

No. 640,550.

Patented Jan. 2, 1900.

F. S. FARR & C. F. NYBERG.

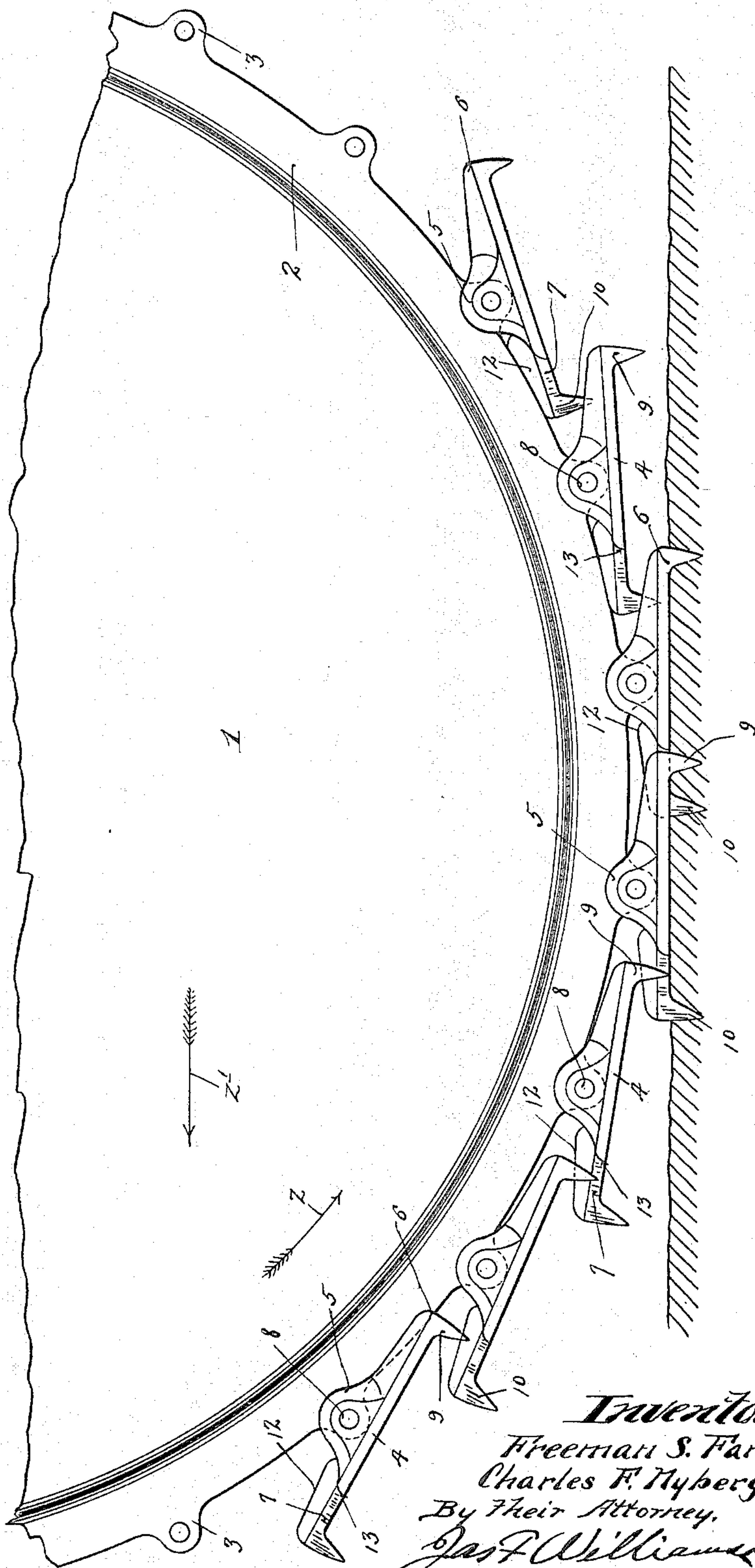
TRACTION WHEEL.

(Application filed Mar. 13, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



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2 Sheets—Sheet 2.

Fig. 2.

