M. HAYNES.

ROLLER FOR ROAD SURFACING GRADERS.

APPLICATION FILED JUNE 22, 1916.

1,330,531.

Patented Feb. 10, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

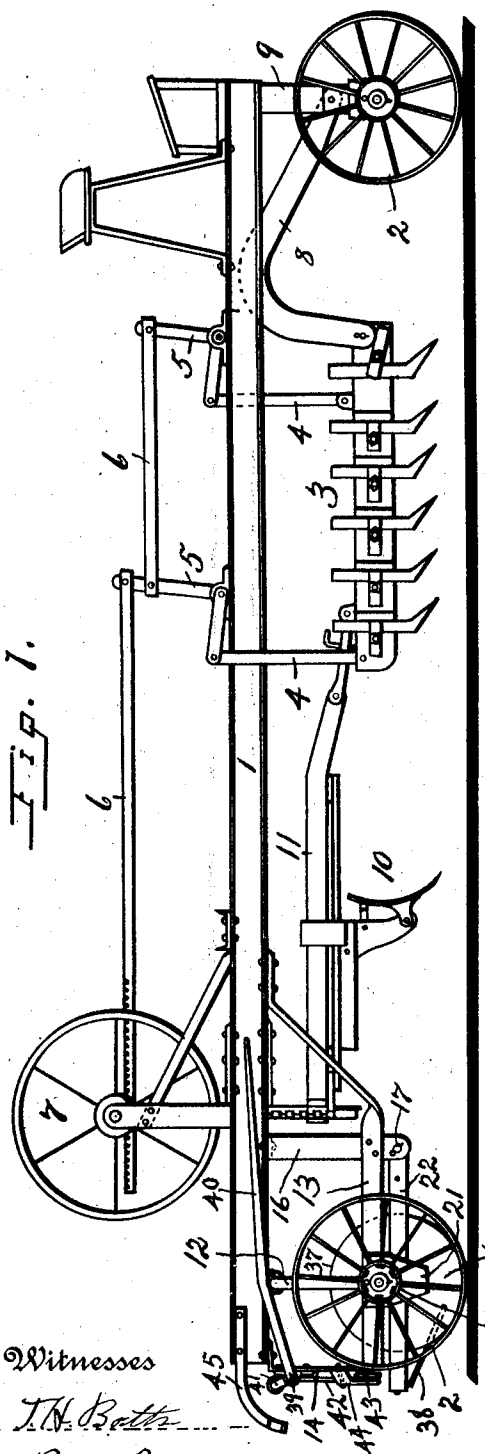
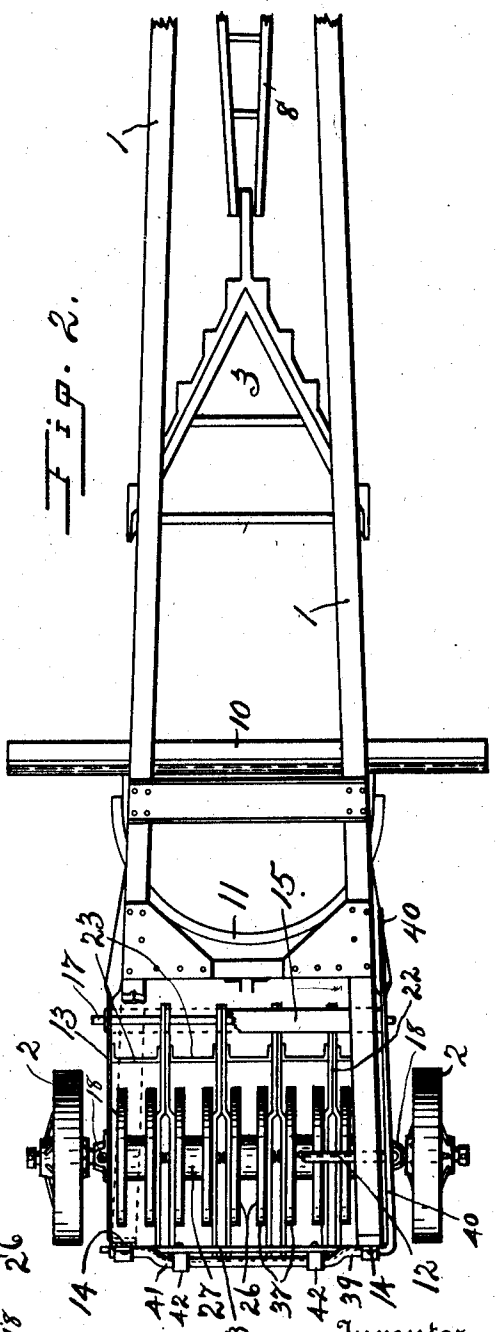


Fig. 2.



