

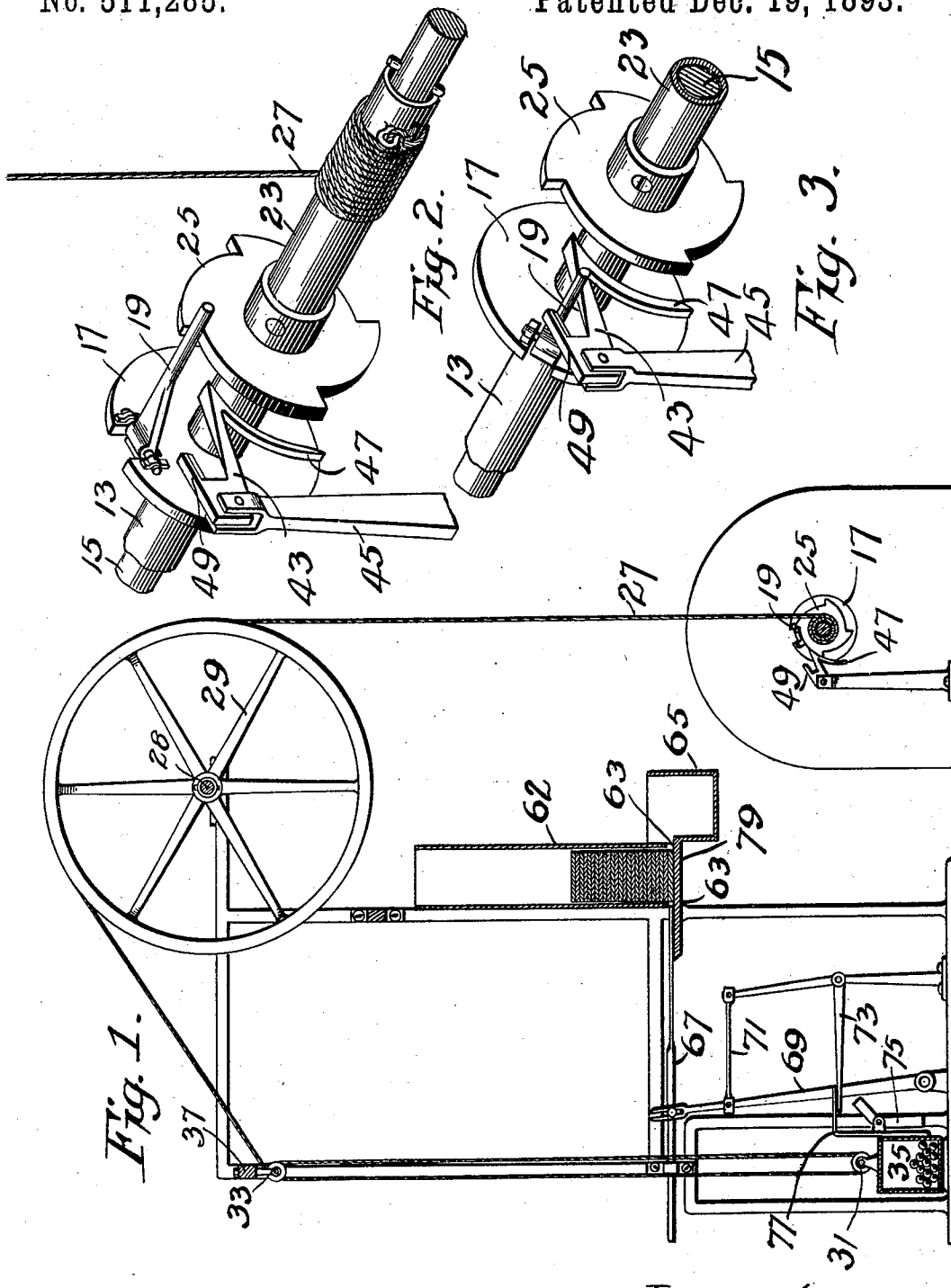
(No Model.)

3 Sheets—Sheet 1.

G. R. BECKWITH & W. F. McCOLLUM.
COIN OPERATED LUNG TESTER.

No. 511,285.

