(No Model.)

F. G. & A. C. SARGENT.

WOOL WASHING MACHINE.

No. 266,901. Patented Oct. 31, 1882.

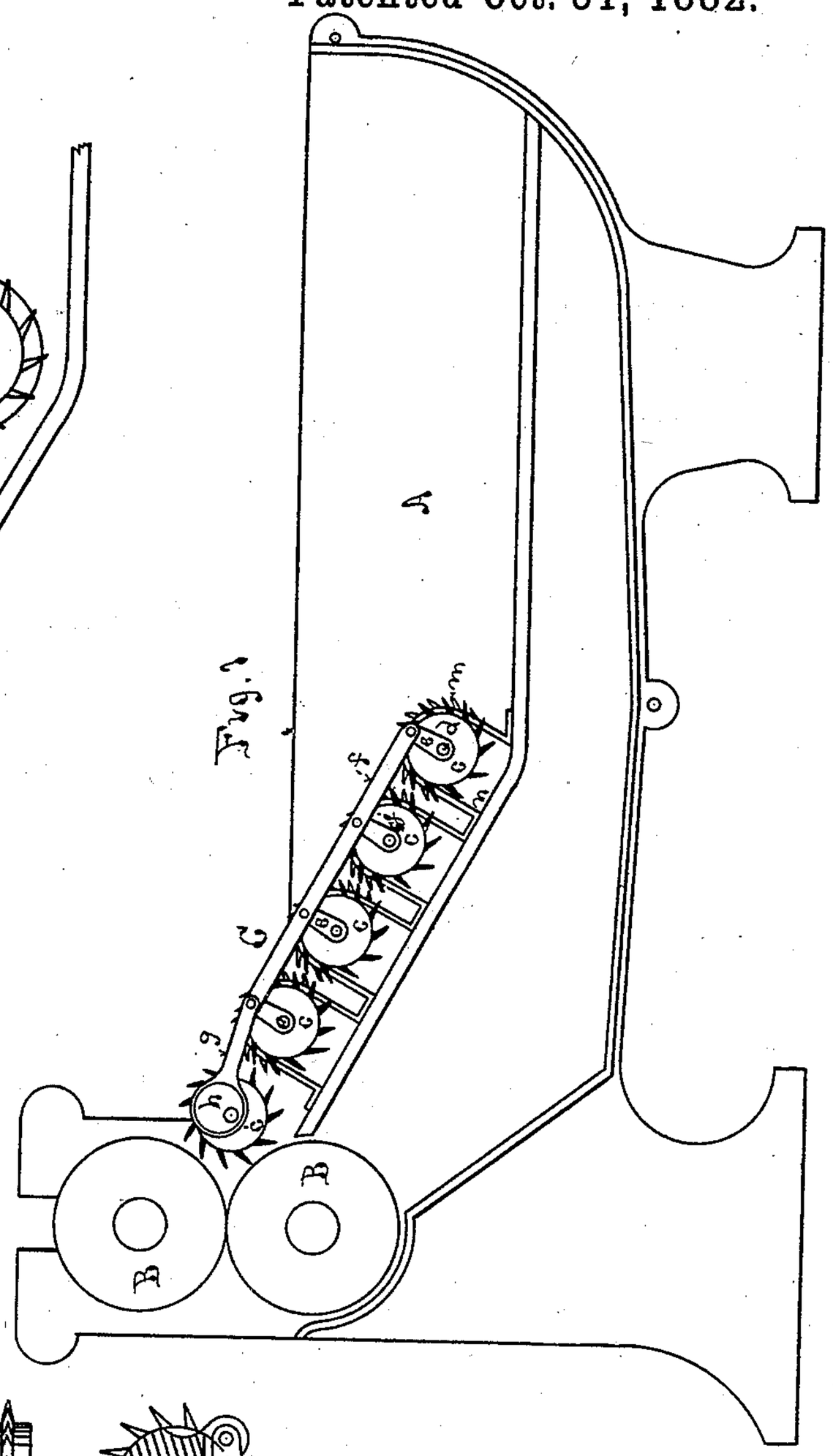

Fig. 1.

