# J. & W. Mc Naught Jr.
## Wool Washing Mach.

No. 89,420 Patented Apr. 27, 1869.

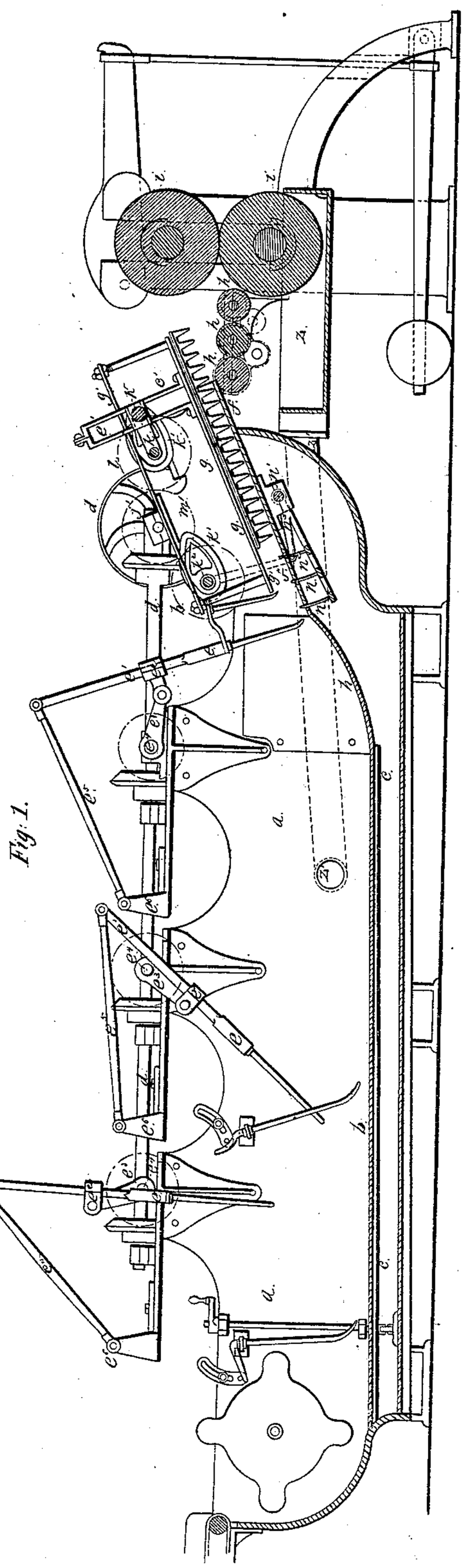

Fig. 1.

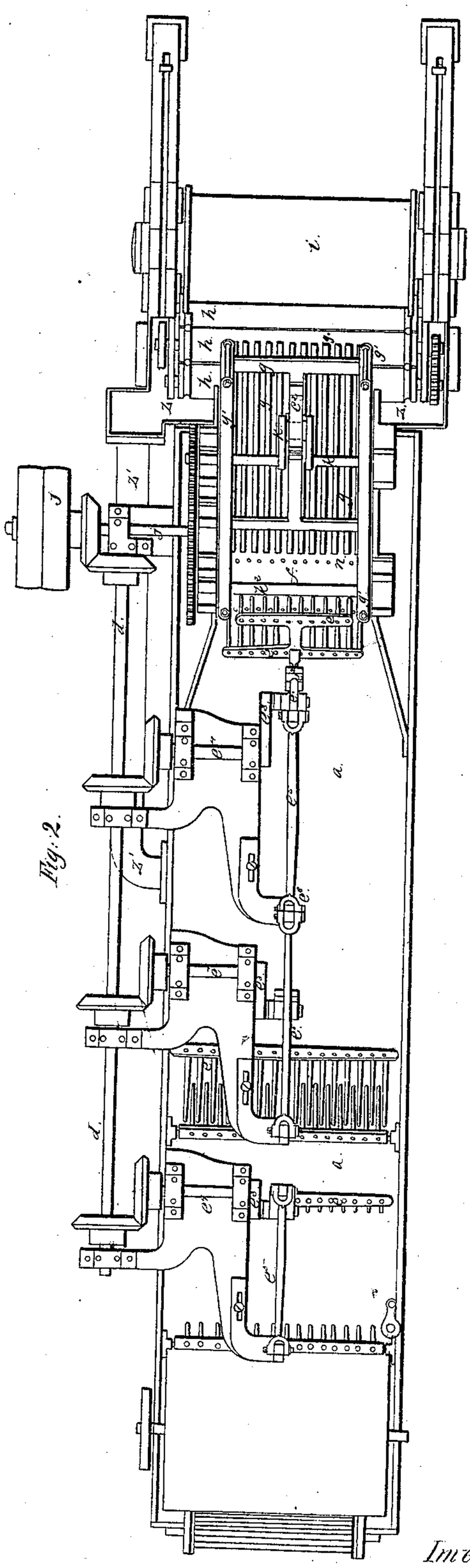

Fig. 2.

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# United States Patent Office.

JOHN McNAUGHT AND WILLIAM, McNAUGHT, JR., OF ROCHDALE ENGLAND.

*Letters Patent No.* 89,420, *dated April* 27, 1869.

## IMPROVEMENT IN MACHINE FOR WASHING WOOL.

The Schedule referred to in these Letters Patent and making part of the same.

