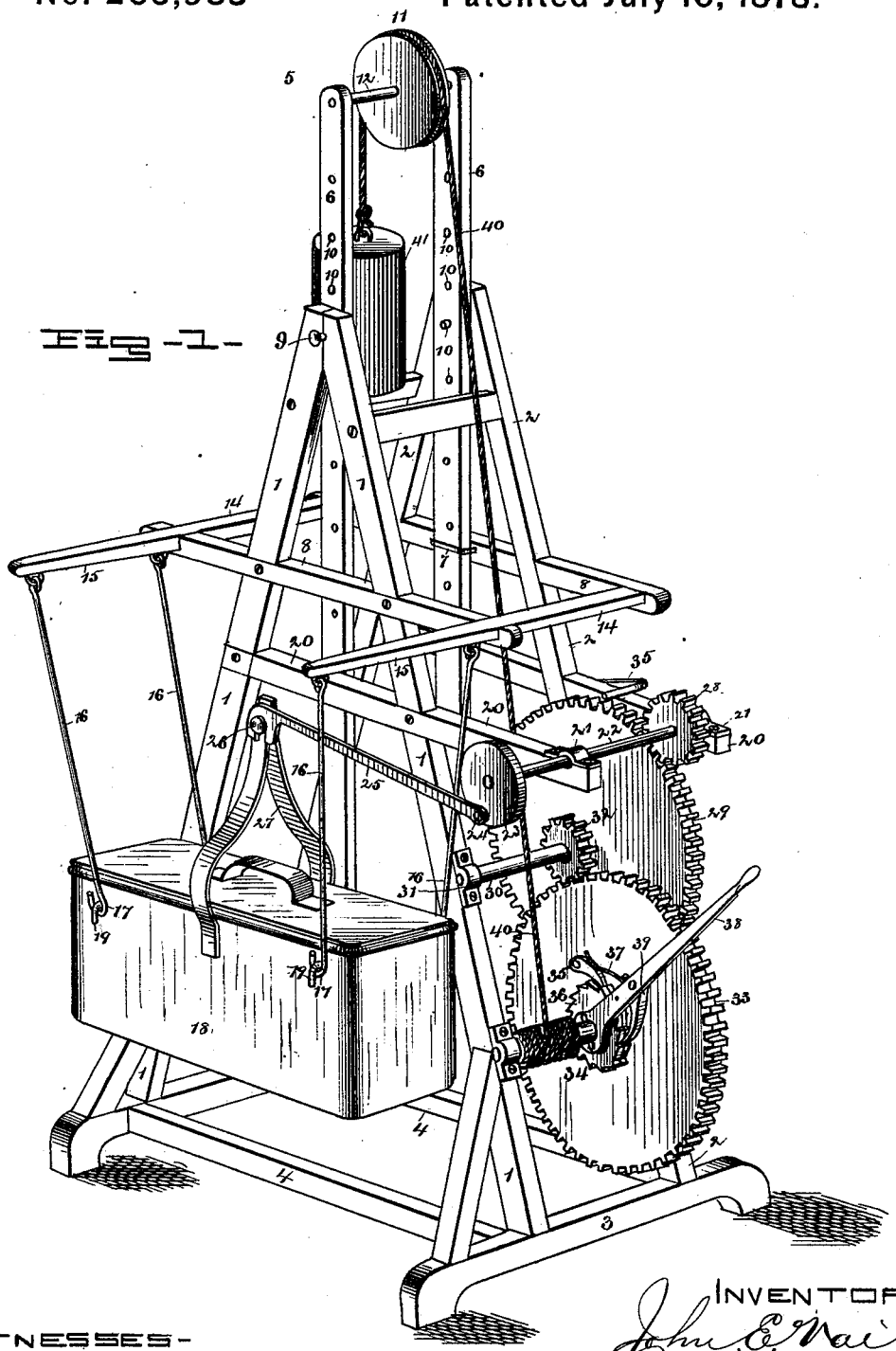
3 Sheets—Sheet 1

J. E. & J. B. VAIL.

Machine for Operating Churns.

No. 205,983 **Patented July 16, 1878.**

Fig-1-



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3 Sheets—Sheet 2.

