No. 608,326. Patented Aug. 2, 1898.

L. B. FIELDS.

SCRUBBING MACHINE.

(Application filed Oct. 11, 1897.)

(No Model.)

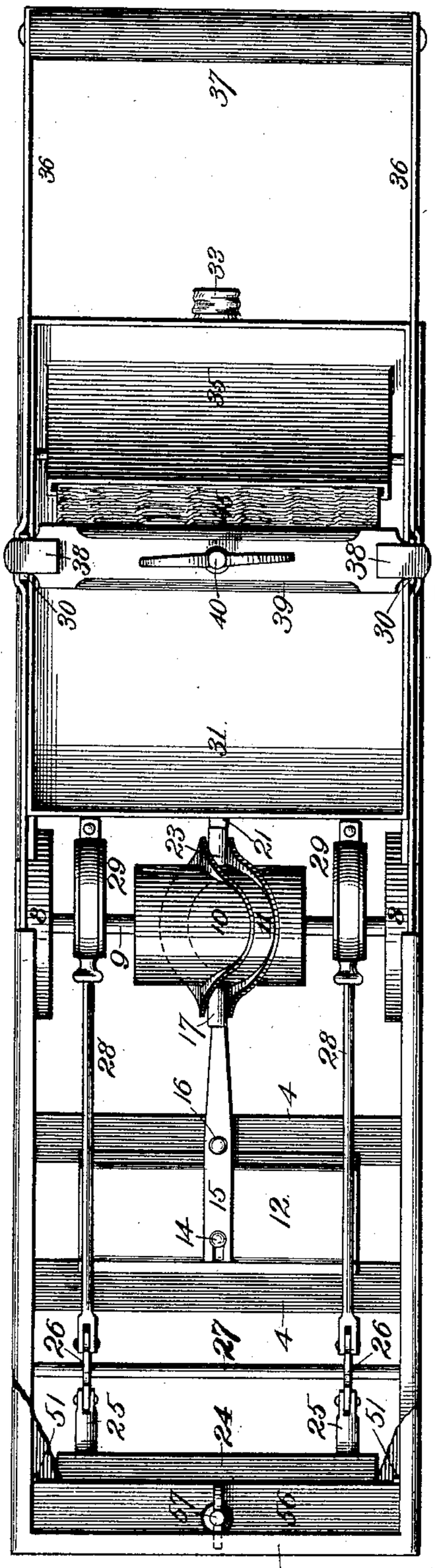

Fig. 1.

