2 Sheets sheet 1

DUNCAN MORRISON

Converting Oscillating into Rotary Motion

Plate 1.

PATENTED

73631

JAN 21 1868

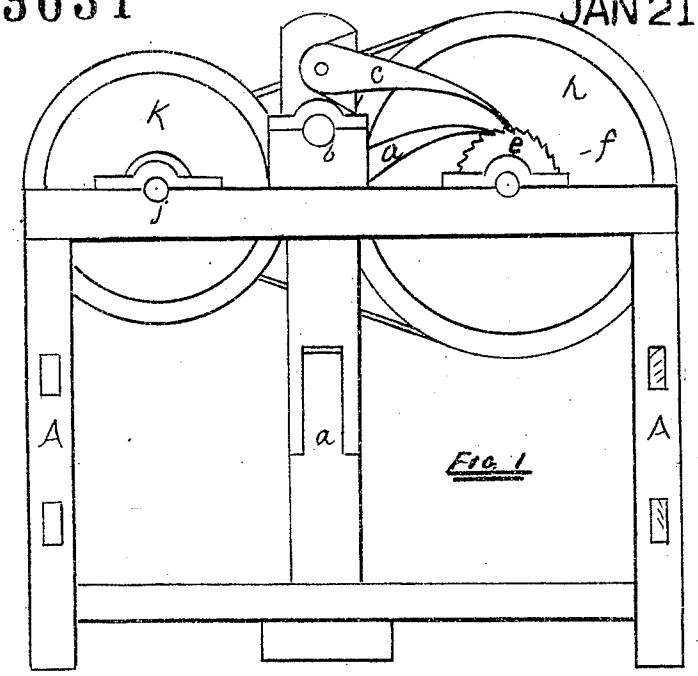


Fig. 1

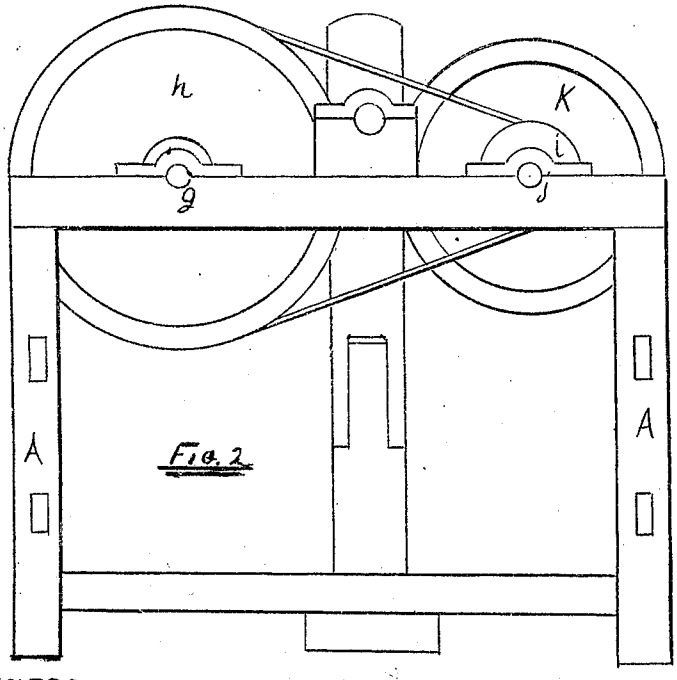


Fig. 2

WITNESS

Henry C. Houston

Wm Mauk Seary

INVENTOR

Duncan Morrison

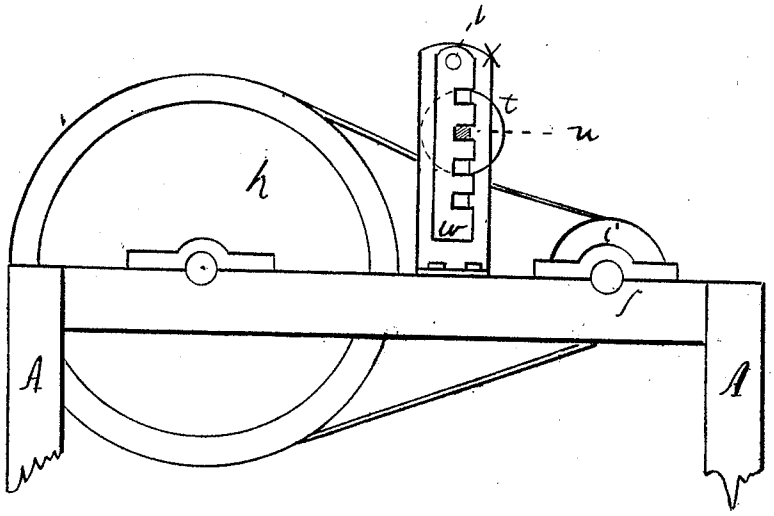
Sub sheet 2
78,631

DUNCAN MORRISON

Converting Oscillating into

Patented Jan 21. 1868 Rotary Motion

Plate. 2.



Witness

Henry C. Houston

Inventor

Duncan Morrison

Per [illegible]

UNITED STATES PATENT OFFICE.

DUNCAN MORRISON, OF PORTLAND, MAINE.

IMPROVEMENT IN THE MODE OF CONVERTING RECIPROCAL INTO ROTARY MOTION.

Specification forming part of Letters Patent No. **73,631**, dated January 21, 1868.

To all whom it may concern:

Be it known that I, DUNCAN MORRISON, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Converting Reciprocal Motion into Rotary; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my invention, showing the ratchet *e* and pawls *c d*, together with the arms *a* and wheels *h k*. Fig. 2 is a side elevation of the same, showing the opposite side from that on which the ratchets and pawls are attached.

In a certain application made by me for Letters Patent on a method of converting rotary into reciprocal motion, which application has been granted, but the Letters Patent not issued, I described a weighted arm or lever swinging so as to move a shaft or shafts, the last thereof, by means of a crank, communicating the desired motion. As an improvement upon the said invention, and disclaiming the parts patented in the first application and common to both, I now employ a weighted arm, as in the previous application, (seen at *a*,) and swinging on the pivot or axis *b*. To this arm are attached the two pivotal pawls *c d*, one above the axis *b*, the other below it, as seen in the drawings. These two pawls *c d* work in small gears *e f*, rigidly attached to the shaft *g*. The gear *e* only is seen in the drawings, *f* being similar and placed on the same shaft. To this shaft *g* is also rigidly fixed the balance-wheel *h*, communicating by a band with the pinion *i*, rigidly attached to the shaft *j*, upon which is also set the large wheel *k*.