Patented Dec. 19, 1893.



Witnesses.

Chas. E. Van Doren

[Signature]

Inventors.

Grove R. Beckwith.

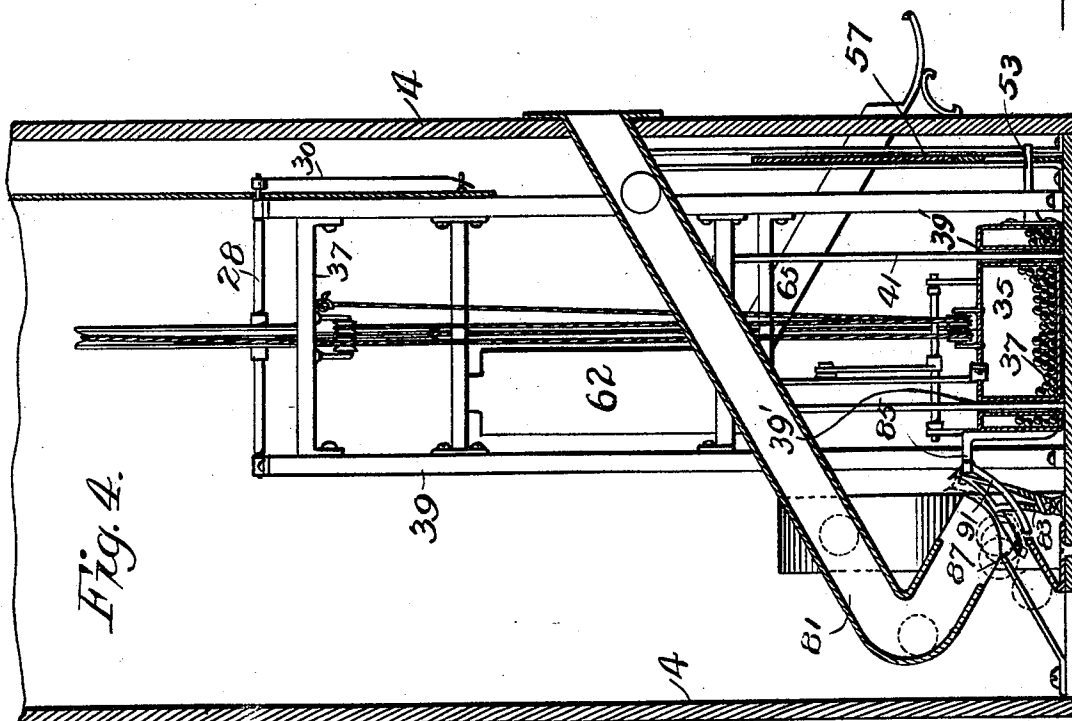
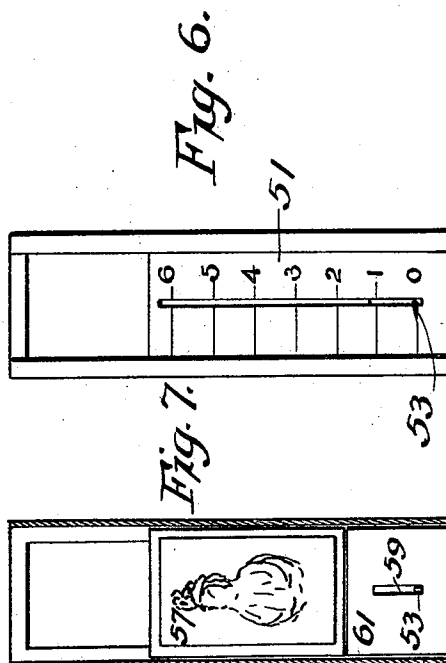
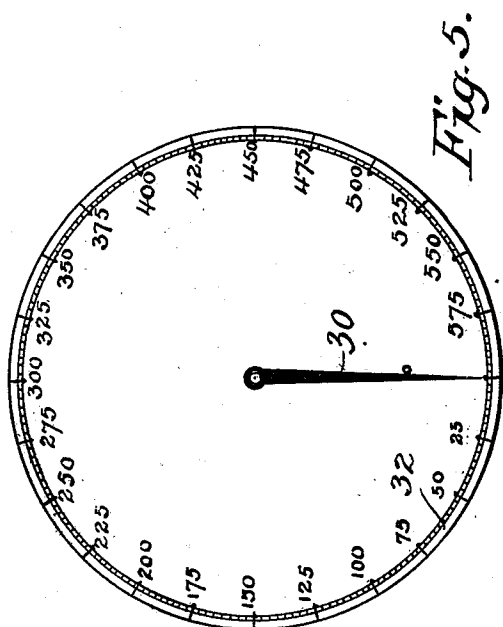
William F. McCollum.

