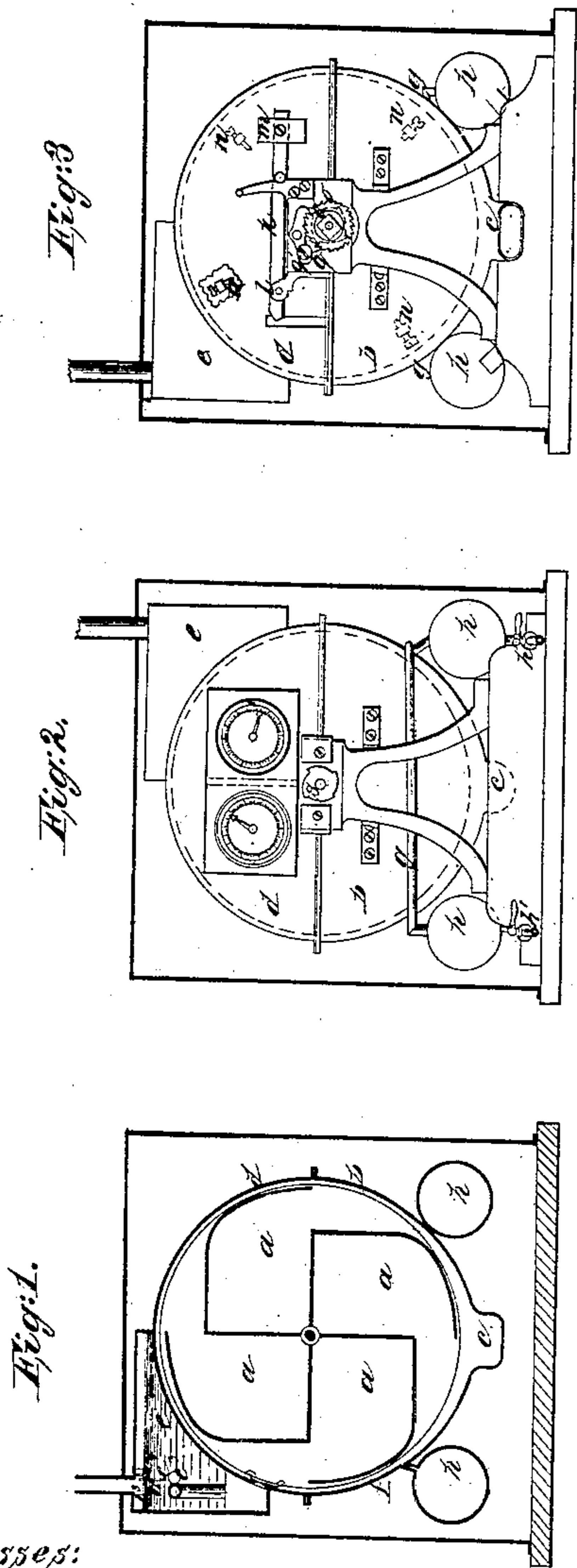


*J.H. Cox, J.W. Murphy,*

*Spirit Meter,*

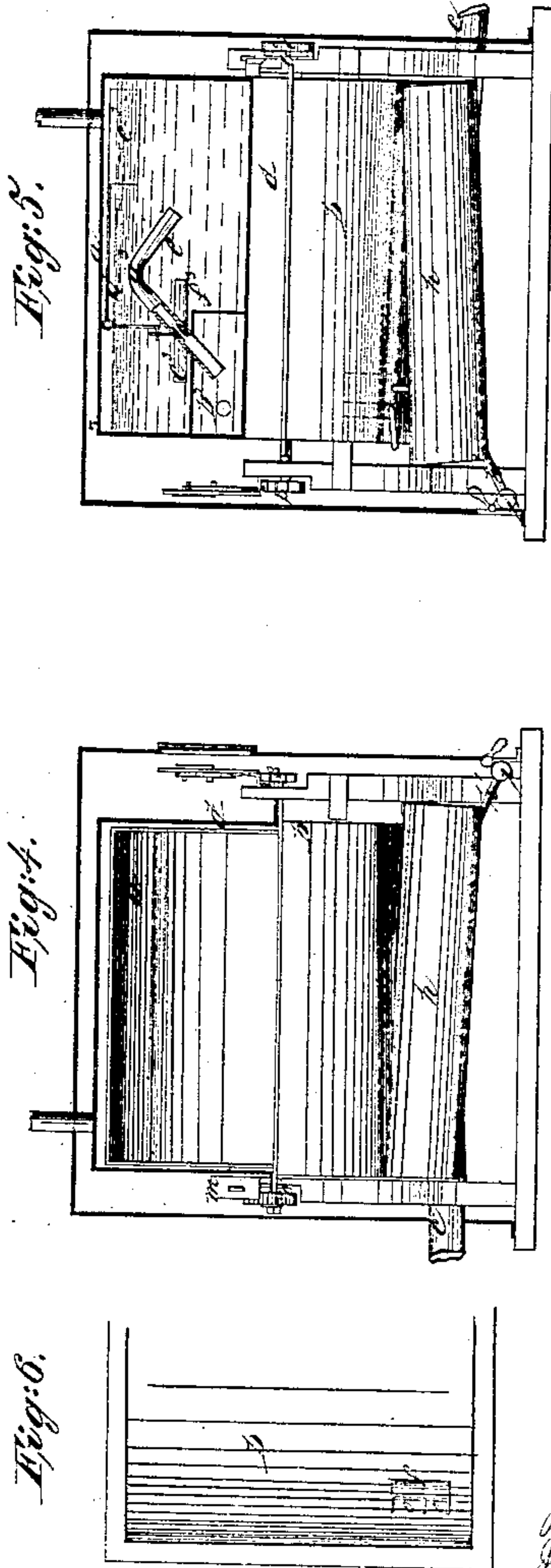
*N<sup>o</sup> 49,486,*

*Patented Aug. 15, 1865.*



*Witnesses:*

*Wm. Brown  
Geo. Fusch*



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Attys*



# UNITED STATES PATENT OFFICE.

JOHN HUTCHINGS COX, JOHN MURPHY, AND WILLIAM MURPHY, OF MONTREAL, CANADA EAST.

## IMPROVED SPIRIT-METER.

Specification forming part of Letters Patent No. 49,486, dated August 15, 1865.

*To all whom it may concern:*

Be it known that we, JOHN HUTCHINGS COX, JOHN MURPHY, and WILLIAM MURPHY, of Montreal, Canada East, have invented a new and Improved Spirit-Meter; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a transverse vertical section of this invention. Fig. 2 is an end view of the same, showing that part containing the registering-dials. Fig. 3 is an end view, looking in the opposite direction from the previous figure. Fig. 4 is a longitudinal vertical section of the same. Fig. 5 is a side elevation of the same. Fig. 6 is a plan or top view of the lower half of the jacket detached.

Similar letters of reference indicate like parts.

Our invention relates to an apparatus intended for the purpose of measuring alcoholic liquors, and particularly to control the quantity of liquor sold by distillers, manufacturers, or dealers, with the special view to enable tax-collectors to get at a true result without trouble or danger of being cheated.

The apparatus consists of a revolving drum arranged to form a series of pans or cups, *a*, four or more in number, of any convenient size and shape, similar to the cups of an ordinary gas-meter. Said pans or cups are closed at their ends by the heads of the drum, which are firmly secured to the axle, and they may be made of tin, copper, or of any other suitable material. The lower half of said drum is surrounded by a semi-cylindrical shell or jacket, *b*, which terminates at the level of the axle in a wide flange, to which the upper half, *d*, of the jacket is firmly secured, said upper half being also furnished with a flange corresponding to that of the lower half. The joint between the two flanges is rendered tight by india-rubber or other suitable packing. The lower side of the jacket inclines toward the discharge-pipe *c*, through which the liquid flows after having escaped from the cups *a*. The upper portion of the jacket is for the purpose of retaining the fumes of the spirit and to pre-

vent spilling. It also serves for supporting the cistern *e*, into which the spirit passes from the worm or still, and thence gradually and in a uniform current through an aperture in its bottom to the cups below.

