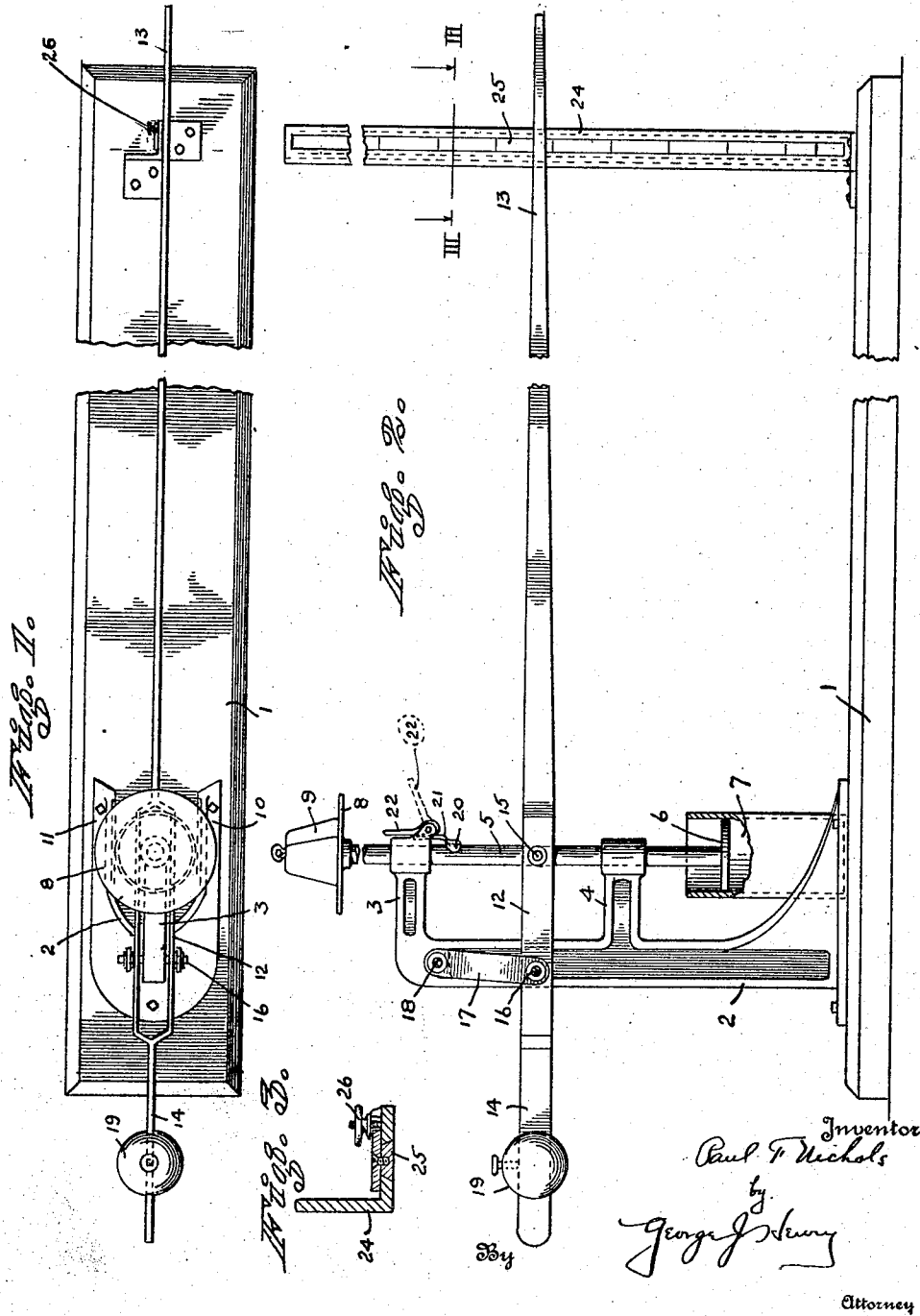


April 5, 1927.

1,623,263

P. F. NICHOLS
APPARATUS AND METHOD FOR DETERMINING THE MOISTURE
CONTENT OF RAISINS AND THE LIKE
Filed Aug. 31, 1925



UNITED STATES PATENT OFFICE.

PAUL F. NICHOLS, OF FRESNO, CALIFORNIA, ASSIGNOR TO SUN MAID RAISIN GROWERS OF CALIFORNIA, OF FRESNO, CALIFORNIA, A COOPERATIVE ASSOCIATION OF CALIFORNIA.

APPARATUS AND METHOD FOR DETERMINING THE MOISTURE CONTENT OF RAISINS AND THE LIKE.