By *Paul H. Hawley* Att'ys.

3 Sheets—Sheet 2.

COIN OPERATED LUNG TESTER.

Patented Dec. 19, 1893.



Witnesses,

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Inventors.

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William F. McCallum.

By Paul & Hawley Att'ys.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.)

3 Sheets—Sheet 3.

G. R. BECKWITH & W. F. McCOLLUM.

COIN OPERATED LUNG TESTER.

No. 511,285.

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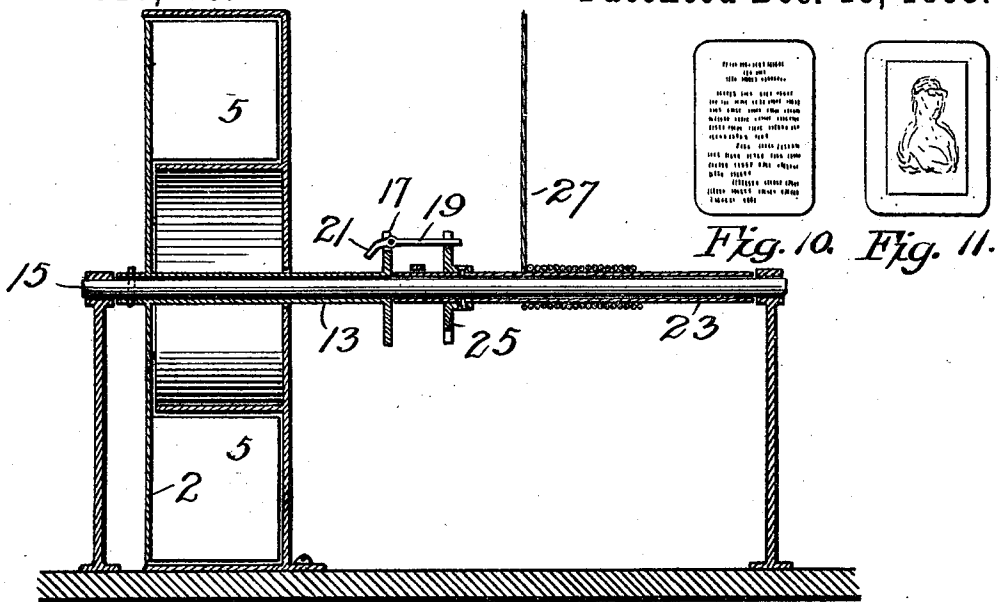


