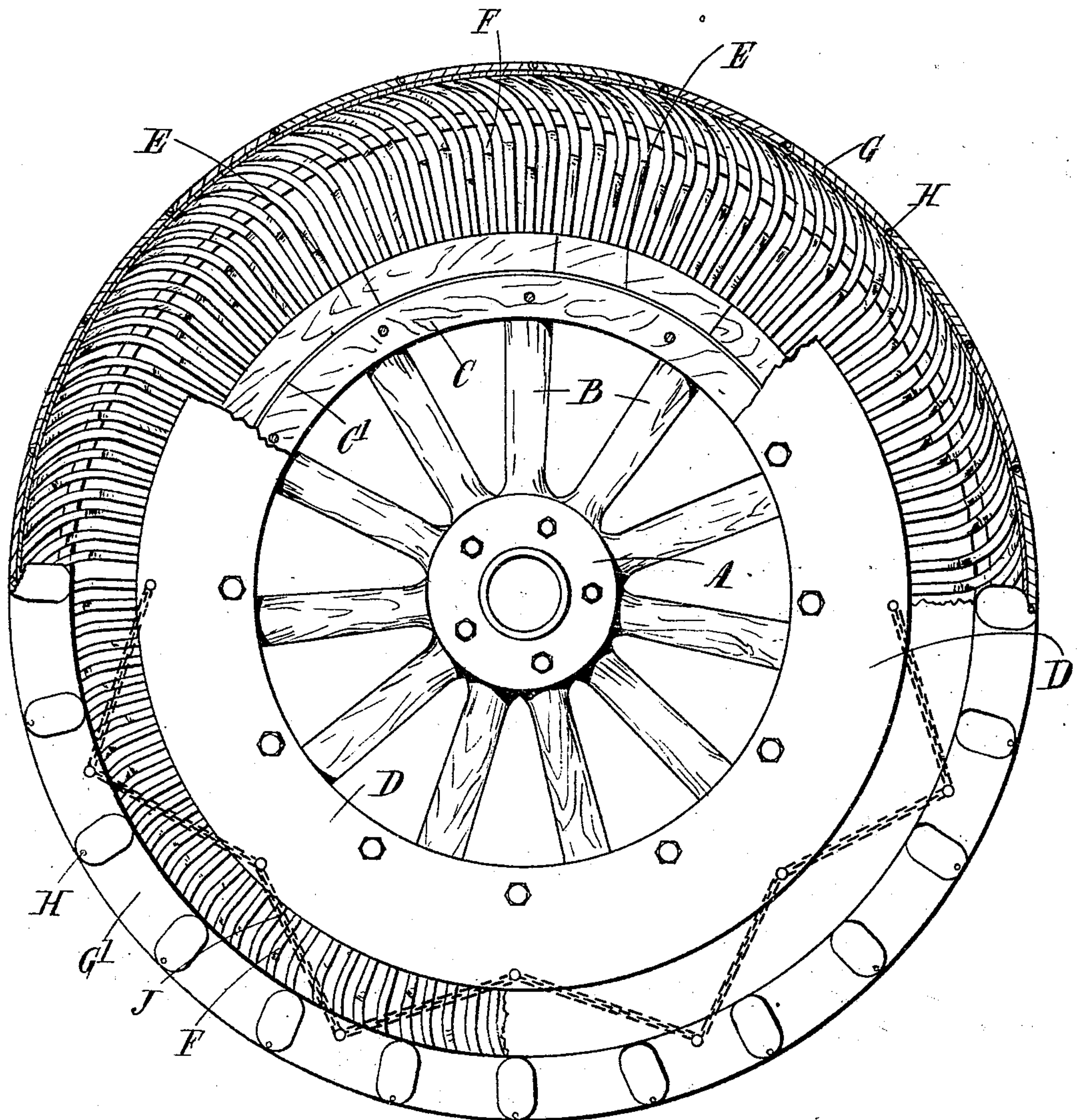


R. V. WAGNER.
RESILIENT WHEEL OR TIRE.
APPLICATION FILED DEC. 23, 1907.

951,209.

