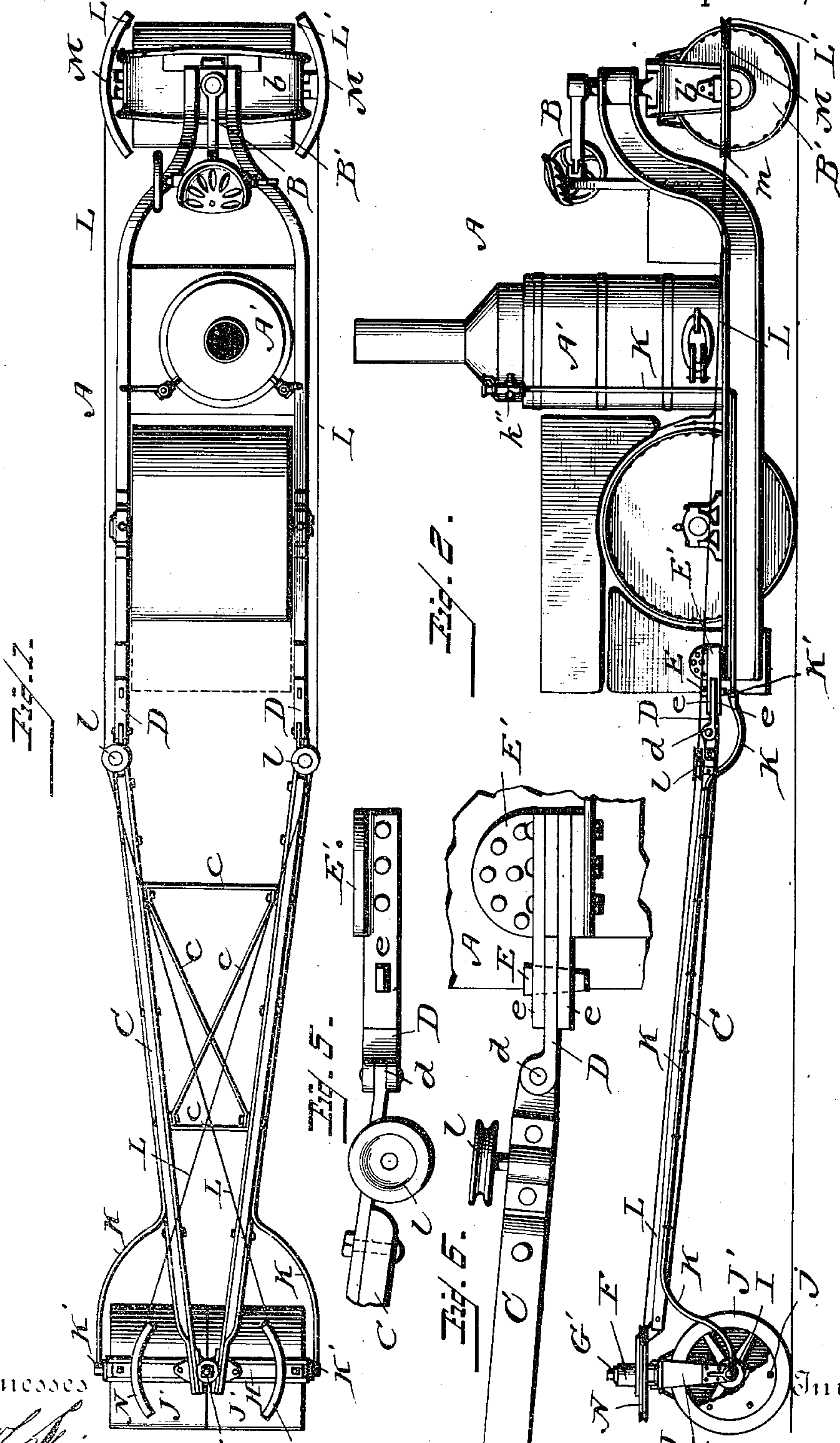


R. C. RUTHVEN.
COMBINATION ROAD ROLLER.

No. 482,757.