Fig. 8

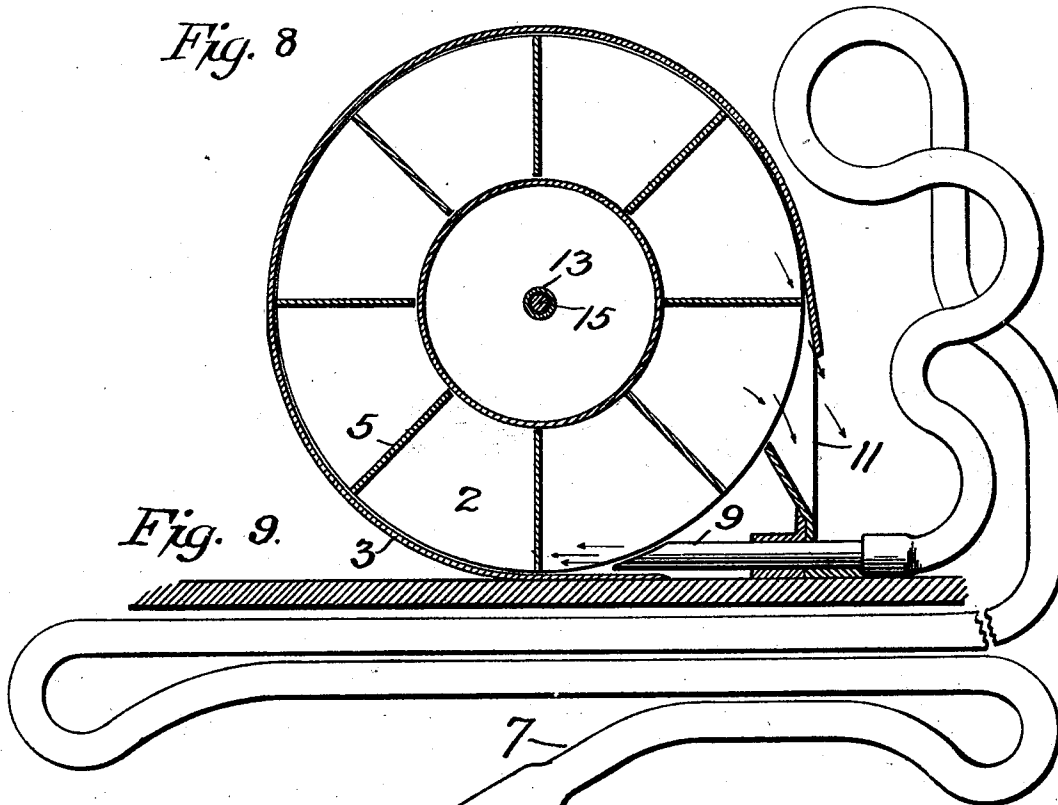


Fig. 9.

Witnesses.
Chas. E. Van Dorn
J. D. You

Inventors.
Grove R. Beckwith
William F. McCollum.
By Paul & Hawley Attys.

UNITED STATES PATENT OFFICE.

GROVE R. BECKWITH AND WILLIAM F. MCCOLLUM, OF MINNEAPOLIS,
MINNESOTA.

COIN-OPERATED LUNG-TESTER.

SPECIFICATION forming part of Letters Patent No. 511,285, dated December 19, 1893.

Application filed May 15, 1893. Serial No. 474,172. (No model.)

To all whom it may concern:

Be it known that we, GROVE R. BECKWITH and WILLIAM F. MCCOLLUM, both of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Coin-Operated Lung-Testers, of which the following is a specification.

This invention relates to improvements in devices designed to be put in readiness for operation by the insertion of a suitable coin; and the objects we have in view are to provide a machine of this class to be used for testing a person's lungs.

Another object is to provide a mechanism that upon the operation of the machine will exhibit a picture or photograph to the person operating the machine, and will also deliver a card upon which may be placed a picture and also suitable printed matter which may be of any suitable character.

The invention consists generally in the constructions and combinations hereinafter described and particularly pointed out in the claims, and will be more readily understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of our improved device with the outer casing removed. Figs. 2 and 3 are details of the mechanism for connecting the rotating drum with the movable weight. Fig. 4 is a partial sectional elevation. Fig. 5 is a view of the dial and pointer. Fig. 6 is a view showing the vertical scale and its pointer and showing also the space above the scale where the picture is exhibited. Fig. 7 is a detail showing the sliding plate carrying the picture. Figs. 8 and 9 are details of the rotating drum. Figs. 10 and 11 are details showing the card that is delivered by the machine.