Witnesses

T. N. Batts

Paul. Bourgas

Inventor

Mollry Haynes.

Attorney

M. HAYNES.

ROLLER FOR ROAD SURFACING GRADERS.

APPLICATION FILED JUNE 22, 1916.

1,330,531.

Patented Feb. 10, 1920.

3 SHEETS—SHEET 2.

Fig. 3.

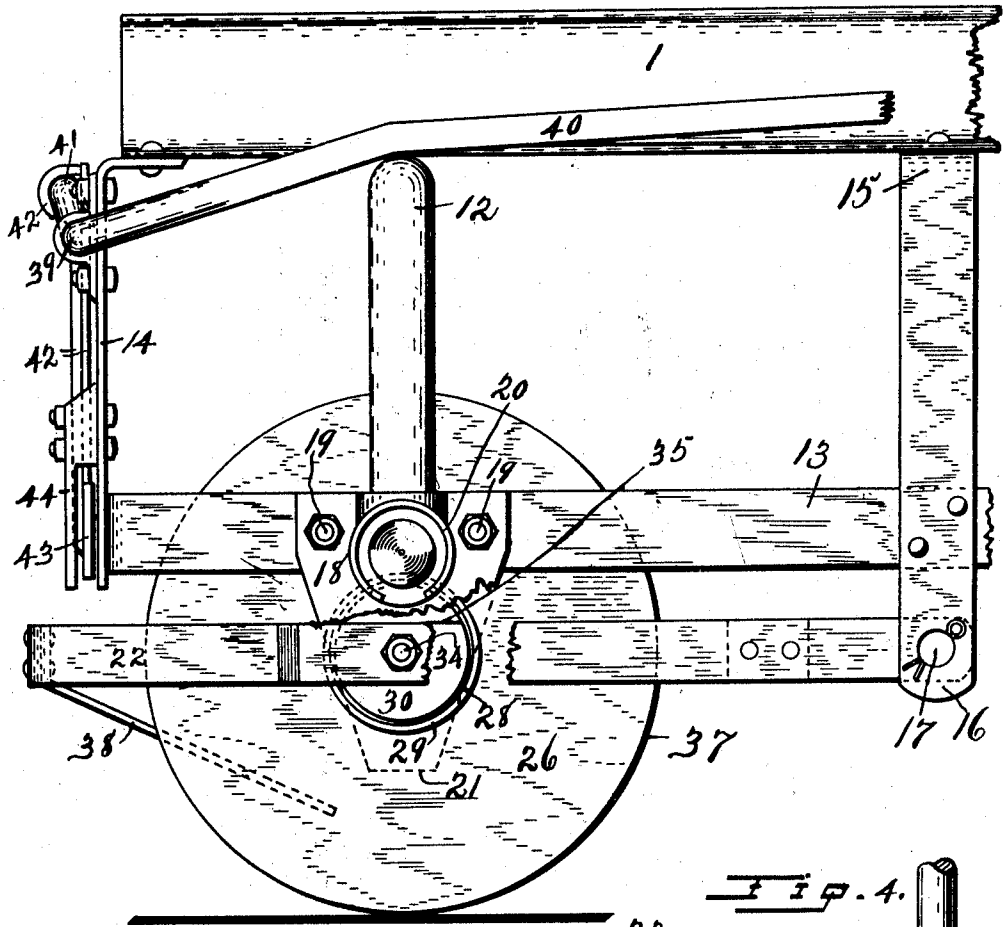
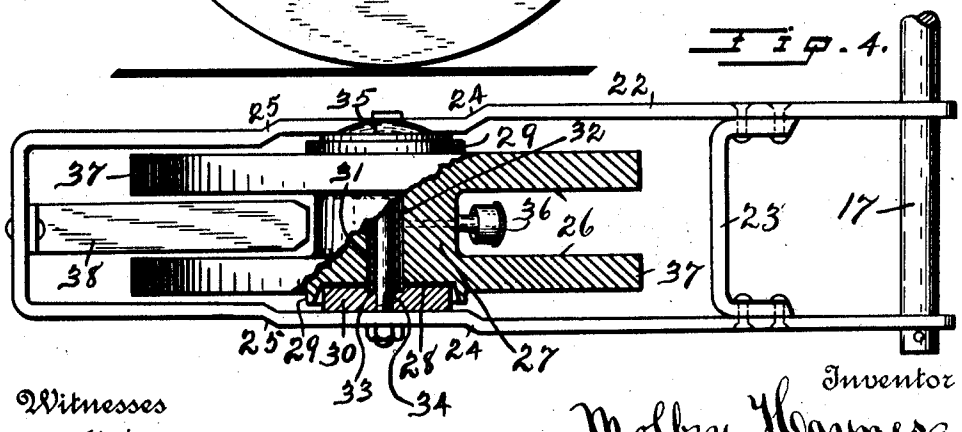


