

N. E. MILLER.
Cider-Mills.

No. 141,582.

Patented August 5, 1873.

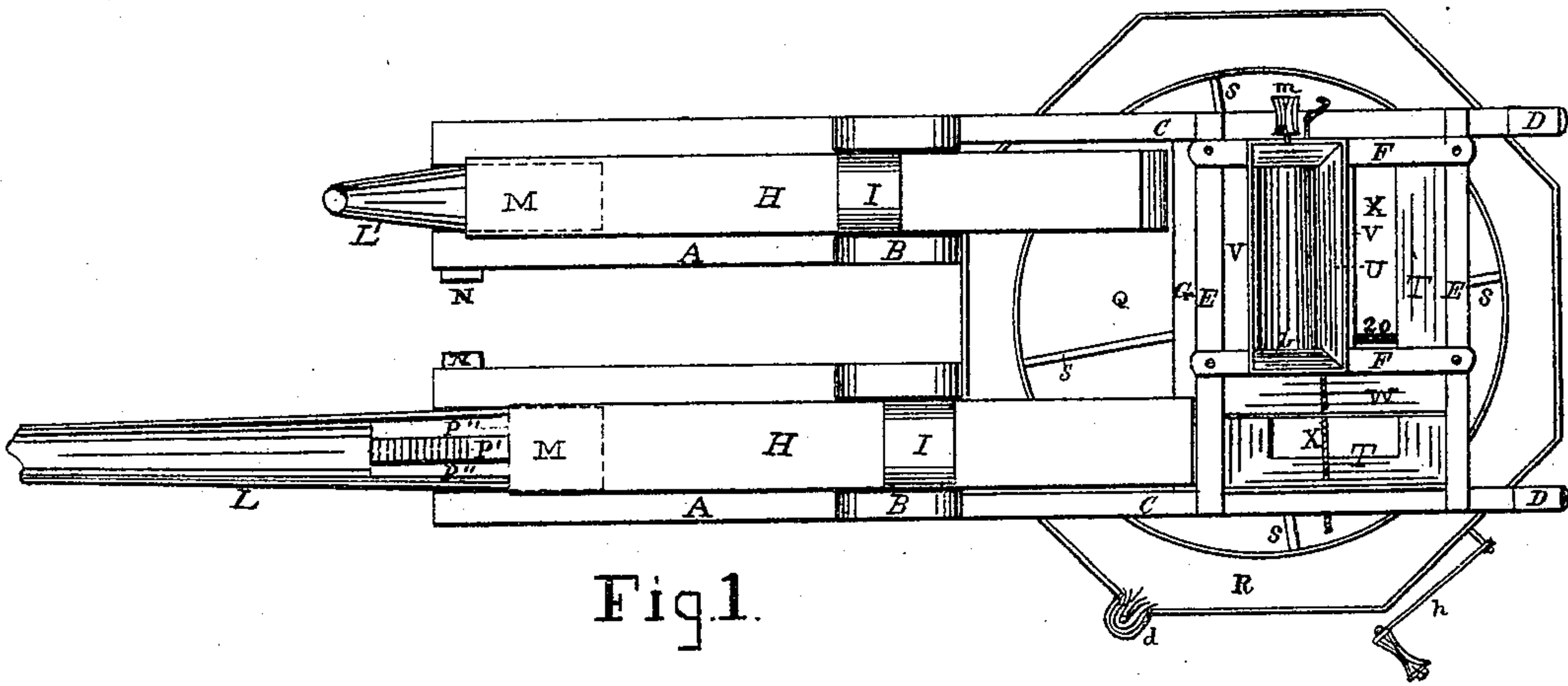


Fig. 1.