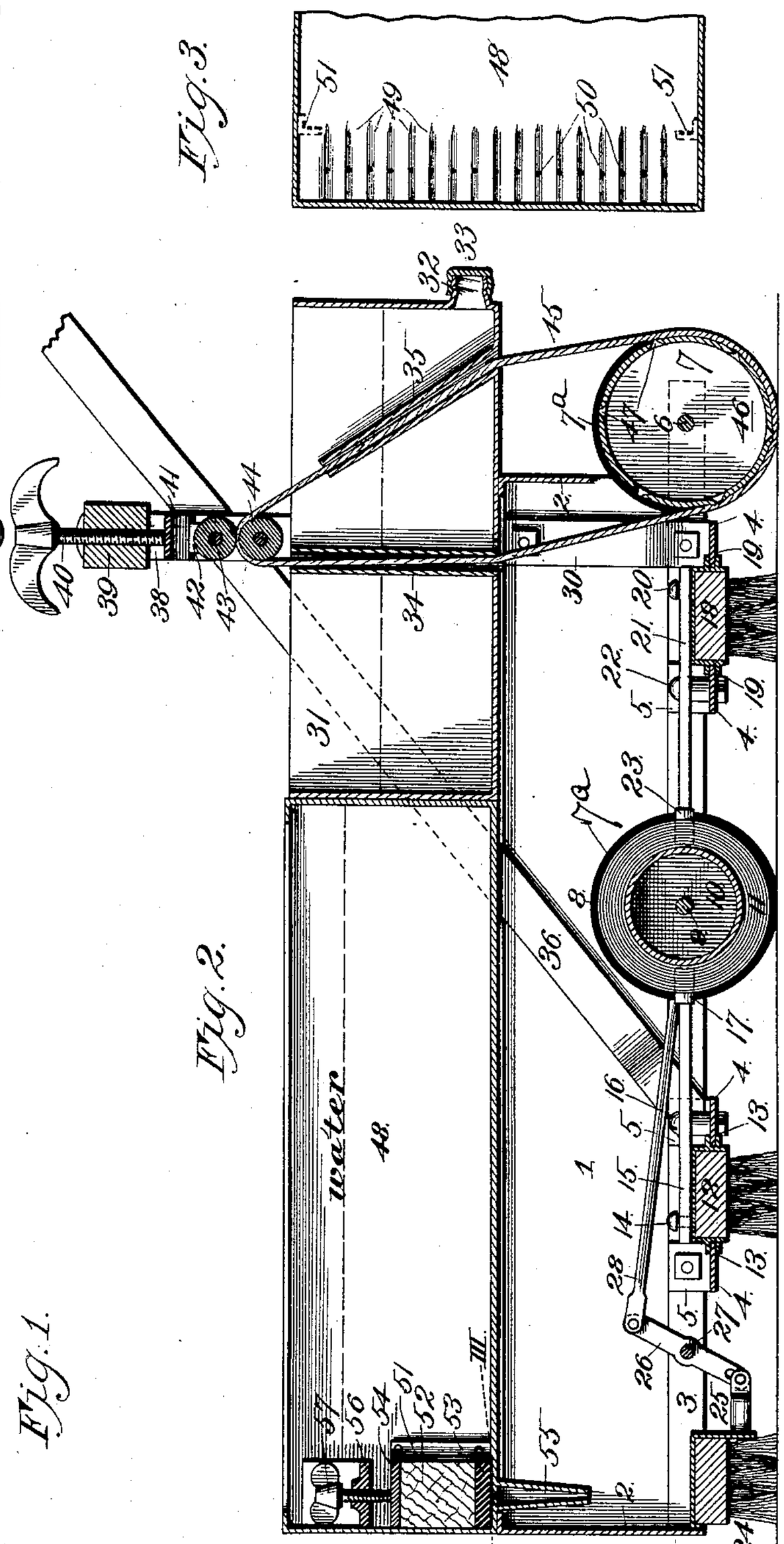

Fig. 2.

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UNITED STATES PATENT OFFICE.

LUCIEN B. FIELDS, OF KANSAS CITY, MISSOURI.

SCRUBBING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 608,326, dated August 2, 1898.

Application filed October 11, 1897. Serial No. 654,838. (No model.)

To all whom it may concern:

Be it known that I, LUCIEN B. FIELDS, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Floor Scrubbing and Mopping Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to floor scrubbing and mopping machines; and my object is to produce a machine of this character mounted upon wheels and adapted as it is propelled back and forth upon a floor to distribute water thereon and thoroughly scrub the floor and mop up said water.

A further object of the invention is to produce a machine of this character which is simple, strong, durable, and cheap of manufacture.

To these ends the invention consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described and claimed.

In order that the invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a top plan view of a floor scrubbing and mopping machine embodying my invention, the water-distributing tank of the same being broken away in order to disclose the mechanism below. Fig. 2 represents a vertical longitudinal section of the same. Fig. 3 represents a horizontal section taken on the line III III of Fig. 2.

Referring to the drawings in detail, a rectangular frame, open at top and bottom, comprises side walls 1 and end walls 2 and is constructed, by preference, of sheet metal. The side walls are strengthened at their inner lower margins by means of horizontal bars 3 and by transverse guide-bars 4, provided with upturned ends 5, bolted or otherwise secured to the bars 3, the same bolts being preferably employed to secure the bars 3 to the side walls, as shown. There are preferably two sets of these guide-bars, one in the front and the other in the rear end of the frame.

6 designates a shaft which is journaled in bars 3 at their rear ends, and 7 designates supporting-wheels (one only of which is shown) mounted upon said shaft near its opposite ends.

8 designates a second or companion pair of wheels, which are arranged about midway the length of the machine and are mounted upon and near the opposite ends of a shaft 9, journaled also in bars 3. The wheels 7 and the wheels 8 are provided with tires 7^a, of rubber or equivalent material, in order that they may travel upon the floor without injuring it, and yet engage it with sufficient friction to positively and reliably operate the scrubbing and mopping mechanism, which will be hereinafter described.

Mounted rigidly upon the shaft 9 at its middle is a grooved cam-wheel 10, its annular groove 11 being of such configuration that it will cause a pair of levers to operate synchronously in opposite directions.