Patented Mar. 8, 1910.
4 SHEETS—SHEET 1.

Fig. 1.



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4 SHEETS—SHEET 2.

Fig. 2.

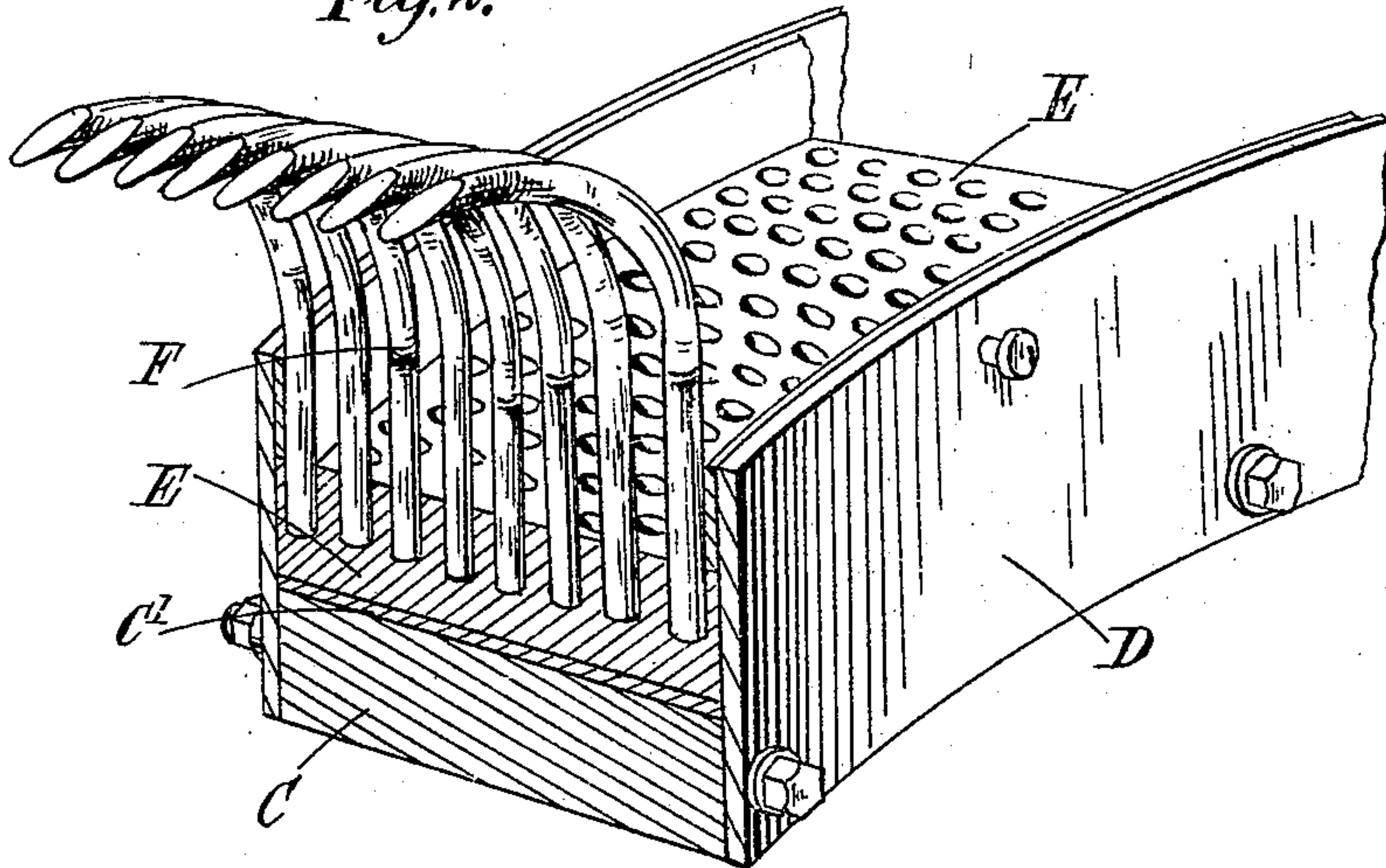
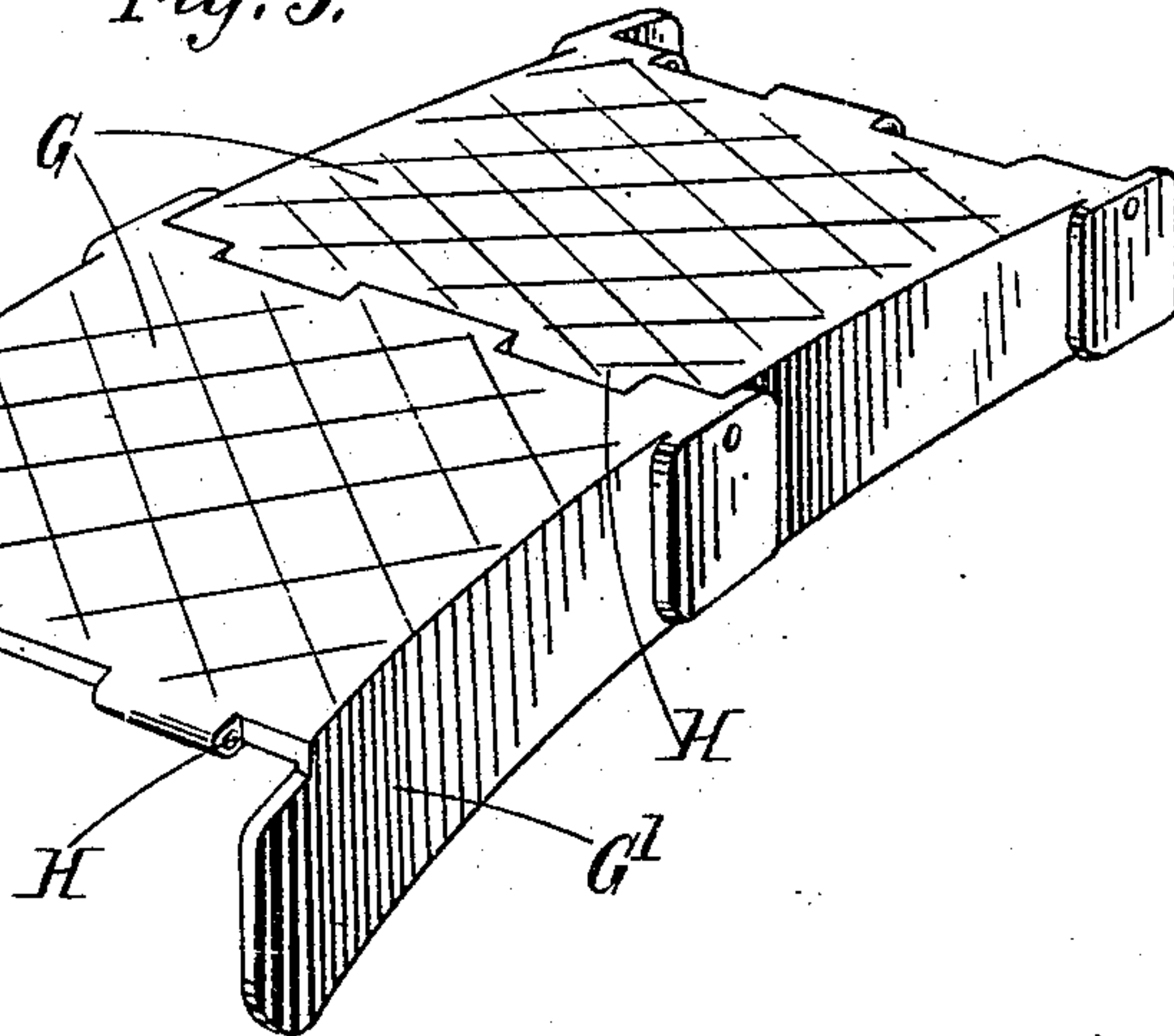


Fig. 3.