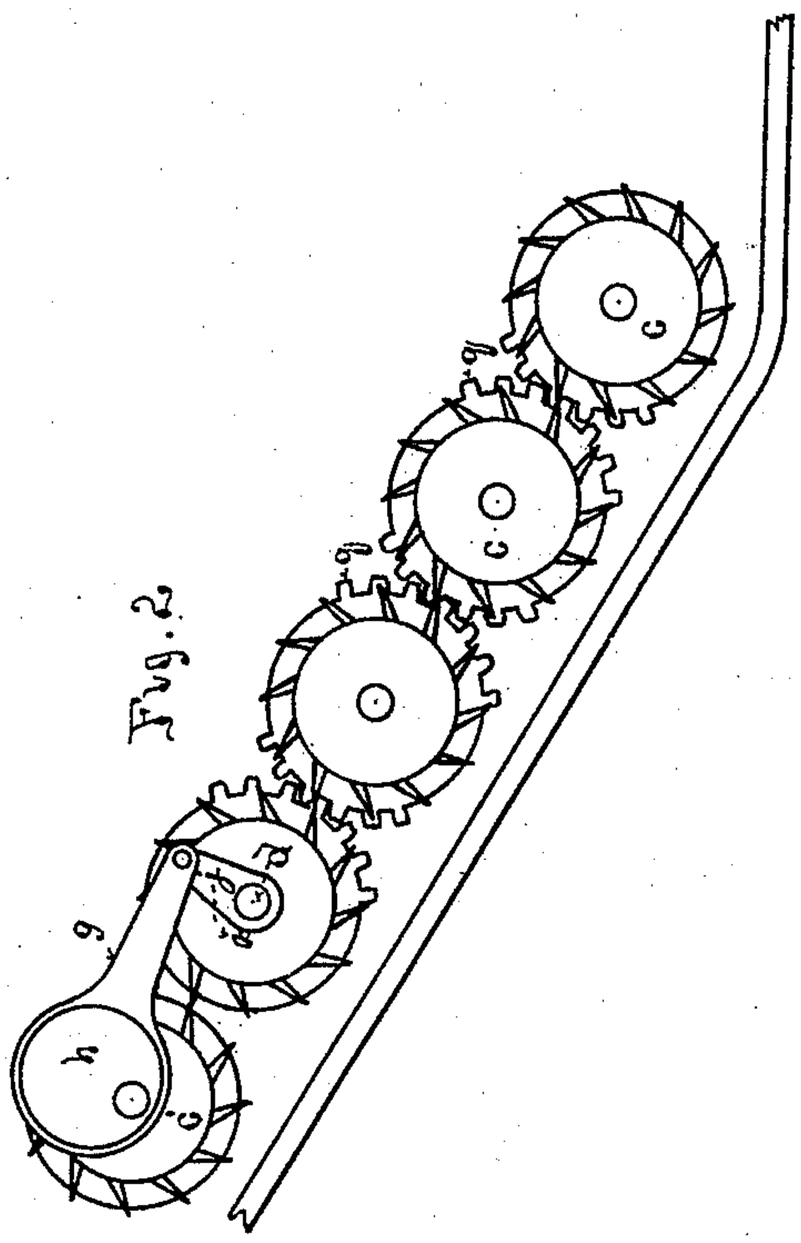

Fig. 2.

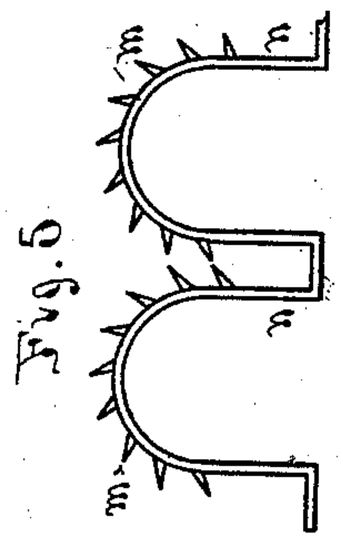

Fig. 5.