The operation is as follows: As the arm *a* swings the pawls *c d* alternately engage the gears *e f*—that is, as *c* is revolving the gear *f*, *d* is being drawn back to perform the same duty when *c* is drawn back. Thus a continuous revolution is imparted to the wheel *h*, and by the band communicated to the shaft *j*. The arm *a* may be moved by a crank or lever, as described in my previously-granted application. A continuous rotary motion can thus be communicated from *j* or *k* to any machine, as desired.

I do not claim the weighted arm *a* nor the the wheels *h* or *k*, for these are the subject of previous grant to myself.

Upon the horizontal part of the frame I attach the standard *x*, having the slot and notches therein, as shown in Plate 2, having also the swinging catch *w*, connected by the pivot *v*. *u* shows a rod with a pulley, *t*. The object of this is, by setting the rod in any of the notches on the standard *x*, to increase the friction of the band upon the wheels by bending it down, as shown in Plate 2, in order to enable the machine to raise weights—as bales of goods, for instance—into the upper stories of store-houses, for which this machine is well adapted.

What I claim as my invention, and desire to secure by Letters Patent, is—

The weighted swinging arm *a*, swinging on the pivot *b*, and the two pawls *c d*, one above and the other below the pivot *b*, and operating upon the gears *e f* alternately, so as to impart to the shaft *g* a continuous revolving motion, as described, together with the standard *x*, catch *w*, rod and pulley *u t*, all arranged and operating for the purposes set forth.

DUNCAN MORRISON.

Witnesses:

WM. HENRY CLIFFORD,

W. FRANK GEAREY.