

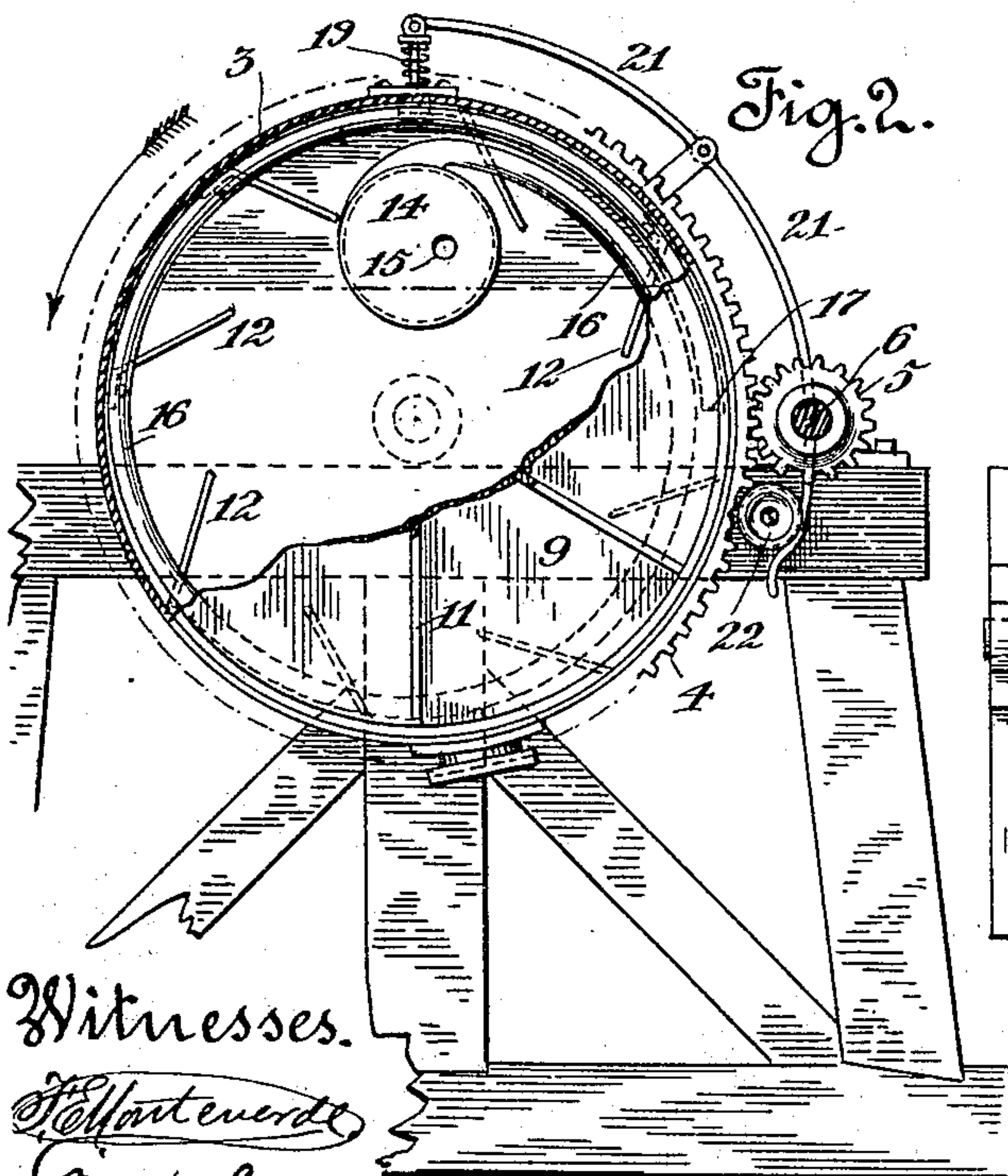