Patented Sept. 20, 1892.



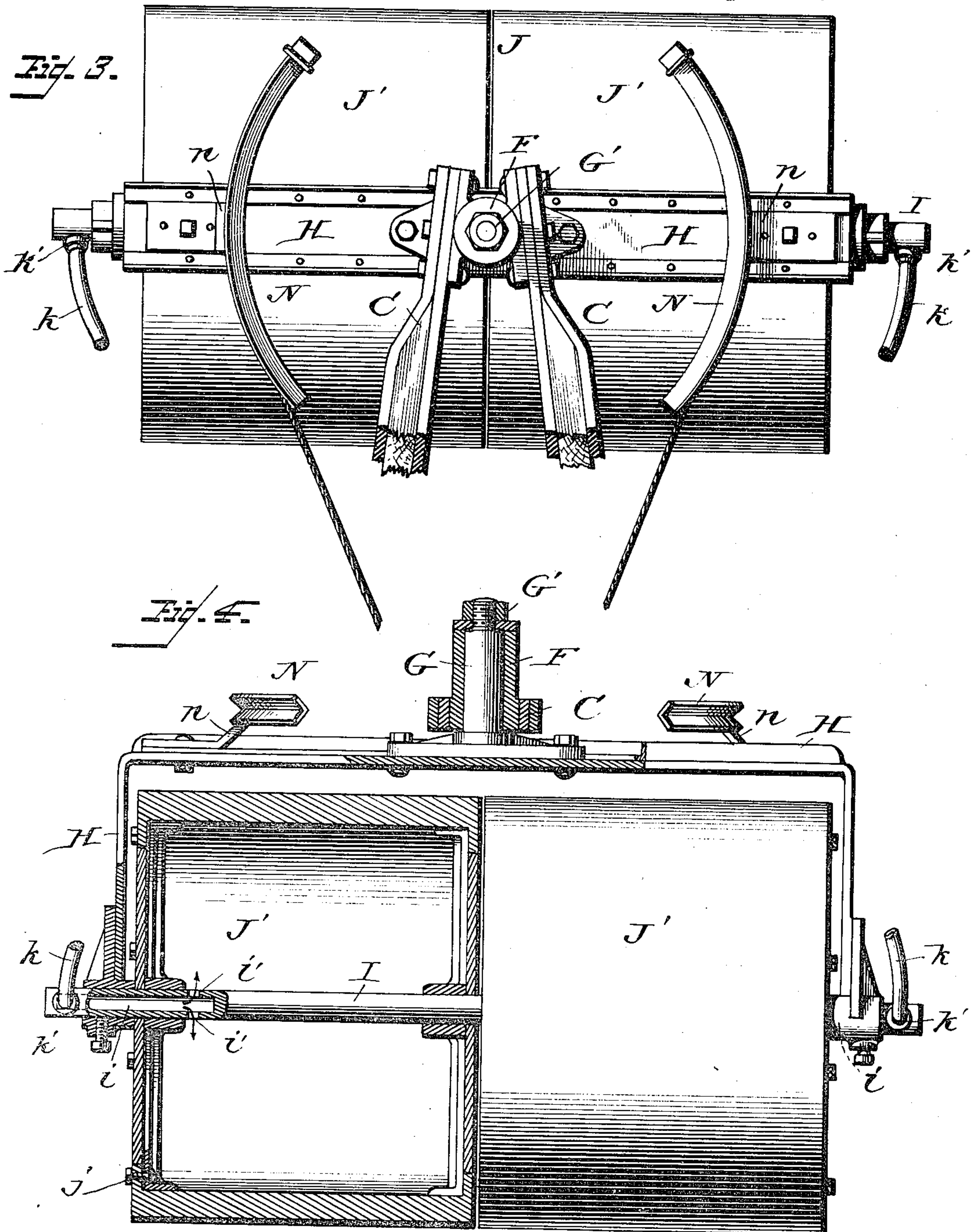
Witnesses
Albert Spender.