At the mouth of the aperture leading from the cistern to the interior of the drum is a valve with a spring-latch working on a hinge. The latch works against the outside of the drum and closes the aperture when the drum is moving; but when the drum stops for receiving liquor in one of its pans or cups the latch is disengaged from the circumference of the drum and allows the valve to open. When the desired quantity of liquor has passed into one of the cups the motion of the drum commences again, and the latch, coming in contact with the circumference of the same, closes the valve until the succeeding cup arrives in the proper position for receiving liquor.

In order to produce a uniform pressure or discharge of liquor from the cistern into the receiving-cup below, a siphon-tube, *a*<sup>3</sup>, is arranged in the cistern *e*, said siphon-tube having its long leg attached to the top of a small chamber, *b*<sup>3</sup>, which is partitioned off in the interior of said cistern and into which the siphon discharges.

The siphon is provided with a stop-cock or valve, *f*<sup>3</sup>, which is operated by a tilting tube, *e*<sup>3</sup>, said valve being provided with a slotted disk and stop-pin, by which it is opened and closed suddenly. In this tilting tube *e*<sup>3</sup> is a ball or rolling weight traversing freely throughout its entire length, and said tube is operated by a bent lever, *d*<sup>3</sup>, which extends from the float *e*<sup>3</sup> and acts on a short lever attached to the tilting tube.

When the cistern is filled with liquor above the top of the siphon the valve of said siphon is opened and the liquor passes into the channel *b*<sup>3</sup>. As the level of the liquid falls the float falls with it, working in doing so the bent lever *d*<sup>3</sup>, which operates the tilting tube *e*<sup>3</sup>, moving the disk of the valve until the end of its slot comes in contact with the stop-pin, when the valve is at once closed, and the discharge of the liquor ceases until the level is raised in the cistern and the valve opened by the other end of the slot in the disk of the valve *f*<sup>3</sup> coming in contact with the stop-pin,



and so on; or, in place of the tilting tube  $c^3$ , with its rolling weight, a balance-weight might be attached to the axle of the valve for the purpose of facilitating its operation in connection with the float and lever.

On the inside of the lower half of the jacket is secured a small cup,  $f$ , with a bell-mouth, as seen particularly in Figs. 1 and 6, for the purpose of receiving samples from each pan as it discharges. This cup is divided by a partition into two unequal divisions, one about three times greater than the other, and each compartment or division connects by a suitable pipe,  $g g$ , with one of the sample-receivers  $h h$ . These receivers are cylindrical vessels placed in inclined positions, one on each side of the meter, so that their contents readily discharge through the pipes  $h' h'$ . One of these receivers, connecting with the larger division of the sample-cup, will be under the control of the excise officer, who may examine it once a month, and the second one under the control of the supervisor, who may perform the same duty once in three months, or at whatever other period of time may be necessary. At the various visits of these respective officials the entire quantity of liquor in the receivers will be withdrawn from them through the discharge-pipes and cocks  $i i$ .

For the purpose of arresting the drum and releasing it at the proper intervals, we use a lever,  $k$ , which works on the fulcrum  $l$  and is retained in place by suitable guides. The end of the short arm of this lever is bent nearly at right angles, and it terminates in a point, against which the catches or tappets  $a$  operate. On the long arm of this lever is placed a balance-weight,  $m$ , corresponding with the amount of liquor to be weighed in each of the revolving parts.