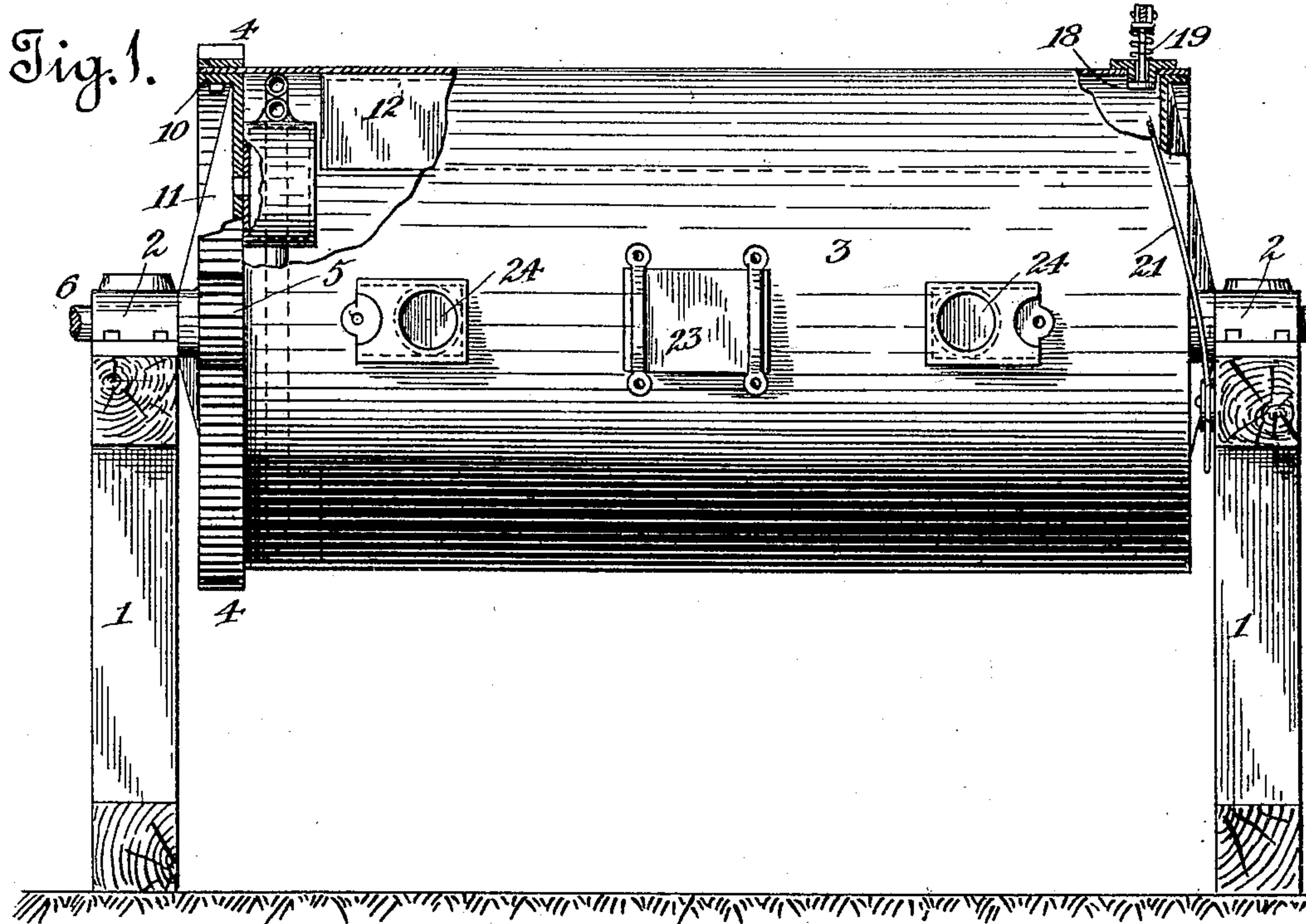
No. 764,870.

