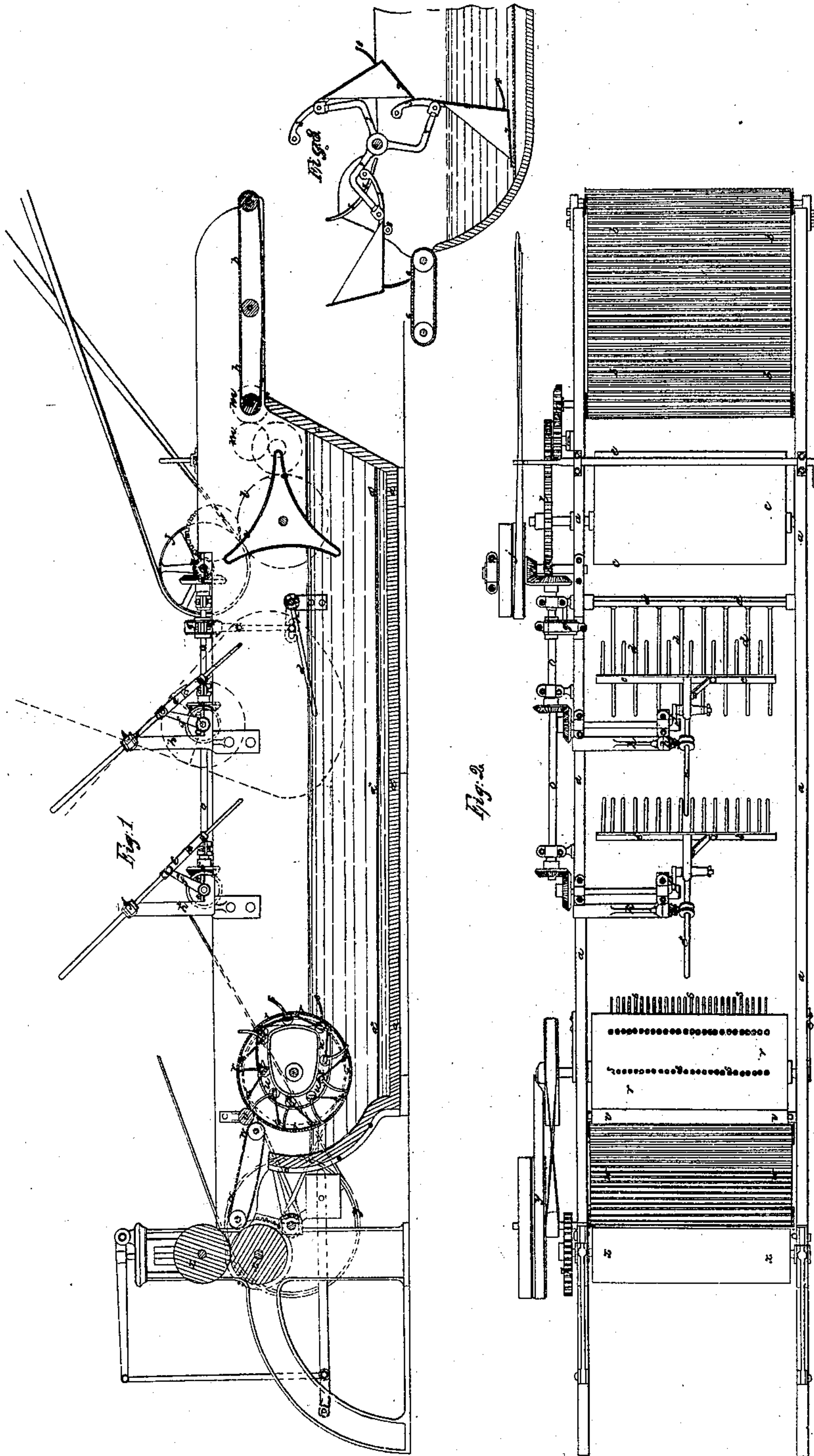


Petrie & Taylor, Wool-Washing Machine,

N^o 46,306.

Patented Feb. 7, 1865.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN PETRIE, JR., AND JOHN KENWORTHY AND MARK KERSHAW, OF ROCHDALE, ENGLAND, ADMINISTRATORS OF THE ESTATE OF SAMUEL TAYLOR, DECEASED, ASSIGNORS TO THOMAS CLEGG, OF NORTH ANDOVER, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR WASHING WOOL.