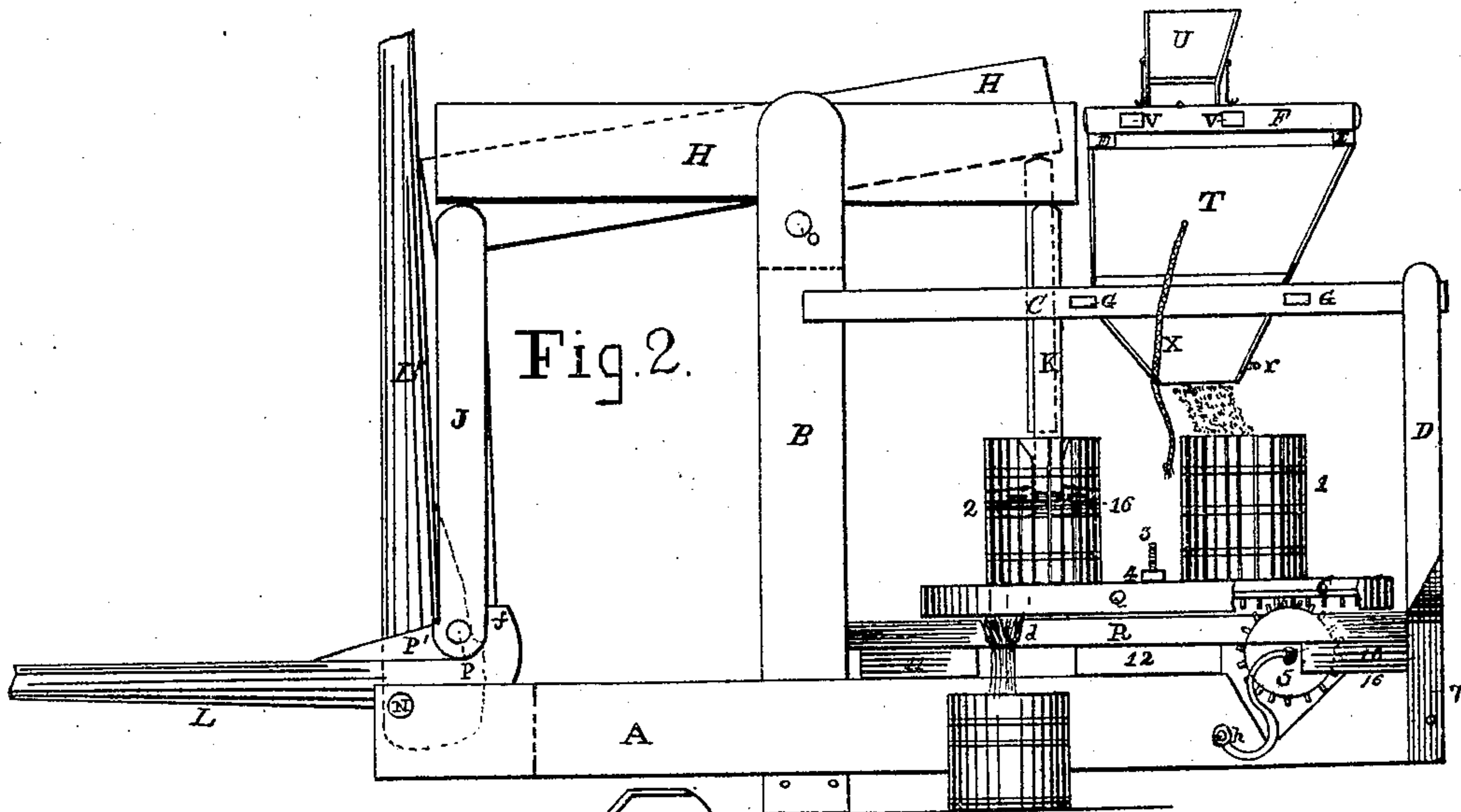


Fig. 2.

