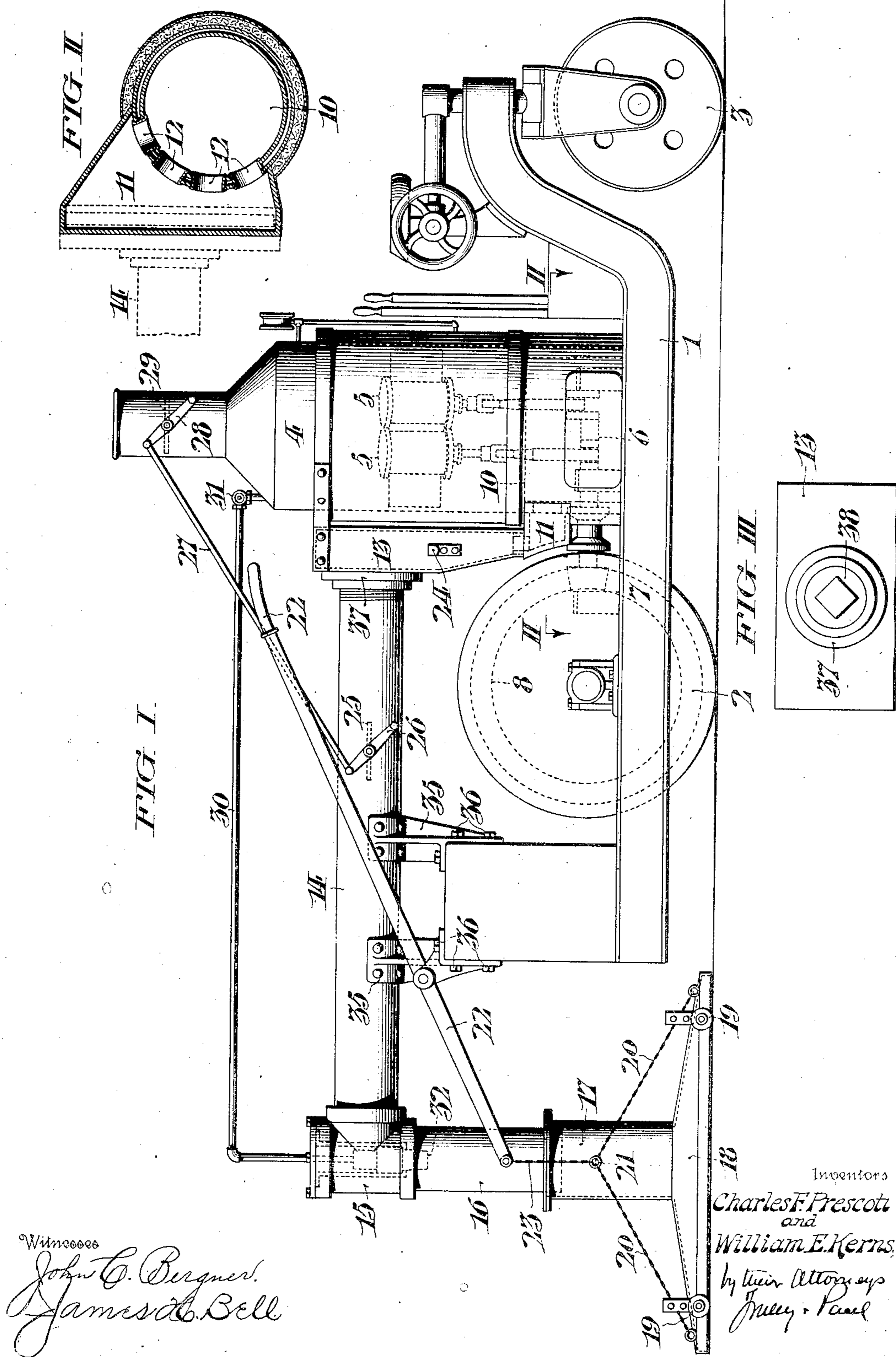


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MACHINERY FOR HEATING AND ROLLING BITUMINOUS PAVEMENTS.
APPLICATION FILED APR. 10, 1909.

931,085.

Patented Aug. 17, 1909.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES F. PRESCOTT AND WILLIAM E. KERNS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGN-
ORS TO THE BARBER ASPHALT PAVING COMPANY, OF PHILADELPHIA, PENNSYLVANIA,
A CORPORATION OF WEST VIRGINIA.

MACHINERY FOR HEATING AND ROLLING BITUMINOUS PAVEMENTS.

No. 931,085.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed April 10, 1909. Serial No. 489,046.