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Fig-2

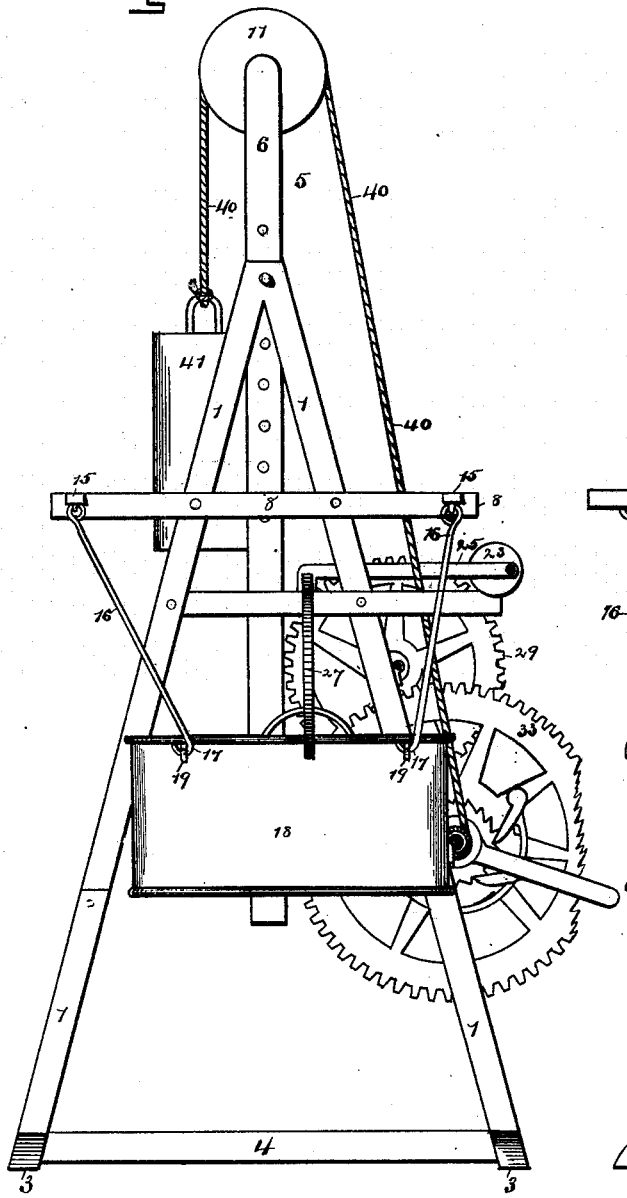
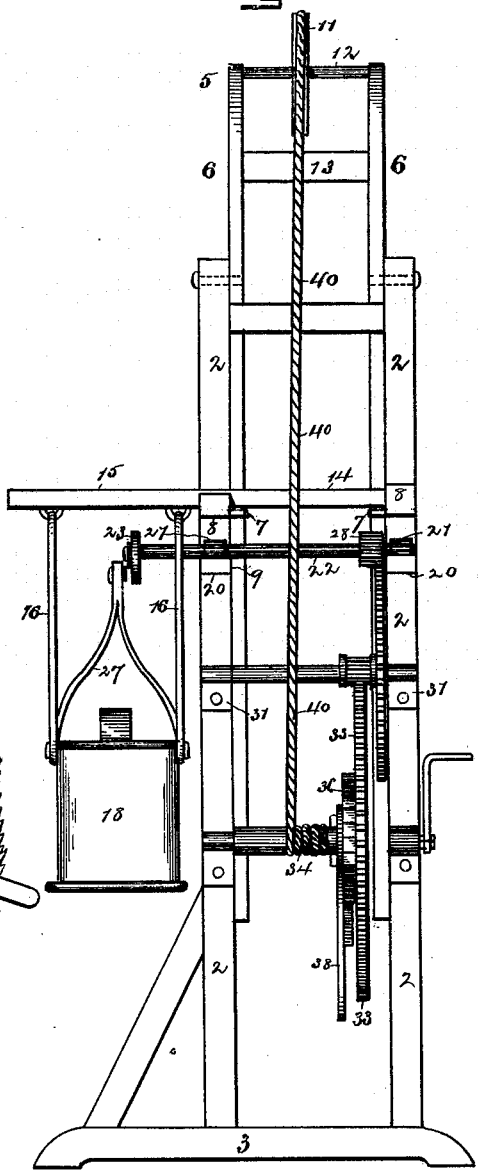


