

F. A. BROWNE.

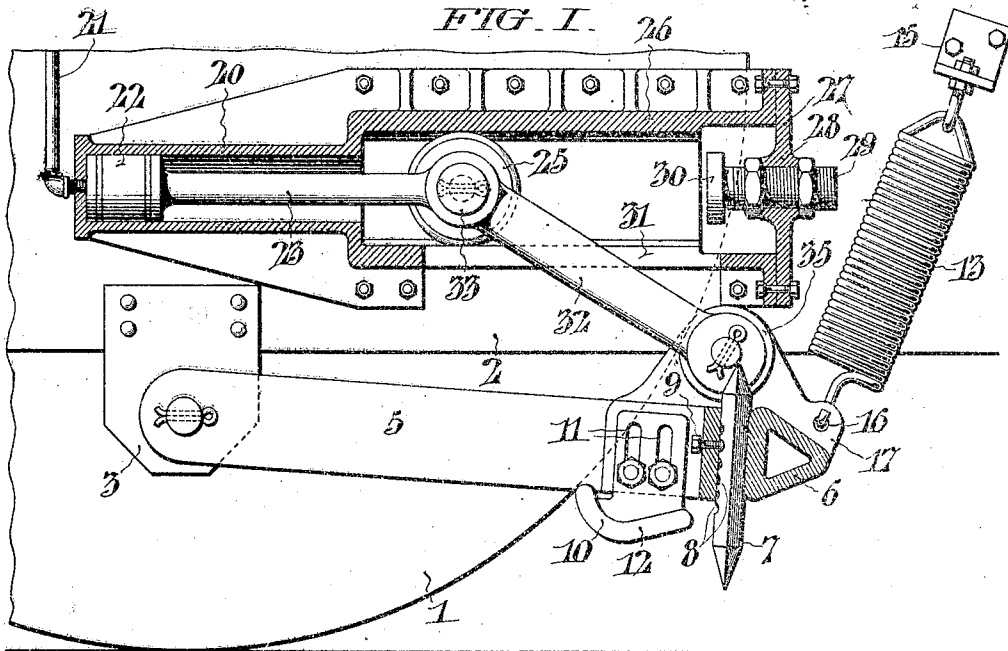
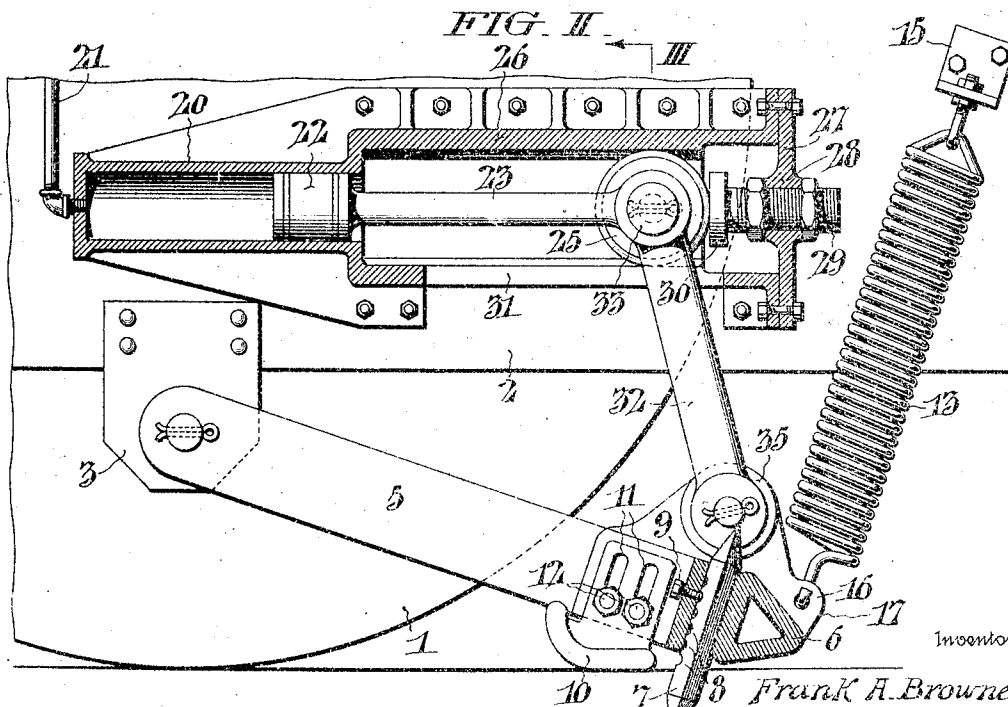
SCARIFIER.