Witnesses

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4 SHEETS--SHEET 3.

Fig. 4.

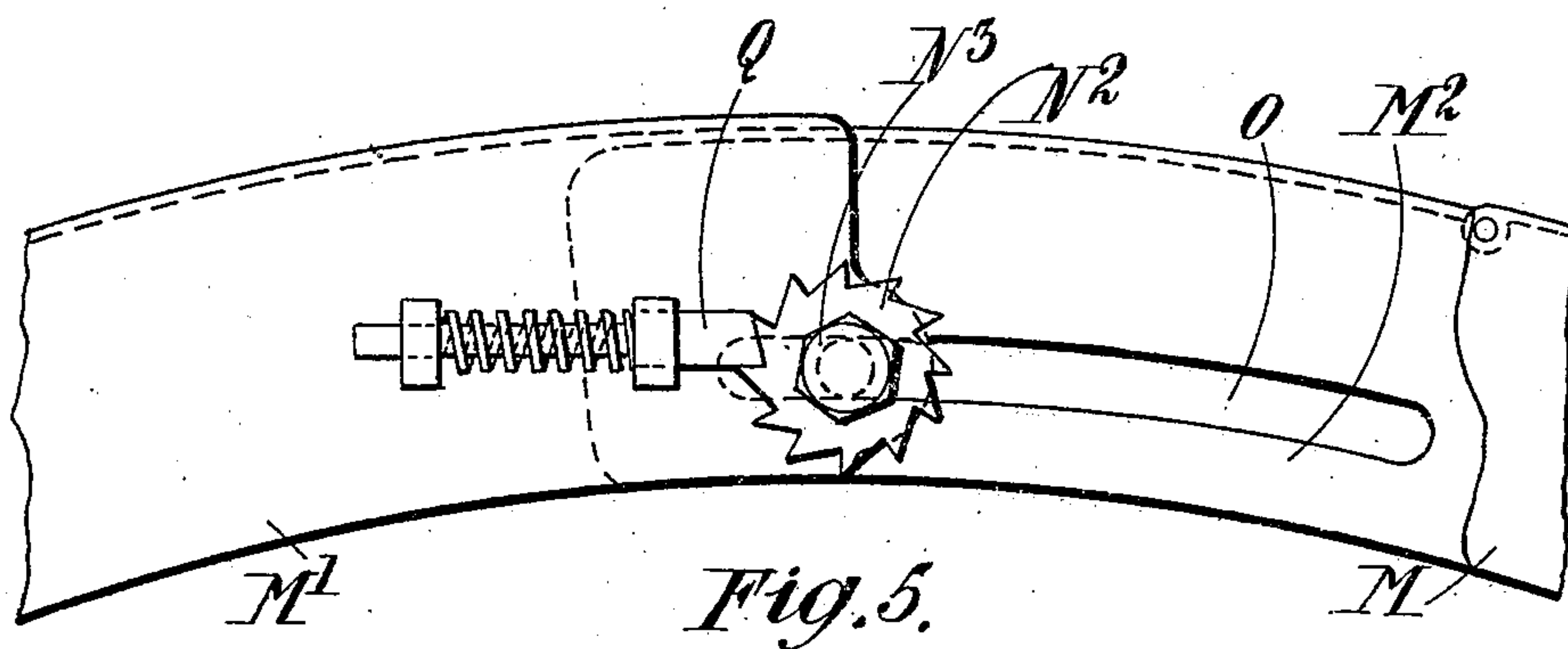
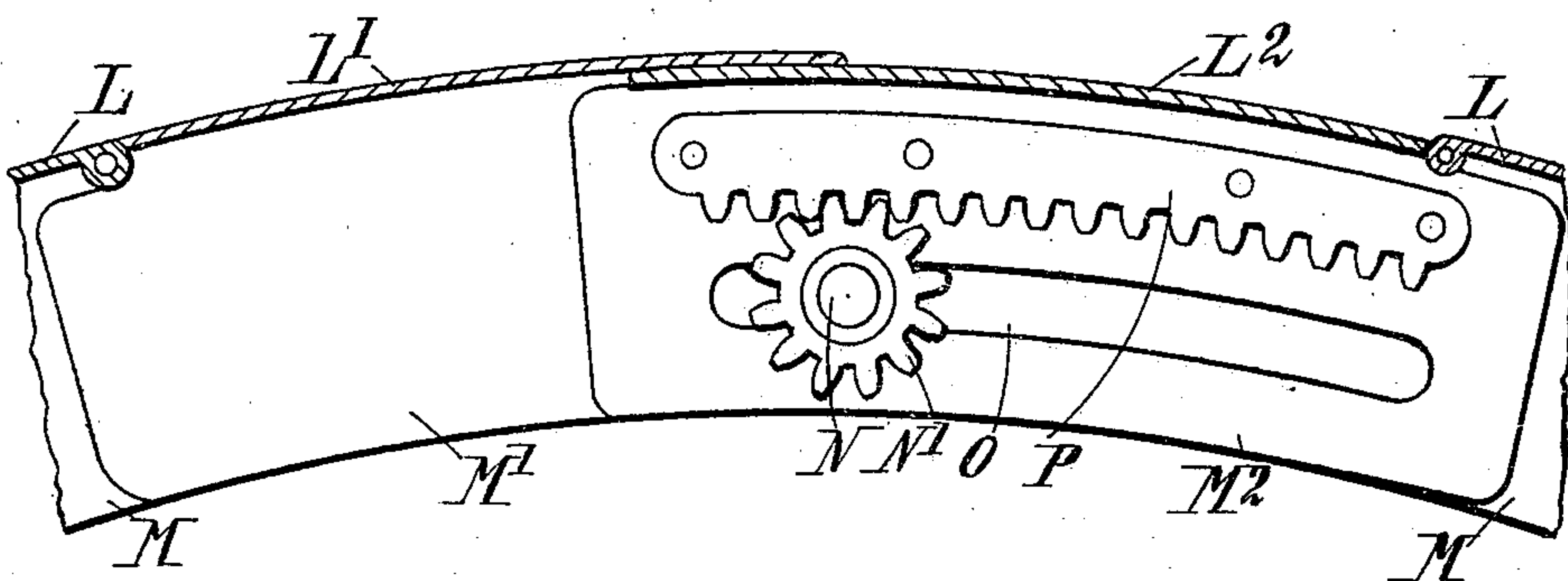


