

No. 619,977.

Patented Feb. 21, 1899.

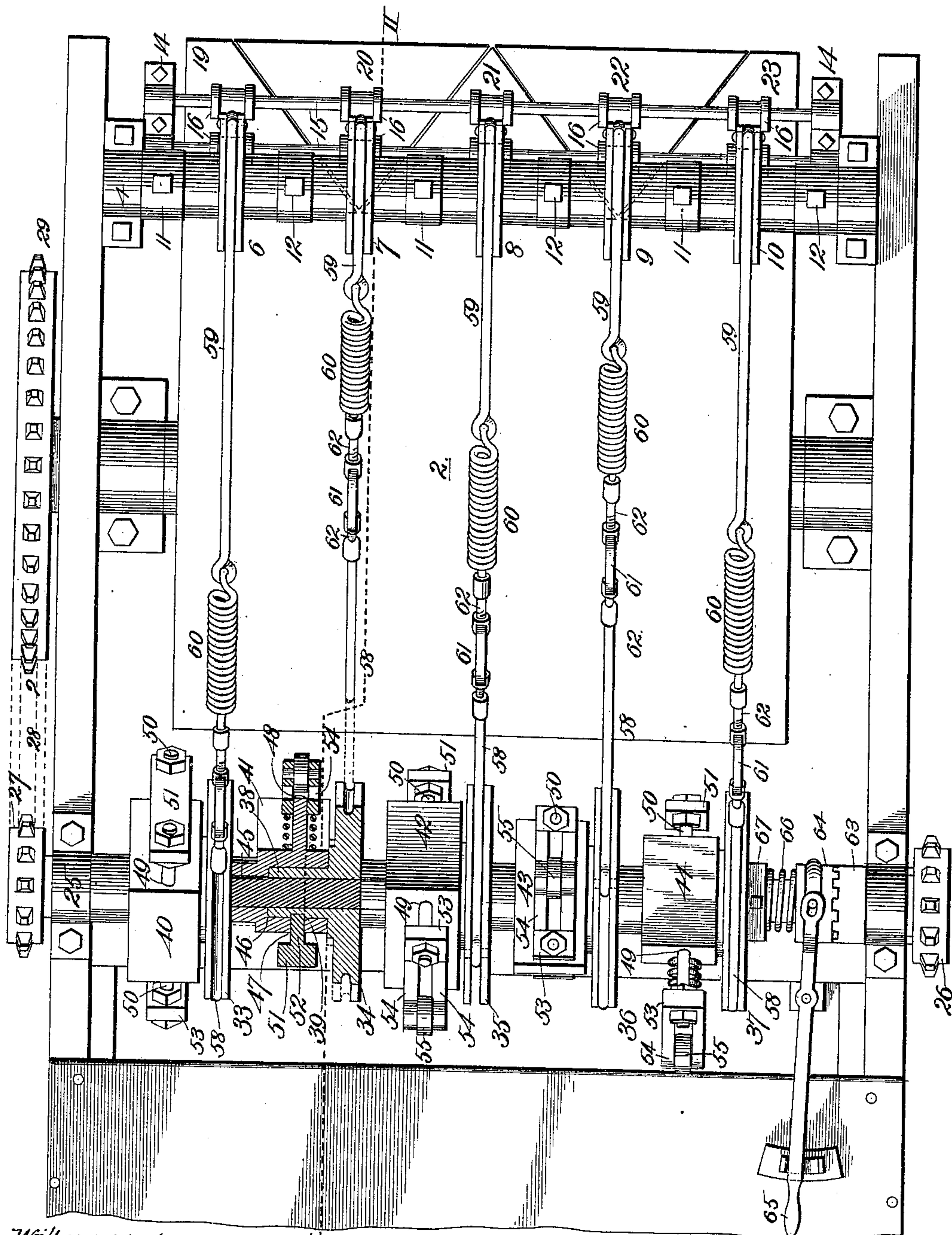
G. A. MAUGER.

COMBINED TAMPING AND ROLLING MACHINE.

(Application filed Apr. 2, 1898.)

(No Model.)