Fig-3-



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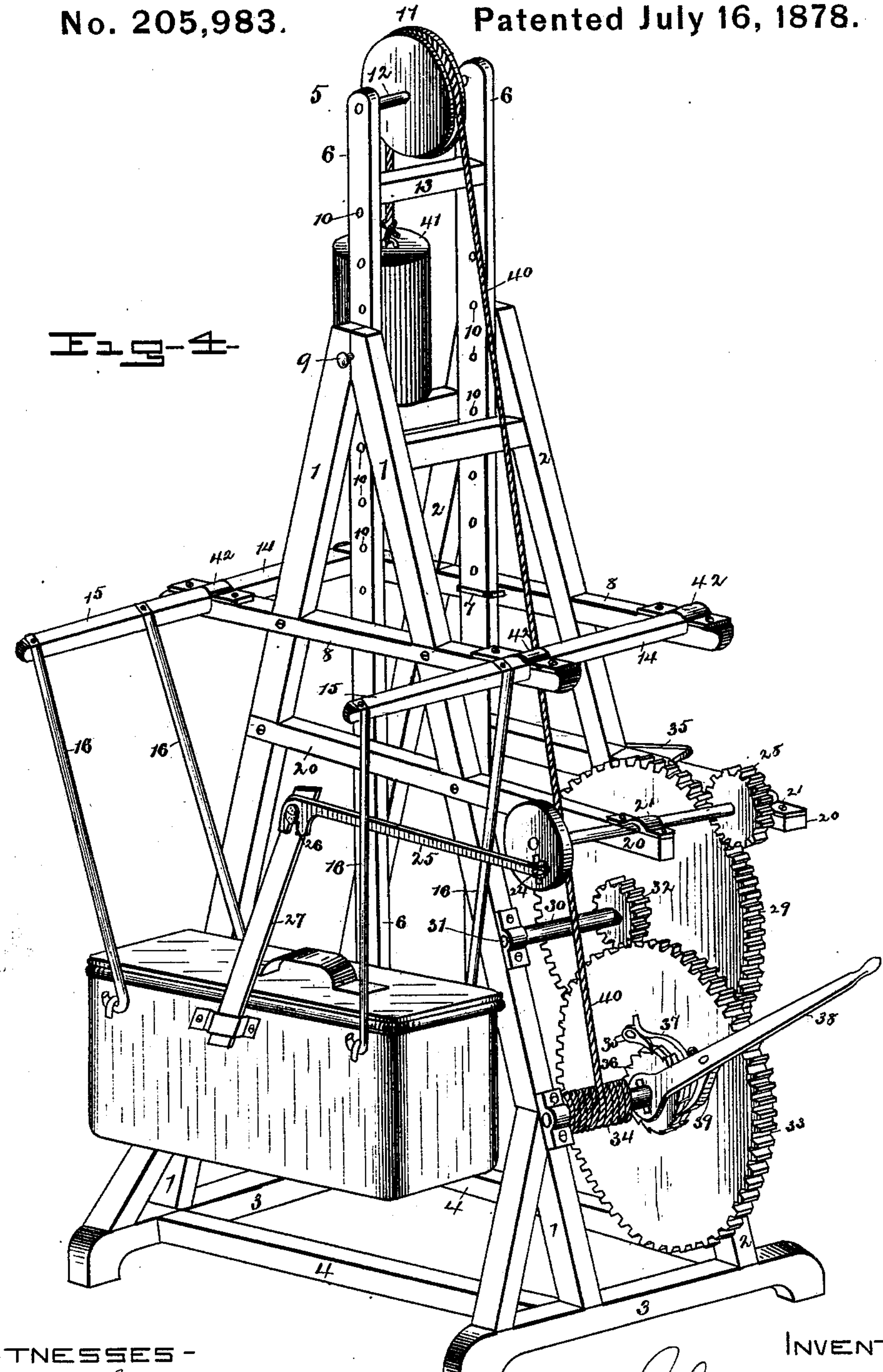
Machine for Operating Churns.

No. 205,983. **Patented July 16, 1878.**

Fig-4-



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UNITED STATES PATENT OFFICE.

JOHN E. VAIL AND JAMES B. VAIL, OF ADRIAN, MICHIGAN, ASSIGNORS OF ONE-HALF THEIR RIGHT TO GEORGE S. GIFFORD AND JONATHAN W. BINNS, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR OPERATING CHURNS.