Fig. 5.

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4 SHEETS—SHEET 4.

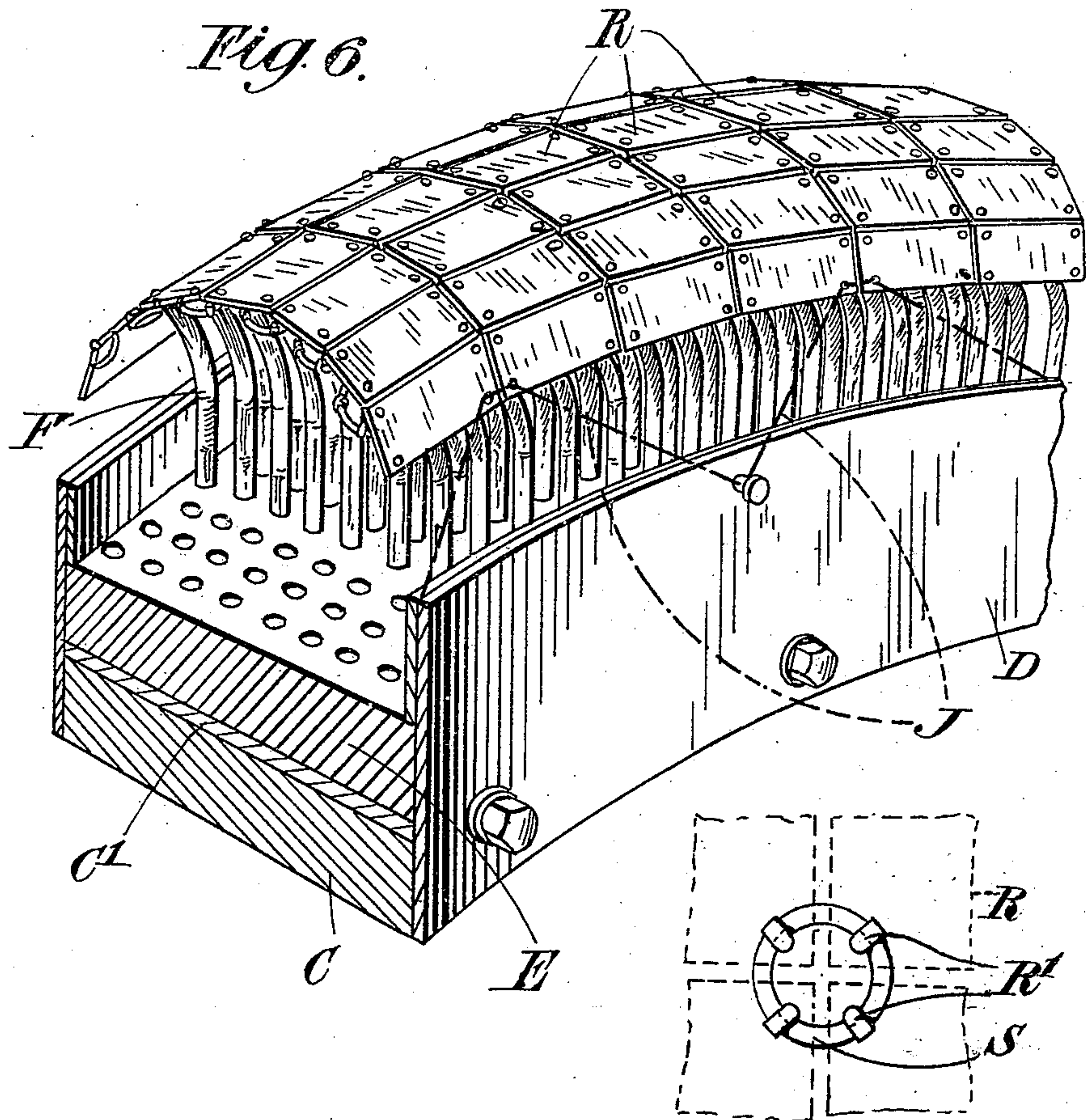


Fig. 7.

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UNITED STATES PATENT OFFICE.

REINHART VICTOR WAGNER, OF LONDON, ENGLAND.

RESILIENT WHEEL OR TIRE.

951,209.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed December 23, 1907. Serial No. 407,807.

To all whom it may concern:

Be it known that I, REINHART VICTOR WAGNER, a subject of the German Emperor, residing in London, England, have invented certain new and useful Improvements in Resilient Wheels or Tires, of which the following is a specification.

This invention relates to resilient wheels or tires, the special feature embodied consisting in a resilient portion or member being suitably secured to the central wheel portion so that it may be applied to any form of wheel. According to this invention the resilient member is made up of a large number of short resilient wooden sticks such as canes secured close together in the form of a brush and firmly inclosed between side flanges. The canes may be pressed over at their free ends so that instead of standing straight out from the back they lie obliquely thereto, each individual cane being by preference curved instead of straight. The constructional details of the arrangement may vary but I will now describe it in detail in one or two of its more particular forms.