2 Sheets—Sheet 1,



Witnesses:

J. S. Thrasher

M. R. Remley,

Fig. 1. II

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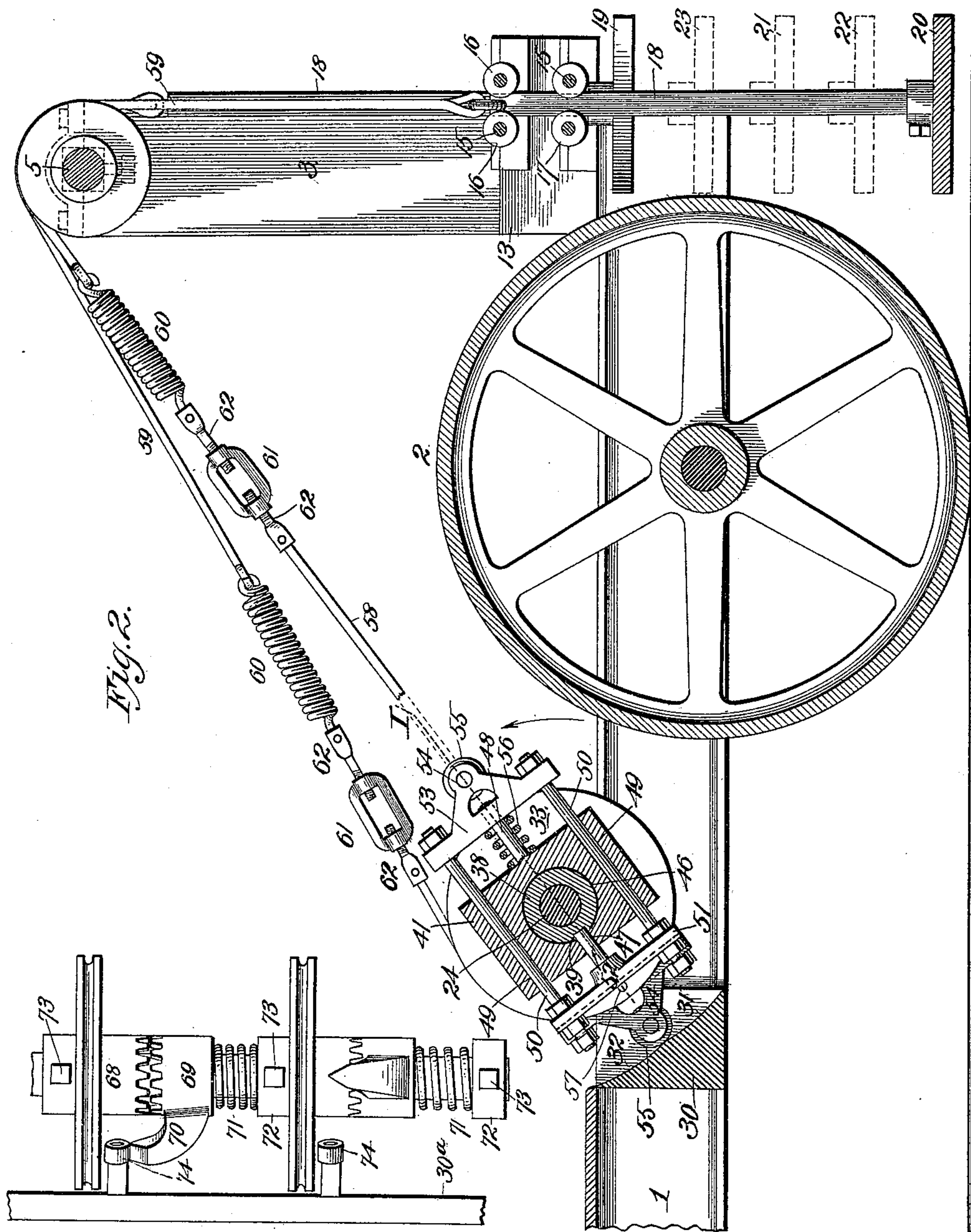
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Witnesses:

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M. R. Penley

Fig. 3.

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# UNITED STATES PATENT OFFICE.

GEORGE A. MAUGER, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF  
TO HENRY R. KASSON, OF SAME PLACE.

