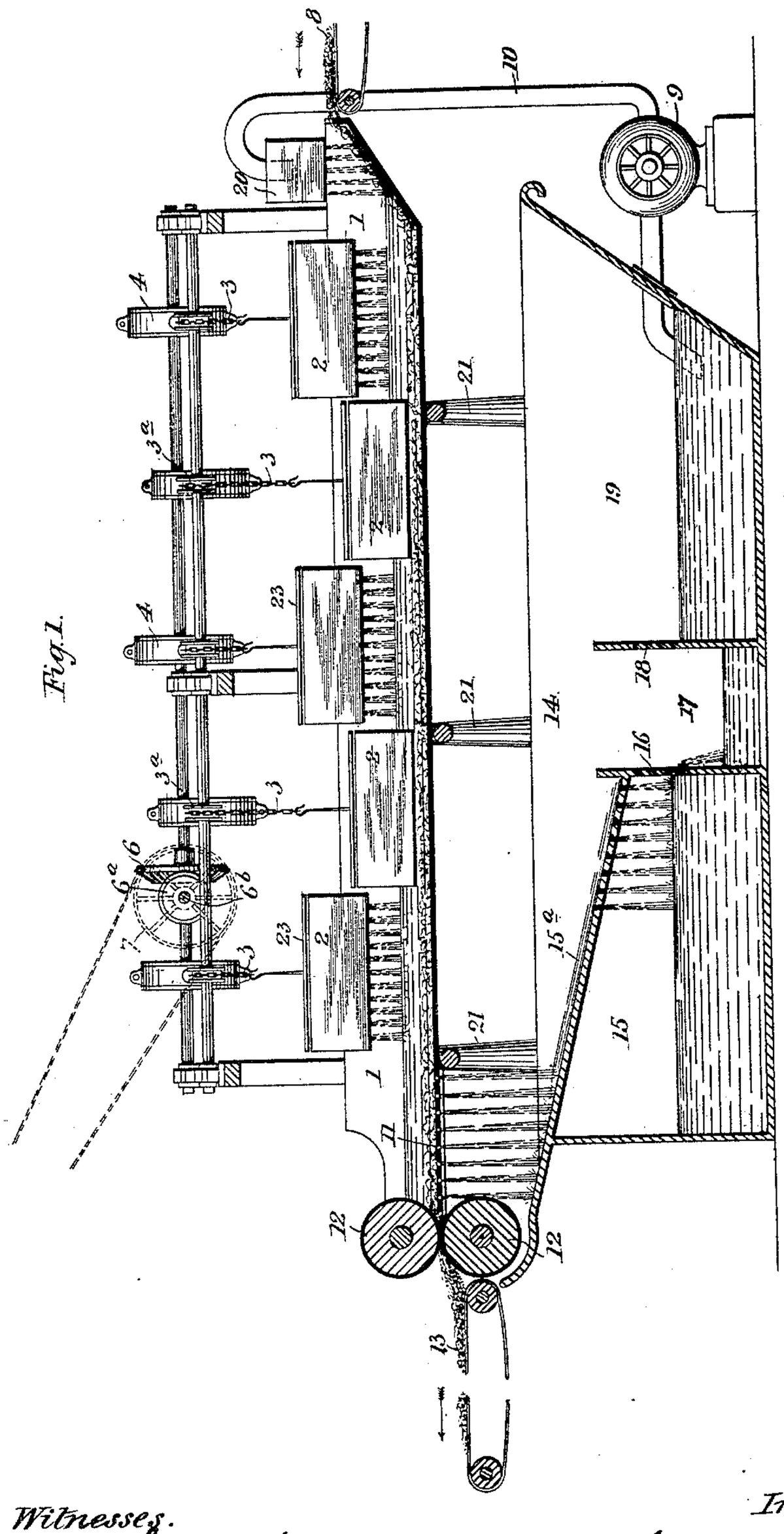
(No Model.) 3 Sheets—Sheet 1.

W. EASTWOOD & A. AMBLER.

APPARATUS FOR WASHING WOOL.