As applied to the road wheel of a vehicle the resilient member will comprise the following parts. The first and inner rim, a flange or channel formed in said rim; into this channel are fixed in any convenient manner a large number of the previously mentioned canes. These canes may when first applied stand out radially from the rim, but I prefer to bend them in advance so that when applied to the rim they at once and naturally lie more or less tangentially thereto. They are intended to be placed close together so as to afford support to each other, and at their roots or portions engaged in the inner rim or channel, they are firmly gripped between the flanges so as to hold them tightly or any desired filling material may be employed to make a satisfactory bed at this part. At the periphery of the complete wheel any desired form of tread may be employed; preferably I use an appropriate kind of metal link chain comprising a number of short links or pieces hinged or otherwise pivoted together and connected up as a circle, each link having side flanges or equivalent depending toward the center of the wheel so as to provide a channel for the outer ends of the canes. Any desired means may be employed for tightening this tread band.

In the accompanying drawings which

illustrate by way of example the application of this invention to a road wheel of a vehicle:—Figure 1 is a side elevation of the wheel partly in section; Fig. 2 is a perspective view in section of part of the wheel on an enlarged scale; Fig. 3 is a perspective view of two of the links or shoes forming the tread; Fig. 4 is a longitudinal section of a portion of a modified form of adjustable tread; Fig. 5 is an outside elevation of the same; Fig. 6 is a perspective view of a portion of the rim of a wheel showing a third form of tread, and Fig. 7 shows in detail a method of connecting together the parts of the tread shown in Fig. 6.

Like letters indicate like parts throughout the drawings.

Referring to Figs. 1 to 3, the hub A of the wheel is connected in a known manner by spokes B to an inner rim C to which are bolted two annular side plates D which are of greater diameter than the inner rim so as to project out and form an external annular channel. A metal band C¹ embraces the inner rim C. A number of arc-shaped blocks E conveniently of wood and together constituting a complete ring are slipped into the annular channel between the side plates D and may if necessary be secured therein by screws, bolts or the like and each block may be perforated all over its circumference. Into each of these blocks E are fixed (say by glue) a large number of short rods of cane F projecting radially from the blocks E and curved at their outer ends as shown. Both circumferentially and transversely the canes are placed close together so as to afford support to each other and practically so as to form a compact brush. The advantage of using independent fittings or blocks E to hold the canes is that these can be readily removed or replaced. Outside the bent ends of the canes and inclosing them is a tread comprising a number of short links or shoes G hinged together as at H, each link G having side flanges G¹ or equivalent depending toward the center of the wheel so as to provide a channel for the outer ends of the canes.

It will thus be seen that the resilient member consists of three parts; the inner ring or channel forming the support for the roots of the canes; second, the canes themselves; and third, the outside rim or tread. Each individual cane is intended to have sufficient room to play on its own account and afford its share of the total resiliency; nevertheless

so long as that movement is attainable, the canes may be as near together as desired. To prevent relative movement or creeping between the tread and inner rim, connecting links J or any other appropriate means may be employed. The canes may be treated with some preservative such for example as beeswax and finished with liquid glue at the ends of the sticks; or creosote would be satisfactory. The open sides of the resilient member may be closed in with a suitable, pliable material and in this case leather is used. In applying the tread, the canes are initially brought into compression so that they will normally be in compression when the wheel is in use.

Referring to Figs. 4 and 5 which illustrate a tread consisting of an outer rigid band, this comprises a flat band L of appropriate dimensions to inclose the resilient portion of the wheel and having inwardly turned flanges M which may be contiguous or divided at intervals and extend around the whole circumference of the wheel. The band L may be made in one or more pieces or sections as desired, and in any case means are provided at one joint so that the length of the band may be adjusted. In the form shown the part L¹ overlaps the part L² and in the same way the part M¹ overlaps the part M². Rotatably mounted in the part M¹ is a short spindle N carrying at its inner end a toothed wheel N¹ and carrying at its outer end a ratchet wheel N² and a nut N³. A slot O is formed in the inner flange M² and the spindle N projects therethrough and can slide therein. Fixed within the flange M² and engaging with the toothed wheel N¹ is a rack P. By applying a key to the nut N³ and turning the spindle N the parts L¹ L² can be drawn closer together or moved wider apart so as to adjust the tread. A spring bolt Q outside the part M¹ may be used to engage the ratchet wheel N² and fix the spindle N.