## COMBINED TAMPING AND ROLLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,977, dated February 21, 1899.

Application filed April 2, 1898. Serial No. 676,230. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. MAUGER, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improve-  
5 ments in a Combined Tamping and Rolling Machine, of which the following is a specification.

My invention relates to combined tamping and rolling machines for laying asphalt pave-  
10 ments, and is designed more particularly as an improvement in a machine of similar character for which I made application for a patent on November 26, 1897, Serial No. 659,833, the  
15 general object in this connection being to produce a machine of far simpler and more compact construction and which is more reliable in operation.

The object of the invention is to produce a street-paving machine which embodies in its  
20 construction a roller and a series of automatic tampers whereby the asphalt may be packed sufficiently hard to prevent the roller as it rolls over such tamped surface from "wav-  
25 ing" or undulating the surface of the street; and a further object is to produce a machine by which asphaltum paving may be facilitated and the cost materially reduced.

In order that the invention may be fully understood, I will proceed to describe it with  
30 reference to the accompanying drawings, in which—

Figure 1 represents a top plan view of a combined rolling and tamping machine embodying my invention, part of the same being a section on dotted lines I of Fig. 2. Fig.  
35 2 is a vertical section taken on the line II II of Fig. 1. Fig. 3 is a plan view of a modified construction hereinafter described.

In the said drawings, 1 designates the horizontal frame or bed of the machine, and 2  
40 designates the roller for compressing the asphaltum and leveling its surface. Said roller, if the machine be newly built, will preferably be located as shown; but if the tamping  
45 mechanism be used as an attachment to the style of "roller" at present in use it will be preferably secured at the front end of the machine, as will be readily understood.

3 designates vertical standards at the front  
50 end of the frame or bed 1, and said standards may be braced or supported in any suit-

able or preferred manner, and provided at their upper ends are bearings 4 for the horizontal transverse shaft 5, which is preferably squared at its ends, as indicated by dotted  
55 lines in Fig. 2, to prevent rotatable movement of said shaft.

A series of grooved guide-pulleys—in this instance five in number—are journaled upon  
said shaft and are numbered 6 to 10, inclu-  
60 sive, and arranged between the same and between said bearings upon the shaft, so as to prevent lateral movement of the pulleys, are collars 11, secured rigidly by means of set-  
65 screws 12 by preference.

Bolted or otherwise secured to the standards 3, near their lower ends and arranged at their inner sides preferably, are plates 13, cast or otherwise formed with superposed bearings  
14 of the usual construction, and secured in  
70 said bearings are parallel shafts 15, arranged in pairs and superposed with respect to each other. Journaled upon said shafts and prevented from sliding thereon by any suitable means, such as collars, (see Fig. 1,) are grooved  
75 antifriction-rollers 16 17, the grooves of said rollers being squared in order that they may embrace snugly and prevent rotatable or twisting movement of the rectangular vertical  
80 stems 18 of a series of tampers numbered 19 to 23, inclusive, and of such configuration that they collectively form a rectangular figure about equal in length to the roller 2, to  
85 the end that as the machine moves forward a path shall be made by said tampers in the freshly-laid asphaltum, in which path the roller treads. These tampers, as before stated,  
collectively form a rectangular figure, but individually are of substantially triangular  
90 form, in order that the tampers whose sides diverge rearwardly may, as the machine moves forwardly, tamp the surface represented by the joints between said tampers and those  
whose sides diverge forwardly, so that no portion of the asphaltum shall remain untamped.  
95 To accomplish this, however, the tampers must be operated with sufficient rapidity to make two or more strokes before the machine has traveled a distance equal to the width of  
said rectangular figure—that is to say, equal  
100 to the width from front to rear of a tamper.

24 designates a transverse shaft which is



journalled near its opposite ends in bearings 25, secured to the frame or bed of the machine, and mounted upon one end of said shaft is a sprocket-wheel 26, adapted to be  
 5 connected to the motor or driving mechanism, (not shown,) and upon the other end a sprocket-wheel 27, geared by a chain 28 (see dotted lines, Fig. 1) to a larger sprocket-wheel 29, upon one end of the shaft upon  
 10 which the roller 2 is mounted.