To all whom it may concern:

Be it known that we, CHARLES F. PRESCOTT and WILLIAM E. KERNS, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machinery for Heating and Rolling Bituminous Pavements, whereof the following is a specification, reference being had to the accompanying drawings.

Our invention relates to the employment, in combination with a steam driven roller, of means for deflecting the heated products of combustion, which are normally used for generating steam to drive the roller over a bituminous pavement, whereby said heated products are projected upon the surface of the pavement until it is sufficiently heated to facilitate the removal of such portion of the pavement as may require repair.

Our invention is capable of ready adaptation to the standard forms of rollers already employed for the purpose of rolling asphalt pavements. Also no gasoline or other form of fuel is used apart from that normally employed to generate steam in the boiler by which the roller is driven. Furthermore by reason of the construction of our apparatus, the heated air and products of combustion which are projected upon the surface of the pavement where it is to be removed or repaired are at such a temperature, that, although they soften the bituminous cementing material of the pavement sufficiently to render its removal easy, they do not burn or destroy the vitality of the bitumen, as is often done when other forms of heaters are used for this purpose. The result is that whereas in such previous forms of heaters the entire mass of pavement subjected to the heating flame must be removed, since its utility has been destroyed, by our arrangement this is not necessary, and only so much of the pavement need be removed as is actually required for the repairs undertaken.

In accomplishing our invention, we construct upon the forward end of a steam driven bituminous road roller, an auxiliary smoke box and flue connecting with the fire box which underlies the steam boiler. This auxiliary flue is provided at its extremity with a down-pass, terminating in a hood, which may be adjusted close to the pavement upon which the roller rests. By means of

suitable dampers, the products of combustion may be deflected from their ordinary path through or around the steam boiler, and led through the flue and down-pass, and thus be caused to impinge upon the surface of the pavement which is to be repaired. We further provide a steam jet by which the passage of the products of combustion through the auxiliary flue may be facilitated. Means are also provided for adjustably regulating the height of the hood above the pavement.

In the accompanying drawings, Figure I, is a side elevation of a machine embodying our invention. Fig. II, is a horizontal section along the line II, II, of Fig. I. Fig. III, is a detail view of one of the flues.

The steam roller may be of any standard construction, and comprises a body frame 1, a main roller 2, a rear steering roller 3, a steam boiler 4, cylinders 5, 5, the connecting rods of which operate cranks on the shaft 6, provided with a pinion 7, which meshes with a beveled gear 8, upon one side of the main roller. These parts, and the accompanying parts which are shown, are too well known to need further description.

The fire box 10, which, with its grate, underlies the steam boiler 4, normally discharges its products of combustion through the chimney which surmounts it, but, according to our invention, it is provided with a horizontal smoke box 11, occupying, as near as may be, a central position upon the machine. Since the steam boiler does not occupy a central position, (being thrown to one side to counterbalance the cylinders), this smoke box 11, is not symmetrically disposed in relation to the boiler and its fire box, as fully appears from Fig. II. Between the fire box and the smoke box 11, are a number of permanent apertures 12. The smoke box is surmounted by a vertical up-draft flue 13, from which leads centrally a horizontal flue 14, passing forward beyond the end of the roller, where it is provided with a tee 15, the upper end of which is closed, except as hereinafter explained, while the lower end carries a down-draft flue 16, at the lower end of which is a sliding extension 17, provided at its lower end with a flaring hood 18. The flues may be jacketed with asbestos or similar non-heat-conducting material, as well as the fire box, as shown in Fig. II.

The hood 18, is fitted with a suitable number of rollers 19, adjustably attached thereto, so as to permit it to be raised from the pavement at a set distance therefrom, as required.

5 The hood, and the extension 17, of which it forms a part, are supported by chains 20, which terminate in a ring 21, which is connected to one extremity of a hand lever 22, by a chain 23, by which the hood may be
10 temporarily raised by the engagement of the free end of the said lever 22, with a hook 24, on the flue box 13, to overcome an obstruction or for other purposes.

The transverse flue 14, is provided with a
15 swinging damper 25, by which it may be completely shut off. Upon the axis of the damper is an arm 26, pivoted to a link 27, which is likewise pivoted to an arm 28, fixed upon the axis of the swinging damper 29, set
20 in the smoke stack 30, of the boiler. By this connection the two dampers 25, and 26, are rendered alternate in their action, the opening of the one necessarily effecting the closing of the other. From the boiler, a steam pipe
25 30, fitted with a steam cock 31, leads to a nozzle 32, suitably situated within the tee 15.

