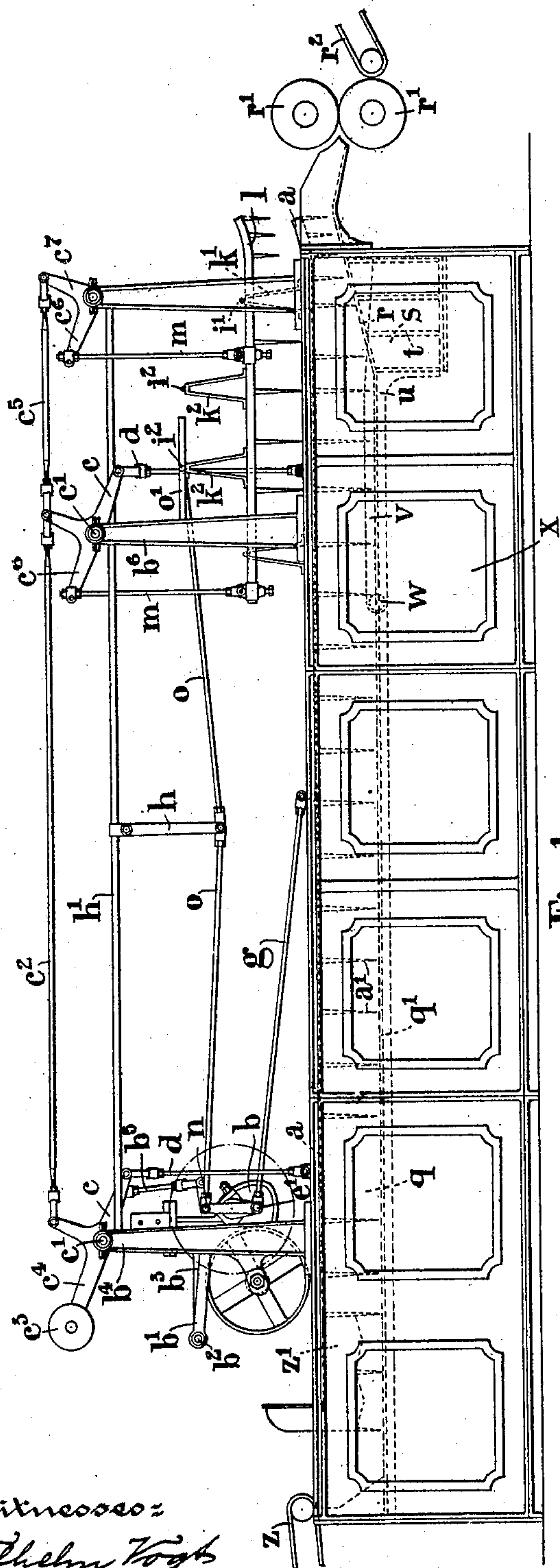


No. 871,433.

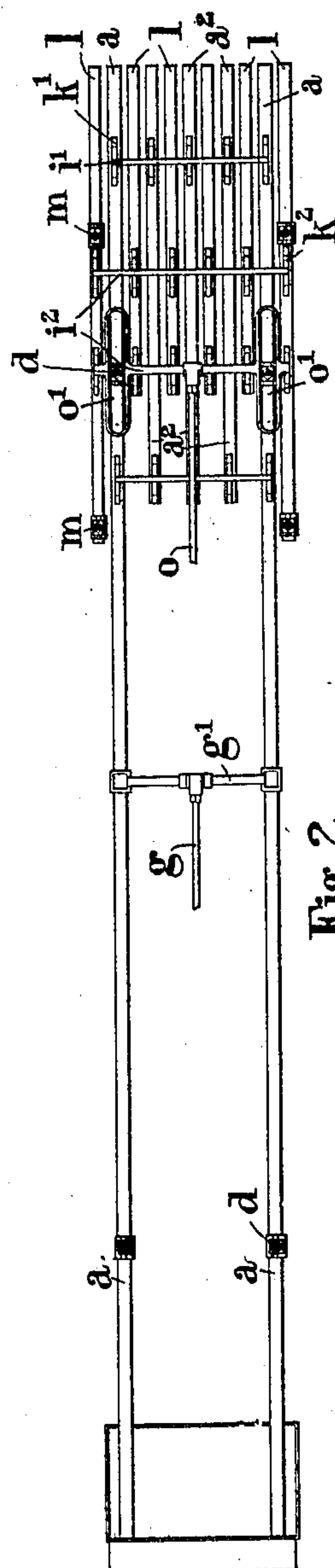
PATENTED NOV. 19, 1907.

