(No Model.) 3 Sheets—Sheet 1.

W. O. NIGHTENGALE.

OILING DEVICE FOR ROAD ROLLERS.

No. 598,206. Patented Feb. 1, 1898.

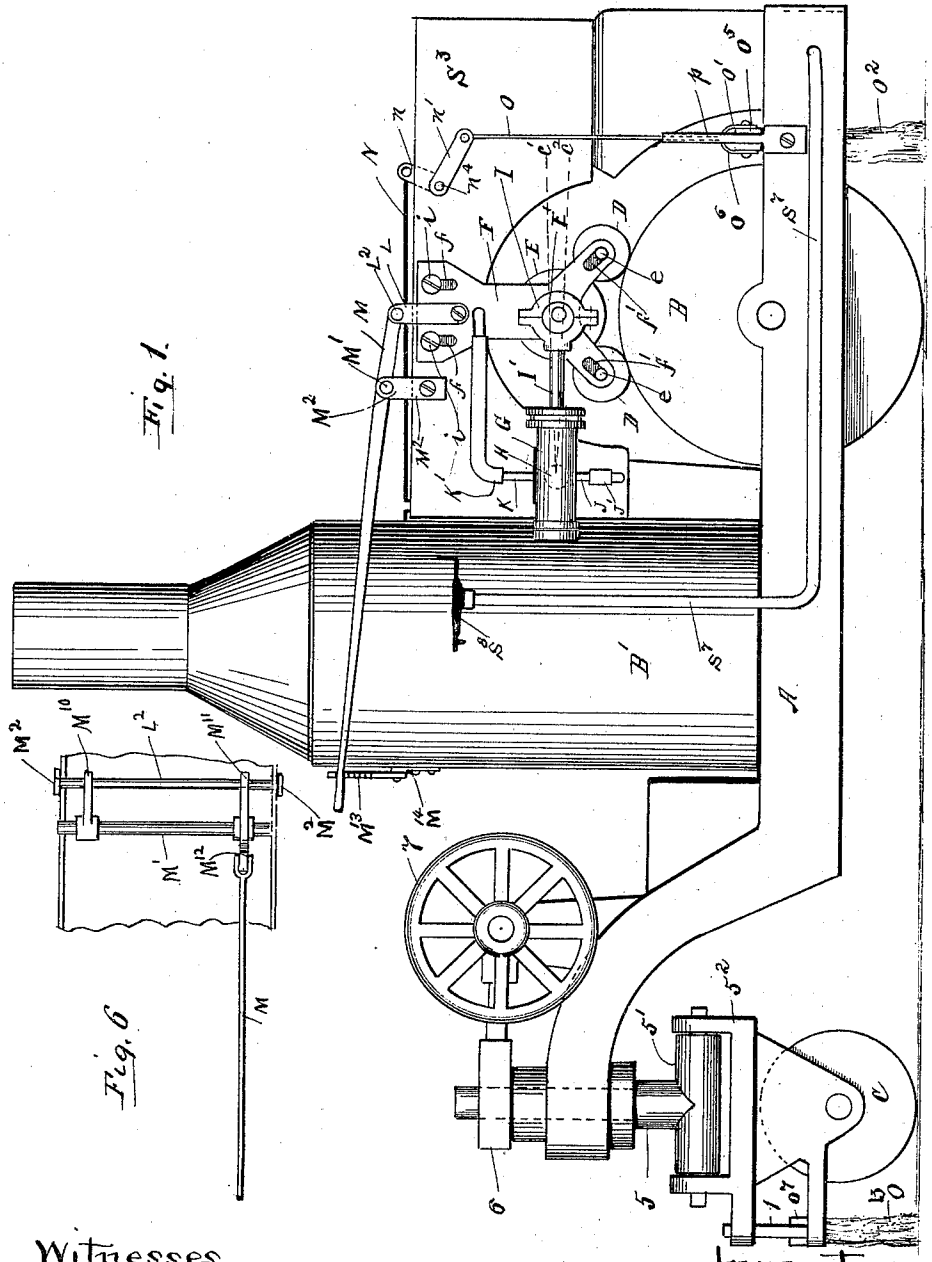


Fig. 1.

Fig. 6.

Witnesses,
Geo. F. Godley
Corwin A. Patton.