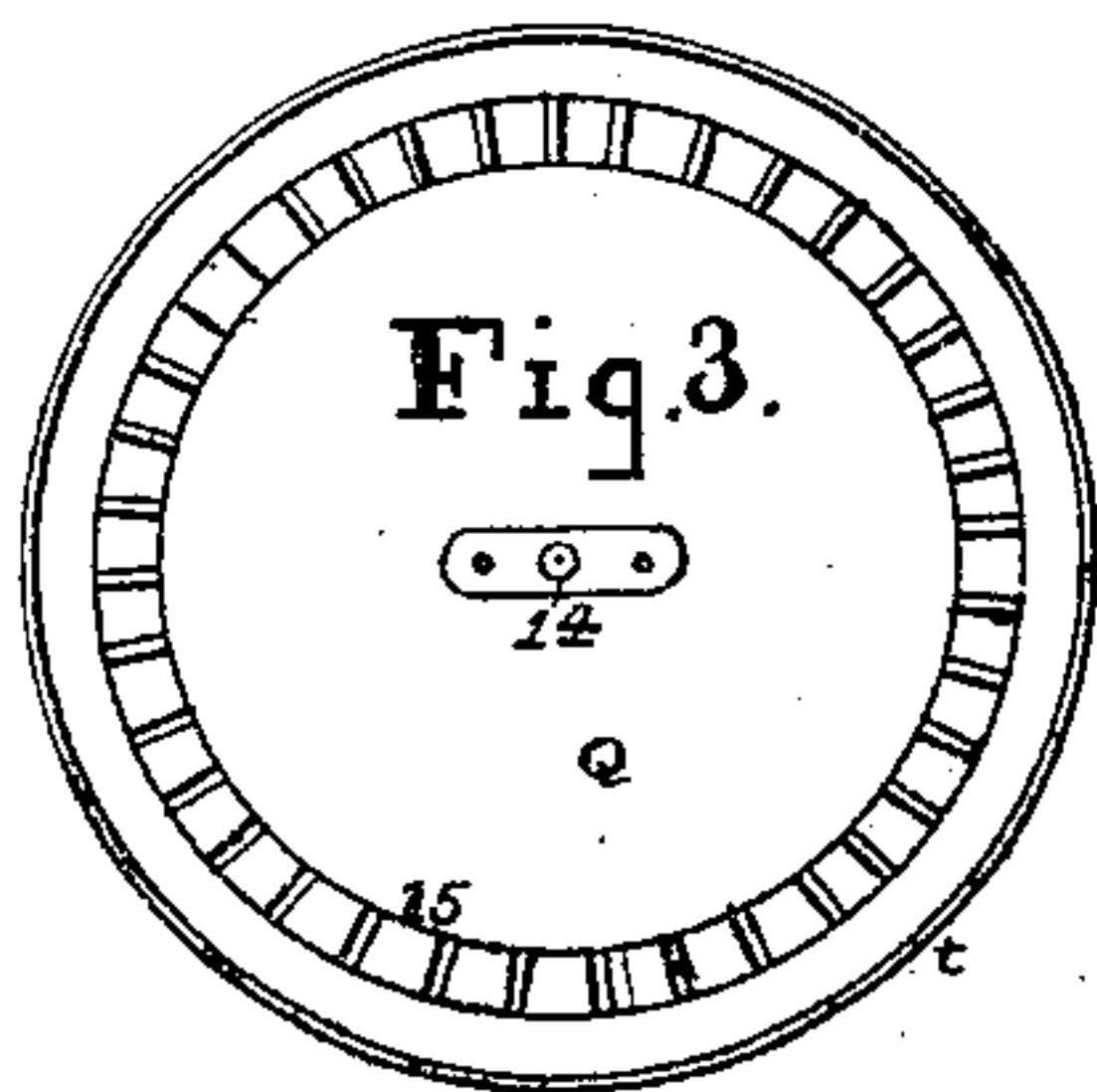


Fig. 3.