W. McNAUGHT.  
WOOL WASHING MACHINE.  
APPLICATION FILED SEPT. 20, 1905.

3 SHEETS—SHEET 1.



2 Witnesses:  
Wilhelm Vogt  
Thomas M. Smith



Inventor:  
William M. Haught,  
33 J. Walter Byles  
Attorney.

No. 871,433.

PATENTED NOV. 19, 1907.

W. McNAUGHT.  
WOOL WASHING MACHINE.  
APPLICATION FILED SEPT. 20, 1905.

3 SHEETS—SHEET 2.

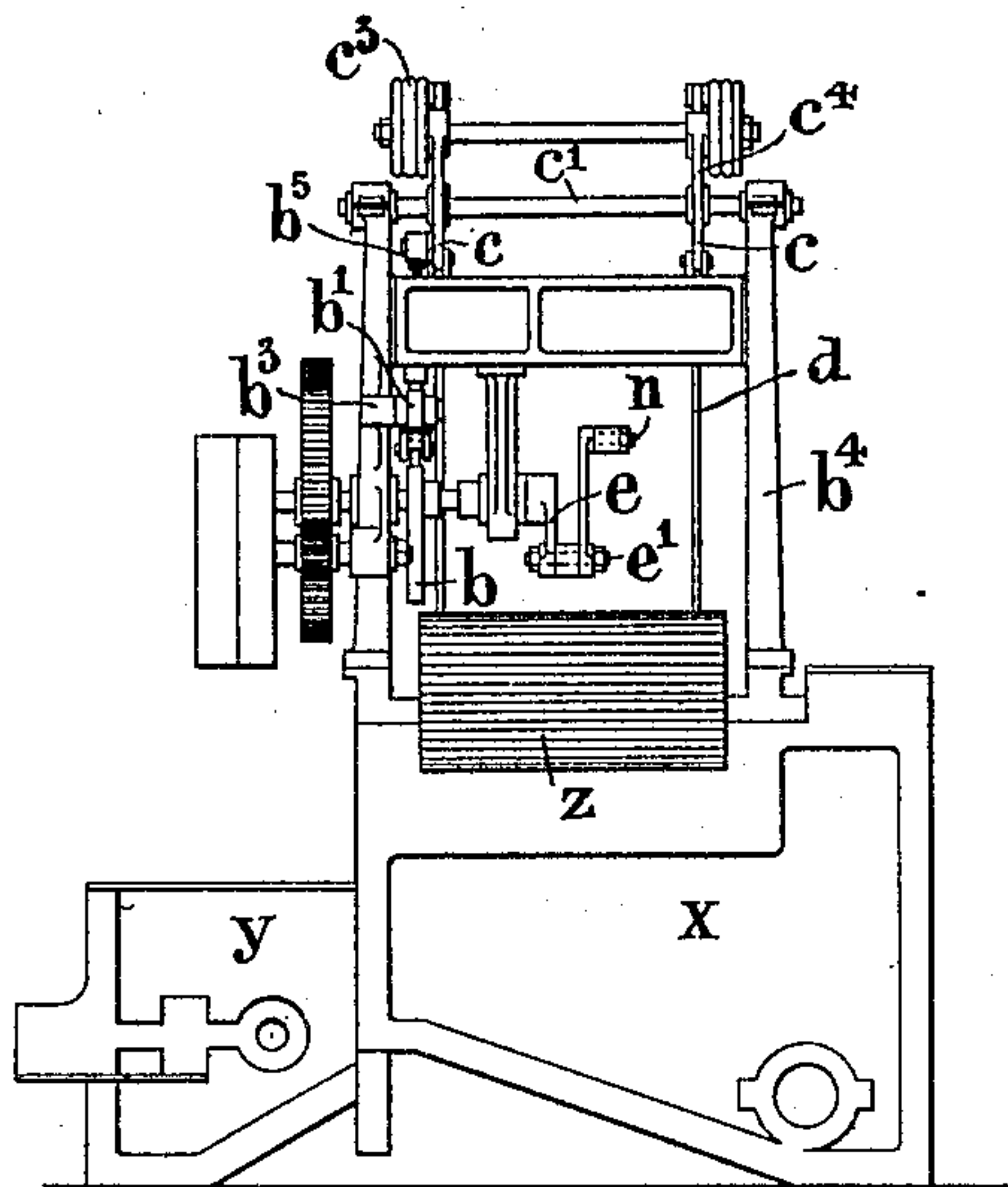


Fig. 3.