*To all to whom it may concern:*

Be it known that we, JOHN McNAUGHT and WILLIAM McNAUGHT, Jr., both of Rochdale, in the county of Lancaster, in England, engineers, have invented certain new and useful "Improvements in Machinery for Washing Wool and other Fibrous Materials;" and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawing forming part of this specification.

Our improved machinery consists of a series of two or more rakes, for traversing the wool or other fibres along the cistern to an inclined plane, up which they are moved by an improved cradle, and delivered to a series of rollers, which convey them to the squeezers.

Figure 1 is a longitudinal section of one of our improved machines for washing wool or other fibrous materials.

Figure 2 is a plan of the same.

*a* is the trough.

*b*, a perforated false bottom in the same, supported by stays *c*.

*d* is a side-shaft, supported in bearings fixed to the trough, for giving motion to the rakes or propellers *e e*, the last of which may have two sets of prongs.

These rakes convey the wool or other fibrous material to the inclined plane *f*, up which the wool or other material is carried, by means of the cradle or lifter *g*, to the small rollers *h h*, and by them forward to the squeezer-rollers *i i*.

*g'* is a frame, of iron or any other suitable material, to which are fixed teeth or prongs of the cradle or lifter *g*, for raking or carrying the wool up the incline *f*.

*c' c'* are brackets, fitted to the frame *g'*, between which the crank *k* acts, to give it the requisite to-and-fro motion.

The up-and-down motion is given to the cradle or lifter *g* by the cams $k^1$, which, in revolving, act on the under side of the top rail of the frame *g'*.

One pair of cams is fixed to the same shaft as the crank *k*, and the other pair is fixed to the shaft $k^2$.

The frame *g'* is supported on the cams, which prevent the teeth or prongs of the cradle or lifter from bearing on the bottom of the inclined plane *f*.

The points of the teeth of the last of the propelling-rakes *e* work in the curved end of the false bottom *b*, and lift the wool or other material on to the lower end of the inclined surface *f*, through which the series of prongs *n* shoots up, to retain it.

These prongs are formed upon arms fixed to the shaft $n^1$, and pass through holes in the bottom of the inclined surface.

The shaft $n^1$ is made to oscillate by a cam on the shaft $k^2$, the motion of which is transmitted through the rod $n^2$, jointed to the lever $n^3$, fixed to the shaft $n^1$.

The cam is formed to lift up the prongs quickly, when the fibrous material is deposited on the inclined surface, and to withdraw them into the position shown in fig. 1, when the cradle or lifter *g* is about to drop over them.

The wool or other material to be operated upon is put into the cistern *a*, in which is the necessary liquid.

The side-shaft *d*, being set in motion by the pulley *j* on the driving-shaft *j'*, imparts the requisite motion to the rakes or propellers *e* in the following manner:

The shank of each rake, $e^1$, passes through and is fastened to a socket, $e^2$, in which socket the shank of the rake is adjustable, and swivels on the crank $e^3$, fixed to the crank-shaft $e^4$, which is driven by mitre-wheels from the side-shaft *d*.

The upper end of each shank $e^1$ is jointed to a link, $e^5$, whose fulcrum, $e^6$, is adjustable; and, by moving this fulcrum nearer to or further from the shaft $e^4$, the sweep of the rakes is varied.

The combined action of two or more of these rakes agitates the fibrous material, and carries it along the bottom of the trough *a*, and leaves it on the bottom of the inclined plane *f*, where it is held, by the rising of the prongs *n*, until it is carried forward by the cradle or lifter *g*.

This cradle or lifter *g*, as before described, is worked by the cams K' K' and the crank *k*, and is so actuated that, after the wool has been deposited on the bottom of the incline *f*, it drops upon it, and drags it up the incline to the extent of its stroke. The cradle then rises, and returns over the wool, to again drop upon it, and to again drag it up, the retaining-prongs withdrawing immediately upon the cradle dropping upon the wool.

The cams K' K' are made to revolve by the wheels *l l*, which receive their motion from the wheel *m*, fitted on the shaft *j'*.

The wool or material, being carried, by the cradle *g*, up the incline *f*, is pushed over, at the end, on to the rollers *h h*, which are covered with sheet-brass or other suitable metal or material, and revolve in the same direction, that is, toward the squeezer-rollers *i i*.

The small rollers *h h* are driven at accelerated speeds in regard to each other, increasing in speed as they approach the squeezer-rollers.

The water pressed from the wool or other fibrous material, as it passes between the squeezer-rollers, falls into the trough *z*, from whence it is conveyed, through the pipe *z'*, into the cistern *a*.

Having thus stated the nature of our invention, and described the manner of performing the same,

We declare that what we claim herein as new, and desire to secure by Letters Patent of the United States, is—

1. The connecting-link $e^5$, with its adjustable fulcrum, combined with the rakes, for regulating the sweep of the points thereof, substantially as specified.

2. The inclined plate *f*, forming part of the trough *a*, combined with the cradle or lifter *g*, substantially as specified.

3. The arrangement of the crank *k*, brackets *c'*, cams $k^1$, and bars *g'*, for actuating the cradle, substantially as specified.

4. The retaining-prongs *n*, combined with the inclined bottom *f*, and actuated substantially as specified.

5. The combination of the cradle *g'* with the incline *f*, rollers *h*, and squeezers *i*, substantially as specified.

In testimony whereof, we have hereunto set our hands, before two subscribing witnesses.

JOHN McNAUGHT.
WM. McNAUGHT, Jr.

Witnesses:
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