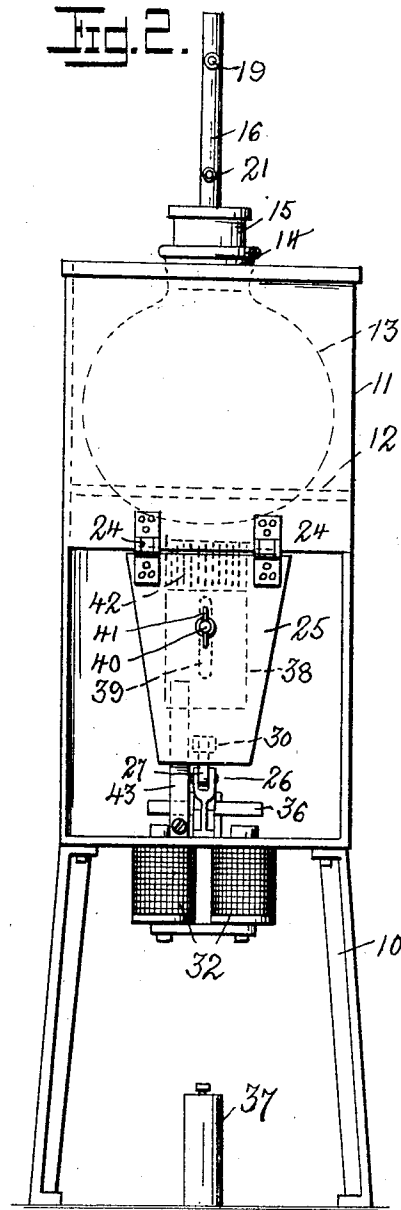
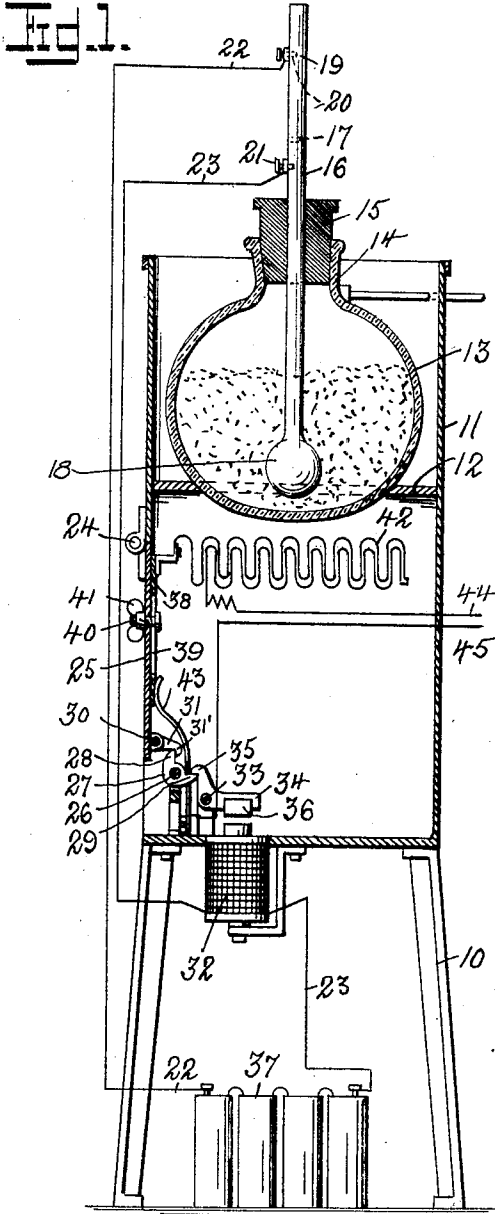


C. P. DE ROO.
MOISTURE TESTER.
APPLICATION FILED SEPT. 9, 1920.

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Inventor,
C. P. DE ROO.
By *Geo. P. Kimmel*
Attorney

UNITED STATES PATENT OFFICE.

CORNELIUS P. DE ROO, OF FLINT, MICHIGAN.

MOISTURE-TESTER.

1,399,696.

Specification of Letters Patent.

Patented Dec. 6, 1921.

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To all whom it may concern:

Be it known that I, CORNELIUS P. DE ROO, a citizen of the United States, residing at Flint, in the county of Genesee and State of Michigan, have invented certain new and useful Improvements in Moisture-Testers, of which the following is a specification.

This invention relates to apparatus for determining the moisture present in various products or commodities, more particularly of grains and the like, and generally known as moisture testers, and has for one of its objects to provide simply constructed electrically operated devices or attachments, whereby the heat is automatically cut off when it reaches a certain predetermined degree.