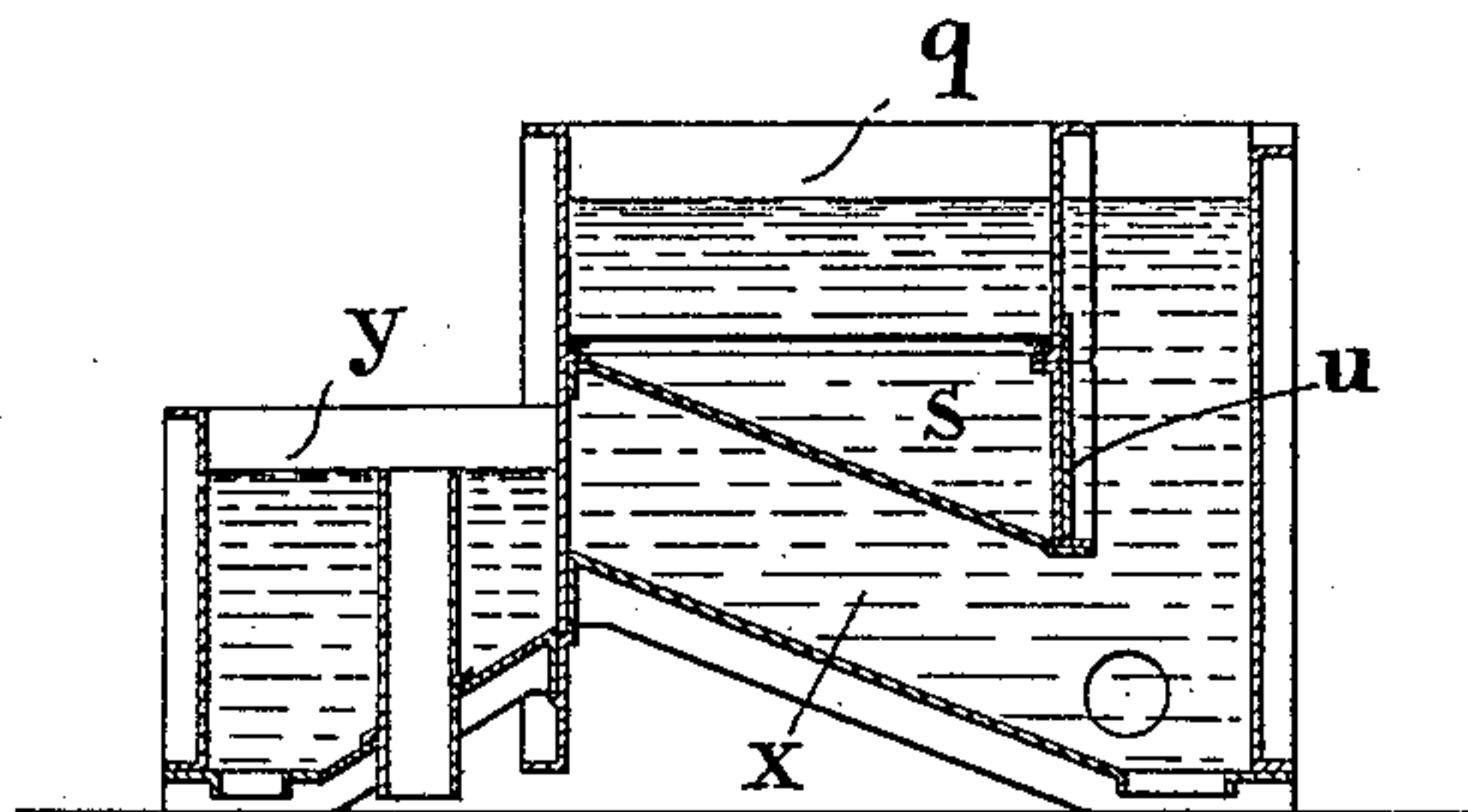


Fig. 4.