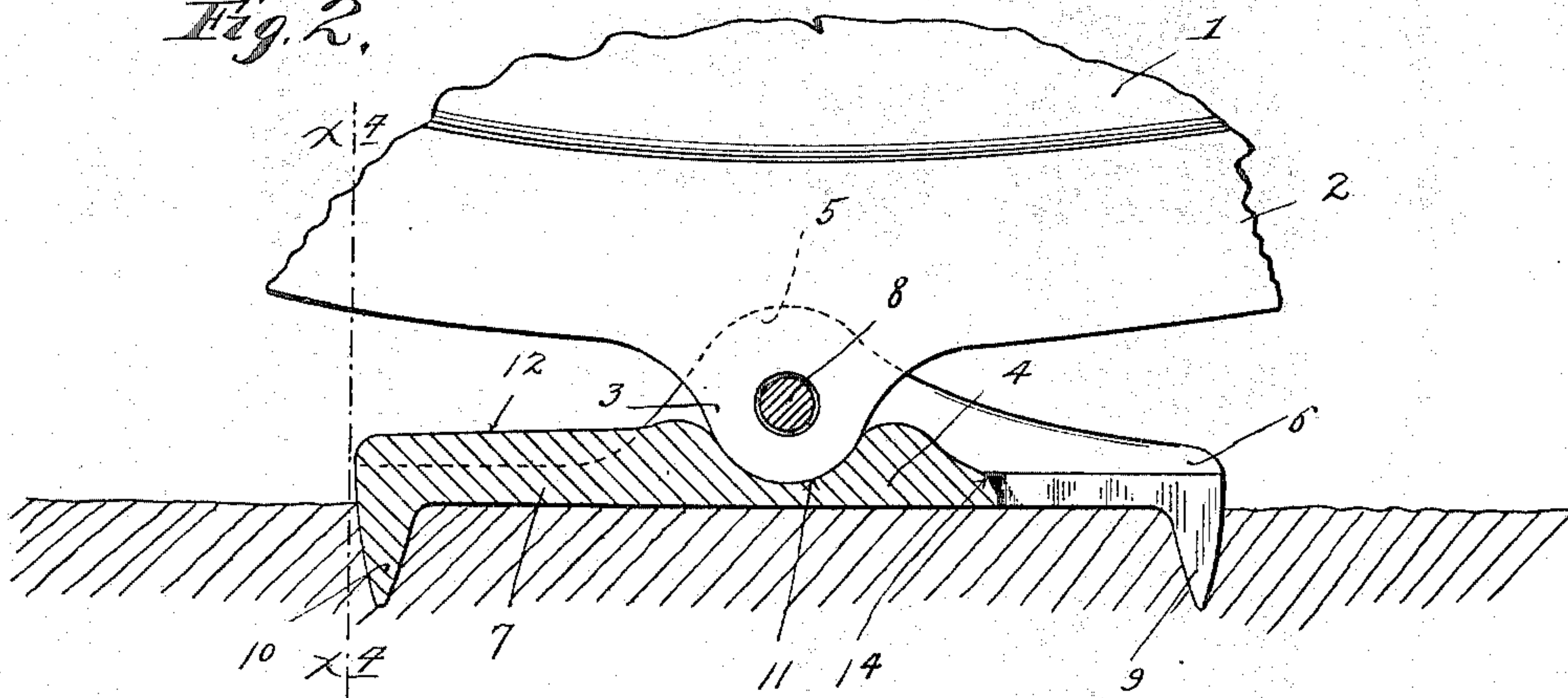


Fig. 3.