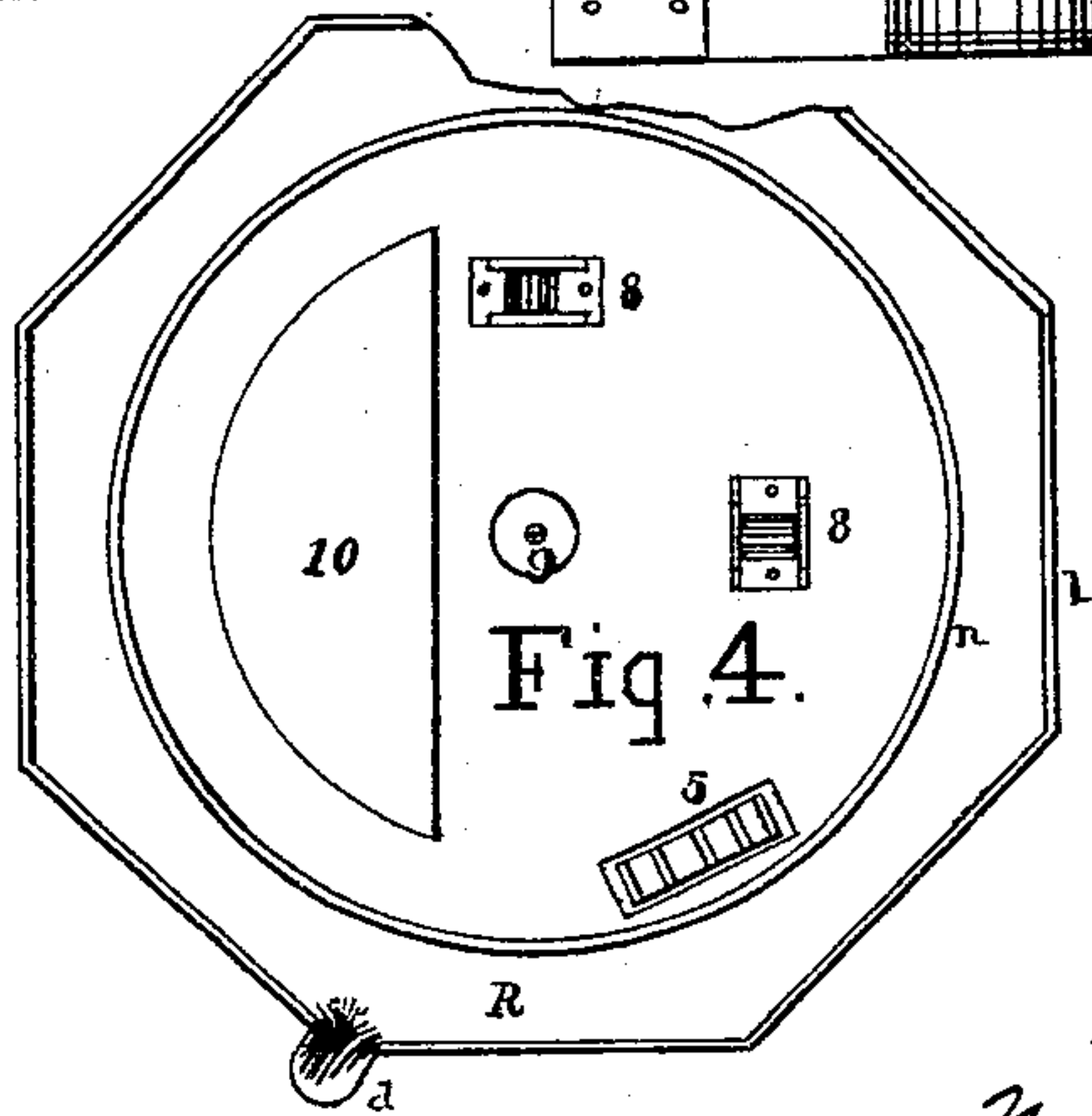


Fig. 4.

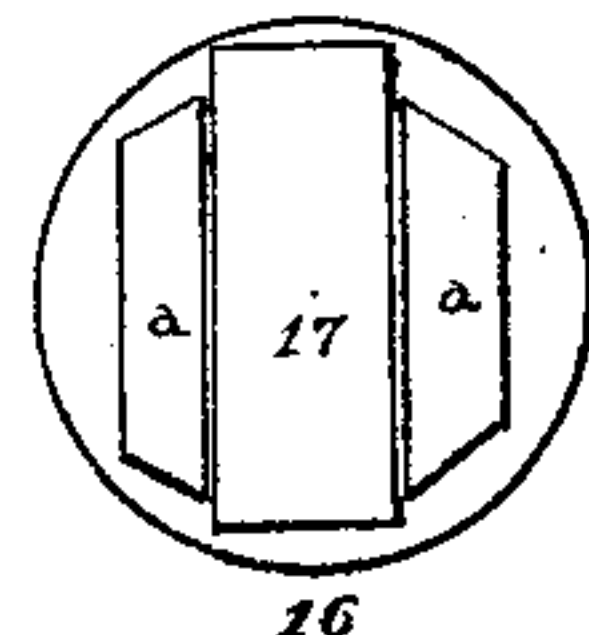


Fig. 5.