30 designates a cross-bar which is preferably secured to the frame or bed rearward of shaft 24 and is provided with two cams or surfaces 31 and 32, which extend eccentric-  
 15 ally with respect to said shaft and are adapted when the machine is rotating forwardly or rearwardly, respectively, to perform the functions of a "knock-off," whereby the raised or elevated tampers are permitted to fall and  
 20 tamp the asphaltum, as will be hereinafter more particularly referred to.

33 to 37, inclusive, designate grooved rollers which are journalled upon the shaft 24 and arranged in the same vertical planes, respectively, as pulleys 6 to 10, inclusive, and said  
 25 rollers are provided with cylindrical hubs 38, provided peripherally with cavities 39, for a purpose which will presently be explained.

40 to 44, inclusive, designate sleeves or collars which are keyed, as at 45, upon the shaft 24 and are provided with sockets 46, wherein fit snugly and rotatably the hubs 38 of said rollers. Said collars or sleeves are provided with radial holes 47, which register normally  
 35 with the sockets 39 of the wheel-hubs, and diametrically opposite said holes with radially outward projecting guide-pins 48 and parallel passages 49, said passages being arranged at opposite sides of the shaft, as shown  
 40 clearly in Fig. 2. Slidingly mounted upon said sleeves or collars are frames constructed as follows—that is to say, 50 designates a pair of rods which extend through the passages 49 and are connected at one side of the sleeve or  
 45 collar by means of the cross-bar 51, provided with the rigid inwardly-projecting pin or dog 52, engaging the hole 47 and normally the cavity 39 of the wheel-hub. The opposite ends of said rod are connected by a cross-bar  
 50 53, having a passage through which guide-pin 48 projects, and downwardly-projecting arms 54, between which are journalled the antifriction-roller 55, the latter being arranged a distance from the pin 48 slightly ex-  
 55 ceeding the depth of cavity 39 in order that as the antifriction-roller rides upon cam 31 or cam 32 and is thereby pushed radially toward said shaft to cause the disengagement of pin or dog 52 from said cavity 39, such  
 60 movement shall not be interfered with because of contact between the inwardly-moving roller and the relatively-rigid pin 48, as will be readily understood. Immediately said roller passes the crest of either cam—that is  
 65 to say, the meeting-line of said cams—the spring 56, surrounding pin 48 and arranged between the sleeve or collar and cross-bar 53,

tends to return the roller to its original distance from the axis of the sleeve or collar. This movement, however, is successfully op-  
 70 posed, because at this time pin or dog 52 is sliding upon the periphery of the wheel-hub 38; but this opposition is removed as the pin or dog and cavity reregister, when immediately the expansive power of spring 56 adjusts said  
 75 frame and causes said pin or dog to enter said cavity and lock the wheel to the sleeve or collar.

Each wheel is preferably provided near its periphery with a pin 57 for the convenient at-  
 80 tachment of the flexible connections, consisting of the cables 58 59, retractile springs 60, turnbuckles 61, and screws 62, and the front or lower ends of these connections are secured to loops or eyes of and at the upper ends of  
 85 the tamper-stems. (See Fig. 2.) By this construction with each revolution of said wheels the tampers are elevated to the position occupied by tamper 19, Fig. 2, from which point as the knock-off or cam-bar trips the spring-  
 90 actuated locking-frame and releases the roller it gravitates with but little frictional resistance and strikes the asphaltum a blow of about four hundred pounds, more or less, the force of course depending on the height from  
 95 which it drops, its weight, and the friction it has to overcome.

As the tamper is released it will slightly expand its spring 60, and said spring, the instant the overpowering force of the descend-  
 100 ing tamper is removed by the contact of the latter with the asphaltum, retracts and supports the tamper slightly above the surface of the asphaltum to the end that the continuous forward movement of the machine may  
 105 not cause said tamper to plow up the asphaltum, as will be readily understood. It is supported in such position, however, only momentarily, because the machine is geared to work with such rapidity that only an im-  
 110 perceptible time elapses between the stroke of the tamper and the reengagement of the pin or dog 52 with the cavity 39 of its respective wheel-hub, which reengagement of course causes the tamper to be again elevated, it be-  
 115 ing understood, of course, that the reengagement is facilitated because the collar or sleeve rotates continuously in the same direction, while the wheel after making a half-revolution is tripped and rotates back again to  
 120 about its original position with great rapidity, caused by the fall of the tamper, where it is immediately after reengaged by said pin or dog. As shown, the machine is presumed to be running backward, and the shaft therefore  
 125 rotating in the direction indicated by the arrow, Fig. 2. When the machine advances, the shaft rotates in the opposite direction.