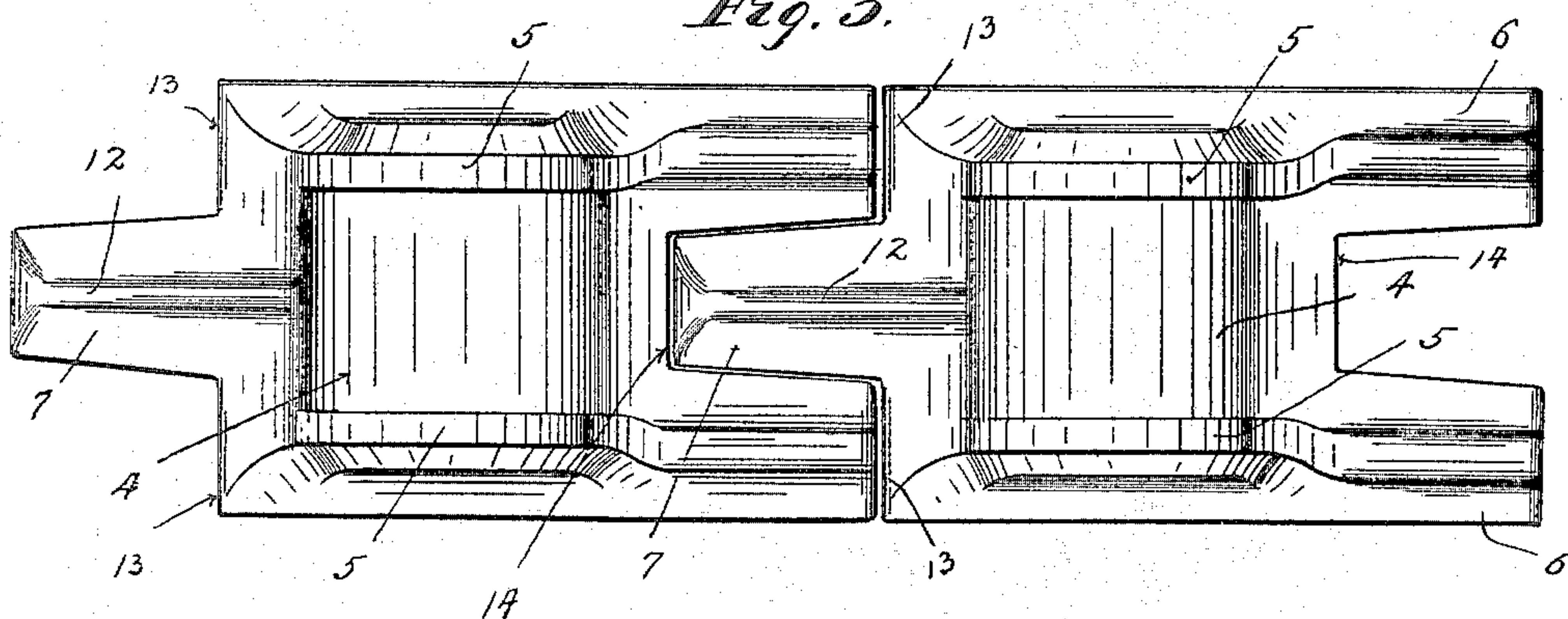
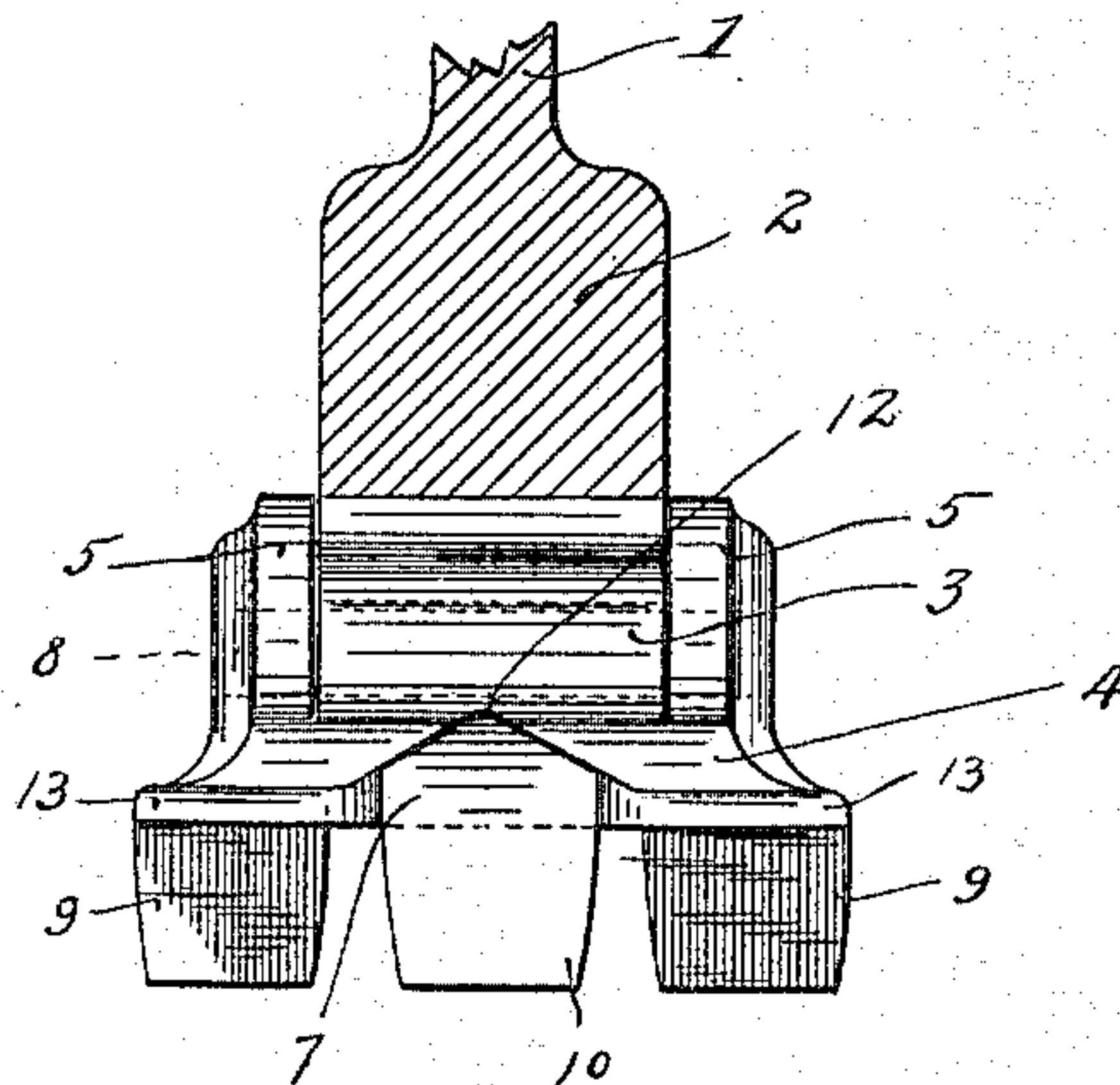