Witnesses:
Jimmie M. Grant.
J. F. Murdy.

Inventor,
N. E. Miller,
by Job Abbott,
attorney.

UNITED STATES PATENT OFFICE.

NATHANIEL E. MILLER, OF CANAAN CENTRE, OHIO.

IMPROVEMENT IN CIDER-MILLS.

Specification forming part of Letters Patent No. **141,582**, dated August 5, 1873; application filed April 30, 1873.

To all whom it may concern:

Be it known that I, N. E. MILLER, of Canaan Centre, in the county of Wayne and State of Ohio, have invented certain new and useful Improvements in Cider-Mills; and that the following is a full, clear, and exact specification thereof, which will enable others skilled in the art to make and use the said invention.

My invention relates to an improved apparatus for grinding apples or other fruit and pressing the juice therefrom, and is designed to give to the farmers, in a cheap, compact, and effective form, all the appliances necessary for cider-making on a small scale and in the most rapid manner. Said invention consists in the combination, with a feed-box and grinding-cylinder of an ordinary form, of a hopper made with a vibrating partition, by means of which the ground fruit can be run from the grinding-cylinder to either of the straining-tubs located under said hopper, as is hereinafter more fully shown, whereby the operation of grinding can be carried on without stopping to change the straining-tubs or any interruption of the pressing operation. Said invention also consists in the construction of a pressing mechanism, consisting of a swinging plunger, walking-beam, connecting-rod, and long hand-lever, all arranged on a frame, upon which the straining-tubs are placed, and in such a manner as to serve as a simple and powerful means of pressing the juice from the ground fruit in the tubs. Said invention also consists in the combination, in a portable cider-mill, of a feed-box with grinding-cylinder, hopper with vibratory partition, turning table with straining-tubs arranged thereon, stationary table with outer rim to gather the expressed juice, and two pressing devices, each consisting of a swinging plunger, walking-beam, connecting-rod, and hand-lever, the whole being arranged so that the process of grinding and pressing can be carried on continuously, as is hereinafter more fully shown.

In the accompanying drawing, Figure 1 is a plan of my apparatus. Fig. 2 is a side view of the same. Fig. 3 is a plan of the under face of the turning table; Fig. 4, a plan of stationary table. Fig. 5 is a plan of a squeezer-head.

The main frame, which supports the several

parts of my invention, is composed of the sills A A, uprights B B and D D, mortised to the sills, and cross-pieces C C, parallel to the sills and mortised to the uprights. T is the partitioned hopper built between the cross-pieces G G, which are mortised to the longitudinal pieces C C. At 20 said hopper is divided, by a vibrating partition, W, into two feed-ports, X X, one of which is to be closed by the partition W that turns on the hinge 20, by means of the rope at X, while the other is being filled from the feeding-box above. U, the feeding-box, is built on the pieces V V, which are mortised in pieces F F that are bolted on top pieces E E of the hopper T. In the feed-box U is the grinding-cylinder *b*, which is turned by the drum *m. r r*, Fig. 2, (only one being shown in the drawing,) are slides to close the feed-ports when desired. Q is the turning table that turns on the pivot-bolt 3 at its center. S S are slats, which divide the table into quadrants, on each of which a straining-tub, 1 2, is placed. *t* is an outside flange, put on in any convenient manner, and made to lap over the raised hoop or ring *n* to keep any juice from running within said ring and being wasted. On the under face of the turning table is the gear-rim 15, securely riveted to it, the teeth of which act with the teeth of the cog-wheel 5 to turn said table. R is the stationary table, secured to the floor-pieces 11 12 13 so as to be perfectly stable. 3 is the pivot, secured to the center of said table, and around which the turning table Q turns. 8 8 are rollers turning in boxes that are riveted to the table, and are so located as to give more bearing-surface to the turning table and to render the turning of the same by the operator more easy. 10 is a press-block, secured to the stationary table directly under the line of pressure of the pressing mechanism, and having sufficient thickness to take all strain from the floor of the turning table when the grindings are being squeezed by the pressing mechanism. *l* is an outside flange, terminating in the spout *d*, and forms, with the flange *n*, a trough for the juice to run in. 5 is a cog-wheel mounted on a shaft, at one end of which is a crank, *h*, and which is journaled in boxes secured to the under surface of the stationary table. Said cog-wheel works through a slot in the stationary table,