If it be desired at any time to throw the tampers out of gear with the driving-shaft  
 130 24 without interfering with the travel of the machine, it is only necessary to disengage from the clutch 63, formed with or secured to sprocket-wheel 26, the sliding rotatable



clutch 64, the latter being keyed to slide upon the shaft 24 in the customary manner and adapted to be disengaged from clutch 63 by the customary lever 65 in opposition to the  
 5 spring 66, interposed between the sliding member of the clutch and the collar 67, secured upon the shaft.

Fig. 3 illustrates a modified form of mechanism for raising the tampers at the proper  
 10 time and releasing them when they have attained the proper elevation. This mechanism embodies the grooved wheels, corresponding in construction, location, and function to the grooved wheels 33 to 37, inclusive, except  
 15 that the hubs of these wheels are in the form of V-tooth clutch members 68. In this case also in lieu of the sleeves or collars 40 to 44, inclusive, and the sliding frames carried thereby I employ clutch members 69, keyed  
 20 to rotate with and slide upon the shaft and provided with V-shaped arms or dogs 70, said members 69 being held with a yielding pressure in engagement with clutch members 68 by springs 71, bearing against collars 72, secured  
 25 upon the shaft by set-screws 73 or equivalent means. In lieu of the cross-bar 30, provided with cam-faces, I employ a cross-bar 30<sup>a</sup>, provided with antifriction-rollers 74, arranged in the path of the V-shaped arms 70, so that  
 30 with each revolution of the shaft when rotating in either direction said arms 70 will come in contact with the relatively-immovable rollers 74, which overcome the pressure of springs 71 and, disengaging clutch mem-  
 35 bers 68 and 69, permit the tampers, connected, as shown in Figs. 1 and 2, to said wheels, to drop and perform their tamping function, as will be readily understood. This modified  
 40 form of construction is much simpler than that illustrated in Figs. 1 and 2; but as the springs 71 are all mounted upon the shaft it would require the removal of the power-shaft from its bearings each time it became neces-  
 45 sary to replace one of said springs. In the preferred type of construction a repair necessitating a new spring 56 may be easily and quickly made without disturbing the shaft by simply removing the cross-bar 53 from the  
 50 ends of rods 50. Of course it is possible to hold the clutch members 69 in engagement with clutch members 68 of the modified form without mounting the actuating-springs or their equivalents upon the shaft, but the arrangement shown is believed to be the sim-  
 55 plest and most practical way of accomplishing the result desired.

The sleeves or collars are keyed upon the power-shaft in different relative positions in order to permit only a single tamper to drop  
 60 at a time, thereby more equally distributing the strain upon the machine by obviating the necessity of lifting all of the tampers at once. Furthermore, the tamping operation may be more uniformly and effectually performed by  
 65 permitting the tampers to descend alternately—that is to say, it is desirable that the sleeves or collars be so arranged that all of

the tampers shall drop as each fifth of a revolution of the shaft is completed, thereby making uniform the interval of time between  
 70 strokes. In the drawings the positions of the tampers and the connected parts presuppose the tamper 20 rising from the impact with the asphaltum, tamper 19 beginning to fall, tampers 21 and 22 on their downstroke,  
 75 and tamper 23 coming up, but, as above stated, this matter is entirely optional with the engineer in charge of the machine.

While the foregoing description relates to the machine as a tamper for street-pavements,  
 80 it is of course obvious that the mechanism for raising the tampers to a certain height and then tripping them will be found of exceptional advantage in a stamping-mill for  
 85 crushing ore. Therefore I do not wish to confine myself to its use in any particular connection, but claim, broadly, the mechanism for operating the tampers either in connection with a roller or independent of the same,  
 90 and it is to be understood that I reserve the right to make all changes which do not involve a departure from the spirit and scope or sacrifice any of the advantages of the invention.