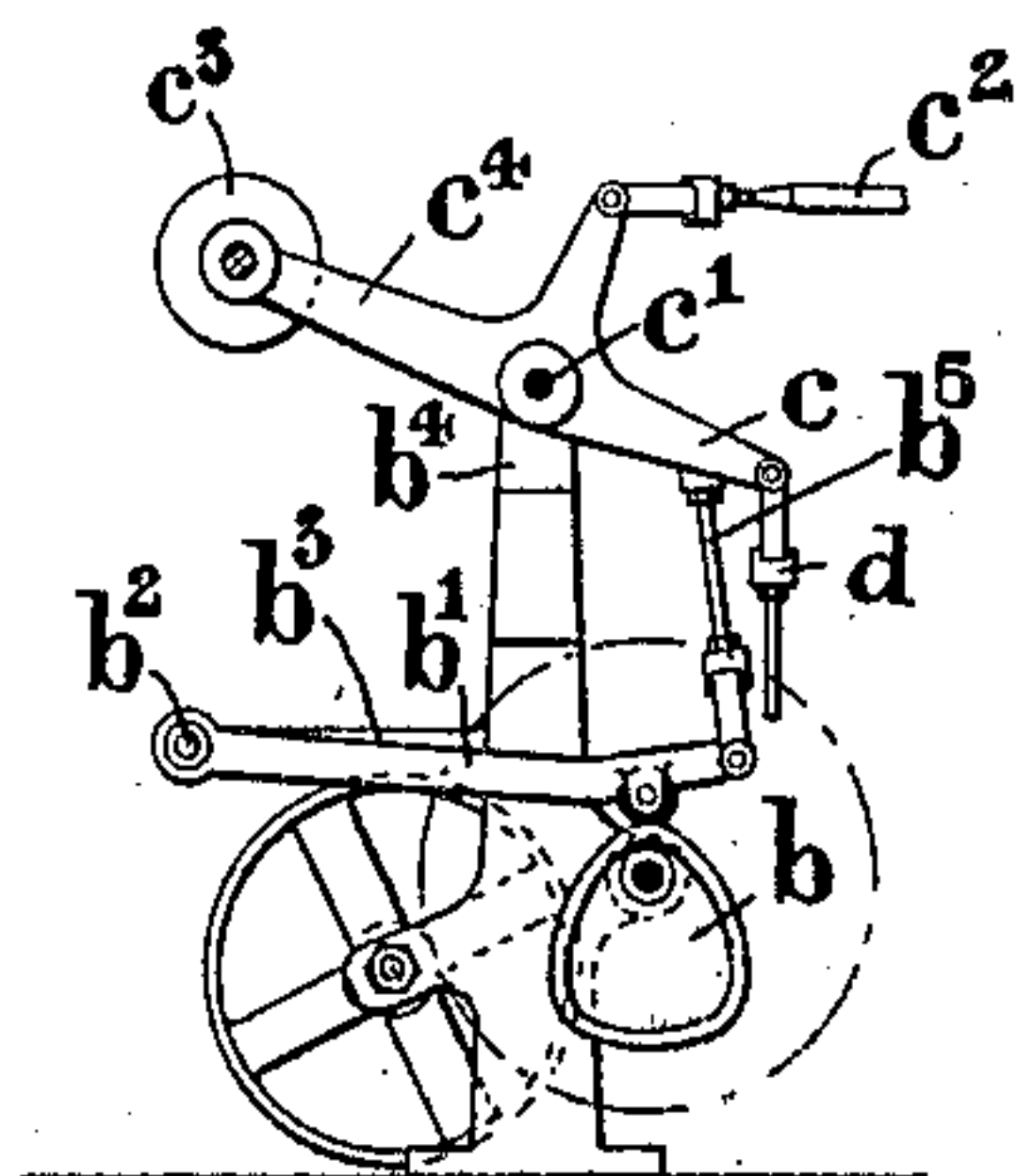


Fig. 7.