In the drawings, 2 represents a drum or cylinder arranged in a suitable casing 3 and divided into a suitable number of compartments by means of the transverse partitions 5. This wheel is designed to be rotated by the air current by blowing through a suitable tube 7, the end 9 of which comes opposite the circumference of the drum in such position as to cause the air current to impinge upon one of the partitions 5 and thereby to rotate said

drum. As the air is blown into the compartment formed between any two of the partitions it is more or less compressed, and as the wheel revolves each compartment passes a suitable opening 11 in the casing through which the surplus air escapes, so that as each compartment is brought back to a position in front of the nozzle 9 the air therein is of normal density. The drum 2 is mounted upon a sleeve 13 that is secured upon a suitable shaft 15, and said sleeve has secured thereon a disk 17 provided with a pivoted arm or rod 19 extending parallel with said shaft. This arm is provided with the heel 21 which prevents the opposite end of the rod or arm from being raised too far from the shaft. Mounted upon the shaft 15 is a second sleeve 23 to which is secured the ratchet wheel 25. The arm 19 engages with one of the teeth of the ratchet wheel 25 and while so engaged the rotation of the shaft 15 and the sleeve 13 causes the sleeve 23 to be rotated therewith. The cord 27 has its end attached to and is adapted to be wound upon the sleeve 23, and said cord passes over a suitable wheel or pulley 29 and is connected by means of the pulleys 31 and 33, of which there may be any number, with the weight 35, the end of the cord being attached to the cross bar 37 of the frame 39. The weight 35 preferably consists of a suitable box within which a suitable number of shot 37 or other heavy substance is placed. This box is preferably provided with the guides 39' extending through it, and is adapted to slide vertically upon the guide rods 41. A safety dog or trip 43 is pivotally supported upon a standard 45 in close proximity to the sleeve 13. This trip is provided with the downwardly projecting curved arm 47 and with the straight projection or lug 49 at its upper part. As the shaft 15 and sleeve 13 are rotated by the force of the air current passing into the drum 2 the arm 19 remains in engagement with the ratchet wheel 25 and the sleeve 23 is rotated therewith and thereby the weight 35 is raised. As soon, however, as the air current ceases and the weight 35 reverses the movement of the sleeves 23 and 13, turning the disk 17 and ratchet wheel 25 backward and moving the arm 19 there-
with, the arm 19 now rides up over the upper

inclined surface of the trip 43 into the notch or space between the main portion of said trip and the lug 49. This causes the arm 19 to be disengaged from the ratchet wheel and permits the weight 35 to immediately descend to its lowest position, the cord 27 unwinding from the sleeve 23.

Upon the shaft 28 of the wheel 29 is preferably arranged a pointer 30, which moves over a suitably graduated dial 32, and the highest number to which the pointer moves in the rotation of the shaft 28 indicates the capacity in cubic inches of the lungs of the person using the machine.

In addition to the dial already shown, we also prefer to provide a scale 51 having a pointer 53 arranged to move over said scale, said pointer being attached to the weight 35. As the weight moves up the pointer moves over the scale. Arranged in the rear of said scale 51 is a slide 57 preferably having a picture or photograph thereon. This picture when the device is not in use is entirely concealed behind the scale 51. The pointer 53 passes through a slot 59 in a sliding plate 61 arranged below the slide carrying the photograph or picture. On the first movement of the weight the pointer moves in the slot 59 and does not raise the picture 57. As soon, however, as the pointer reaches the end of the slot 59 the picture begins to move upward and when the weight has reached its highest point the picture is fully displayed above the scale 51.

We also prefer to provide the receptacle 62 adapted to contain a number of cards, upon one side of which may be a suitable picture and upon the other may be a prophetic sentence or statement, or any other desired printed matter. The receptacle 62 is provided at its lower end with the slot 63 and in front of the exit slot is the inclined trough or way 65. An ejector plate 67 is arranged to move through the rear slot 63 in the receptacle 62 and push the lower card out of said receptacle into the chute 65 through which the card slides to the outside of the casing of the machine. This ejector is preferably connected to the pivoted lever 69 and said lever is connected by a rod 71 to the bell crank lever 73. Secured upon the weight 35 is the pivoted dog 75 provided with the outwardly projecting arm that engages the lower arm of the bell crank lever 73 as said weight is raised. The arm 77 is also preferably connected with the weight 35 and when the weight returns to its lowest position said arm 77 engages the bell crank lever 73 and draws down the lower arm of said lever and with- draws the ejector 67, thus permitting the cards to drop down onto the plate 79 which forms the bottom of the receptacle 62, in position for the next operation.