PATENTED JULY 12, 1904.

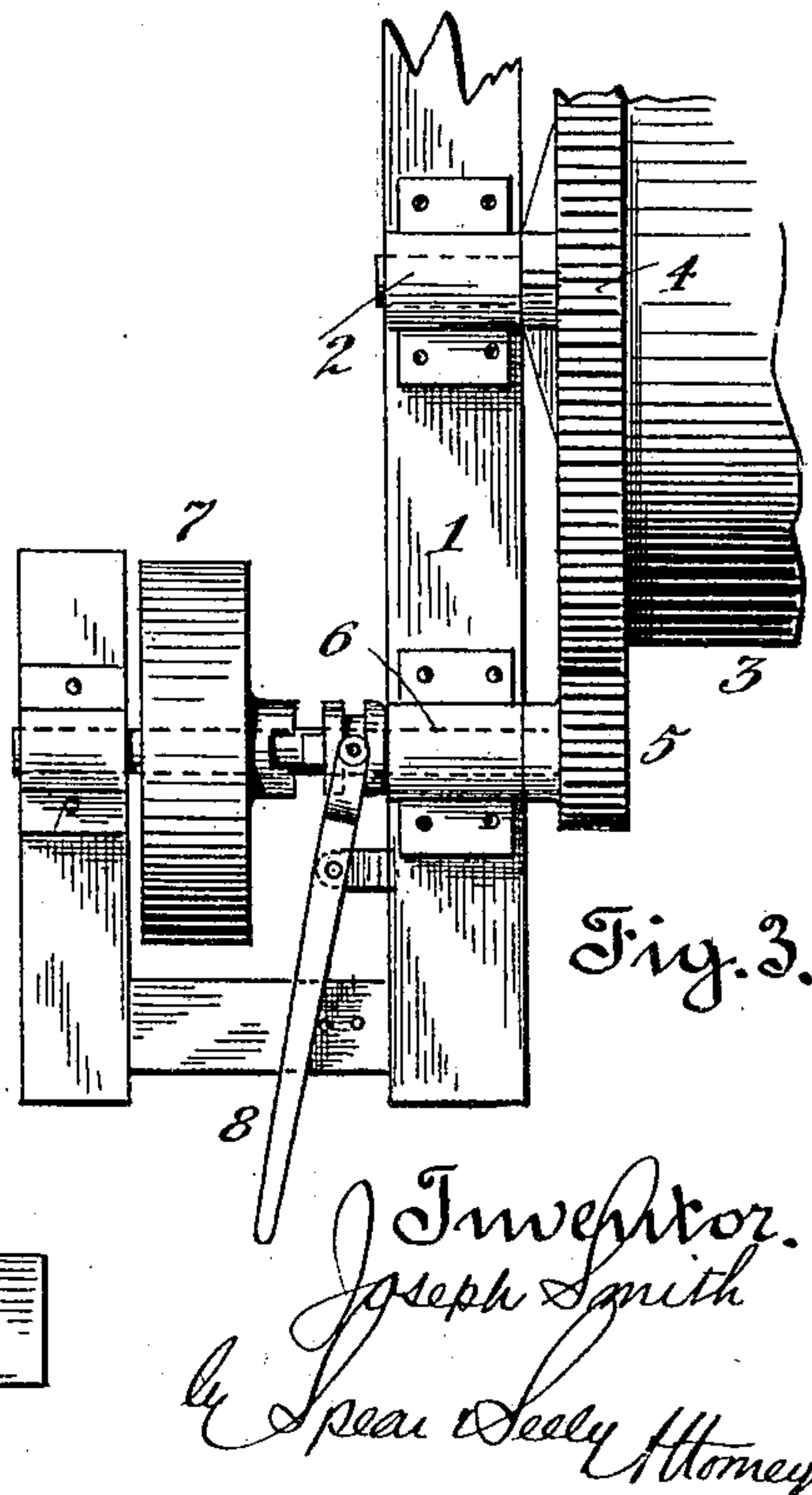
J. SMITH.
ROTARY AGITATOR.

APPLICATION FILED JULY 17, 1903. RENEWED JUNE 15, 1904.

NO MODEL.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH SMITH, OF SAN FRANCISCO, CALIFORNIA.

ROTARY AGITATOR.

SPECIFICATION forming part of Letters Patent No. 764,870, dated July 12, 1904.

Application filed July 17, 1903. Renewed June 15, 1904. Serial No. 212,731. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SMITH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Rotary Agitators, of which the following is a specification.

My invention relates to the treatment of ores for the recovery of values by the cyanid process, and particularly to the treatment of such material which along with heavy gold and silver precious particles contains other heavy matter, such as iron sulfids, iron pyrites, baryta, and the like. Such ores are frequently too heavy to be worked by ordinary methods of extraction in upright apparatus, because the great specific gravity of the material continually causes them to sink to the bottom and clog the machinery.