Inventor.
William O. Nightengale
by
Homer A. Nerr.
atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

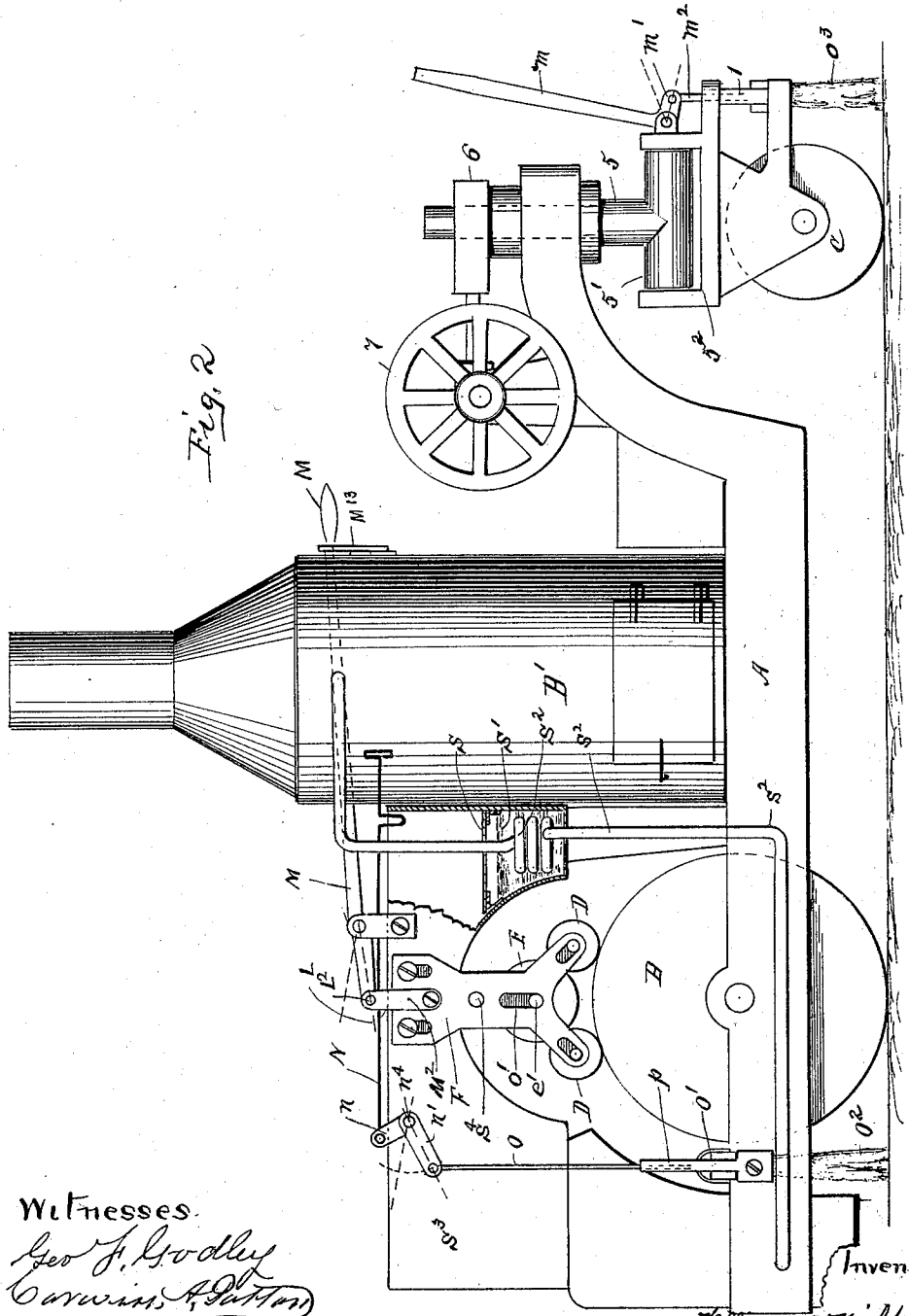
(No Model.) 3 Sheets—Sheet 2.

W. O. NIGHTENGALE.

OILING DEVICE FOR ROAD ROLLERS.

No. 598,206. Patented Feb. 1, 1898.

Fig. 2.



Witnesses.
Geo. F. Godley
Carroll A. Patton

Inventor.
William O. Nightengale,
by Homer A. Hertzler
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 3.

W. O. NIGHTENGALE.

OILING DEVICE FOR ROAD ROLLERS.