12 designates a rectangular scrubbing-brush of the customary form and of width to fit snugly between the front pair of guide-bars 4 and of such length that it may reciprocate transversely a distance equal to the widest points of divergence of the cam-groove without striking the side walls of the frame. Said brush is also provided at its front and rear sides with the longitudinal grooves 13 snugly engaging the front set of guide-bars 4.

The pin 14, projecting upwardly from the brush midway of its length, engages the longitudinally-slotted end of a rock-lever 15, pivoted upon bolt 16, so as to oscillate in a horizontal plane, and provided with an antifriction-roller 17, engaging the cam-groove at the front side of the wheel 10. A similar scrubbing-brush 18 is provided with longitudinal grooves 19, engaging the rear set of guide-bars 4, and a pin 20, projecting upwardly therefrom, engages a lever 21, similar in all respects to the lever 15 and pivoted on a bolt 22. It is also provided with an antifriction-roller 23, engaging the groove of the cam-wheel at a point diametrically opposite the antifriction-roller 17 in order that said cam-wheel as it rotates may cause the brushes to reciprocate.

24 designates a third scrubbing-brush, which may in length almost equal the width of the frame and is located in advance of the brush 12. Said brush, near its opposite ends,

is provided with rearwardly-projecting arms 25, to which are pivoted at their lower ends the levers 26, mounted rigidly at their middle upon the rock-shaft 27, journaled in bars 3. The upper ends of said levers are pivotally connected to the rods 28, projecting from and actuated by the eccentrics 29, mounted upon the shaft 9, in order that the rotation of said shaft may cause the brush 24 to reciprocate longitudinally of the machine at the same time that the brushes 12 and 18 are reciprocating transversely thereof.

30 designates a pair of vertical and parallel standards which are secured rigidly to and project above the rear end of the frame, and 31 a tank which is mounted upon said frame and snugly between said standards. Said tank at its rear end is provided with a drain-hole 32, through which the soiled or dirty water may be drawn off, and 33 is a screw-cap normally closing said hole. The tank at a point in the plane of the front edges of the standards 30 is provided with a narrow vertical guide-tube 34, which is almost or may be quite as wide as the tank. Said tube, by preference, in height equals the depth of the tank and may extend clear through the same or may register with the slot in the bottom of the tank. A second tube 35, which also opens through the bottom of the tank and corresponds in width to the tube 34, extends upwardly and forwardly from said tank near its rear end, but terminates some distance from the upper margin of the tank.

36 designates a pair of parallel bars which are arranged with respect to the bars 3 and standards 30 at an angle of about forty-five degrees. At their lower ends they are secured to the bars 3, within the frame, and about midway their length they externally embrace the standards 30, so as to obviate any tendency of the same to spread or open outwardly, and said bars 36 are connected together by and carry at their upper ends the handle 37.

38 designates a pair of vertical extension-standards which are secured externally to the standards 30 and embrace externally the bars 36. They carry rigidly at their upper ends a cross-bar 39, in which is mounted the clamping-screw 40 for compressing the flat spring 41, and thereby forcing downwardly with a yielding pressure the boxes 42, slidingly mounted in the standards 30 and carrying the movable member 43 of a wringer, the other member or roll 44 being journaled in said standards vertically below the roller 43.

45 designates an endless mop, of cloth or other suitable material, which extends through the guide-tubes 34 and 35 and engages frictionally the roller 44 and the rotary drum 46, the latter being peripherally roughened, preferably by puncturing it, as shown at 47, in order that the rotation of said drum, which is mounted rigidly upon the shaft 6, may reliably cause the operation of said endless mop as the machine is pushed forward or pulled backward upon the floor, being handled in about the same manner as a lawn-mower.

48 designates a tank for distributing suitably-prepared water upon the floor at the front end of the machine, said tank being mounted upon the frame in advance of the tank 31 and between the bars 36 at its rear end, so as to be incapable of lateral movement at such point. At its front end it is provided with a series of shallow longitudinal grooves 49 and with apertures or perforations 50 about midway the length of said grooves. Just forward of the rear end of said grooves and secured vertically to the side walls of the tank are a pair of guide-flanges 51, between which and the front wall a device for regulating the quantity of water discharged is slidingly mounted, said device comprising a bar 52, provided with a rubber or equivalent base 53 and a metallic or equivalent top plate 54.