Application filed August 31, 1925. Serial No. 53,503.

My invention has for its object an apparatus by which the moisture content of raisins or similar fruits, dried or partially dried, may be readily determined.

I have found that under constant atmospheric conditions, a mass of raisins or similar semi-dried fruit in bulk are compressible within relatively wide limits, in proportion to their moisture content, and the apparatus and method of my invention are adapted to employ and exemplify this principle.

Referring to the accompanying drawing my invention will be made clear:

Fig. 1 is a plan view of an apparatus embodying my invention.

Fig. 2 is a side view of the apparatus of Fig. 1.

Fig. 3 is a section on the line III—III of Fig. 2, illustrating the sliding scale.

Throughout the figures similar numerals refer to identical parts:

A base plate is indicated by the numeral 1, on which is mounted the standard 2, carrying therefrom the rigid brackets 3, 4.

Through these brackets loosely passes the piston rod 5, carrying the piston head 6, freely traveling within the cylinder 7.

At 8 is a table on the upper end of the piston rod 5 and on this table different weights, one of which is shown at 9, may be placed to exert the desired compression upon any mass of material to be compressed as raisins in the cylinder 7.

The standard 2 is preferably arranged with foot members 10, 11, between which the cylinder 7 may be readily passed and positioned while resting on the base 1.

A bifurcated arm 12 carrying the pointer 13 on one end and the counter-balance projecting portion 14 on the other end, is pivotally connected at 15, with a piston rod 5 and provided with a fulcrum at 16, the latter carried on the swinging link 17, which is supported from the frame 2 by the pivot or knife edge 18.

An adjustable counter-balance weight is shown at 19 and a friction or brake-shoe at 20.

The latter is carried upon the spring 21 and adapted to be actuated by the hand lever 22 to frictionally engage the rod 5 or to spring outward and free therefrom

according to the position of the hand lever 22.

At 24 is an upright standard preferably of angle-like form as shown best in Fig. 3 and having a scale 25 slidable with respect to 24.

A clamp screw at 26 enables the operator to clamp the scale 25 in any of its adjusted positions.

Knife edges or watch spring supports may be substituted for the pivot 15, although I have shown a circular pivot at 15 and knife edges at 16, 18 respectively.

The operation is as follows:

A mass of raisins whose moisture content it is desired to determine, is placed within the cylinder 7 and passed into position below the piston 6. The hand lever 22 is brought to the full line position shown in Fig. 2, thereby releasing the shoe 20 and the piston rod 5 and head 6 drop into place resting on the raisins.

The pointer 13 will now occupy a definite position with respect to the standard 24, and the scale 25 is now shifted by the operator until its zero corresponds with the pointer 13.

The hand lever 22 is now thrown down to the dotted position, clamping the shoe 20 against the rod 5. A predetermined weight, indicated at 9 is now placed upon the platform 8, the rod 5 being held by the shoe 20, the pointer will register zero on the scale 25.

With a watch in hand the operator now releases the lever 22 into the full line position of Fig. 2, thus transferring the action of the weight 9 to the raisins contained in the cylinder 7.

After a predetermined interval, depending on the calibration of the apparatus, the pointer 13 will register a new position on the scale 25 and this position indicates the percentage of moisture contained in the raisins.

In a preferred form of my apparatus I employ a two pound weight acting for fifteen seconds.

I prefer to calibrate the scale 25 in percentages of moisture.

It will now be seen that the moisture content of various samples may be very quickly obtained and I have found that the limits of

error by employing my apparatus are well within all commercial requirements.

I claim:

1. Apparatus for measuring the compression of a mass of raisins when subjected to a predetermined pressure comprising a compartment, means for applying a predetermined pressure on said mass of raisins contained in said compartment, an indicating arm connected to said means and adapted to move along a scale, said scale, which is calibrated to indicate by the lever movement the percentage of compression of said mass when said pressure is applied and a base member supporting said compartment and said scale.

2. Apparatus for measuring the compression of a mass of raisins when subjected to a predetermined pressure comprising a compartment, means for applying a predeter-

mined pressure on said mass of raisins contained in said compartment, and an indicating arm connected to said means and adapted to move along a scale, said scale, which is calibrated to indicate by the lever movement the percentage of compression of said mass when said pressure is applied, said scale having associated means whereby the scale may be adjusted with respect to said arm and clamped in said adjusted position.

3. The steps in the method of determining the moisture content of a mass of raisins which consists in determining the volume of said mass under normal conditions, and then subjecting said mass for substantially fifteen seconds to a compressing force of substantially 0.41 pounds per square inch and then determining the volume of said mass as thus compressed.

PAUL F. NICHOLS.