No. 598,206. Patented Feb. 1, 1898.

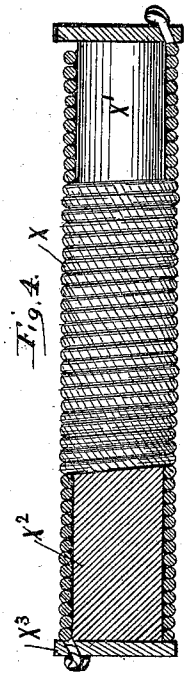


Fig. 4.

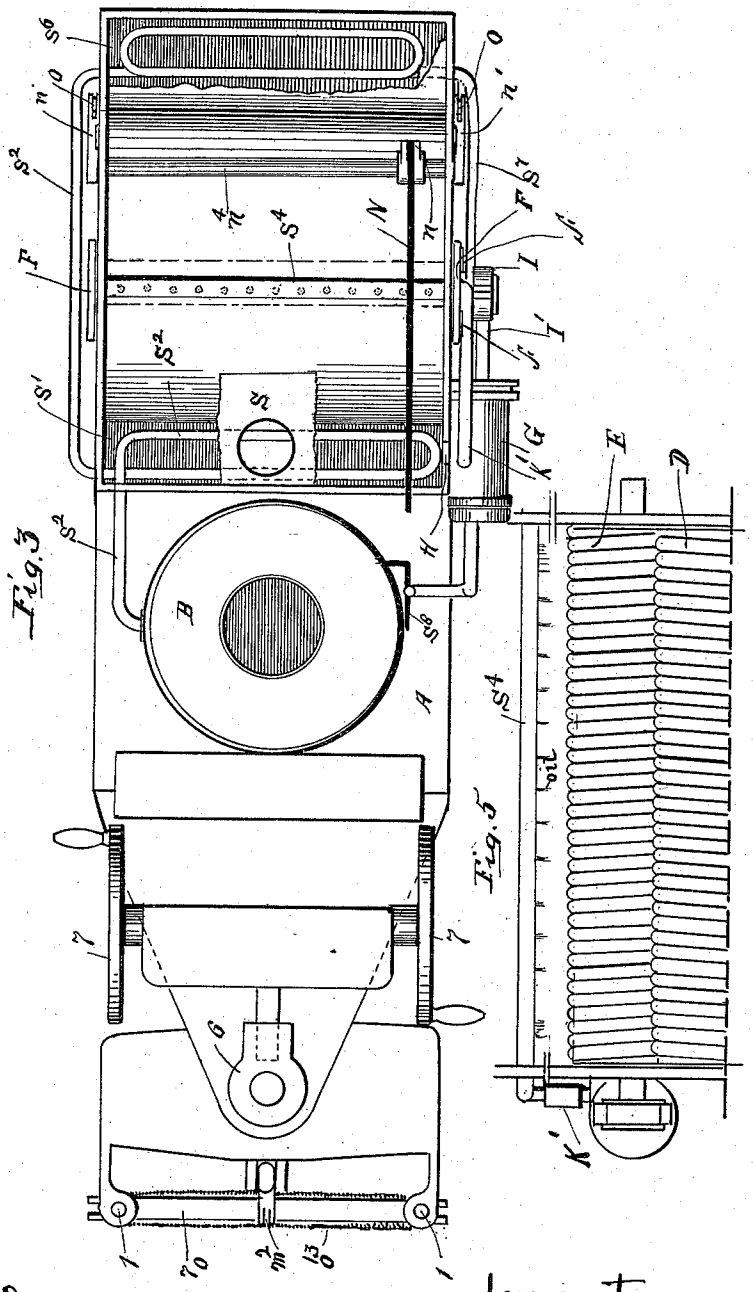


Fig. 3.

Witnesses,
Geo. F. Godley
Lorain A. Patton,

Inventor.
William O. Nightengale,
by
Homer A. Hero,
atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM O. NIGHTENGALE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE ALCATRAZ PAVING COMPANY, OF SAME PLACE.

OILING DEVICE FOR ROAD-ROLLERS.

SPECIFICATION forming part of Letters Patent No. 598,206, dated February 1, 1898.