Specification forming part of Letters Patent No. **205,983**, dated July 16, 1878; application filed April 9, 1878.

To all whom it may concern:

Be it known that we, JOHN E. VAIL and JAS. B. VAIL, of Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Machines for Operating Churns; and we do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to certain improvements in machines for operating churns; and the invention consists in the construction, arrangement, and combination of parts, which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and arrangement, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view. Fig. 2 is a front view. Fig. 3 is a side view; and Fig. 4 is a modification, in perspective, of the machine shown in Fig. 1.

1 and 2 denote converging standards, provided with cross-pieces 3 and braces 4. These parts constitute a frame for supporting the parts, which I will now describe.

From the frame projects a vertical adjustable extension-frame, 5, the two side pieces 6 of which pass freely through straps 7, or other suitable devices, secured to the arms 8, which latter are secured to the standards 1 and 2, as shown. The straps 7 serve as guides for the extension-frame, as well as to hold its lower end in position. The upper end of this extension-frame is held by pins 9, which pass through the top of the standards into either of a series of perforations, 10, in the side pieces 6, as shown. At the top of this extension is placed a sheave, 11, which may bear ranged on an axle or keyed to a shaft, 12, as desired.

The extension 5 is provided with one or more braces, 13, to hold the side pieces 6 together and give the extension the required stiffness.

At each end of the arms 8 is arranged a cross-bar, 14, having the ends 15 extended out at one side of the frame, as shown in Fig. 2. To each of these extensions 15 is secured one end of two rods, 16, the manner of attachment being such as to admit of the rods swinging to and fro, as required. The lower ends of these rods are provided with hooks 17. These rods 16 support an elongated churn, 18, provided with lugs 19, two of which are arranged on each side of the churn. The churn is attached to the rods by engaging their hooked ends 17 with the lugs 19, as shown.

On the extended ends of the arms 20 is supported in suitable bearings 21 a shaft, 22. The extended end of this shaft 22 is provided with a wheel, 23, which latter is provided near its periphery with a crank-pin, 24, to which is secured one end of an arm, 25, the other end being secured to a gudgeon, 26, of a rigid and stiff forked upright, 27, of the churn 18.

The shaft 22 is also provided with a pinion, 28, with which meshes a cog-wheel, 29, keyed or otherwise secured to the shaft 30, held by bearings 31 on the two front standards 1 and 2. This shaft is also provided with a pinion, 32, with which meshes a large cog-wheel, 33, of the windlass 34. This windlass is provided with the ordinary pawl 35 and ratchet-wheel 36, the pawl being held and made to engage with the ratchet-wheel 36 by a spring, 37, as shown in drawing.

To the windlass 34 is secured, in a loose manner, one end of an arm, 38, the place of attachment being contiguous to the ratchet-wheel 36, as shown. This arm is provided with a pawl, 39, which may be thrown down and made to engage with the teeth of the ratchet-wheel 36, when desired.

A suitable chain or rope, 40, secured to the weight 41, passes up over the sheave 11 at the top of the extension 5, then down to the windlass 34, as shown in drawing.

The arm 20 is provided with a locking device, 35, which may be thrown down between the teeth of the cog-wheel 29, to prevent the machine from running, when desired.

The operation is as follows: The pin 9 being removed, the extension 5 is raised any desired height, and then fastened by passing the pin through one of the perforations 10 in the side

pieces 6 of the extension. The weight 41 is then raised by the windlass up to or about the brace 13. The machine will then be set in motion.

The windlass is operated by the arm 38; but, when desired, it may be operated to elevate the weight by a crank, as shown in Fig. 3.

In Fig. 4 of drawing I have shown the cross-bars 14 held in bearings 42 on the arms 8. In this case the upper end of the rods 16 are rigidly secured to the extensions 15, as shown; also, the wheel 23 slotted, in order that the arm 25 may be adjusted to regulate the stroke. In place of the forked upright 27 a curved or straight standard may be used, if desired.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the hereinbefore-described frame, provided with an adjustable vertical extension, with the rope 40 and weight 41 and the operating mechanism, as set forth.

2. The combination of the arm 38, provided with a pawl, 39, with the hereinbefore-described windlass, cog-wheels, and suspended churn, all constructed and arranged substantially as shown and described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

JOHN E. VAIL.
JAMES B. VAIL.

Witnesses:
WM. S. GREENLY,
R. B. ROBBINS.