Fig. 4.



Witnesses

T. H. Batts

Karl Bonnyas

Inventor

Molby Haynes

Attorney

M. HAYNES.

ROLLER FOR ROAD SURFACING GRADERS.

APPLICATION FILED JUNE 22, 1916.

1,330,531. Patented Feb. 10, 1920.

3 SHEETS—SHEET 3.

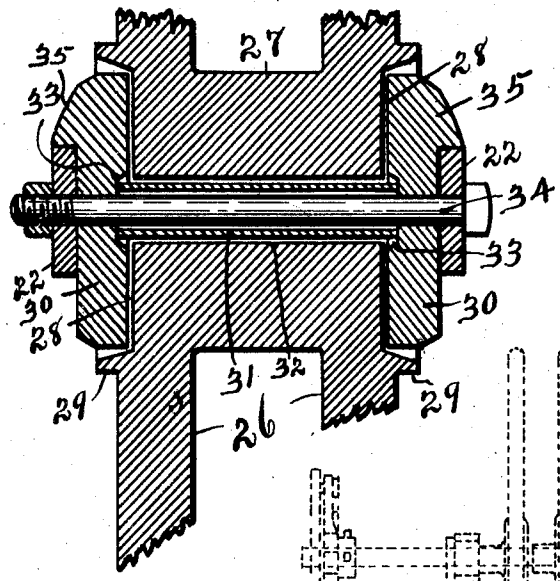
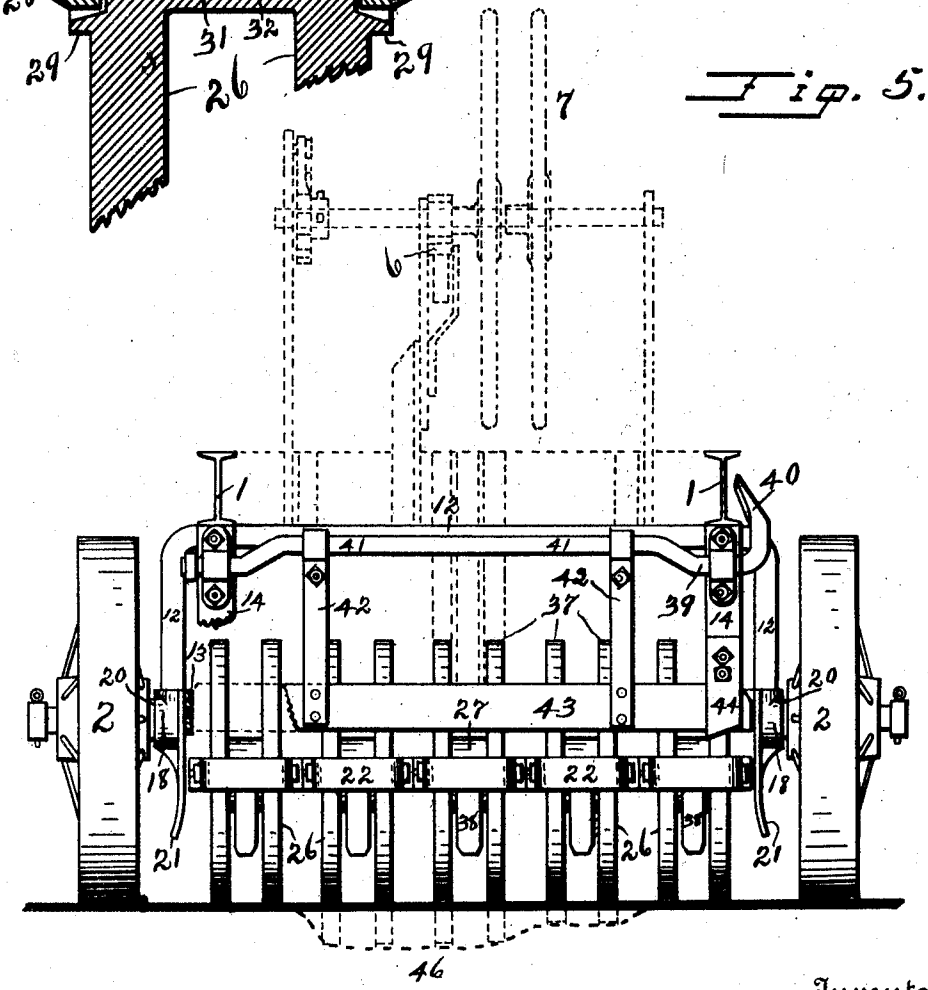