Application filed June 17, 1897. Serial No. 641,139. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. NIGHTENGALE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Oiling Devices for Road-Rollers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has reference to road-rollers; and it consists of features fully set forth in the following specification and accompanying drawings, forming part thereof. It belongs more specifically to oil devices for road-rollers, and has for its object an improved and efficient means for effectively lubricating the circumferential surface of the road-contact roller, thereby preventing the adhering of the asphalt or any other substance to the surface of the aforesaid roller.

It consists of a roller or series of rollers normally in contact with the circumference of the pressure-roller and an oil feeding and distributing roller contacting with said roller or rollers longitudinally on their circumferential face or surface. In combination with these rollers I provide an oil feeding and distributing means consisting of a perforated pipe and adapted to drop and distribute the oil longitudinally on the outer surface of the aforesaid oil-distributing roller. I also provide an automatically-actuated oil-feeding pump, whereby the oil is delivered from its reservoir to and through the aforementioned oil-distributing pipe. I further provide means for heating the oil prior to its entering the pump, thus facilitating its distribution and the general effectiveness of the machine. I also provide sweepers, one forward and one rearward, designed to perform the function implied by their means and means for raising and lowering the same.

Other specific features of my invention will be described more at length hereinafter.

In the drawings like parts are referred to by marks or figures of a corresponding kind in the different views.

Figure 1 is the left side elevation of my roller or of a road-roller having my device applied thereto. Fig. 2 is a right side elevation of the same. Fig. 3 is a plan. Fig. 4 shows the manner of wrapping my oil-distributing rollers, being part longitudinal section and part side elevation. Fig. 5 shows the manner in which the oil-feeding pipe distributes the oil over the oil-feeding roller. Fig. 6 is a plan reduced to a smaller scale, showing a modified way of actuating my roller-bearing vertically.

A, Figs. 1 and 2, is the supporting bed-frame for the entire mechanism of the machine.

B′ is the boiler.

B is the road-contact or pressure roller proper.

C is the forward steering-roller, adapted to be oscillated on a longitudinal line medial to the machine and controlled in such movements by the steering apparatus 5^2, 5′, 5, 6, and 7 in the well-known way.

D D are the oil-distributing rollers, contacting with the pressure-roller B. E is the primary oil-feeding roller for said rollers D D and is in frictional contact therewith. These rollers are all supported by the lateral frames F, one on each side of the machine. They are provided at their upper ends with slots *f f* and are supported against the sides of the machines by screw-studs *i i*, passing through the said slots. The slots *f′ f′* serve as bearings for journals for the axles *e e* of the intermediate oil-distributing rollers D D, thus permitting the said rollers to accommodate themselves to irregularities of or on the outer face of the pressure-roller B, and the slot O′, Fig. 2, in sympathy with any such movement to the rollers D D, will likewise permit its journal *e′* to so accommodate itself.

While I show two rollers as oil-feeding rollers, I of course do not restrict myself to the use of two. I might use more or I might use but one.

There are two of the roller-supporting frames F, as stated. In structure and function they are identical. At their upper end they carry a link L, pivoted thereto at L′ and pivotally connected with a cross-rod L^2, Figs. 1 and 2, only. This cross-rod has attached to it a handle M, pivotally supported on the rod M′, itself held by suitable standards M^2. The handle M is under the control of the en-

gineer in charge of the machine, and is adapted to be operated by him while on the platform on which he normally stands. In Fig. 3 I do not show the handle M nor rod L^2, as so showing would interfere with properly showing the plan view of my oil-distributing pipe in that figure. It is evident that when I wish to disengage the oil-distributing rollers from contact with the roller B, I merely place my hand on the end of the handle M and by pulling down thereon the frame F, with the rollers D D and E, which it carries, is raised, thereby disconnecting the rollers D D from the pressure-roller B, and thus stopping the feeding and distributing of the oil over the surface thereof.

The manner in which I distribute the oil from the oil-reservoir S′, Figs. 2 and 3, to the pipe S^4 is as follows:

G, Fig. 1, is an oil-pump. This pump does not differ structurally from an ordinary force-pump. Therefore no structural details are shown. It is supported oscillatably to the side of the machine by a trunnion H, Figs. 1 and 3 only.

J is the pipe, connecting with the inlet-valve chamber, and J′ is a flexible portion thereof. K is the pipe connecting with the outlet-valve chamber, and K′ is a flexible portion thereof. These flexible oil-conducting members permit of an oscillating pump without obstructing their function as conductors for the oil.

I is the pump-actuating eccentric, Figs. 1 and 3, which, through the rod I′, communicates a reciprocal motion to the piston of the pump within the pump-cylinder.