Specification forming part of Letters Patent No. 46,306, dated February 7, 1865.

To all whom it may concern:

Be it known that JOHN PETRIE, Jr., and SAMUEL TAYLOR, of Rochdale, in the county of Lancaster, Great Britain, did invent certain new and useful Improvements in Machinery or Apparatus for Washing or Scouring Wool; and we, the said JOHN PETRIE, Jr., and JOHN KENWORTHY and MARK KERSHAW, executors of the estate of the said SAMUEL TAYLOR, deceased, do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Previous to the date of the invention in question the operation of washing or scouring wool has been performed either entirely by hand-labor or with the assistance of some contrivance for stirring or moving the wool about in the water or washing-liquid, the other necessary operations being performed by hand. It will be easily understood that the employment of much hand-labor not only enhances the cost of washing and scouring, but also renders it a long and tedious operation to clean large quantities of wool.

The object of these improvements relates to the employment of mechanical means for washing the wool, and thereby to dispense almost entirely with the use of hand-labor. With this novel or improved arrangement of apparatus the attendant is only required to place the wool on a traveling endless band, whereby it is conveyed forward into the washing trough or vessel, into which it falls and is immediately forced downward beneath the surface of the liquid by a rotating plunger or fan-wheel, which also has the effect of pushing or carrying it forward under the operation of a vibrating fork or frame. The said frame is mounted horizontally in the vessel, and as it moves up and down agitates the wool in the liquid. The stirring or agitating operation is further assisted by two other vibrating frames furnished with prongs or teeth. These latter frames are mounted and actuated in such manner that they not only agitate and move the wool about

in the water, but also have the effect of carrying it forward to the end of the trough, from which, when the wool has been thoroughly washed, it is lifted or raised out of the water by a rotating drum armed with teeth, whereby it is deposited on a second traveling endless band, which carries it forward to a pair of squeezing-rollers, whereby the water is squeezed out or expressed, and the wool is then allowed to fall into any suitable receptacle placed below.

In order, however, that the invention may be more clearly understood, there are shown in the accompanying drawings two views of an arrangement of machinery which will be found convenient for carrying out the improvement.

Figure 1 is a longitudinal and vertical section of the machine, showing all the principal working parts; and Fig. 2 is a plan of the same, in which is represented the gearing whereby the working parts are actuated.

a a a a is a trough or vessel, made of wood, iron, or other suitable material. While in use it is to be partly filled with water or other liquid for washing or scouring the wool. It is provided with a perforated false bottom, *a^x a^x a^x*, through which dirt or other heavy impurities that may be mixed with the wool may pass when washed away from the fibers, after which the residuum may be drawn off when required.

The wool to be operated upon is placed by the attendant on the traveling endless belt *b b*, which it is preferable to have constructed of strips of metal jointed or hinged together in any convenient manner. By the onward motion of this traveling band the wool is conveyed forward and deposited into the trough, where it is immediately submerged by the action of the rotating plunger *c*. By the operation of the plunger the wool is carried under the horizontal vibrating frame *d*, which, while moving up and down, agitates and washes the wool in the water. A vertical vibrating arm, *e*, provided with teeth or prongs at its lower end, as seen in Fig. 2, also assists in washing or stirring the wool, and by its peculiar mo-

tion drags the wool forward from under the vibrating frame d and leaves it, to be again laid hold of and carried still further forward by a second and similar vibrating arm, e^x . These arms $e e^x$ are actuated by cranks $f f^x$, and work in swivel sockets or guides $g g^x$, which are attached to the upright standards $h h^x$. It will therefore be seen that as the cranks $f f^x$ rotate the forked ends of the arms $e e^x$ will be made to dive into the water in the trough a and traverse a curve somewhat like that shown by dots in the drawing at Fig. 1.

Motion is communicated to the several working parts just described from the main driving-shaft i , on which is mounted the wheel or pulley j , which is driven by an endless band or strap driven by any prime mover. On the main shaft i is keyed the pinion k , which, by means of the toothed wheels l and m , actuates the rotating plunger c and the traveling endless band b . A bevel-pinion, n , also keyed to the main shaft i , gears into a bevel-wheel on the end of the longitudinal shaft $o o$, which, by means of the miter-wheel or bevel-gearing $p p'$, drives the crank-shafts $f f^x$, and by that means actuates the vibrating arms $e e^x$. The horizontal vibrating frame d is actuated by an eccentric, q , on the long shaft o . A pendent rod (shown by dots in Fig. 1) extends down from a yoke of the eccentric q , and is connected by a screw-bolt, or in any other convenient manner, to an arm or lever on one end of the shaft of the vibrating frame d , as shown in the said figure.