Fig. 6.

Fig. 5.



Witnesses

T. A. Botts

Paul Baumgac

Inventor

Molby Haynes.

Attorney

UNITED STATES PATENT OFFICE.

MOLBRY HAYNES, OF OAKLAND, CALIFORNIA.

ROLLER FOR ROAD-SURFACING GRADERS.

1,330,531. Specification of Letters Patent. Patented Feb. 10, 1920.

Application filed June 22, 1916. Serial No. 105,174.

To all whom it may concern:

Be it known that I, MOLBRY HAYNES, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Rollers for Road-Surfacing Graders; and I do declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of machines used for shaping and dressing the surface of roads and streets and my object is to furnish a mechanism wherewith the hard surface of roads may be disintegrated and pulverized, after the same has been scarified, and rolled to an even density during and after the same has been shaped into a perfectly formed crown, also a mechanism which may be cheaply constructed, durable, efficient in operation and easily operated and controlled.

This I accomplish by the peculiar construction, novel combination and adaptation of parts hereinafter particularly described and specifically pointed out in the claims hereunto annexed, reference being had to the drawings, for a better comprehension hereof, in which:—

Figure 1, represents a right hand side elevation of a road surfacing grader having my invention attached thereto.

Fig. 2, is a plan view of the same with portions of the old parts eliminated for the purpose of showing the improvement without crowding.

Fig. 3, is a detached detail side elevation of the rollers showing the relative frame construction with portions broken away.

Fig. 4, shows a plan view of one of the roller units, partly in section, with its accompanying frame.

Fig. 5, is a rear view showing the arrangement of the roller beneath the rear end of the main frame of the grader and between the rear bearing wheels.

Fig. 6, is a detached detail sectional view of one roller bearing showing the sand-plates in position in depressions in the sides of the rollers in such a manner as to eliminate dust and dirt from the roller bearing.

This view also shows the removable cylindrical journal and the method of bolting the frame construction securely together.

Similar letters and figures of reference indicate corresponding parts in the several views.

Broadly, my invention comprises a sectional roller, arranged beneath the rear of a grading machine, in independent individual frames hinged to said grading machine so as to be vertically operative independent of each other, and an appliance whereby additional weight may be applied to the individual roller frames collectively.

In Figs. 1, 2, and 5 I have shown portions of structural arrangements which are old for the purpose of identifying the adaptability and functional use of my invention, with machines of this class and therein I have represented a main frame 1, mounted on main bearing wheels 2, carrying a scarifier 3, suspended beneath said main frame 1, by means of links 4, secured to said scarifier and bell-cranks 5, journaled on said main frame and controlled by links 6, communicating with a hand-wheel 7, suitably mounted and journaled on the main frame.

8 represents a goose-neck, flexibly connecting said scarifier to the front bolster 9.

A grader 10, pivoted beneath a grader frame 11, is arranged beneath the main frame and behind the said scarifier.

The rear wheels 2, are journaled on an arched axle 12, secured rigidly to the main frame at a point near its rear end and is more rigidly braced by braces 13, one arranged on each side of and attached to the main frame 1, as shown in Fig. 1.

The rear ends of said braces 13, are made rigid and stiff by standards 14, one on either side, depending from the rear ends of the main frame members 1, to which they are rigidly attached.

The lower ends of said standards 14 are rigidly attached to the said braces 13.

At a point forward of the said axle 12, a hinge member 15, is rigidly secured athwart the main frame with its ends bent at ap-

proximately right angles downwardly and attached to the said braces 13.

The lower ends 16, of the said hinge member 15, extend below the said braces 13 and are provided with openings to receive a hinge rod 17, as and for the purpose hereinafter set forth.

By reference more particularly to Figs. 3 and 5, 18 represents a combination axle-collar, sand cap and roller guide, one arranged at the lower angle of each end of the rear axle.