APPLICATION FILED APR. 3, 1917.

1,243,672.

Patented Oct. 16, 1917.

2 SHEETS—SHEET 1.



Witnesses
Thomas W. Kerr, Jr.
James C. Bell

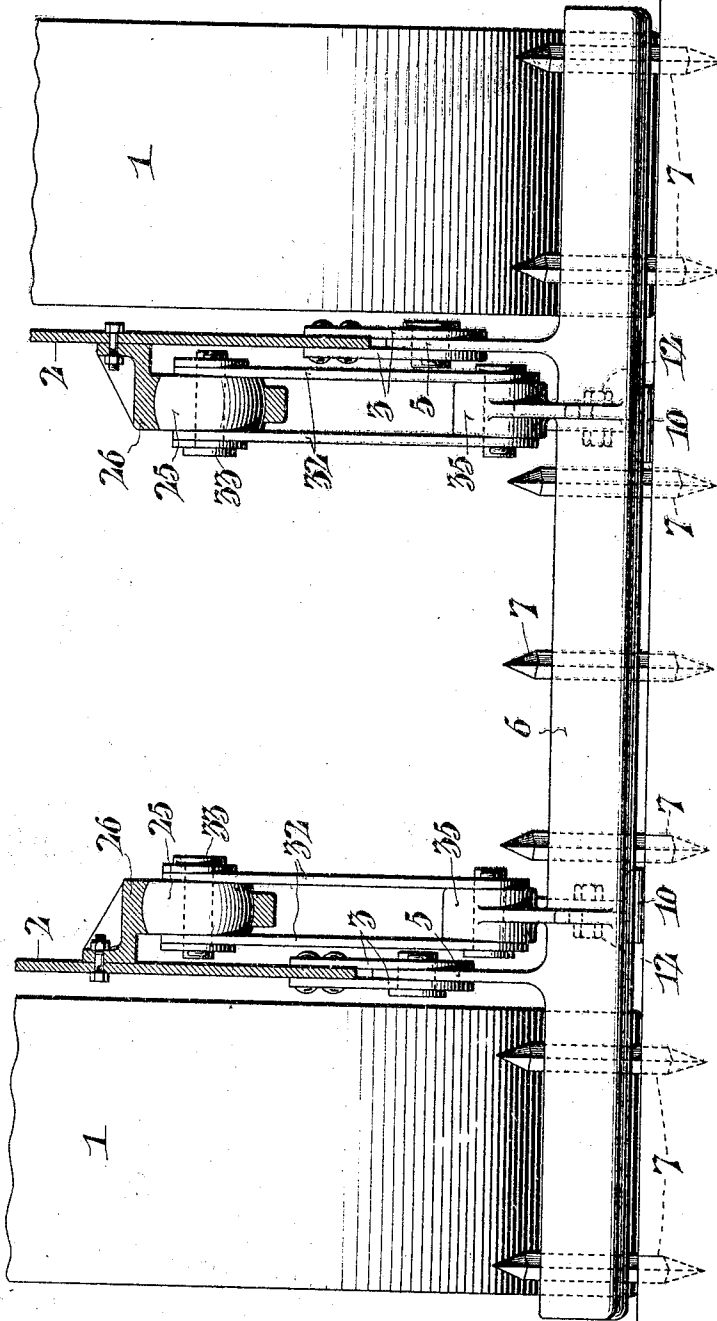
Inventor
Frank A. Browne,
by Juley & Lang.
 Attorneys.

F. A. BROWNE.
SCARIFIER.
APPLICATION FILED APR. 3, 1917.

1,243,672.

Patented Oct. 16, 1917.

2 SHEETS—SHEET 2.



Inventor

Frank A. Browne,

by *Galley & Kauf-*

Attorneys.

Witnesses

Thomas W. Kerr, Jr.
James H. Bell

UNITED STATES PATENT OFFICE.

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

SCARIFIER.

1,243,672.

Specification of Letters Patent.

