup engaging with the spring-pressed cross-

bar G causes the latter to bear strongly on the upper roll as the latter is raised by heavy material fed between it and its lower counterpart roll.

Motion is communicated to the rolls by power applied to the large internally-toothed spur-gear Q rigidly secured to shaft of lower roll C, and a pinion, *d*, rigidly secured to the counter-shaft D, meshes with the same, and carries motion to the upper roll B by means of its opposite end pinion *a'* engaging with the large externally-toothed spur-gear *b*, secured to the corresponding extremity of the said upper roll B.

Fig. 5 shows a removable gear attachment, R, fitted diametrically within the internally-toothed gear Q, and provided with cogged extremities corresponding to the size of the teeth of said gear. A locking device, *r*, consists of a flat piece of metal, pivoted eccentrically to the side of one extremity of the attachment R, which easily locks or unlocks the attachment from its internal gear. A central wrist-pin, *s*, adapts it to be revolved by the crank-shaft S. If desirable to vary the speed of the rolls, and at same time preserve the same number of revolutions per minute of the crank-shaft, I unlock the catch *r*, remove entire attachment R, and substitute the following described mechanism: A removable gear-supporting standard, T, made of angle-iron, and of suitable dimensions, is provided with an open elongated slot, *t*, at its lower extremity, and a stud, *u*, at its opposite extremity, which latter serves as a journal-bearing for the several independent pinions V, with which latter the internal gears Q may be caused to engage, as follows in description.

A stand, W, is fixedly secured to the end frame A, just below the large gear Q, and is provided with a set-screw, *w*, which supports the standard T by its slot *t* engaging with the said screw. This open elongated slot permits the raising or lowering of the standard for any distance suitable to the diameter of the individual pinion, which may be supported on the upper extremity of the standard, so that the said pinion may mesh with the gear Q.

Each of the several pinion-gears V has central engaging-lugs *v*, which lock into recesses formed in the end of the crank, and thus permits the latter to be readily connected or disconnected from the pinions. By this means a pinion of any desired size may be caused to operate the main internal gear Q, under different degrees of speed for the same speed of revolution of the crank-shaft, a small pinion making a correspondingly less number of revolutions than a larger pinion in the ratio of their differential radii.

The gear attachment R, of course, operates the rolls under the usual proportion of speed in wringers, and causes them to revolve faster than the several pinions V do; but this is accomplished by a greater expenditure of applied force than is the case with the said pinions, and thus, to ease the labor of wringing, the detachable gear-pinions may be used as described.

X represents the clamping-plates for securing the wringer to the side of its tub, and they are connected with the adjustable set screws Y in a ball-and-socket joint, *y*, so that they may easily adapt themselves to any particular form of tub to which the wringer may be attached.

Guide-rods Z connect with them and cause them to travel in the same horizontal line of direction, the said rods working in grooves formed in the lower end pieces of the main frame.

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

1. In a wringer, the combination, with a stirrup and a suitable tension device, of independent journal-boxes for the wringer-rolls and driving-shaft, the several boxes supported in the stirrup, whereby an equal pressure may be exerted on both ends of its wringer-rolls without throwing the gearing out of connection, substantially as described.

2. In a wringer, the combination, with a stirrup and the independent and vertically-adjustable boxes of the wringer-roll journals, of a pressure-bar secured to said stirrup, a rigid cross-bar secured to the wringer-frame, and a spring interposed between said cross-bar, substantially as described.

3. The combination, with a pair of wringer-rolls journaled in independently-adjustable bearings, and a stirrup within which is secured one set of said boxes and the end of a movable cross-bar, of a rigid cross-bar secured to the wringer-frame, and an elliptic spring interposed between said cross-bars, substantially as described.

4. The combination, with the shaft of one of the wringer-rolls and an internal gear-wheel secured thereto, of a removable cross-bar, the latter constructed for the ready attachment of the crank, substantially as described.

5. The combination, with the internally-toothed spur-gear actuating the rolls, of a removable gear attachment constructed with cogged extremities, the same diametrically fitting in the said internal gear, and provided with a gear-locking device, substantially as described.

6. The combination, with the internally-toothed spur-gear actuating the rolls, of the removable gear-supporting standard, the latter being vertically adjustable, as described, whereby pinions of different diameters may be engaged with the main internal gear, substantially as described.

7. The combination, with the removable gear-supporting standard, of a stand secured to the wringer-frame, and provided with a set-screw for adjusting the height of the said standard, substantially as described.

8. In a wringer, the detachable gear-sup-

porting standard, made of angle-iron, having a journal-bearing at its upper extremity, and an elongated open slot at its opposite extremity, substantially as described.

9. The combination, with the clamping-plates connected by ball-and-socket joint to their respective adjusting-screws, of angular guide-rods, the latter sliding freely in slots cut in the frame-standards, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 19th day of February, 1877.

GEORGE CAMPBELL. [L. S.]

Witnesses:
H. C. COLLIN,
E. H. KENNEDY.