Witnesses:  
Wilhelm Fogg  
Thomas M. Smith.

Inventor:  
William McNaught,  
by J. Walter Smyth,  
Attorney.

No. 871,433.

PATENTED NOV. 19, 1907.

W. McNAUGHT:  
WOOL WASHING MACHINE.  
APPLICATION FILED SEPT. 20, 1905

3 SHEETS—SHEET 3.

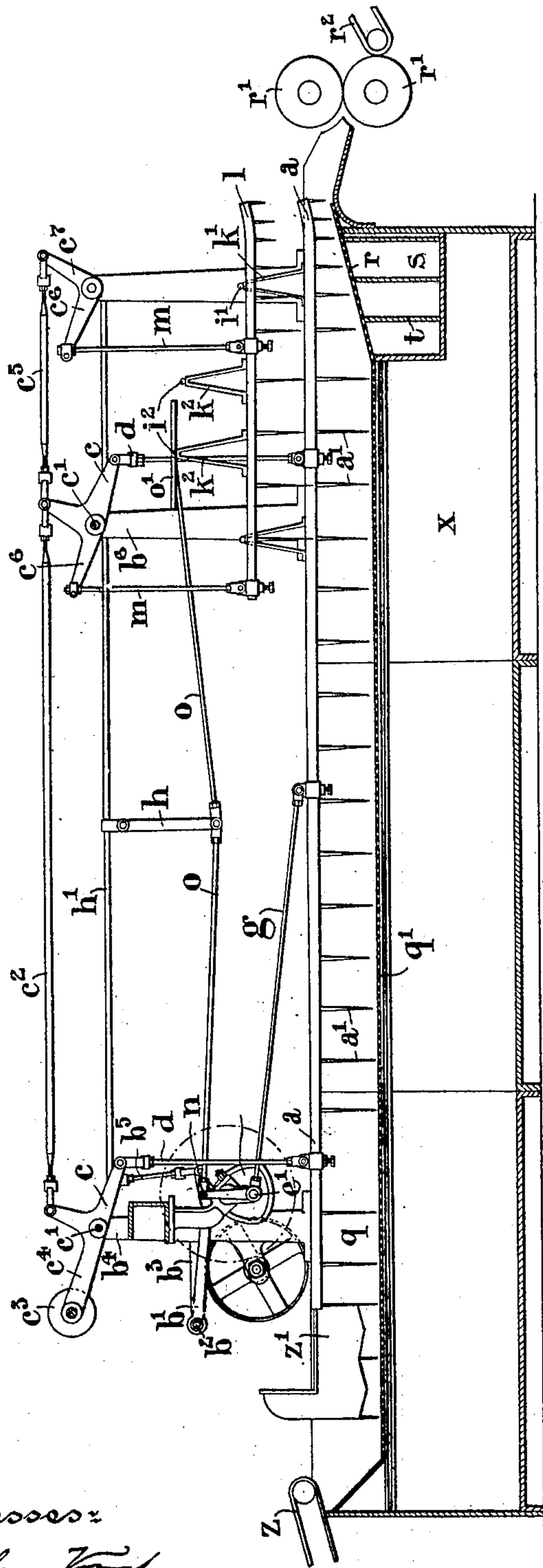


Fig. 5.