Patented Oct. 16, 1917.

Application filed April 3, 1917. Serial No. 159,406.

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 Scarifiers, whereof the following is a specification, reference being had to the accompanying drawings.

The invention relates to scarifiers and more particularly to attachments adapted to be used in connection with an ordinary road roller for tearing up old roads and disintegrating the surface thereof.

An object of the invention is to provide a scarifying device which is simple in construction and capable of operation with a minimum expenditure of energy, and at the same time powerful enough to perform the desired work.

A further object of the invention is to provide a scarifying attachment comprising a movable abrasive member so arranged that as the abrasive member descends into the ground, the power of its thrust is increased in proportion with the amount which it descends.

A still further object is to provide means for regulating the extent of the downward thrust of the abrasive member.

The invention consists generally of a toothed member pivoted to the rear portion of a road roller. The toothed member is connected through intermediate means with a reciprocating piston in such a manner that when pressure is applied to the piston, the toothed member is lowered and forced into the ground or surface to be broken up. The raising of the toothed member, however, is not accomplished by the action of the piston, but by a coiled spring which is at one end attached to some portion of the machine and at the other end directly attached to the toothed member, so that when pressure is withdrawn from the piston, the toothed member is raised out of engagement with the ground.

Referring to the accompanying drawings, Figure I, is a longitudinal section through a portion of a vehicle conveniently illustrating the application of my improved scarifier thereto.

Fig. II, is a similar view showing the device in active position.

Fig. III, is a transverse sectional elevation as viewed in the direction of the arrows III—III, in Fig. II.

My scarifying device is adapted to be employed in connection with any road roller of ordinary construction, and applied to the rear portion of the frame. In the drawings I have, therefore, shown the rear ground wheel 1, of a roller having a frame 2. To this is attached the toothed member, which comprises transverse bar 6, rigidly held between drag bars 5, and mounted in the rear of wheel 1. Drag bars 5, are in turn pivotally connected to frame 2, through plates 3, rigidly attached to the frame by rivets, bolts or other suitable means. Bar 6, is provided with spokes or teeth 7, adjustably mounted, and held in place by set screw 9, which engages suitable notches 8, therein.

With this pivotal construction the toothed member may be raised, as shown in Fig. I, or lowered as shown in Fig. II. In order to accomplish the raising of the toothed member I provide coiled spring 13, one end of which engages eyelets 16, in plates 17, which are integrally formed with the bar 6, and the other end of which is rigidly secured to the plate 15, attached to the frame 2. The spring 13, tends to raise the bar 6, to the position shown in Fig. II, and is sufficiently strong to hold bar 6, in this position. It is not, however, strong enough to counteract or materially affect the lowering means presently to be described.

In order that bar 6, may be lowered and held in its lowered position, I provide cylinder 20, connected by pipe 21, with any suitable source of fluid power, and attached to the frame 2, or other convenient portion of the road roller. Piston 22, is adapted to reciprocate in cylinder 20, and has rod 23, formed integrally therewith, which carries on its end roller 25, pivoted thereto by pin 33. Roller 25, is formed with a spherically curved bearing surface adapted to engage guides 26, as best shown in Fig. III. Rod 23, is connected to bar 6, by links 32, also pivoted at one end on pin 33, and pivoted at the other end on pin 34, in ears 35, on the plate 17, which is integrally formed with bar 6. With this construction bar 6, may be lowered by reciprocation of the piston 22, from left to right as viewed in Figs. II, and III. When the bar 6, is raised piston 22, occupies the position shown in Fig. I, at the forward end of cylinder 20. When, however, pressure is applied to the piston 22, it moves to the other end of the cylinder

20, moving roller 25, with it and depressing bar 6, through the action of link 32.

With this construction the resultant power of the downward thrust applied to the bar 6, is increased through the leverage obtained in links 32. The rate of increase in the leverage, however, is more rapid than the rate at which bar 6, descends, so that the amount of power exerted by the downward thrust is constantly increasing as the bar descends, the greatest thrust being obtained at the point of lowest descent. In this way most force is obtained at the point at which it is most needed, and maximum penetration results.