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

1. The combination of a reciprocatory tamper, a power-shaft, a wheel mounted upon the power-shaft and rotating with the same, an expansive connection between the tamper  
 100 and the wheel, and means to free said wheel from the power of said shaft, and thereby permit the tamper to make its power-stroke, substantially as described.

2. In a combined tamping and rolling machine, a reciprocatory tamper, a driven shaft, a wheel mounted upon said shaft, and a flexible expansive connection between said wheel  
 105 and said tamper, substantially as described.

3. In a combined tamping and rolling machine, a reciprocatory tamper, a driven shaft, a wheel mounted upon said shaft, a flexible expansive connection between said wheel and  
 110 said tamper, means for varying the length of said flexible connection, and means to free  
 115 the wheel from the power of said shaft, substantially as described.

4. In a combined tamping and rolling machine, a reciprocatory tamper, a driven shaft, a wheel journaled thereon and connected to  
 120 the tamper, a sleeve or collar keyed upon said shaft, a spring-actuated frame carried by said sleeve or collar and engaging said wheel to cause the latter to rotate with the former, and means to repress said spring-actuated  
 125 frame and thereby disengage said sleeve or collar and the wheel, substantially as described.

5. A combined tamping and rolling machine, comprising a reciprocatory tamper, a  
 130 driven shaft, a wheel journaled thereon, a flexible connection between the tamper and said wheel, a sleeve or collar upon the shaft, a spring-actuated frame carried thereby and



engaging said wheel, and means to repress said frame and disengage said sleeve or collar and the wheel, substantially as described.

6. A combined tamping and rolling machine, comprising a reciprocatory tamper, a driven shaft, a wheel journaled thereon, a flexible connection between the tamper and said wheel, embodying a retractile spring, a sleeve or collar upon the shaft, a spring-actuated frame carried thereby and engaging said wheel, and means to repress said frame and disengage said collar and wheel, substantially as described.

7. In a combined tamping and rolling machine, a reciprocatory tamper, a driven shaft, a wheel journaled thereon, and connected to the tamper, a sleeve or collar keyed upon said shaft, a spring-actuated frame carried by said sleeve or collar and engaging said wheel to cause the latter to rotate with the former, means to repress said spring-actuated frame and thereby disengage said sleeve or collar and the wheel, and a "knock-off" having cam-faces to adjust said frame in opposition to its actuating-spring, and thereby free the wheel from the sleeve or collar, substantially as described.

8. In a combined tamping and rolling machine, a reciprocatory tamper, a driven shaft, a wheel journaled thereon, and connected to the tamper, a sleeve or collar keyed upon the shaft, a spring-actuated frame carried by said sleeve or collar and engaging said wheel to cause the latter to rotate with the former, means to repress said spring-actuated frame and thereby disengage said sleeve or collar and the wheel, and a "knock-off" having a double cam-face to adjust said frame in oppo-

sition to its actuating-spring, and thereby free the wheel from the sleeve or collar, substantially as described.

9. In a combined tamping and rolling machine, a reciprocatory tamper, a driven shaft, a wheel journaled thereon, a connection between the wheel and the tamper, a sleeve or collar keyed upon said shaft, a sliding frame carried by said sleeve or collar and provided with a pin or dog, an antifriction-roller, a spring for causing said pin or dog to interlock with the hub of said wheel, and a "knock-off" bar having cam-faces to engage said roller and cause the disengagement of said pin or dog with the hub of said wheel, substantially as described.

10. In a combined tamping and rolling machine, a suitable frame, provided with a roller, for compressing and leveling asphaltum, vertically-arranged series of guide-rollers, guide-pulleys, a driven shaft, wheels journaled thereon, a series of reciprocatory tampers having their stems guided between said series of rollers, flexible connections guided over said pulleys and attached at their lower ends to the tamper-stems and at their opposite ends to the peripheries of said wheels so as to wind thereon, means to lock said wheels upon said shaft, and means to free them from the power of said shaft, substantially as and for the purpose set forth.

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

GEORGE A. MAUGER.

Witnesses:

J. L. HANK,  
L. H. CHENET.