and acts, by its teeth, on the teeth of the gear-rim 15 of the turning table Q. 16 is a circular squeezer-head, made of one or more pieces of wood, firmly braced, and with flanges *a a*, between which is slid the piece 17, on which the swinging plunger of the pressing mechanism bears. H is the walking-beam, which is hung in the standards B by means of the clasp I, whose arms turn on the pivot O as an axle. At one end of the walking-beam, and hung by a pin from its under side, so as to keep a vertical position, whatever may be that of the beam, is the swinging plunger K, which, when the lever-arm L is borne down, presses on the cap 17 of the squeezer-head 16. At the other end of the walking-beam H, and similarly secured, is the connecting-rod J. L is a lever-arm working on a pivot. N is a slot cut in the sill A. The head of said lever is made with a projection, P', of triangular side elevation, which fits in a slot of the connecting-rod J, and turns in said slot on a pivot P. On each side of said projection P' are seats P'', Fig. 1, on which the rounded end of the rod J bears and turns, thus taking most of the strain from the pivot P.

The operation of my apparatus is as follows: The levers L L' should, at the start, have a vertical position, as shown by L', and the turning table Q, with a straining-tub on each of its four divisions, should be turned till two of the said tubs are under the feed-ports X X of the hopper and the other two immediately under the pressing-beams K K of the pressing mechanism. When thus arranged apples are ground by the cylinder in the feeding-box; and each of the feed-ports X X of the hopper T are filled one-half or two-thirds full by closing the entrance to one, when it is sufficiently full, by the door W, and turning the grindings into the other, which operation may be kept up continually; then the ports are opened by drawing out the slides *r*, and the two tubs standing thereunder filled from one-third to one-half full, when the ports are closed and the turning table turned till the full tubs come under the plungers K and the empty tubs under the feed-ports, when the operation of filling the empty tubs is carried on in the same manner as before, while squeezing-heads 16 are put in the grinding-tubs on the grindings and the levers L L' are borne down till sufficient pressure is brought to bear, through the arm J and beam K, onto aforesaid squeezing-heads to press and squeeze from the grindings

the juice contained therein. This juice runs off the turning table into the trough formed by the flanges *n* and *l*, and is collected at the spout *d*. The straining-tubs are then emptied and replaced, and the operation continued in a manner readily seen.

The ratio between the arms of the levers L L' and between the arms of the walking-beam H—which, in the first, should be about one to eight, and, in the second, about two to three—greatly lessens the labor in pressing; and the construction and arrangement of the turning table with four straining-tubs thereon, in reference to the hopper having two feeding-ports and the two pressing-beams, render the whole operation of manufacturing cider, from the grinding to the drawing the juice, a comparatively simple and easy process.

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

1. The hopper T, provided with the vibrating partition W, in combination with the feed-box U, having the grinding-cylinder *b* therein, substantially as and for the purpose specified.

2. The press-block 10, in combination with the turning table Q, substantially as and for the purpose specified.

3. The herein-described pressing mechanism, consisting of the swinging plunger K, walking-beam H hung in pivot-clasp I, connecting-rod J, with rounded end bearing on lever-seats P, and hand-lever L, in combination with the frame A B, the whole being arranged to act on the grindings in the straining-tubs supported from the sill-pieces A A, substantially as and for the purpose specified.

4. A cider-mill combining in its construction the following essential features, viz., a feed-box with grinding-cylinder, hopper with vibrating partition, turning table for the support of the straining-tubs, stationary table with outer rim and press-block, and two pressing devices, each consisting of a swinging plunger, walking-beam, and hand-lever, the several parts being so combined as to allow of the continuous operation of the grinding and pressing processes, substantially as and for the purpose specified.

As evidence of the foregoing witness my hand.

NATHANIEL E. MILLER.

Witnesses:

ALVI ZUVER,
B. E. MILLER.