Another object of the invention is to provide a device of this character wherein provision is made for adjusting the heat generating devices to control the amount of heat transmitted to the container and the grain or other product to be tested contained therein.

With these and other objects in view, the invention consists in certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims, and in the drawings illustrative of the preferred embodiment of the invention.

Figure 1 is a longitudinal section of the improved apparatus,

Fig. 2 is a front elevation.

The improved apparatus comprises a stand or support 10 having a shell or inclosure 11 rising therefrom.

Disposed within the shell 11 and spaced below its top, is a support 12 having a central opening forming a seat for a flask like receptacle 13 for the grain or other product to be tested. The flask has a relatively large intake or neck 14 projecting through the top of the shell, as shown, which is preferably provided with a detachable closure or stopper 15.

Extending through the stopper 15 is a thermometer device comprising a tubular body 16 for the mercury represented at 17, and having a globular lower end 18 and with a metal contact member 19 at the upper end, preferably with an electrode 20 depending into the tubular body 16. An electric contact 21 is disposed through one wall of the body 16 and constantly embedded in the mercury, as shown.

Conductor wires 22 and 23 lead from the contacts 19 and 21, as shown.

The shell 11 is open at one side below the shelf or flask support 12, and hingedly connected at 24 to the shell at the upper side of the opening is a plate 25.

Pivoted at 26 to the shell 11 is a trip device 27 having an upper lip 28 and a lower lip 29.

Pivoted at 30 to the plate 25 is a latch device 31 having a lip 31' to engage with the lip 28 of the trip device 27.

An electromagnet 32 is supported by the shell 11, and pivoted at 33 to the shell is a spring controlled trip lever 34 having a lip 35 engaging the lip 29 of the trip catch 27.

The lever 34 is provided with an armature member 36 adapted to be influenced by the core of the magnet 32 to draw the lever 34 downward and release the trip catch 27 when the magnet is energized.

A source of electric energy, for instance a battery indicated conventionally at 37, is associated with the magnet 32, and with one pole connected to the contact 21 by conductor 23 which passes through the electromagnet 32, and the other pole of the battery connected to the contact 19 by conductor 22.

Attached adjustably to the inner face of the plate 25, is another plate 38, the adjustment being accomplished by a coacting slot 39, bolt 40 and wing nut 41.

Attached to the plate 38 is an electric heater coil of any approved design and represented conventionally at 42, and extending substantially at right angles to the plates 25 and 38 when the latter are in vertical position with the trip device 27, catch lever 31 and trip lever 34 in closed position, as shown in Fig. 1.

A spring contact 43 is attached to the shell 11 and bears at its free end against the plate 38. The heater coil 42 and contact 43 are in electrical connection with the main service circuit by conductor wires 44 and 45.

With a device thus constructed, the operation is as follows:

The parts are disposed initially, as shown in Fig. 1.

A predetermined quantity of the grain or other product to be tested is deposited in the flask 13 and the thermometer device inserted therein with its bulb 18 embedded in the grain and the stopper 15 inserted in the neck

14, the mercury in the thermometer being contracted, and the electrode 20 disconnected from the mercury.

The "readings" of the thermometer device
5 are visible above the stopper 15.

The circuit is then closed through the service wires 44 and 45 to cause the operation of the heater coil, and if the temperature does not rise above a predetermined degree the heater coil will remain in action,
10 but if the heat rises above normal, the mercury will rise in the tube 16 and contact with the electrode 20 and close the circuit through the battery 37 and magnet 32 and cause the
15 latter to withdraw the lever 31 and release the trip device 27 so that the weight of the heater coil 42 will cause it to drop and swing the plates 25 and 38 outwardly into the position shown by dotted lines in Fig. 1. This
20 swinging movement of the heater, coil and plates breaks the connection between the plate 38 and contact 43 and cuts out the heater coil at the same time that the heater coil drops.

25 The apparatus may be applied and adapted without material structural change to various purposes, and it is not desired to limit the invention to this respect.

The preferred embodiment of the invention is disclosed in the drawings and set forth in the specification, but it will be understood that any modifications within the scope of the claims may be made in the construction without departing from the principle of the invention or sacrificing any of its advantages.

I claim:

1. In an apparatus of the class described, a receptacle for the product to be tested, an electric heater device movably supported in position to impart heat to the receptacle and the product therein, and electrically actuated means for releasing said heater to cause it to move away from the receptacle when the heat rises above a predetermined degree.

2. In an apparatus of the class described, a receptacle for the product to be tested, an electric heater device movably supported in position to impart heat to the receptacle and the product therein, and electrically actuated means for releasing said heater to cause it to move away from the receptacle and breaking the circuit therethrough when the heat rises above a predetermined degree.

CORNELIUS P. DE ROO.