S′ is the oil well or reservoir, with which the oil-conducting-pipe J is connected.

S^4 is the oil-distributing pipe, distributing the oil longitudinally over the cylinder E. (Best shown in Figs. 3 and 5.)

The power to actuate the pump is communicated thereto primarily by the friction-cylinders D D, which rollers actuate the oil-feeding roller E. The axle of this oil-feeding roller carries a cam E′, which, through the rod I′, actuates the pump in the manner above detailed.

The frames E are so supported on their studs *i i* that they will oscillate slightly forward or rearward, depending in which direction the machine is traveling. When it moves forward, the rear roller D is in close frictional impingement with the roller E and the forward roller D is barely in contact with the roller B. When, however, the machine is moving in the contrary direction, the functions of these primary rollers are reversed, and in accord with the law of the machine the frame F is oscillated in a contrary direction. No resistance is thus offered to the rotation of the roller E from the fact of my carrying two rollers D, a feature of considerable importance.

O^2 is the rearward sweeper. It is supported on a transverse frame o^5, Fig. 1. This frame is held in position by the guiding-posts therefor, *p*, it being slotted at both ends to fit these guides.

O is a rod pivoted at its upper end by the arm n' and carrying at its lower end a sweeper-bar engaging member o^6. There are of course two of these rods O and two arms n', one on each side of the machine. They are rigidly united to the rod n^4 and move, therefore, in concert therewith. Thus the sweeper o^2 is raised at both ends uniformly. The rod N is pivoted to the arm *n* and the arm *n* is rigid with the rod n^4. The engineer on the platform of the machine controls the movements of the rod N and therethrough the sweeper.

O^{13} is the forward sweeper, carried by its bar O^7. It is held by its guides *l l* in precisely the same manner as the rearward sweeper is adjustably supported. The handle *m*, with an integral bell-crank arm *m′* through the link m^2, attached to the sweeper-supporting frame o^7, controls the vertical movements of the sweeper.

The pipe S^2 is an oil and water heating pipe. This pipe passes from the boiler in a coil through the oil-reservoir and thereafter rearward to the water chamber or reservoir, its function being to heat the water and the oil. By heating the oil its passage from the reservoir to point of service is facilitated. By heating of the water before entrance to boiler I economize fuel.

It remains for me yet to describe the manner of wrapping my oil-distributing cylinders. It will be remembered these cylinders are actuated entirely by friction. To insure this frictional working, I wrap my cylinders tightly with rope or heavy cord. The manner of this wrapping is shown in Fig. 4, in which X shows a central section wound in elevation. X′ shows a side elevation of the roller and vertical longitudinal section through the rope, and X^2 shows a vertical longitudinal section through rope and roller. In applying this rope I first drill a hole through the end plate X^3, put the end of the rope therethrough, knot it, then draw tightly, and commence to wrap the rope tightly and carefully around the cylinder. I then on completing the wrapping knot the rope or cord to the opposite end plate in the manner shown in Fig. 4. When wound, the manner of mounting the rollers with respect to their winding is shown in Fig. 5, where it will be seen the lead or pitch of cord is in opposite directions. By this arrangement my friction is much more positive in its action. It will also be evident that the strands composing my winding-rope, running, as they do, almost diagonal to the cord-line of winding, make in effect a somewhat serrated edge, and so the circumferential surface of contacting rollers are in very effective frictional contact, as is evident without further remark.

In further reference to structural features

of the oil and water heating means S is a cover-plate for the oil-well S′. The heating-pipe S^2 is best shown in Figs. 2 and 3, and in Fig. 3 the water-reservoir is shown at S^6. The pipe S^7 is the water-feed pipe for the boiler, through which the hot water is conducted from the tank S^6 to the injector (indicated at S^8) and therethrough to the boiler in the manner common to feeding steam-boilers.

In Fig. 6 is shown a modified way of operating my bearing-frames M^2. It consists of a bell-crank having arms M^{11} and M^{12}, rigid with a pivoted rod M′, and having the handle M linked or pivoted to the bell-crank arm M^{12}. M^{10} is a secondary arm also rigid with the rod M′. It is evident that when I pull on the handle-arm M, I oscillate the rod M′, also therethrough the arms M^{10} and M^{11}, and as the arms M^{10} and M^{11} are loosely connected with the rod L^2, which carries the frames F through the link L, the rollers D D and E are thus raised. The object in raising the oiling device as above is to prevent injury thereof by coming in contact with any substance, which by chance may adhere to the roller B.