No. 460,852. Patented Oct. 6, 1891.

Fig. 1.



Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

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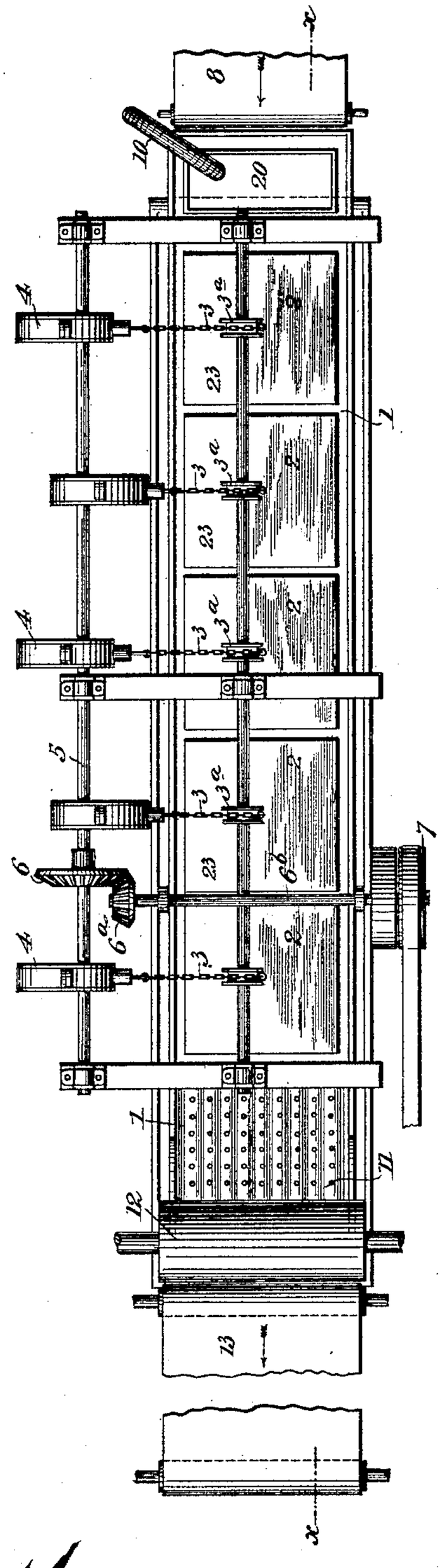
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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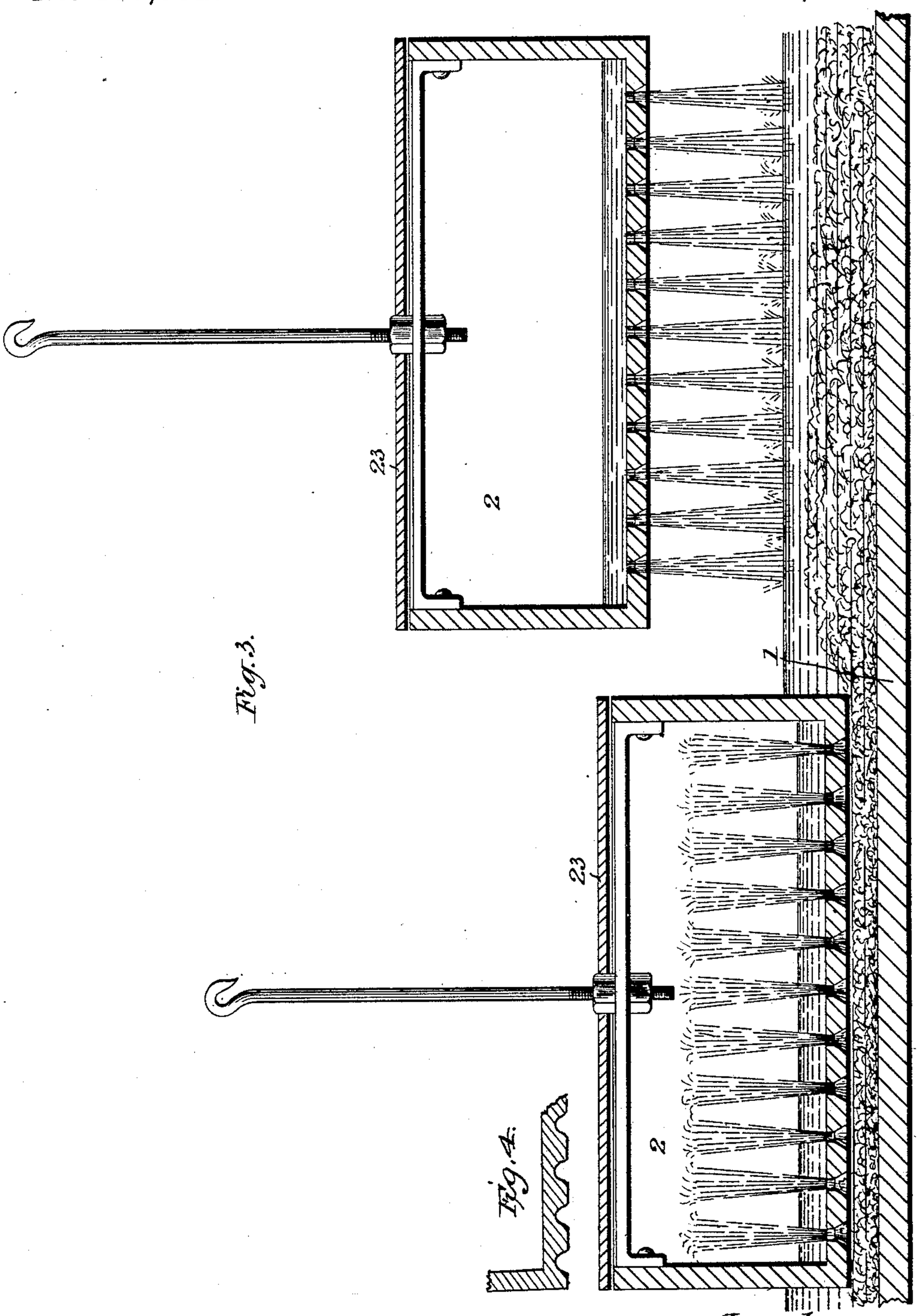