The extent of reciprocation of piston 22, and rod 23, is regulated by adjustable screw 29, mounted in plate 27, and held in place by nuts 28. Inasmuch as the extent of downward thrust of the bar 6, is primarily dependent on the extent of horizontal reciprocation of the piston 22, the penetration of teeth 7, may be regulated by limiting the extent of this reciprocation by means of screw 29.

The extent of actual penetration of teeth 7, may also be limited by the setting of teeth through set screw 9, as has already been pointed out. This adjustment is further facilitated by shoe 10, mounted on drag bar 5, and capable of adjustment through slots 11, and bolts 12. Shoe 10, engages the surface to be acted upon as shown in Fig. II, and thereby definitely limits the extent of penetration of teeth 7. By means of these agencies a very accurate and nice adjustment may be obtained, and one which in no way affects the means through which the power is applied to bar 6.

Bar 6, remains in its lowered position as shown in Fig. III, as long as pressure is applied to piston 22, in cylinder 20, but when this pressure is removed, the action of spring 13, immediately raises bar 6, to its upper position, and forces piston 22, back to the forward end of cylinder 20. The parts then remain in this position until pressure is again applied to piston 22. It is, therefore, only necessary to apply pressure while the machine is actually in operation. In this way it will be seen that I have provided a very simple yet powerful and efficient means for raising and lowering the toothed member.

Although in the drawings I have shown the preferred embodiment of my invention, it is not limited to the precise form shown, but may be varied in details of structure and design, without departing from the spirit thereof.

Having thus described my invention, I claim:

1. The combination with a road engine, of a scarifying attachment therefor, comprising a toothed member suspended be-

neath the rear of said road engine; a drag bar rigidly connected to said toothed bar and pivotally connected to said road engine; a spring directly connected to said toothed member tending to hold it in raised inoperative position; a cylinder mounted on said road engine; a piston reciprocating therein; a link directly pivoted to said piston and said toothed member, whereby when pressure is applied to said piston, said toothed member is moved to its lower operative position and there held against the action of the spring, the relation between said link and said piston being such that the downward pressure exerted by said toothed member increases as said toothed member descends.

2. The combination with a road engine, of a scarifying attachment therefor, comprising a toothed member suspended beneath the rear of said road engine; a drag bar pivotally connected to said road engine and rigidly connected to said toothed member; a spring directly connected to said toothed member normally tending to hold it in a raised position; a cylinder mounted on said road engine; a piston reciprocating therein; a rod attached to said piston and reciprocating therewith; guides rigidly attached to said road engine; a roller pivotally mounted on the end of said rod moving in said guides; a link also pivoted at one end to said rod and at the other end to said toothed member, whereby the toothed member is lowered in accordance with the reciprocation of said piston.

3. The combination with a road engine, of a scarifying attachment therefor, comprising a toothed member suspended beneath the rear of said engine; a drag bar pivotally connected to said road engine and rigidly connected to said toothed member; a spring directly connected to said toothed member normally tending to hold it in a raised position; a cylinder mounted on said road engine; a piston reciprocating therein; a rod attached to said piston and reciprocating therewith; guides rigidly attached to said road engine; a roller pivotally mounted on the end of said rod moving in said guides; a link also pivoted at one end to said rod and at the other end to said drag bar, whereby the toothed member is lowered in accordance with the reciprocation of said piston; means for regulating the extent of reciprocation of said piston.

4. The combination with a road engine, of a scarifying attachment therefor, comprising a toothed member suspended beneath the rear of said engine; a drag bar pivotally connected to said road engine and rigidly connected to said toothed member; a spring directly connected to said toothed member normally tending to hold it in a raised position; a cylinder mounted on said

road engine; a piston reciprocating therein;
a rod attached to said piston and reciprocating
therewith; guides rigidly attached to said
road engine; a roller pivotally
5 mounted on the end of said rod moving in
said guides; a link also pivoted at one end
to said rod and at the other end to said
drag bar, whereby the toothed member is
lowered in accordance with the reciproca-
10 tion of said piston, means for regulating
the extent of reciprocation of said piston,

said means comprising a plate mounted on
the end of said guides, and a screw ad-
justably mounted therein, adapted to engage
said roller.

In testimony whereof I have hereunto
signed my name, at Buffalo, Erie Co., New
York, this 29th day of March, 1917.

FRANK A. BROWNE.

Witnesses:

HENRY A. SHELDON,
MARK F. BROWN.