Inventor
Robert Crosby Ruthven
By his Attorney Woodbury Lowrey

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Witnesses
"Amos Shiden,
Albert Shiden.

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UNITED STATES PATENT OFFICE.

ROBERT CROSBY RUTHVEN, OF BUFFALO, ASSIGNOR TO THE BARBER ASPHALT PAVING COMPANY, OF NEW YORK, N. Y.

COMBINATION ROAD-ROLLER.

SPECIFICATION forming part of Letters Patent No. 482,757, dated September 20, 1892.

Application filed May 5, 1892. Serial No. 431,892. (No model.)

To all whom it may concern:

Be it known that I, ROBERT CROSBY RUTHVEN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Combination Road-Rollers, of which the following is a specification.

In the construction of an asphalt pavement, after the laying of the surfacing a light roller is passed over it to obtain a preliminary compression while the material is still viscous and previous to the passage of the heavy steam-roller. This surface-roller has heretofore been a hand-roller, requiring the labor of several men, two or more to push it and one to grease its surface in order to prevent the composition from sticking.

The object of my invention is to dispense with the labor of these men, with the greasing of the surface-roller, and to place the latter under the control and direction of the engineer of the steam-roller, while retaining all the advantages arising from its use immediately on the laying of the surface composition before the surfacing is able to bear the weight of the steam-roller and while the steam-roller is in use on another section of the pavement. This object I attain by attaching the surface-roller, which I call the "preliminary or advance roller," to the steam-roller, ahead of the latter, by means of a suitable reach, connecting it by cables with the steering-gear of the steam-roller and heating the surface-roller by means of steam conveyed to it through hose or pipes from the boiler of the steam-roller. The hose, reach, and cables are made detachable, so that the surface-roller can at any time be quickly uncoupled from the steam-roller should it be desirable to use the latter alone.

As far as I am now aware, the best results are obtained when the surface-roller runs about fifteen feet ahead of the steam-roller; but I do not limit myself to any particular distance between the two, as it may be greatly varied without departing from the spirit of my invention.

In the accompanying drawings, which illustrate my invention, Figure 1 is a plan view, and Fig. 2 is a side elevation, of my combination-roller. Fig. 3 is a plan view, and Fig. 4

is a front elevation, partly in cross-section, of the surface-roller, and Figs. 5 and 6 are detail views of the reach connections.

A is a steam-roller of well-known construction. A' is its boiler, and B its steering-gear, consisting of the roller B', its yoke b, and well-known means for turning the roller B'.

C is a reach, of any suitable material, detachably fastened to the forward end of the steam-roller A by the links D D, hinged at one end d to the reach to allow of a vertical motion to the latter, and at the other end keyed by the removable pin E between the leaves e e of the plate E', bolted to the steam-roller.

Through a sleeve F, secured to the forward end of the reach C, projects the yoke-bolt G of the yoke H, carrying the axle I of the surface-roller J. A nut G' on the end of the yoke-bolt G, which projects above the sleeve, allows bolt and sleeve to turn freely, while holding the two together. The surface-roller J consists of two hollow drums J' J', identical in every respect and turning independently on the fixed axle I.