The object of the sweepers O^2 and O^{13} is to remove any obstruction from the street in the path of the rollers B and C. It is hardly necessary to say that M^{13}, Fig. 1, is a locking-ratchet pivoted to the plate M^{14}, which plate in turn is riveted to the boiler B′ and adapted to hold the rollers D·D from engagement with the roller B.

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

1. The combination in an oiling device for a road-roller of a pressure-roller, a frame supported thereby, an oil-reservoir, oil-distributing rollers, an oil-feeding mechanism consisting of a pump, oil-conducting pipes, leading from the reservoir to the pump and oil-conducting pipes leading from the pump to the said rollers, as and for the purpose set forth.

2. The combination in an oiling device for a road-roller, of a pressure-roller, a framework for supporting the mechanism of the machine supported thereby, an oil-reservoir carried by said framework, oil-feeding mechanism likewise so supported consisting of a series of oil-distributing rollers, loosely-mounted carrying-frames for the axles of said rollers, said frames carried by said framework, as and for the purpose specified.

3. The combination in an oiling device for a road-roller of a pressure-roller, a framework for supporting the mechanism of the machine supported thereby, an oil-reservoir carried by said framework, oil feeding and distributing mechanism likewise so supported consisting of a pump, oil-conducting pipes leading from the said reservoir to the pump, a series of oil-distributing rollers, an oil-conducting pipe leading from the pump to the said oil-distributing rollers, supporting-axles for said rollers, oscillatable axle-supporting frames for said roller-axles, journals carried by said frames, said journals permitting of independent, variable and differential reciprocal movements of the axles of said rollers, substantially as described for the purpose set forth.

4. The combination in an oiling device for a road-roller of a pressure-roller, a framework for supporting the mechanism of the machine supported thereby, an oil-reservoir, means for feeding the oil from the reservoir to the rollers and distributing it thereover, loosely-mounted carrying-frames for said rollers and hand-controlled means for raising or moving said frames, thereby disengaging said rollers from their normal frictional contact with the pressure-roller.

5. The combination in an oiling device for a road-roller of a pressure-roller, oil-distributing rollers normally in frictional contact with the circumference of said pressure-roller, an oil-reservoir, means for heating the oil in said reservoir, bearings for the axles of said rollers, movable and loosely-supported frames for said roller-axles, means for feeding the oil from said reservoir to said rollers and a mechanical connection between the rollers and the said oil-feeding mechanism whereby when the rollers are in action the oil is distributed and when the rollers are stationary the oil ceases its flow, as and for the purpose set forth.

6. A friction-roller for an oil-distributing mechanism consisting of a cylinder having circular end plates, a rope or cord tightly wound around the circumference of the cylinder and having its ends passed through and knotted on the outer side of said end plates.

7. The combination in an oiling device for a road-roller of a pressure-roller B, oil-distributing rollers D, D, a primary oil-gathering roller E, supporting-frames F for said rollers, supporting-studs *i*, *i* for said frames and hand-controlled means for raising said frames and therethrough the said rollers carried thereby.

8. An oil-feeding mechanism for a road-roller consisting of a pressure-roller B, primary oil-distributing frictionally-actuated rollers D, D, a secondary and oil-gathering frictionally-actuated roller E, cam E′ carried by the axle of said latter roller, rod I′, oil-pump G, feed-pipe J, J′, delivery-pipe K, K′, and oil-distributing perforated pipe S^4.

9. A sweeper device for a road-roller consisting of brush O^2, supporting-frame O^5 carrying slotted ends, guides *p* therefor, rod O, arms *n*′ carried by rod n^4, arm *n* and handle N, substantially as described for the purpose set forth.

10. An oil-feeding mechanism for a road-roller consisting of a pressure-roller B, primary oil-distributing frictionally-actuated

rollers D, D, a secondary and oil-gathering frictionally-actuated roller E, oil-pump actuated by said friction-rollers, oil-feed and oil-delivery conductors, means for disengaging said frictionally-actuated rollers D, D, from their engagement with roller B, and means for locking them in a disengaged position.

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

WILLIAM O. NIGHTENGALE.

Witnesses:
H. A. HERR,
FRANK B. STOCKLEY.