In order to provide a guide for the water descending through the apertures 50, I employ a depending spout 55, which serves chiefly, however, by fitting snugly between the side walls of the frame and against its front wall or a flange projecting inwardly therefrom, as shown in Fig. 2, to prevent lateral or forward movement of the tank 48, rearward movement being prevented by the tank 31, which preferably is riveted to the standards 30. By this arrangement it is obvious that to remove said tank from position it must first be lifted vertically some distance, which of course cannot occur accidentally.

When the tank 48 is distributing water upon the floor at its full capacity, the regulating device before described simply rests upon the bottom and bridges the grooves of the tank. When it is necessary or desirable to diminish the supply of water passing to the tank, pressure is applied upon the device, so as to compress the rubber base and cause it to project down into said grooves and thus diminish the quantity of water passing through them. The pressure applied may be sufficiently great to cause said rubber base to completely cut off the passage of water to said grooves when the machine is not being used. To apply this pressure in a simple and convenient manner, I secure a cross-bar 56 to the tank above the regulating device and mount therein a clamping-screw 57, which may be manipulated to produce the effect desired, as will be readily understood.

The operation of the machine will be obvious upon a close inspection of the drawings.

The prepared water is placed in the tank 48. The screw 57 is then manipulated for the purpose described and the machine propelled back and forth by means of the handle 37. The revolution of the supporting-wheels 7 and 8, as hereinbefore explained, causes the operation of the scrubbing-brushes upon the frame, and the endless mop, which trails after the

brushes as the machine is pushed forward, takes up the surplus water in the customary manner, and as it passes between the wringer-rolls 43 and 44 the soiled or dirty water is expelled and descends in a continuous sheet or stream into the tank 31 at the rear end of said rollers, but forward of the tube 35, which is terminated short of the top of said tank in order that the descending water will not flow back through it to the floor. As the mop emerges forwardly from between said rollers it is comparatively dry and descends through the tube 34 and becomes again saturated, this operation being repeated, of course, as long as the machine is in operation.

Owing to the fact that the wheels are located within the frame and that the stroke of the laterally-reciprocating brushes is almost equal in length to the width of the machine, it is obvious that the floor may be effectually scrubbed to within about an inch of the walls, so that very little hand scrubbing will be necessary where one of my machines is employed, and a great saving in time and labor will be made possible.

It is to be understood, of course, that changes in the detail construction or arrangement of parts or the substitution of equivalents will not be considered a departure from the spirit and scope of my invention.

Having thus described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a floor scrubbing and mopping machine, a wheeled frame, a series of scrubbing-brushes mounted therein and in contact with the floor, a tank supported upon said frame and provided with guide-tubes extending upwardly thereof, a wringer above said tank, a guide-drum, an endless mop extending through said guide-tubes, said wringer, and around said drum, and means to synchronously operate said brushes and said mop, substantially as described.

2. In a floor scrubbing and mopping machine, a wheeled frame, scrubbing-brushes mounted therein and in contact with the floor, means for operating said brushes, a water-supply tank upon said frame and provided with grooves and perforations in its base, a vertically-adjustable water-regulating device, having a compressible base, and means for applying more or less pressure upon said device, substantially as and for the purpose described.

3. In a floor scrubbing and mopping machine, a wheeled frame, a wringer supported thereby, a tank carried below the wringer and provided with guide-tubes, an endless mop extending through said tubes and said wringers and in continuous contact with the floor, and means to operate said mop, substantially as described.

4. In a floor scrubbing and mopping machine, the combination of a wheeled frame, standards projecting upwardly therefrom, bars secured to said frame and embracing externally said standards near their upper ends and connected by a handle, a water-distributing tank mounted upon the frame between said oblique bars and provided with a depending portion fitting snugly between the side walls and against the front wall of the frame, a water-receiving tank upon the frame at the rear side of the distributing-tank and externally embraced by the oblique bars and the standards, scrubbing-brushes geared to one set of the supporting-wheels of the frame, a drum geared to the other set of supporting-wheels, a wringer mounted in said standards above the receiving-tank, and an endless mop extending through said wringer and around said drum, substantially as shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

LUCIEN B. FIELDS.

Witnesses:
M. R. REMLEY,
G. Y. THORPE.