F. A. BROWNE.

TANDEM ROLLER.

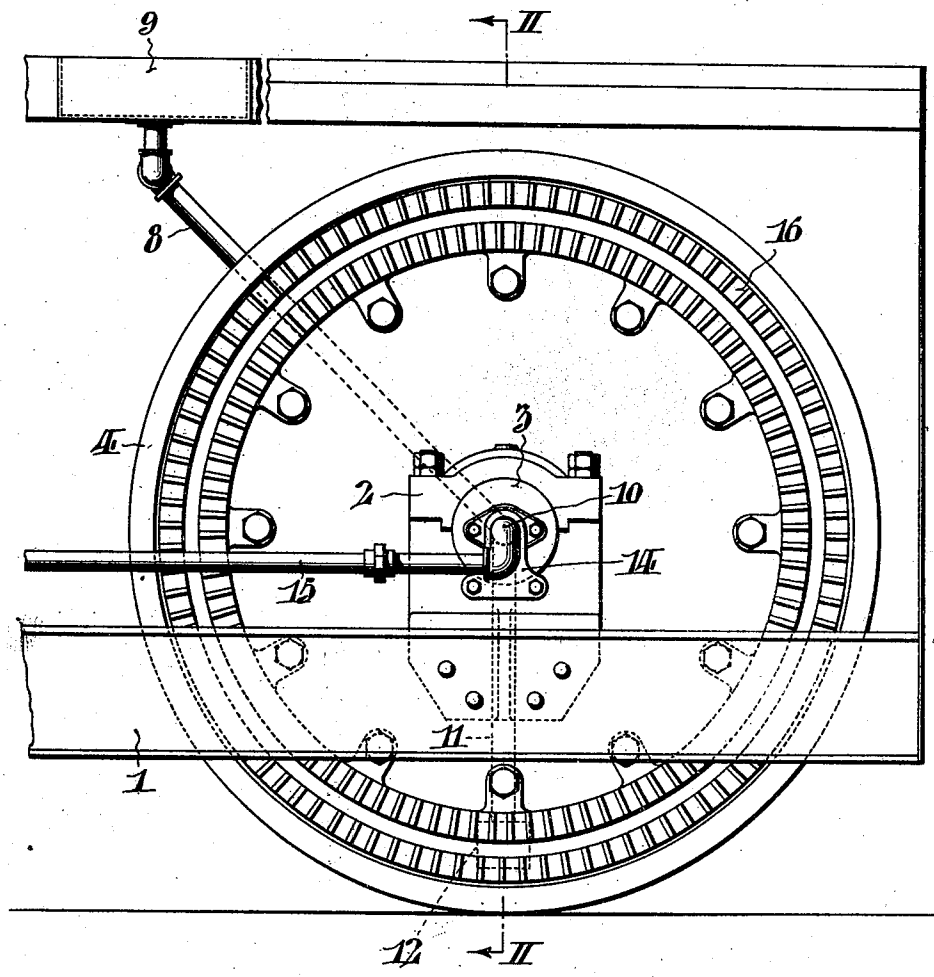
APPLICATION FILED NOV. 18, 1916.

1,421,665.

Patented July 4, 1922.

2 SHEETS—SHEET 1.

FIG. I.



Witnesses
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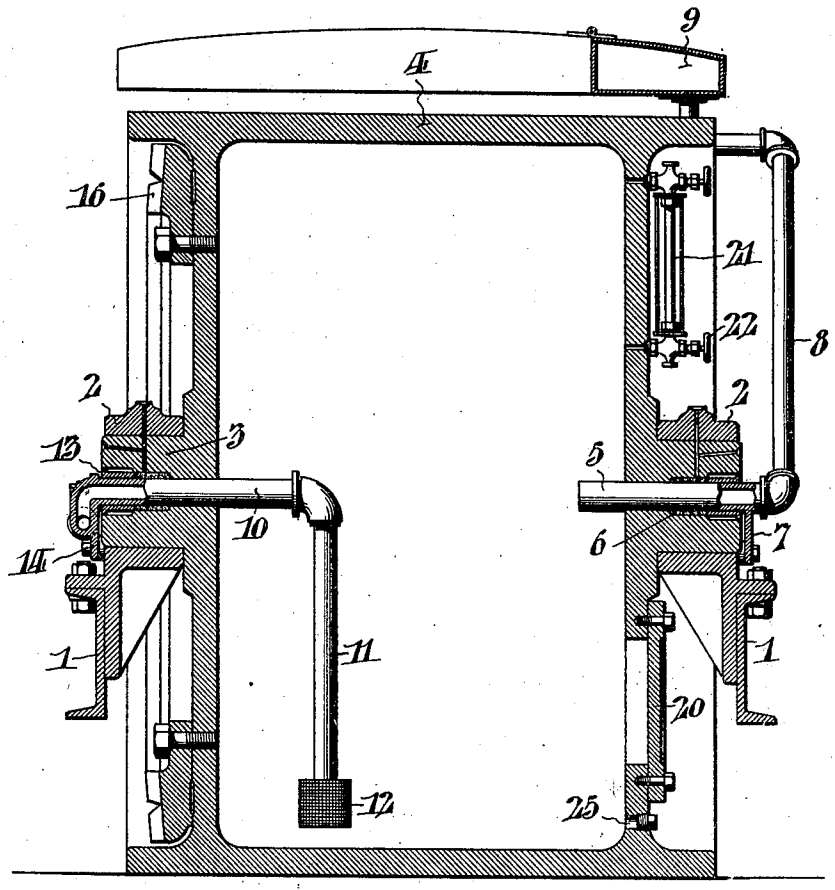
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2 SHEETS—SHEET 2.