Steam from the boiler A' is introduced into the drums J' J' to heat them when in use as follows: A steam-hose K, leading from the boiler A, is conducted along one of the arms of the reach C to its outer extremity, where it passes through the flexible branches k k, coupled at k' to the outer ends of the axle I, which are bored hollow at i i and communicate by apertures i' i' with the interior of the hollow drums J' J'. The hose K is secured to the reach in any suitable way, sufficient length of flexible connection being provided at the surface-roller end to allow of the turning of the latter, as hereinafter described, as also between the steam-roller and the reach to allow of the vertical play of the latter. A suitable coupling K' is provided between the hose and the steam-roller. k'' is a steam-cock to turn the steam on and off from the boiler. The water from the condensation of the steam in the rollers J' J' is tapped through one of the screw-holes of the drum-head plate by removing the screw for that purpose, as at j. The surface-roller J is guided by a duplex rudder movement, consisting of yoke lines or cables L L, connecting it with the yoke b' of

the steering-roller B' on the steam-roller A. Bearings M M, having segmental grooved guides *m*, are bolted on each side of the yoke *b'*, from which the cables L L, after passing around friction-rollers *l l* on the reach, extend to similar bearings N N, secured by standards *n n* to the yoke H of the surface-roller J, each cable crossing the other and being attached to the steering and surface rollers on opposite sides. The cables L L are detachably connected to the bearings M M at L' in any well-known way. I thus provide a surface-roller which runs in advance of the steam-roller without in any way interfering with the operation of either, steering connections by which the surface-roller is operated from the steam-roller, and convenient means for heating the former, and thereby effect a great economy of labor and increased facility in operation.

I further provide means for coupling and uncoupling the rollers, so that each may be used independently of the other.

I have shown the reach C as braced by the cross-braces *c*, but do not limit myself to the particular construction. It is also evident that I may use a rigid pipe between the boiler and the surface-roller, provided that a suitable steam connection be always maintained with the interior of the surface-roller drums in any position which said roller may assume. Neither do I limit myself to the particular means for attaching and detaching the surface-roller from the steam-roller, or to the particular devices shown for steering the surface-roller.

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

1. The combination of a steam-roller, an advance roller, a connecting-reach, means for connecting and disconnecting the advance and the steam rollers, and suitable steering-gear for steering the advance roller adapted to be operated from the steam-roller, substantially as described.

2. The combination of a steam-roller, an advance roller, a reach connecting the two, means for connecting and disconnecting the advance and the steam rollers, and suitable steam connections between the steam-roller and the interior of the advance roller, substantially as described.

3. The combination of a steam-roller, an advance roller, a connecting-reach, suitable

steam connections between the steam-roller and the interior of the advance roller, and steering-gear for steering the advance roller adapted to be operated from the steam-roller, substantially as described.

4. The combination of a steam-roller, an advance roller, a connecting-reach, suitable steam connections between the steam-roller and the interior of the advance roller, steering-gear for steering the advance roller adapted to be operated from the steam-roller, and means for connecting and disconnecting the rollers, substantially as described.

5. The combination of the steam-roller A, having the steering-roller B' and yoke *b*, the reach C, having the hinged links D D, detachably connected to the steam-roller A, the sleeve F, fastened to the reach, the yoke H, having the yoke-bolt G, an axle mounted in the yoke, rollers turning upon the axle, the cable connection L L between the yokes H and *b* of the respective rollers, and means for steering the roller B', substantially as described.

6. The combination of the steam-roller A, having the boiler A', the reach C, detachably connected to the steam-roller, the yoke H, pivoted to the forward end of the reach C, the fixed axle I, suspended in the yoke and having the tubular borings *i i*, the hollow rollers J' J', mounted upon and communicating with said tubular axle, the steam connection K between the boiler A' and the axle I, and means for connecting and disconnecting the same, substantially as described.

7. The combination of the steam-roller A, having the boiler A', the steering-roller B', the reach C, detachably connected to the steam-roller, the yoke H, pivoted to the forward end of the reach C, the fixed axle I, suspended in the yoke and having the tubular borings *i i*, the hollow rollers J' J', mounted upon and communicating with said tubular axle, the detachable steam connection K between the boiler A' and the axle I, and the detachable cable connection L L between the advance roller and the steering-roller B', substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT CROSBY RUTHVEN.

Witnesses:

WM. Y. WARREN,
HENRY J. WARREN.