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREEMAN S. FARR AND CHARLES F. NYBERG, OF MINNEAPOLIS, MINNESOTA.

TRACTION-WHEEL.

SPECIFICATION forming part of Letters Patent No. 640,550, dated January 2, 1900.

Application filed March 13, 1899. Serial No. 708,795. (No model.)

To all whom it may concern:

Be it known that we, FREEMAN S. FARR and CHARLES F. NYBERG, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Traction-Wheels; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our present invention relates to traction-wheels of the general character illustrated and claimed in our pending application, Serial No. 692,292, filed September 30, 1898, entitled "Ice-motors," and is particularly directed to the so-called "calk-plates" and the manner of mounting the same for pivotal movements with respect to the traction-wheel which carries them, the object being to obtain certain improved functions, to be hereinafter noted.

The invention in its preferred form is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a side elevation showing a portion of a traction-wheel having our improved calk-plates pivotally mounted thereon in an improved manner and illustrating the actions of the said calk-plates on the road-bed. Fig. 2 is a view, partly in side elevation and partly in vertical longitudinal section, showing one of the calk-plates and a section of the traction-wheel. Fig. 3 is a plan view showing a pair of the calk-plates in their relation to each other when pressed into or onto the road-bed, and Fig. 4 is a transverse vertical section taken approximately on the line $x^1 x^1$ of Fig. 2.

1 indicates a portion of a traction-wheel which, as shown, is provided with a thickened peripheral flange 2, having projected therefrom at intervals a plurality of evenly-spaced and perforated hinge-lugs 3.

The so-called "calk-plates" as entireties are indicated by the numeral 4. These calk-plates are provided with laterally-spaced ears 5, that cooperate with the hinge-lugs 3, and they are further provided with laterally-spaced arms 6 at one of their ends and with centrally-located arms 7 at their other ends. The calk-plates are pivotally connected—one to each of the hinge-lugs 3—by pins or

bolts 8, and when thus mounted the centrally-located arms of the same are positioned to work between the laterally-spaced arms of the adjacent calk-plates, as best illustrated in Fig. 3. The arms 6 and 7 are provided, respectively, with calks 9 and 10, which of course are adapted to enter the ice or other road-bed. This much of the description of the parts would apply to the construction illustrated in our said pending application as well as to the present construction. The points of improvement over the said prior construction will now be considered. By reference to Fig. 2 it will be noted that the pivot bolts or pins 8 are less in diameter than the seats for the same in the cooperating hinge-lugs 3 and that the said calk-plates are provided with bearing-surfaces 11, which under pressure from the weight of the traction-wheel are pressed tightly into engagement with the outer surfaces of the cooperating hinge-lugs. There is of course sufficient play between the pivot bolts or pins 8 and their seats in the hinge-lugs 3 to permit the cooperating bearing-surfaces of the calk-plates and hinge-lugs always to be engaged under the weight of the wheel, so that the weight of the wheel will not be thrown onto the said pivot pins or bolts, but will be taken by the said cooperating bearing-surfaces of the calk-plates and hinge-lugs. This action is decidedly an improvement on our prior construction, wherein the weight of the traction-wheel as well as the driving-strains were taken by the pivot-pins, inasmuch as the cooperating bearing-surfaces, arranged as above described, will wear much longer and are much less liable to break than said pins. Of course when the weight of the wheel is taken off from any particular calk-plate that particular calk-plate becomes free to move on its pivot-pin under the action of gravity.