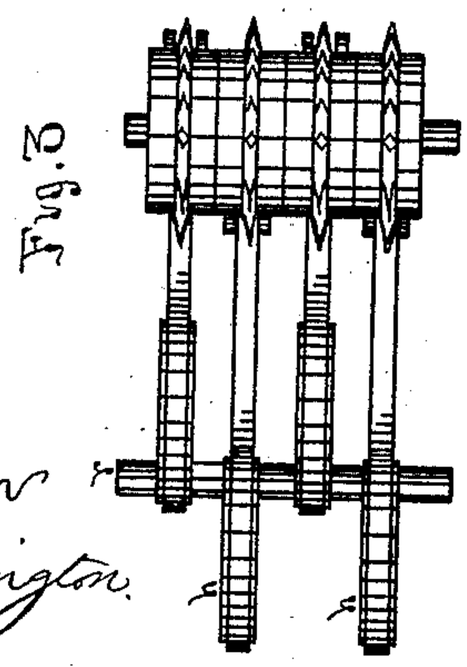

Fig. 3.

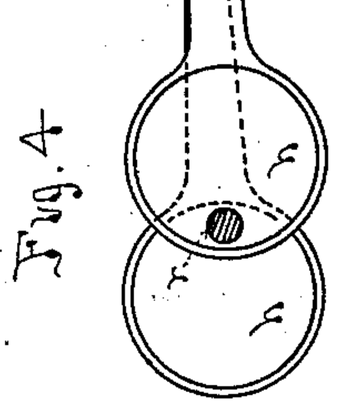

Fig. 4.

Witnesses

Wm. S. Brown

N. P. Ockington.

Inventor

F. G. Sargent

A. C. Sargent

by their Atty

Eugene P. Rice.

UNITED STATES PATENT OFFICE.

FREDERICK G. SARGENT AND ALLAN C. SARGENT, OF GRANITEVILLE, MASS.

WOOL-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 266,901, dated October 31, 1882.

Application filed September 2, 1881. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK G. SARGENT and ALLAN C. SARGENT, of Graniteville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Wool-Washing Machine, of which the following is a specification.

Our invention relates to machines for washing wool in which, after being agitated in a bowl or tank containing a scouring or cleansing fluid, it is taken up from such fluid by a carrier and conveyed to squeeze-rolls; and its objects are to deliver to such rolls a continuous sheet of fiber, and to pull and vibrate the sheet of fiber as it passes from the fluid up to the squeeze-rolls, so as to permit and facilitate the falling from among the fibers forming the sheet of the fluid brought up from the bowl. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of the bowl of a wool-washing machine, with the side removed to show the carrier mechanism. Fig. 2 is a modification of carrier mechanism. Fig. 3 is a detail showing a modification of the device shown in Fig. 2. Fig. 4 is an end elevation of the same. Fig. 5 is an elevation of the toothed retaining-rib seen in Fig. 1 removed from the machine.

A is the bowl of the machine. B B are the squeeze-rolls; C, the carrier which conveys the wool from the fluid in the tank to the squeeze-rolls. This carrier consists of toothed rolls or segments of rolls *c c c* and the roll *c'*. These rolls or segments are mounted upon shafts *d*, extending transversely across the tank, each of which shafts is on a plane higher than that of its predecessor, so that the toothed rolls form an inclined series, the upper one of which is near the squeeze-rolls. Attached to the toothed roll-shafts are cranks *e e*, whose pins are coupled by the connecting-bar *f*. Attached to said bar or one of the crank-pins is the eccentric-rod *g*, communicating to said bar the motion given the rod by the eccentric *h*. The cranks are attached to the roll-shafts by set-screws *j*, so that when the teeth of the upper side of the rolls, which come into contact with the wool, become dulled by use the crank can be loosened and the roll turned to bring other unused teeth into operative position. Placed between the rows of teeth over the upper half of the cylinder are the retaining-teeth *m*, attached to the strip *n*, which is carried down to the inclined apron *p*, under the oscillating rolls, and attached thereto.