FIG. II.



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UNITED STATES PATENT OFFICE.

FRANK A. BROWNE, OF BUFFALO, NEW YORK, ASSIGNOR TO THE BARBER ASPHALT COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF WEST VIRGINIA.

TANDEM ROLLER.

1,421,665. Specification of Letters Patent. Patented July 4, 1922.

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To all whom it may concern:

Be it known that I, FRANK A. BROWNE, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Tandem Rollers, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to the utilization of the roller or rollers of a tandem roller, as the receptacle for the water or fuel which is used to drive the steam engine or motor. My device is equally applicable to a steam-driven roller, in which case water is thus stored, or to a vehicle driven by a motor using any form of liquid fuel which may be similarly stored. It is particularly applicable to tandem rollers, such as are employed for rolling asphalt pavements for purposes of construction and maintenance.

According to my invention the roller is mounted on trunnions, through which are provided axial pipe connections, whereby water or other liquid may be continuously fed into and withdrawn from the interior of the roller as it rotates.

According to my construction, the machine carries a storage receptacle for liquid, in addition to the further receptacle provided by the hollow roller, which latter is always kept completely filled with liquid which is supplied to it from the storage receptacle, as rapidly as it is withdrawn for purposes of consumption, either as steam or fuel. There are several advantages in thus maintaining the roller continuously filled with liquid. One purpose of the roller being to continuously absorb heat from a newly constructed asphalt surface, it is found that the high specific heat of the liquid in the roller accomplishes this better, preventing overheating of the roller, which occasions sticking of the asphalt thereto. It is further advantageous in the case of a steam-driven tandem roller to thus partially preheat the water before injecting it into the boiler.

A roller containing water as ballast has long been known, but the importance of maintaining the roller completely filled with the liquid, has not been appreciated. If but partially filled the motion of the roller occasions constant swaying of the liquid within the roller. This places objectionable strains upon the axle of the roller and occasions uneven rolling of the pavement. My invention is especially designed to overcome these difficulties.

In the acccompanying drawings, Fig. I, is a side elevation of the rear roller of a tandem roller, certain adjoining parts being also shown.

Fig. II, is a central vertical section along the line II, II, of Fig. I.

I have shown my invention as applied to the rear or driving roller of a tandem roller, but it is to be understood that it is not thus limited. The side frame 1, carries the journals 2, in which rotate the trunnions 3, of the hollow metal roller 4. Upon one side of the roller is bolted the bevel gear 16, by means of which it may be driven. The trunnions of the roller do not extend across the axis of the roller in the form of an axle, but the interior of the roller is left free for the pipe connections which I will describe.

On one side of this roller, (being the right hand side of Fig. II), the trunnion 3, is centrally pierced for the reception of the non-rotating feed pipe 5, which fits closely within the rotating trunnion, any escape of fluid being prevented by means of a stuffing box 6. The pipe 5, is affixed to a plate 7, mounted on the side frame 1, and thus held from rotation, notwithstanding the rotation of the roller. Exteriorly it is connected by pipe 8, to any suitable source of fluid supply, as for example, the covered storage receptacle 9, which may be filled from a hose or bucket.

On the opposite side of the roller the trunnion is similarly pierced centrally for the reception of the non-rotating exit or suction pipe 10, which is provided within the roller with a downward projection 11, extending vertically to its opening near the bottom of the roller. This opening is protected by a strainer 12. Where the pipe 10, passes through the trunnion it is protected by a stuffing box 13. Exteriorly to the trunnion, the pipe 10, is affixed to a plate 14, bolted or otherwise attached to the side frame 1, of the machine, whereby it is held in stationary position with the downward projection 11, always reaching vertically to near the bottom of the roller, notwithstanding the constant rotation of the same. Beyond the plate 14, this exit pipe connects with a suction pipe 15, which passes to a feed pump or injector, as the case may be, whereby water or fuel oil

or other liquid occupying the interior of the roller may be continuously withdrawn from the roller during its rotation. The pipe 5, admits fluid to the interior of the roller at all times, to take the place of that drawn out through the pipe 10, so that the roller is at all times completely filled.

The roller may be provided with a manhole 20, and also with a water gauge 21, with a pet cock 22, for air release, the two latter being useful in connection with the initial filling of the roller, while the former is useful for cleaning purposes. There may also be provided near the bottom of the roller a plugged opening 25, for filling from a pipe line or for draining the interior of the roller. The passages 30, and 31, are provided for lubrication of the trunnions, and the pipes 5, and 10, which run through them axially.

Having thus described my invention, I claim:

1. In a tandem roller, the combination of a completely closed hollow steam engine-driven roller, with axially pierced trunnions, a storage receptacle for water for the steam engine, and pipe connections communicating with the interior of the roller only through the axis of each trunnion, one of which communicates with the storage reservoir, so that withdrawal of water through the other connection from the roller to supply the engine, occasions replacement thereof by a similar amount of water drawn by the first mentioned connection from the storage reservoir, thus keeping the roller continuously filled with water.

2. In a tandem roller, the combination of a liquid reservoir for its prime mover; a hollow roller; and fixed axial pipe connections, one at either side, fitting the roller so closely as to maintain its interior water-tight notwithstanding movement of the roller; one of said pipe connections communicating with the storage reservoir and the other with the prime mover, so that liquid will be continuously fed from the storage reservoir through the completely filled roller to the prime mover as needed for consumption without altering the center of gravity of the roller.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this eleventh day of November, 1916.

FRANK A. BROWNE.

Witnesses:
ARTHUR L. ROBINSON,
JAMES L. BLAKE.