These guide-collars, are provided with a recess by means of which they are inserted over the end of the rear axle and impinged against the vertical portion of the said axle and are rigidly attached to the brace 13, by bolts or rivets 19.

The sand cap 20 extends over the end of the hub of the wheel, thus preventing sand and dust from entering the bearing of the wheel.

The downwardly extending portion 21, of said guide-collars 18 prevents undue lateral motion of the rollers as will more fully appear.

With their axial centers immediately beneath the axle 12, I arrange a serial tamping roller, comprising independent rotatable disk members journaled in independent, vertically operative frames, laterally between the said guide-collars 18 and hinge said frames to the said hinge rod 17.

These rollers and frames are similar in form and construction, each of which comprises a longitudinally disposed frame 22 rectangular in general form and having a strengthening distance member 23 securely riveted at a point between the roller and hinge rod 17. Offsets in the side of the said frame 22 at 24 and 25 narrow the rear end thereof for the purposes as will be shown.

At a point in the frame 22 between the said offsets 24 and 25 in line with, and beneath the axle 12, I journal a double disk roller having its disk members 26 arranged with a solid hub 27 centrally located between the same circumferentially.

Said disk members 26 I have here shown with square peripheral bearing edges 37, but a convexed curved peripheral face may be used.

The center of each side of the said disks 26 has a depression 28 formed therein, as more particularly appears in Figs. 3 and 4, surrounded by a dust ring 29.

Sand-plates 30, preferably circular in form, are fitted in said depressions 28 and engage the inside of the frame members 22.

A cylindrical journal 31 is inserted into a journal bearing 32, arranged in the center of the disk members 26 at right angles to their peripheral faces, with its ends resting in a recess 33 in each sand plate 30.

A bolt 34, designed to secure the bearing, sand plates and frame in rigid position, is inserted in holes in the said frame 22, sand plates 30 and cylindrical journal 31, and impinges upon the outside of said frame 22 binding the whole structure rigidly together.

The cylindrical journal 31 acts in the capacity of a spreader, as well as a journal, maintaining said sand plates at a distance sufficient to permit the free rotation of the disk members.

The sand plates 30 are provided with shoulders 35 on their outside top faces which rest on the top of the frames 22 for the purpose of precipitating any dirt or dust, that may fall on the same, beyond the frame 22 thereby preventing its accumulation on said frame and ultimate entrance into the bearing.

Said shoulder 35 also prevents any tendency of the said sand plates to rotate by reason of the attendant drag caused by the revolving disk members.

Lubrication is effected preferably by a compression grease cup 36 inserted in the hub 27 which is provided with an opening communicating with the bearing.

Referring to Fig. 4, the frame members 22 of the narrowed rear end of said roller frames, by reason of the offsets 25, act as a scraper to maintain the sides of said disk members 26 free from mud or other adhesive matter.

The inside edges are kept clean by a scraper 38 rigidly secured to the rear end of the frame members 22 as shown in Figs. 3 and 4.

The offsets 24 in the frame 22 provide space for the accommodation of the nut and head of the bolt 34, as the rollers are assembled in operating position in the machine as shown in Figs. 2 and 5.

In practice I use preferably five individual rollers arranged together which present ten peripheral faces to the road surface.

However any number may be used as may appear convenient or expedient.

I provide an attachment for placing additional weight on the tamping rollers, comprising an eccentric shaft 39 journaled on the standards 14 and having a hand lever 40 attached to one end wherewith the eccentric may be arranged either in elevated or depressed position.

To the eccentric 41, links 42, preferably two, are journaled and extend downwardly to, and are attached to, a bar 43 arranged athwart and above the rear ends of the frames 22.

Guide slots are formed by guides 44 attached to said standards 14 so as to engage each end of said bar 43 and maintain the same in position over said frames 22.

As the lever 40 is thrown over to the rear the bar 43 is caused to impinge upon the

roller frames 22, by reason of the eccentric 41, and the weight, of the rear end of the main frame and bearing wheels, is precipitated on the rollers, thus providing additional pressure on the road surface.

The lever 40 may be maintained in a depressed position by any approved means such as the spring catch 45 attached to the rear of the main frame.

If it is desired to maintain the rollers all on a horizontal level laterally, the same may be journaled on a common axis, in place of the bolts 34, extending the entire width of the roller frames 22, thus causing the said rollers to operate in unison instead of independently.