The wool, having been washed by means of the several parts just described, will, by the operation of these parts, have been conveyed toward that end of the trough which is opposite to that at which the wool entered, from whence it will be lifted up by the prongs or teeth of a rotating lifting drum or wheel, $r r$, which consists, principally, of a hollow drum having a series of slots or openings made therein to allow teeth or prongs $s s$ to protrude when required. These teeth or prongs are attached to bars provided at their ends with bowls or anti-friction rollers $t t$, which run in an eccentric groove or cam, u , fixed on a shaft inside and at one or both ends of the drum r . By this means the prongs or teeth are protruded from the drum $r r$ at a certain part of their rotation, while during the remaining portion they are withdrawn into the drum, as shown in the figure. Upon slow rotation, therefore, being communicated to this drum or wheel the prongs or teeth will lift the wool out of the water in the trough and pass it under the roller v , whereby it will be conveyed to the traveling endless belt w , and by it be conducted to a pair of squeezing-rollers, $x x$, from whence, after having the water expressed out of it, the wool may be deposited in any suitable receptacle arranged below such rollers. All these parts only re-

quire a slow motion, which is communicated to them from the band-wheel or pulley y by means of the toothed wheels $z z$ (shown in the drawings) or other suitable gearing, as will be well understood by any intelligent mechanic.

At Fig. 3 is shown another form of lifter, to be used in place of the drum or wheel $r r$. (Represented in Figs. 1 and 2.) The lifter shown in Fig. 3 consists of three arms, 1 1 1, mounted on a shaft, 2, each carrying at the end thereof a tumbling lever, 3, to one end of which is affixed a series of prongs or tines, 4, whereby the wool is lifted out of the water as the shaft 2 rotates; and at the other end of the said lever there is a bowl or anti-friction roller, which, as the arms are brought around, comes in contact with a fixed cam-piece, 5, and causes the levers to tumble over and deposit the wool on the traveling endless band 6, as shown in the said Fig. 3. At the back of the levers 3 there is a plate, 7, of sheet-iron, which, as the arms 1 move around, is made to scrape along the curved part of the trough and gather up all the wool that accumulates at that end. It should be observed that when the levers 3 are tumbled over by the cam 5 they fall on two rollers, 8, one of which is mounted at each side of the trough, for the purpose of raising the teeth or prongs 4 over the edge of the trough as the arms 1 1 1 are carried around.

In place of the rotating plunger c , (shown in the drawings,) a reciprocating plunger may be used. This will merely consist of a pendent arm with a plate or frame at the lower end and attached to one end of a vibrating arm or lever, which may be actuated in any convenient manner from the main shaft.

Having now described the invention and the best means with which we are at present acquainted for carrying the same into effect, we would observe, in conclusion, that we do not intend to confine it to the precise arrangement of parts hereinbefore described and shown, nor to the described machinery for actuating these parts, although it has been found that the same will answer practically to good purpose. The arrangement and construction of the several parts may doubtless be varied without departing from the nature and object of the invention.

What is considered to be new, and therefore claimed as the invention of the said PETRIE and TAYLOR, is—

1. The combination of a rotating or reciprocating plunger, C , one or more reciprocating beaters or agitators, $e e^x$, and a rotating wheel or drum cylinder or frame, r , armed with teeth, prongs, or tines, the whole of such parts being applied to a trough and actuated by mechanical means, substantially as described.

2. The combination of the rotating plunger c and the vibrating or reciprocating arms e ,

for stirring, agitating, and moving forward the wool in the trough.

3. In combination with the trough, the endless apron *w*, or its equivalent, and the squeezing-rollers, the lifting drum or frame *r*, above shown and described, for raising the washed wool out of the water and depositing it on the traveling endless band or other contrivance for conveying it to the squeezing-rollers or some receptacle for receiving it.

4. The combination of the squeezing-rollers, the lifting-wheel, one or more stirrers or agitators, and the plunger, the whole being arranged and applied to a trough, substantially as and to operate as specified, and also their

combination with the vibrating frame *d*, arranged in the trough, as described.

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