My invention is designed to apply a horizontally-set rotary apparatus to the cyaniding process and involves special features of construction particularly applicable to that method of recovery.

I have shown in the accompanying drawings an embodiment of my invention which is fully hereinafter described.

Figure 1 is a side elevation. Fig. 2 is an end elevation partly broken away to show a cross-section. Fig. 3 is a detail view to illustrate the driving.

Throughout the drawings, 1 represents a supporting-frame, and 2 2 are bearings therein in which is journaled the barrel, tank, or receptacle 3. This receptacle can be of any shape in cross-section, such as square, polygonal, or round; but I prefer to make it circular and have so shown it in the drawings. It may be constructed of wood, metal, or any suitable material. At one end this receptacle is provided with a gear 4, which is slowly revolved by a pinion 5 on a shaft 6. Any suitable clutch, such as that shown in Fig. 3, can be slidably mounted on the shaft 6 and can be thrown into and out of engagement with a loose pulley 7, so that by means of a clutch-shifter 8 motion can be imparted to the receptacle or can be caused to cease. The heads 9 of the receptacle are flanged, as shown at 10,

and are preferably provided with strengthening-ribs 11. The receptacle is supposed in this case to revolve with the arrow in Fig. 2. Within the receptacle and firmly secured thereto substantially tangent to its internal periphery are shelves, riffles, or agitators 12, which extend inwardly at an angle to any radius of the rotating structure. As the barrel revolves in a vertical plane these agitators enter, pass through, and lift the material in the receptacle, carrying portions of the material partly around and then dropping it as the angle to the perpendicular decreases. This with the rotary motion of the receptacle insures a thorough turning over and mixing of the material with the solution and the complete permeation of the former by the latter, and though the material is heavy and tends to settle and concentrate at the bottom every part of it is exposed to the action of these agitators, and there is no opportunity for clogging. Some or all of the agitators can be provided with perforations, if desired; but I do not consider this essential to a proper working of average material.

The necessary supply of oxygen is provided for, without danger of leakage from the receptacle, by an air-trap 14, which is a chamber preferably supported in proximity to one of the ends of the receptacle or tank and having an opening 15 to the atmosphere. From this chamber leads a coil of pipe 16, which is shown as of a length greater than the circumference of the barrel and terminating with an open end at 17. During the revolution of the tank air is drawn in to mingle with the solution, the open end of the pipe dragging through the mass and supplying such air directly to and through it. In case the discharge of air should be excessive, and in order to relieve the structure of gases generated in the interior, I have provided a relief-valve 18, which I have shown as opening downwardly, its stem passing through the shell of the tank and the valve being seated by a spring 19. This valve can be automatically operated in any suitable way. I have shown a lever 21 pivoted to the rotary tank and hinged at one end to the valve-stem. The free end of this

lever is so bent as to lie in the path of a roller 22 on the supporting-frame, so that at each revolution the valve is unseated and a vent formed for the outlet of air, gases, &c.

5 I have shown in Fig. 1 a filling-opening for the tank having a cover 23 and discharge-outlets having gates 24, by which such openings can be regulated as to size.

10 I do not limit myself to the precise constructions and arrangements herein described, and shown in the drawings, as I desire to avail myself of such modifications and equivalents as fall properly within the spirit of my invention.

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

20 1. A cyaniding-tank mounted so as to be capable of revolution in a vertical plane and provided with interior agitating devices, and provided with an interior air trap or chamber

open to the atmosphere and to the interior of the tank.

2. A rotary cyaniding-tank, in combination with an interior air-chamber open to the at- 25 mosphere, and a pipe leading from said chamber and terminating with an open end within the tank.

3. A rotary cyaniding-tank provided with interior agitating devices, and with an air- 30 trap, and provided with a relief-valve.

4. A rotary cyaniding-tank provided with interior agitating devices, and with an air- trap, and provided with a relief-valve, and 35 means for automatically operating the same.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 7th day of July, 1903.

JOSEPH SMITH.

Witnesses:

F. M. BURT,
L. W. SEELY.