My invention may be attached or detached from a road machine adapted therefor, by simply removing the hinge-rod 17 thus releasing the roller frames 22 from the main frame hinge member 15—16.

The adjustment, mode of operation, control and resultant action of my improved roller for road surfacing grader, is as follows:

Road surfaces which are hard, after they have worn or otherwise become uneven, must be scarified in order to provide a smooth sub-surface on which to put a new wearing surface.

These hard surfaces break up into large clods. Heretofore these clods have either been thrown away or placed back into the holes without having been thoroughly pulverized and in such condition a road surface was produced that was full of hard and soft spots, for the reason that the road rollers now in use are unable to pack the dirt or rock effectually between the clods so used.

Surfaces which have been scarified must be broken up to reasonably fine proportions before they can be used again.

It is a conceded fact that the acme of road construction contemplates a foundation and surface rolled to a uniform hardness. This can be accomplished, only, by a roller whose construction and mechanical operation enables it to exert a uniform pressure on the road surface at each and every bearing point of the roller, irrespective of the contour of the road surface over which it is operated.

My improved roller is calculated to accomplish these results. By its weight and the narrow peripheral face 37, a clod is mashed into a number of pieces, instead of being cut, the whole clod being fractured and when moved again will fall into small pieces.

If clods of excessive hardness are encountered the rollers may, where desired, have their weight augmented by throwing the hand lever 40 over rearwardly thus throwing the eccentrics and links downwardly causing the bar 43 to impinge upon the roller frames 22 thus bringing the total weight of the rear end of the entire machine to bear on the rollers.

The rolling and tamping action of the roller is continuous at all times during its use on the road.

Its members are always dropping into the soft low places, as shown in dotted lines at 46 in Fig. 5, packing the dirt in such low places to the same consistency as the higher points, whereas a wide faced roller will "bridge" over the low spots and rest on the higher and harder spots, leaving the low places in condition to yield under the pressure of the traffic and form a chuck hole.

It is contemplated, during the operation of this roller while rolling and tamping the road for the finished surface, that said surface will be maintained in a smooth condition by the addition of material where any depression appears each time the roller passes over it. Thus a surface is built up having an even density.

The rollers are prevented from any side motion and from becoming entangled in the wheel 2, by the guides 21.

I am well aware that land rollers have been constructed which feature a frame hinged at one end, therefore I do not claim that feature broadly but what I do claim and desire to secure by Letters Patent is:—

1. The combination with the main frame of a road machine, of a series of rectangular frames hinged to said main frame so as to be vertically operative independently of each other, wherein thin flanged roller members are suitably spaced and loosely journaled, substantially as described.

2. The combination with the main frame of a road machine, of a series of rectangular frames hinged to said main frame and a series of double flanged disk rollers journaled in said rectangular frames and means whereby the weight of the said main frame may be impinged on said roller frames.

3. In a roller of the class described, individual roller members, comprising double flanged disks, with a hub and annular space between the same, journaled in an individual frame, with sand plates interposed between said roller and frame in annular recesses in the center of each outside face of said double flanged disk, on removable bearings rigidly secured to said frame, and means for impinging additional weight on said frame as may be desired.

4. In a machine of the class described, the combination with a road machine having a main frame and bearing wheels, of a serial tamping roller, arranged between the rear bearing wheels wherein thin double flanged members, are suitably spaced and loosely journaled in independent vertically operative frames secured to a common hinge rod attached to said main frame.

5. In a road surfacing grader, a roller attachment comprising a series of double flanged disk rollers each provided with annular side depressions, centrally located and surmounted by dust rings, sand-plates arranged in said annular depressions, a cylindrical journal inserted in said roller and impinged between the said sand-plates, a suitable frame engaging the outside face of the sand-plates and a bolt inserted through the said frame, sand-plates and cylindrical journal and rigidly securing the same together and means for attaching said roller frames to the main frame.

6. In a roller attachment for road making machines, the combination with the main frame of the road machine and a serial tamping roller comprising double flanged disk members journaled in independent roller frames hinged to the said main frame, of an attachment whereby additional weight may be applied to the roller members, comprising an eccentric shaft journaled athwart the rear of the main frame and having an operating lever attached thereto, thrust arms journaled on said eccentric shaft and attached to a cross bar, said cross bar slidable in slots in said main frame and adapted to impinge upon the said roller frames and means for maintaining said lever and eccentric in the desired position, substantially as described.

In witness whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

MOLBRY HAYNES.

Witnesses:
W. M. BARR,
R. E. TIERNAN.