The tappets  $n n$  correspond in number and position to the pans in the drum, and they are secured to the outside of the same and made adjustable by set-screws or other suitable means, as shown in Fig. 3 of the drawings. There will be one tappet for each cup. A double ratchet,  $o o'$ , is mounted on one end of the axle. The inner ratchet,  $o'$ , will be made of steel, and have one tooth for each cup or pan in the drum, with a detent,  $q'$ , working in it, and it stops the revolution of the pan at its proper position independently of the lever. The outside ratchet,  $o$ , will have an indefinite number of teeth in its circumference, said teeth being made to point in an opposite direction to the teeth of the inner ratchet, and provided also with a detent,  $q$ . These two detents will be connected with each other at their ends by a pivot, on which they will play freely and work on a second pivot passing through the first detent,  $q'$ , as shown in Fig. 3. By the rebound of the revolving cups the detent  $q'$  is thrown out of the inner ratchet, and by that means allows the machine to revolve when the succeeding pan is filled to a weight corresponding to the ascertained weight of the lever.

At the front end of the meter is placed a single or double registering mechanism, which indicates the number of pans or cups discharged, and is worked by an eccentric or cam,  $s$ , on the end of the shaft. This cam is provided with the same number of teeth as there are pans.

The meter is surrounded with an external metal casing to protect it from interference. Said casing will be provided with an aperture provided with a glass face-protection in front of the index, and with doors furnished with suitable locks, but differing from each other, in front of the pipes  $h' h'$  of the sample-receivers. The keys of these doors will be in the possession of the excise officer and supervisor.

The operation is as follows: The inlet-pipe into the cistern of the meter will be attached to the worm or still, from which the liquor will flow directly into the cistern, and from thence in a uniform current into the revolving cups or pans of the meter, said meter having been previously adjusted by the lever-weight and catches to an amount corresponding in weight with the contents of the cup when filled with spirit, and the index-hands of the register placed at 0 on the scales. When the first pan is filled it tilts up the lever, and, passing down, is discharged into the space between the pan and jacket; but in discharging from the cup a sample is caught by the small cup  $f$ , from which one-third is conveyed to the supervisor's receiver and the remaining two-thirds to the excise officer's receiver. When this is accomplished the succeeding pan is in a position for being filled and emptied in the same manner, and so on, each succeeding tilt moving forward the index-hands of the registers in the ratio of one to one hundred, or in whatever other proportion they may be arranged. After a certain period—say one month—to ascertain the quality of liquor which has passed through the meter, the excise officer withdraws the entire amount of liquor from his sample-receiver and tests the average strength with a hydrometer, and by noting on the register the number of pans discharged and converting them into pounds weight the number of gallons of liquor reduced to a regular standard can be ascertained by the use of the specific-gravity table. At the end of a quarter, or three months, the supervisor can check the returns of this subordinate in a very accurate manner.

By the use of this invention it is evident that a very great saving will be effected in the collection of revenue, as the Government will not be at the mercy of interested parties in making returns. At the same time the honest distiller, who is in the habit of making correct returns, will be benefited, because the dishonest manufacturer is forced to do likewise, and therefore not able to undersell the honest man.

It is obvious that the details of our apparatus may be varied in many different ways, and we do not wish to confine ourselves, therefore, to the precise arrangement shown in the drawings.



We claim as new and desire to secure by Letters Patent—

1. The combination, with the revolving drum and pans, of suitable tappets acting on a weighted lever, and ratchets  $o o'$ , with detents  $q q'$ , all working together in the manner and for the purpose substantially as described.

2. The sample-cup  $f$  and sample-receivers  $h$ , in combination with the revolving drum and pans, constructed and operating substantially as and for the purpose set forth.

3. The cistern  $e$ , applied in combination with the revolving drum, sample-cup, sample-receiver, and registering mechanism, constructed

and operating substantially as and for the purpose specified.

4. The siphon-tube  $a^3$ , with stop-valve  $f^3$ , and tilting tube  $c^3$ , or its equivalent, in combination with the float  $e^3$  and chamber  $b^3$ , constructed and operating substantially as and for the purpose described.

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JOHN MURPHY.

WILLIAM MURPHY.

Witnesses:

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C. W. TAYLOR.