In the modification shown in Fig. 2 the shafts of the oscillating rolls are provided with gear-wheels or segmental gears *q*, and the movement of oscillation given to the upper one will be reversed in the one next to it, and a movement in the same direction given to each alternate one of the series, so that while one half of the series composing the carrier are moving forward to carry up the wool over their upper surfaces the other half of the series will be making a reverse movement, drawing their teeth backward under the advancing sheet of fiber to bring them into position to begin their forward movement, which they do at the moment the previously-advancing rolls begin their return movement, so that the sheet of fiber lying upon the carrier will be constantly advancing toward the squeeze-rolls. In this modification it will be seen that the teeth of one roll act against the teeth of the next roll in the same intermediate position with relation to each other as the stationary teeth upon the bars *n* have to the teeth of the rolls *c c* in Fig. 1, and where the teeth of the rolls shown in Fig. 2 pass each other, reciprocating in opposite directions, the outer ends of the teeth, moving faster than their bases, serve to carry the wool forward and hold it from going backward, substantially as in Fig. 1, and the same is the case between the continuously-rotating roll *c'* and the upper roll, *c*, Fig. 1.

In the construction shown in Fig. 1 the oscillating rolls all move in the same direction at the same time, and the wool is prevented from slipping back toward the fluid in the bowl, as the rolls make their reverse motion by the retaining-teeth, and the upper rotating roll, which, moving continuously, pulls upon the sheet at one moment stronger than at another, so that the fibers of the sheet above the upper oscillating roll are with each stoppage of its lower part, by reason of the oscillating rolls ceasing to draw it upward, drawn partly out from among the fibers of the part below or nearer the fluid, and then resting upon the os-

cillating rolls, thus disturbing those drops of fluid retained in the mass by the coaction of adjacent fibers, and permitting such fluid to fall from the sheet of fiber of its own weight. The escape of the fluid retained among the fibers of wool passing up over the carrier is also greatly facilitated by the jerking and shaking movement given the wool by the oscillating toothed rolls as they alternately rotate forward and backward, for the teeth, as they move backward under the fiber, lift upon it, and as they pass permit it to drop upon the next tooth after the one last in lifting-contact with it. As the oscillating rolls begin their forward movement the sheet of fiber resting upon their tops is caught by the teeth upon the roll that project upward, and which, by the weight of the superincumbent mass, are forced into the sheet and moved forward, and as the roll is rotated other teeth, rising on the back of the roll from below the plane of the sheet of fiber, are projected endwise into the fibers to separate them and assist in carrying the sheet forward, while those first mentioned, as they pass forward and downward, move their points farther ahead than their bases and, assuming a position more nearly parallel with the sheet, pull the fibers which are in front of them down between the rolls somewhat, and thereby cause these fibers to separate slightly from those with which they are in contact above them and permit the fluid held in suspension by the capillary attraction of the fibers of wool lying close together to fall out.

In the modification shown in Figs. 3 and 4 each roll is composed of sections, and each line of sections from the top to the bottom of the carrier are coupled together by a connecting-bar and driven by an eccentric placed upon a shaft, *r*, placed in a convenient position under the rolls. In this modification each alternate line of sections moves in the same direction of oscillation at the same time and the intermediate line of sections moves in the opposite direction, so that the sheet of fiber extending over the carrier is first pulled up toward the carrier by one line of sections and then by another intermediate of the first, so that different fibers of wool are drawn upon at different times, while by the backward movement of the oscillating toothed sections the part of the sheet farthest from the teeth pulling upon it will be lifted and agitated by the teeth of the intermediate toothed sections as they make their backward movement, so that between alternately being pulled and shaken many times as the wool passes to the squeeze-rolls from the scouring-liquid it will be very thoroughly freed of the liquid of saturation and opened out before being presented to the squeeze-rolls.

In the modification shown in Figs. 3 and 4 it will be seen that every alternate series of teeth on one of the sections *c c* serves the same purpurpose in preventing the oppositely-reciprocating rolls of teeth on each side of it from carrying the wool backward that the stationary teeth upon the bars *n* do, as shown in Fig. 1, and this function is in addition to the forward movement of such series of reciprocating teeth.

What we claim as new and of our invention is—

1. The carrier C, composed of the series of toothed rolls, mechanism for imparting a reciprocating motion thereto, and intermediate stationary or oppositely-moving holding-teeth, substantially as described.

2. The combination, with the rolls *c c* and *c'*, of the strip *n*, provided with retaining-teeth, *m*, substantially as described.

FREDERICK G. SARGENT.
ALLAN C. SARGENT.

Witnesses:
LEPINE C. RICE,
N. P. OCKINGTON.