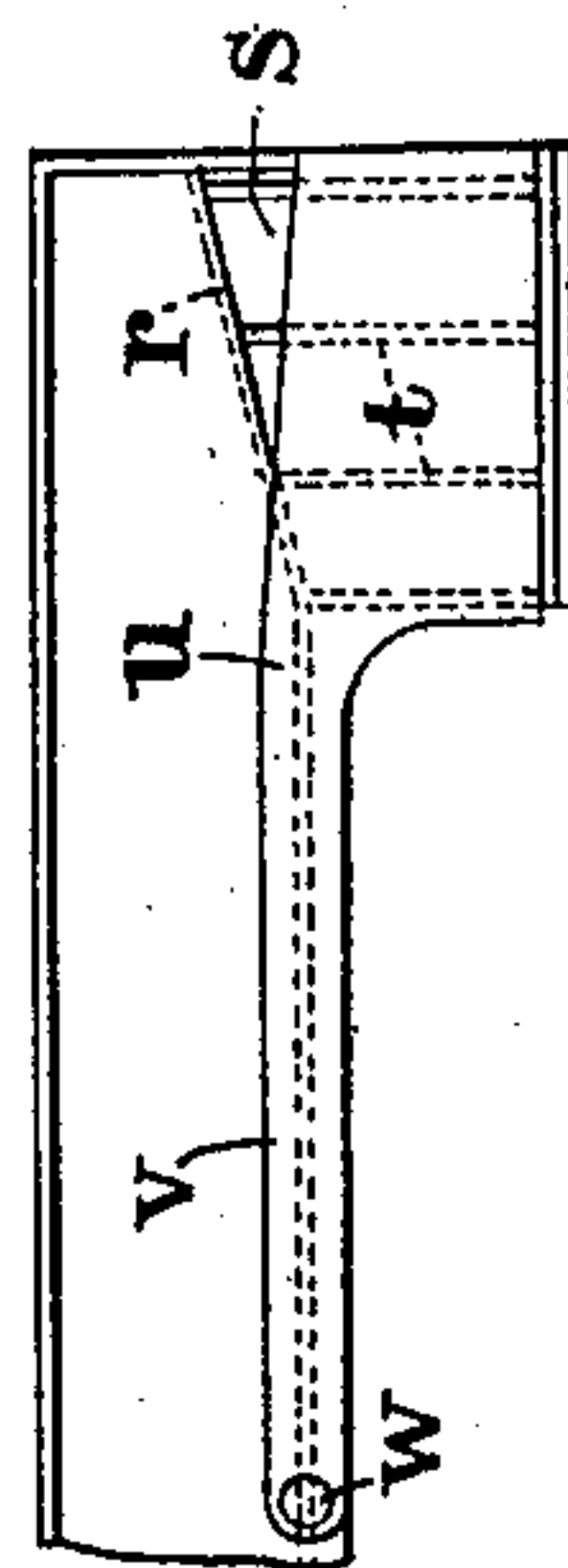


Fig. 6.

Witnesses:  
Wilhelm Vogt  
Thomas M. Smith

Inventor:  
William M. Naught  
By J. Walter Dugan  
Attorneys.



# UNITED STATES PATENT OFFICE.

WILLIAM McNAUGHT, OF ROCHDALE, ENGLAND.

## WOOL-WASHING MACHINE.

No. 871,433.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed September 20, 1905. Serial No. 279,217.

*To all whom it may concern:*

Be it known that I, WILLIAM McNAUGHT, a subject of the King of Great Britain and Ireland, of St. George's Foundry, Rochdale, in the county of Lancaster, England, have invented certain new and useful Improvements in Connection with Wool-Washing Machines, of which the following is a specification.

10 This invention relates to wool washing and the like machines of the type wherein the wool or other fibrous material to be washed is passed into one end of a long trough which has a perforated bottom and which is dis-  
15 posed in an outer trough or tank full of a suitable cleansing liquid.

In machines hitherto in use the wool has been agitated in and propelled or caused to travel along the trough by means of frames fitted with numerous prongs, the frames being moved down into the trough to engage the wool, then moved forward, then raised out of the trough and finally moved back into the original position. In  
20 this way the wool is caused to travel forward in the liquid by successive stages, the wool during the interval that the prongs are out of the trough being allowed to rest momentarily in the liquid and in practice it is  
25 found that this rest is very advantageous to effective washing as the fibers of the wool spread out or the wool expands and thus all the fibers are exposed to the action of the cleaning fluid. If this opening or expanding  
30 action were not permitted the wool would clog or cake and be passed through the tank with the greater proportion of the fibers unattached by the cleaning fluid. The matter removed from the wool passes through the  
35 perforated trough and is deposited on the bottom of the outer tank. When the wool reaches the delivery end of the trough it is usually conveyed by the prongs on the forward end of the frame up a perforated slope  
40 or incline from which it is delivered to squeezing rollers which remove the greater proportion of the water from the wool. A greater number of prongs are usually provided at the delivery end. Now it is obvious  
45 that this delivery up the incline is intermittent and it is also found in practice that considerable disturbance or surging of the cleaning liquid occurs below the incline which causes some of the wool to be drawn

through the perforations and the latter very  
often become choked.