For the purpose of locking the weight at all times except after the coin has been inserted, we provide any suitable locking device that may be released upon the insertion

of a suitable coin. As here shown, we have provided a chute 81 through which the coin is inserted, and at the lower end of this chute is the pivoted dog 83 adapted to engage the weight 35 or a lug 85 thereon. This locks the weight 35 and prevents its being moved upward until the proper coin has been put into the machine. This dog is provided with the rearwardly extending loop 87 arranged directly below the end of the chute 81 so that when the coin passes through the chute it rests upon said loop 87 and the weight of the coin is sufficient to tip back the dog 83 until it disengages the weight. The dog 83 is preferably made double and the weight is provided with the curved arm 91 projecting between the two parts of said dog and beneath the space between the two parts of the loop 87, so that when the weight is moved upward this arm encounters the edge of the coin and throws said coin over the loop 87 and it then drops into a suitable receptacle. When the weight is returned to its lowest position the dog 83 engages said weight and again locks it in its lowest position.

It will be understood that the entire mechanism is designed to be inclosed in a suitable casing 4, a portion of which is shown in Fig. 4. Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with the rotating drum provided with a series of partitions, of the casing for said drum, the tube arranged to direct the current of air against the partitions in said drum, the weight arranged to be operated by the movement of said drum, a suitable scale, and a pointer operated by said mechanism, and a coin controlled locking device for said weight, substantially as described.

2. The combination, with the rotating drum provided with a series of compartments, of the casing containing said drum, the tube for directing a current of air against the partitions in said drum whereby said drum may be rotated, the movable weight, the cord connected to said weight and connected to a sleeve operated by said drum, an indicating mechanism operated by the movement of said weight, and a coin controlled locking device for said mechanism, substantially as described.

3. The combination, with the rotating drum, of the casing therefor, the tube for directing a current of air against the partitions in said drum, a suitable weight, means connecting said drum with said weight, and means for disconnecting the drum and weight when the air current is discontinued, substantially as described.

4. The combination, with the rotatable drum provided with the series of partitions, of the inclosing casing, the tube for directing a current of air against the partitions of said drum, the movable weight, means connecting said drum with said weight, a coin controlled lock-

ing device for said weight, and the slide carrying a suitable picture arranged to be displayed by the movement of said weight, substantially as described.

5 5. The combination, with the rotatable drum, of its inclosing casing, the tube for directing a current of air against the partitions of said drum, the movable weight, means connecting said weight with said drum, a coin-controlled mechanism for said weight, a card receptacle, and a card, ejector arranged to be operated by the movement of said weight, substantially as described.

15 6. The combination, with the rotatable drum provided with the series of partitions, of the tube for directing a current of air against the partitions of said drum, the shaft 15 provided with the sleeve 13 upon which said drum is mounted, the sleeve 23 also mounted upon 20 said shaft, the movable weight, the cord connected to said weight and mounted upon the sleeve 23, means connecting said sleeves 13 and 23 whereby they rotate together as said

drum is rotated, and means for disconnecting the sleeve 23 from the sleeve 13 when the air 25 current for rotating said drum is discontinued, substantially as described.

7. In a device of the class described, and in combination with the rotating drum and the movable weight, the sleeve 13 provided with 30 the disk 17, having the pivoted arm 19, the sleeve 23 having wound thereon the cord 27 by which said weight is moved, said sleeve being provided with the ratchet wheel 25, and the trip 43 provided with the curved arm 47 35 and the lug 49, and arranged to disengage the arm 19 from the ratchet 25 upon a backward movement of said sleeves, substantially as described.

In testimony whereof we have hereunto set 40 our hands this 8th day of May, 1893.

GROVE R. BECKWITH.

WILLIAM F. McCOLLUM.

In presence of—

A. C. PAUL,

J. S. INGALLS.