Referring to Figs. 6 and 7, the canes F may be covered by a tread consisting of a great number of small metal plates R fastened together to form a flexible metal band. As shown in Fig. 7, the plates R may have on their inner side at each corner a metal pin or staple R¹. A metal ring S is placed around the four pins R¹ at the meeting corners of four contiguous plates and the pins R¹ are then bent over the ring S whereby the four contiguous plates are flexibly connected together. The tread R is secured to the inner rim D by connecting links J.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a spring wheel the combination of an inner rim, short canes projecting therefrom and secured together in the form of a brush, an outer tread consisting of a metallic band embracing the periphery of the canes

and means for connecting the tread to the inner rim.

2. In a spring wheel the combination of an inner rim, short canes projecting therefrom and secured together in the form of a brush, an outer tread consisting of a metallic band embracing the periphery of the canes, means for connecting the tread to the inner rim, and means for keeping mud out of the brush of canes.

3. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an annular channel, arc-shaped blocks removably fixed in said channel and forming a ring therein, short rods of cane in the form of a brush projecting radially from the blocks and a tread consisting of a metallic band embracing the periphery of the canes.

4. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an annular channel, arc-shaped blocks removably fixed in said channel and forming a ring therein, short rods of cane in the form of a brush projecting radially from the blocks and bent over at their ends, and a tread consisting of a metallic band embracing the periphery of the canes.

5. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an annular channel, arc-shaped blocks removably fixed in said channel and forming a ring therein, short rods of cane in the form of a brush projecting radially from the blocks and bent over at their ends and a tread consisting of a flexible metallic band embracing the periphery of the canes.

6. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an annular channel, arc-shaped blocks removably fixed in said channel and forming a ring therein, short rods of cane in the form of a brush projecting radially from the blocks and bent at their ends, and a tread consisting of metal plates hinged together and embracing the periphery of the canes.

7. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an external annular channel, arc-shaped blocks of wood removably fixed in said channel and forming a ring therein, short rods of cane fixed into said blocks in the form of a brush projecting

radially from the blocks and curved over at their outer ends, and a tread surrounding the bent ends of the canes comprising metal shoes pivoted together to form a flexible band around the canes and having side flanges to provide a channel for the outer ends of the canes.

8. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an annular channel, arc-shaped blocks removably fixed in said channel and forming a ring therein, short rods of cane impregnated with beeswax in the form of a brush projecting radially from the blocks and a tread consisting of a metal band embracing the periphery of the canes.

9. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an external annular channel, arc-shaped blocks of wood removably fixed in said channel and forming a ring therein, short rods of cane fixed into said blocks in the form of a brush projecting radially from the blocks and curved over at their outer ends, a tread surrounding the bent ends of the canes comprising

metal shoes pivoted together to form a flexible band around the canes and having side flanges to provide a channel for the outer ends of the canes, and links connecting the shoes to the inner rim.

10. In a spring wheel the combination of a hub, spokes projecting therefrom, an inner rim connected to the spokes, annular side plates bolted to the inner rim and projecting therefrom to form an external annular channel, arc-shaped blocks of wood removably fixed in said channel and forming a ring therein, short rods of cane fixed into said blocks in the form of a brush projecting radially from the blocks and curved over at their outer ends, a tread surrounding the bent ends of the canes comprising metal shoes pivoted together to form a flexible band around the canes and having side flanges to provide a channel for the outer ends of the canes, links connecting the shoes to the inner rim, and a ring of leather secured to the shoes and to the inner rim to keep out the mud.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

REINHART VICTOR WAGNER.

Witnesses:

HARRY B. BRIDGES,
HERBERT BURRAGE.