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM EASTWOOD, OF LEEDS, AND ABRAHAM AMBLER, OF BRADFORD, ENGLAND.

APPARATUS FOR WASHING WOOL.

SPECIFICATION forming part of Letters Patent No. 460,852, dated October 6, 1891.

Application filed March 18, 1890. Serial No. 344,416. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM EASTWOOD, residing at Leeds, in the county of York, England, and ABRAHAM AMBLER, residing at Bradford, in the county of York, England, both subjects of Her Majesty the Queen of Great Britain, have invented certain new and useful Improvements in Apparatus for Washing Wool and other Articles, of which the following is a specification.

Our invention relates to improvements in apparatus for washing wool and other textile fibers, though it is also applicable for washing clothes, and has for its object the construction and arrangement of an apparatus whereby the use of rakes or the like in contact with the fiber to carry the same along the washing-bowl from the feeding end to the squeezing-rollers is entirely obviated, and, further, to provide a receptacle for the separation from the washing-liquor of any solid matter—such as sand—which may be washed from the wool or other fiber.

We effect our object in the following manner: The wool or other fiber is passed into an elongated suds-bowl, termed the "washing-bowl," which may with advantage be fixed at a slight declivity toward the squeezing-rollers, and is preferably made of marble, porcelain, enameled iron, or other material having a non-metallic surface.

To clearly explain the nature of our invention, reference is made to the accompanying drawings, in which—

Figure 1 is a sectional elevation on the line *x x*, Fig. 2, of a machine constructed according to our invention. Fig. 2 is a plan view of the machine; and Fig. 3 is a sectional elevation enlarged, showing the action of two of the "troughs." Fig. 4 is a detail sectional view showing the corrugations on the bottom of the trough.