The object of the present invention is to insure a constant delivery of the wool up the incline to the squeezing rollers and to prevent  
surging of the cleaning liquid below the in-  
cline for the purpose of avoiding the above  
mentioned disadvantages.

Referring to the accompanying drawings; Figure 1 is a side elevation of a wool washing machine with the invention applied. Fig. 2  
is a plan of the frames which are fitted with  
the propelling prongs. Fig. 3 is an end elevation of the feeding end of the machine shown  
in Fig. 1. Fig. 4 is a cross section through  
the washing trough and outer settling tank  
and also a side trough which as is usual in  
wool washing machines receives the liquid  
rejected by the squeezing rollers, said liquid  
being elevated from the side trough back  
into the washing trough or outer tank by any  
suitable means. Fig. 5 is a longitudinal  
sectional elevation corresponding to Fig. 1.  
Fig. 6 being a detail side view of the sluice  
door on the side of the anti-surging pocket  
hereinafter referred to. Fig. 7 is a detail  
view of the oscillating mechanism.

In the machine illustrated a frame composed of two longitudinal tubular members, *a*, each of which is fitted with numerous depending prongs, *a'*, the prongs towards the  
delivery end of the machine decreasing in  
length corresponding to a slope or incline, *r*,  
hereinafter referred to. The frame also  
comprises short bars, *a''*, also fitted with  
prongs and arranged at the delivery end  
only. This frame receives a combined vertical and horizontal motion, the first being  
effected by a cam, *b*, which oscillates a lever,  
*b'*, pivoted on a pin, *b''*, carried by an arm, *b'''*,  
extending from one of a pair of standards, *b''''*,  
the oscillating lever, *b'*, transmitting motion  
by a connecting rod, *b''''''* to one of a pair of  
bell-crank levers, *c*, mounted on a common  
shaft, *c'*, and having one arm of each connected  
by a link, *d*, to one of the bars, *a*, of  
the propelling frame. Another pair of levers,  
*c*, are mounted on another shaft, *c'*, carried  
by standards, *b''''*, near the delivery end of the  
machine. One arm of each of these levers,  
*c*, is connected by a link, *d*, to one bar or rod  
of the propelling frame, *a*.

The two pairs of levers, *c*, are connected by link rods, *c''*, so as to work in unison and the



weight of the propelling frame, *a*, is partly counterbalanced by weights, *c*<sup>3</sup>, on arms, *c*<sup>4</sup>, of one pair of levers, *c*. The horizontal movement of the propelling frame, *a*, is effected by a double throw crank, *e*, one crank pin, *e'*, of which is connected by a connecting rod, *g*, to a cross bar, *g'*, uniting the two bars of the frame, *a*. The bars of the frame, *a*, are further united to bars, *a*<sup>2</sup>, and braced by cross bars, *i'*, *i*<sup>1</sup>, the latter being carried on trestles *k'* for the purpose hereinafter described. The frame thus described receives a motion suitable for agitating and propelling the wool in and along the washing trough, *q*, and for delivering it up an incline *r*, to squeezing rollers, *r'*, as usual, from which the wool is conveyed by an endless band *r*<sup>2</sup>, to another machine or elsewhere as desired.

The washing trough, *q*, as usual has a perforated bottom, *q'*, and is arranged inside the usual outer tank, *x*, having a sloping bottom for precipitating the deposited matter to one side to facilitate removal. *y* is the usual side trough into which the water squeezed out of the wool by the rollers, *r'*, is led and from which it is elevated in any usual manner back to the trough *q*, or tank, *x*.

To insure a constant delivery of the wool up the incline *r*, a second or auxiliary frame is provided at the delivery end comprising bars, *l*, fitted with prongs and cross braced by cross bars, *i*<sup>2</sup>, mounted on trestles, *k*<sup>2</sup>. The auxiliary delivery frame receives the necessary combined vertical and horizontal motion from one pair of levers, *c*, and from an additional pair, *c'* linked to the others by link rods, *c*<sup>5</sup>, the frame being connected to the levers, *c*, *c'* by links, *m* *m*. The links, *m*, however are connected to arms, *c*<sup>6</sup>, *c*<sup>6</sup>, on the opposite sides of the fulcrum of the lever, *c*, to which the links, *d*, are attached and the arm *c*<sup>6</sup>, of the lever, *c'*, is correspondingly arranged so that the motion of the frame, *l*, is alternate to that of the frame, *a*. In this way the bars of the frames pass up and down between each other and when one frame is inoperative the other is operative and vice versa, the bars of the frames being free to clear their respective cross bars owing to the latter being mounted on trestles. One bar, *i*<sup>2</sup>, is provided with loops, *o'*, to avoid fouling of the same by the rods, *d*. The auxiliary frame receives its horizontal motion from the second crank pin, *n*, on the crank, *e*, by means of a jointed connecting rod, *o*, *o*, which is suspended at its mid-point by a radius rod, *h*, from an upper bracing bar, *h'*.