The calk-plates are pivoted, approximately, at their longitudinal centers, and it is of course obvious that the ends having the laterally-spaced pairs of arms and calks are heavier than are their other ends, which have the single centrally-located arms and calks. With the construction illustrated gravity will hold the calk-plates, which are free from the ground or road-bed approximately, as shown in Fig. 1. Now let it be assumed that the wheel is

being rotated in the direction indicated by the arrow marked Z and is traveling in the direction indicated by the arrow marked Z', in Fig. 1. Now it will be seen that the rearwardly-projecting pairs of calks 9 will strike the road-bed first; but this is of slight consequence, as all three of the calks of a particular plate will be brought into contact with the road-bed before any of the same have been pressed into it; but having once been pressed into the road-bed or ice it becomes important that all three of the calks of a plate be simultaneously withdrawn from the depressions made thereby and by approximately vertical movements. Such action is more important when the traction device is run over an icy road-bed, for if in this case the calks are rocked or withdrawn by a tilting or rocking movement large cavities will be cracked or torn from such icy road-bed. Now in the case of our present improvement the heavy ends of the calk-plates will as the calks are withdrawn tend to hold the light ends—that is, the centrally-located arms 7—against the periphery of the wheel 1 2. The relation of the pivots and central arms of the calk-plates to the periphery of the wheel is such that when the said parts are thus engaged the points of the calks will all be approximately on the level of the surface of the road-bed.

The centrally-located calk-bearing arms 7 are provided with upper surfaces 12, that are V-shaped or approximately V-shaped in cross-section, (see particularly Figs. 3 and 4,) and which as the calks of the calk-plates are withdrawn are thrown against the periphery of the wheel under the action of gravity on the said calk-plates. By this action any snow or ice which may have accumulated or caught upon the arms 7 or upon the adjacent periphery of the wheel will be split in two, as it were, and forced outward from the centers of the arms. This action is also important, as it prevents packing of the ice or snow between the said parts, such as would take place if both of the approaching surfaces of the wheel and the calk-plates were flat.

As another point of improvement attention is called to the fact that the edges 13 and 14 of the calk-plates are reduced and made quite sharp or, otherwise stated, are made relatively very thin as compared with the adjacent surfaces of the calks 9 and 10, respectively, against which they abut or closely fit. This serves to split and crowd from between the said abutting parts all snow and ice, &c., which may have been caught between the same. In this connection it may also be remarked that if two thick or flat and extended surfaces are brought toward each other and

caused to compress snow or ice such snow or ice will be so tightly packed between the parts as to prevent closer movements of the same and in the case at hand would in some cases materially interfere with the proper actions of the calk-plates.

From the foregoing description and statements made the features of improvement residing in our present invention are thought to have been made evident. It will, however, be understood that our invention is capable of considerable modification as to details of construction.

What we claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a wheel, of a plurality of calk-plates pivoted thereto at their intermediate portions, which calk-plates have the laterally-spaced arms 6 constituting their heavy ends, and the centrally-located arms 7 constituting their light ends, said parts operating substantially as described.

2. The combination with a wheel, of traction or calk plates pivoted to the periphery of the same, one of which parts has a surface that is approximately "V-shaped" in cross-section, and is arranged to move against or close to the adjacent surface of the other part, and in virtue of which construction and relation, accumulations of snow, ice, &c., between the said parts are prevented, substantially as described.

3. The combination with the wheel provided with the plurality of hinge-lugs 3, of the plurality of calk-plates 4 pivoted to said hinge-lugs 3 and provided with arms 6 and 7, the centrally-located arms 7 having the upper surface 12 which is approximately "V-shaped" in cross-section, said parts operating substantially as described.

4. The combination with a wheel, of the traction or calk plates pivoted thereto, the said plates having abutting edges, one of which is relatively very thick and the other relatively thin.

5. The combination with a wheel, of the plurality of calk-plates pivoted thereto, and provided with the depending calks 9 and 10 and the reduced and thin edges 13 and 14 arranged to abut respectively against the said calks, substantially as and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

FREEMAN S. FARR.
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Witnesses:

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