At 1 is the suds-bowl or washing-trough, in which are suspended the troughs 2, having perforated bottoms through which the liquor from the suds-tank can enter. Said troughs are connected by chains 3, which pass over pulleys 3^a, carried by a shaft 3^b, the chains being connected to the strap-eccentrics 4, which impart thereto a rising-and-falling motion, said strap-eccentrics being carried on the shaft 5, driven by the gear-wheels 6 and 6^a, the latter being secured to a shaft 6^b, having a pulley 7, to which motion is imparted. As the troughs 2 are operated and as, say, the second and fourth are immersed and the first, third, and fifth are in the raised position, the pressing or squeezing action of the second and fourth troughs on the fiber will cause the displacement of suds and consequently a flushing or floating of the fiber forward and under the next trough, which then in turn operates upon it, as described, the troughs being alternately in the raised and lowered position, so that the tendency is to carry the fiber under operation from the feeding end of the suds-bowl 1, to which it is brought by the traveling apron 8, and to work and wash it gradually, stage by stage, to the opposite end of the fiber, receiving in its progress a series of squeezings or pressings from the troughs 2, together with the pourings of suds through the perforations in the bottoms of the troughs 2 upon it each time one or more of the said troughs are lifted upward out of the suds or washing-liquor. The bottom of the suds-bowl may have a slight declivity, which will assist the forward progress of the fiber. The wool or fiber so acted upon thence floats forward to the nipping-rollers 12, at which point it is in a perfectly open and fleecy state, which, as will be readily understood, greatly facilitates the squeezing out not only of the suds, but also the dirt or foreign matter, because the wool or fiber is not matted or clogged together, as is the case (more or less) in all fork machines or fork operations. The portion 11 of the bottom of the suds-bowl 1 is perforated and preferably corrugated longitudinally, the corrugations forming channels for the suds or washing-liquor to run under the wool or fiber, and thereby not only to facilitate its passage to the squeezing-rollers 12, but to keep it in its open and fleecy state. The wool or fiber passes from the squeezing-rollers 12 to the endless apron 13, by which it is carried to the succeeding machine by which it is to be treated.

At 14 is a tank, divided, as shown, into compartments, the first compartment 15 being for the receipt of the suds from the washing-

bowl 1, which pour down and through the perforated plate 15ª. In this compartment solid matter or sand can precipitate the overflow from 15, being by way of the perforations in the plate 16, into the compartment 17, the liquid in which passes through the perforations in the plate 18 in a comparatively filtered state to the supply-tank 19, from whence it is drawn by the pump 9 and forced by way of the pipe 10 to the supply tank or trough 20, through the perforations in the bottom of which it passes on to the fresh fiber as it enters the suds-bowl 1.

At 21 are standards which support the suds-bowl 1 above the tank 14.

We prefer that the tops of the troughs 2 should be covered by lids 23, as the immersion of the same forces more or less air from the interior of the troughs into the suds and among the wool or fiber, thus favoring the extension of the fibers in the desired open and fleecy state and the expulsion of dirt, grit, and sand.

It will be evident that the invention in its main features is also adapted for washing clothes and the like.

In practice the troughs 2 may be made of cast-iron and of such weight and proportions as will afford ready immersion with the requisite pressure or nip on the fiber, though they should not be too heavy or cumbersome to raise and lower.

We do not confine ourselves to any particular number of troughs or to the particular arrangements shown for raising and lowering same; but

What we claim is—

1. In combination, the suds-tank, the series of troughs, a shaft having a series of pulleys 3ª, and a shaft 5, having a series of eccentrics and connections from the eccentrics to the various troughs for elevating them without moving them laterally, substantially as described.

2. In combination, the suds-tank for the mass of material, the series of vertically-movable troughs, and means for raising and lowering the troughs without lateral movement, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM EASTWOOD.
ABRAHAM AMBLER.

Witnesses:
J. BRIERLEY HOWARD,
CHARLES AINLEY.