In order to prevent surging of the liquid below the perforated delivery incline or slope *r*, a small tank or pocket, *s*, is provided, the pocket being subdivided by a number of partitions *t*, which prevent the water surging or flowing from one compartment to the other, insuring a quiescent condition of liquid be-

low the incline and thus preventing the wool passing through or choking the perforations of the incline. The bottom of the pocket, *s*, is sloped or downwardly curved to one side as shown in Fig. 4 to cause the sediment or impurities to settle down to that side. Against this lower settling side a sluice door *u*, is fitted. It may be hinged, pivoted or be made to slide or be otherwise mounted so as to enable the pocket, *s*, to be cleaned out. In the example shown it has a longitudinal extension, *v*, pivoted at *w*.

In operation the wool to be treated is fed up the continuous band, *z*, and falling into the trough, *q*, is caught by the immerser or box like portion, *z'*, on the extremity of the propelling frame, *a*, as the latter descends, being thereby thrust down into, the liquid. The prongs, *a'*, propel the wool forward for a short distance and then as the frame, *a*, rises out of the trough the wool is free to float and its fibers are free to distend or expand. On a further descent of the frame, *a*, the wool is again engaged by the prongs and propelled further on and so on until it reaches the incline, *r*, up which it is rapidly delivered by the action of both frames *a* and *l*, to the squeezing rollers, *r'*, and thence up the conveyor, *r*<sup>2</sup>.

It will be understood from the foregoing that although the wool is only being intermittently propelled through the main part of the washing trough and is intermittently allowed to expand therein and thus give up its impurities to the water or cleansing fluid, yet it is being constantly delivered up the incline, and the latter being perforated and provision being made to prevent surging of the fluid therethrough, the wool is constantly delivered and in a better condition than is effected with machines as hitherto constructed.

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

1. A textile washing machine, comprising a washing trough, a main propelling frame extending over the delivery end as well as over the main portion of said trough, an auxiliary frame at the delivery end only, said frames comprising bars fitted with prongs, and means for operating said frames alternately for the purpose hereinbefore set forth.

2. A textile washing machine, comprising a washing trough, a main propelling frame, comprising a number of bars fitted with prongs, said bars extending through the whole of the trough and an additional number of similar bars at the delivery end only, an auxiliary frame at the delivery end only and comprising bars fitted with prongs, the bars of the two frames being adapted to pass between one another, and means for operating said frames alternately.

3. In a textile washing machine comprising a washing trough and a propelling frame



consisting of bars fitted with prongs, an auxiliary frame at the delivery end only, a perforated inclined delivery surface and a divided chamber beneath said surface substantially as and for the purpose set forth.

4. In a textile washing machine comprising a washing trough and a propelling frame consisting of bars fitted with prongs, an auxiliary frame at the delivery end only, a perforated inclined delivery surface, a divided chamber beneath said surface, an inclined bottom to said chamber and a sluice door, substantially as and for the purpose hereinbefore described.

5. In a textile washing machine a washing trough, means for propelling the wool through said trough, means for delivering the wool therefrom, a perforated inclined de-

livery surface and a divided chamber beneath said surface substantially as and for the purpose hereinbefore set forth.

6. In a textile washing machine, a washing trough, means for propelling the wool through said trough means for delivering the wool therefrom, a perforated inclined delivery surface, a divided chamber beneath said surface, an inclined bottom to said chamber and a sluice door therefor, substantially as and for the purpose hereinbefore set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM McNAUGHT.

Witnesses:

ROBERT MORRISON NEILSON,  
ELSIE HUGHES.