In operation when it is desired to remove any portion of a bituminous pavement, the machine is placed so that the hood 18, over-
30 lies the portion to be repaired. When the hood has been suitably adjusted in relation to the pavement to avoid a waste of the heated products of combustion, the dampers 25, and 29, are thrown so as to open the
35 former and close the latter, whereupon all of the heated air and heated products of combustion generated in the fire box are forced to pass through the flue 14, to the hood 18, whence they escape from under the edges of
40 the hood. In order to maintain this alteration in the path of the heated products from the grate, steam is injected into the down-pass 16, of the flue, and compels the passage of the products of combustion therethrough.

45 As soon as the pavement has been thus sufficiently heated, the position of the dampers may be reversed and the roller moved away sufficiently to permit of the removal of so
50 much of the softened material, as is required for the repair work, it being again noted, that owing to the nature of the heating means employed, and the distance which they are compelled to traverse before they reach the surface of the pavement, the heat applied to
55 the pavement is not sufficient to structurally injure it or burn it, as is commonly the case where the usual oil heaters are employed. In the latter case the whole amount of pavement subjected to the flame must be re-
60 moved, while with our apparatus this is unnecessary. Not only is there thus a clear saving of material, but there results a much more satisfactory joint between the old material and the new, since the heated part of
65 the old material which is left in place, joins

readily to the new material which is immediately put in, rendering the patch quite homogeneous and invisible. As soon as the new material has been put in, the roller is used in the ordinary way to roll the surface of the
70 pavement. The device is so constructed that the flue 14, and its connections may be readily removed so that the roller may be employed alone when so desired. The brackets 35, which support the forward end of the
75 said pipe 14, are secured to the frame of the machine by means of bolts 36. After removing the said bolts 36, the pipe 14, may be turned so as to release its threaded end from engagement with the flange 37, on the ver-
80 tical flue 13. The opening in the flange 37, may thereafter be closed by the pipe plug 38, as clearly shown in Fig. III, which is a face view of the flue 13.

The importance of providing for the ready
85 removal from the machine of the hoods and parts which relate to the repair work, will be apparent when it is considered that a roller such as is employed in connection with
90 our invention is commonly used in the construction of new roadbeds in which no heating of the surface is called for, and in which the presence of the hood and auxiliary parts, as shown in the drawings, would operate det-
95 rimentally, especially when cross rolling (*i. e.* from curb to curb), is being done. Under such circumstances, therefore, the attachments to which our invention relates, are entirely removed from the roller, and are
100 only attached to it, and employed, when the roller is employed specially for repair work.

Having thus described our invention, we claim:—

1. The combination of a steam roller, including a boiler and fire box, with an aux-
105 iliary flue leading to the surface of the pavement upon which the roller stands, in combination with means whereby the products of combustion from the fire box may be caused to pass either through the boiler or
110 through the auxiliary flue to the surface of the pavement.

2. In a combined steam roller and surface heater, the combination of a boiler and its
115 fire box; an auxiliary flue whereby the products of combustion may be led from the grate to proximity with the surface of the pavement upon which the roller stands; and an adjustable hood upon the extremity of the
120 auxiliary flue.

3. In a combined surface heater and steam roller, a steam boiler and its fire box, sur-
125 mounted by its smoke stack; an auxiliary flue also communicating with the fire box and leading toward the surface of the pavement upon which the steam roller stands; dampers in the smoke stack and also in the
130 auxiliary flue; and means correlating the action of the dampers, whereby the opening of one effects the closing of the other.

4. The combination of a steam roller including a boiler and fire box with an auxiliary flue leading to the surface of the pavement upon which the roller stands, in combination with means whereby the products of combustion from the fire box may be caused to pass either through the boiler or through the auxiliary flue to the surface of the pavement; including a steam pipe and injector whereby steam from the boiler may be injected into the auxiliary flue for the purpose of maintaining the down-draft therein.

5. The combination with a steam roller including a boiler and fire box with an auxiliary flue leading to the surface of the pavement upon which the roller stands and termi-

nating in an expanded hood; means whereby the products of combustion from the fire box may be caused to pass either through the boiler or through the auxiliary flue to the surface of the pavement; and means whereby the auxiliary flue with its hood may be temporarily disconnected from the steam roller.

In testimony whereof, we have hereunto signed our names, at Philadelphia, Pennsylvania, this eighth day of April, 1909.

CHARLES F. PRESCOTT.

WILLIAM E. KERNS.

Witnesses:

JAMES H. BELL,

E. L. FULLERTON.