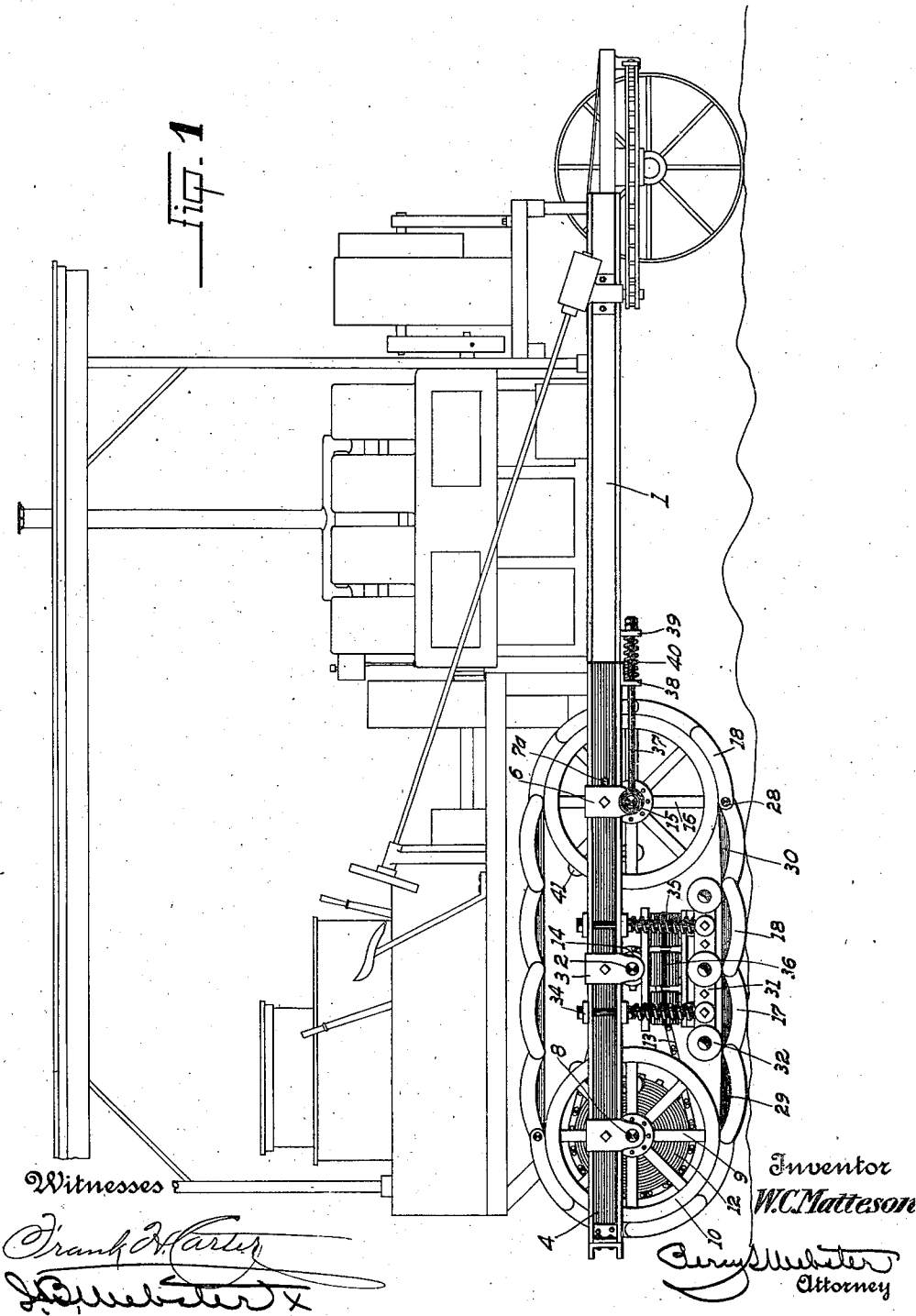


W. C. MATTESON.
FLEXIBLE BAND WHEEL.
APPLICATION FILED MAR. 23, 1910.

1,011,634.

Patented Dec. 12, 1911.

8 SHEETS—SHEET 1.



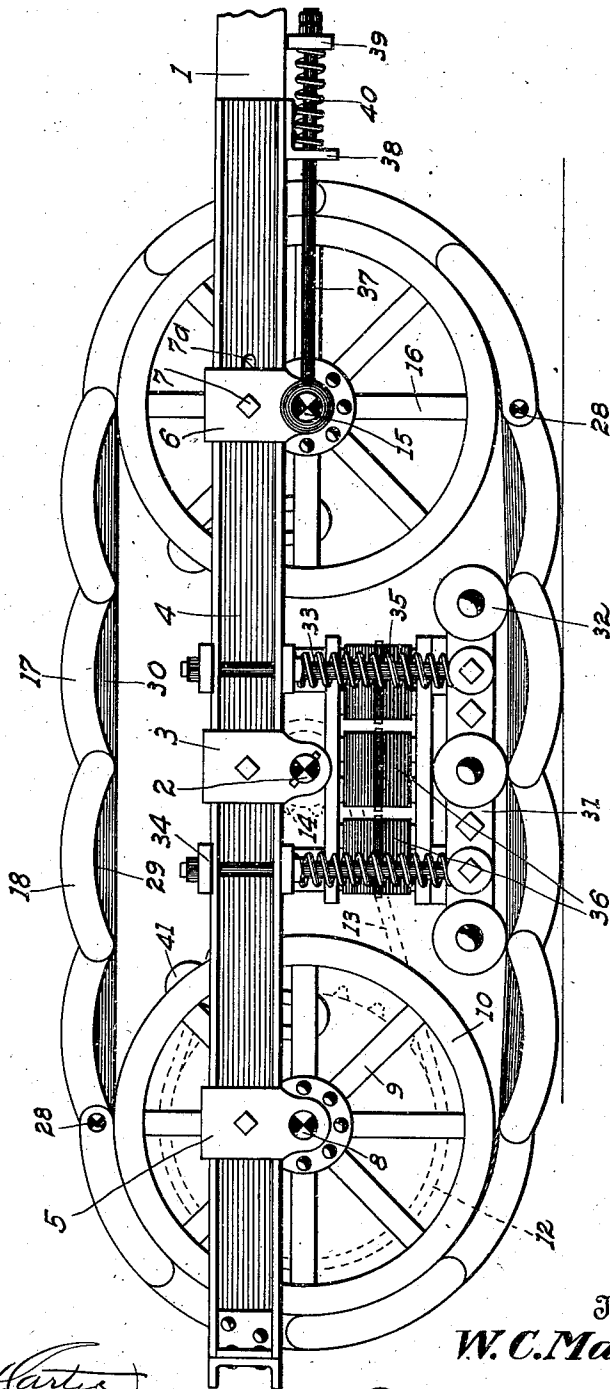
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8 SHEETS—SHEET 2.

Fig. 2



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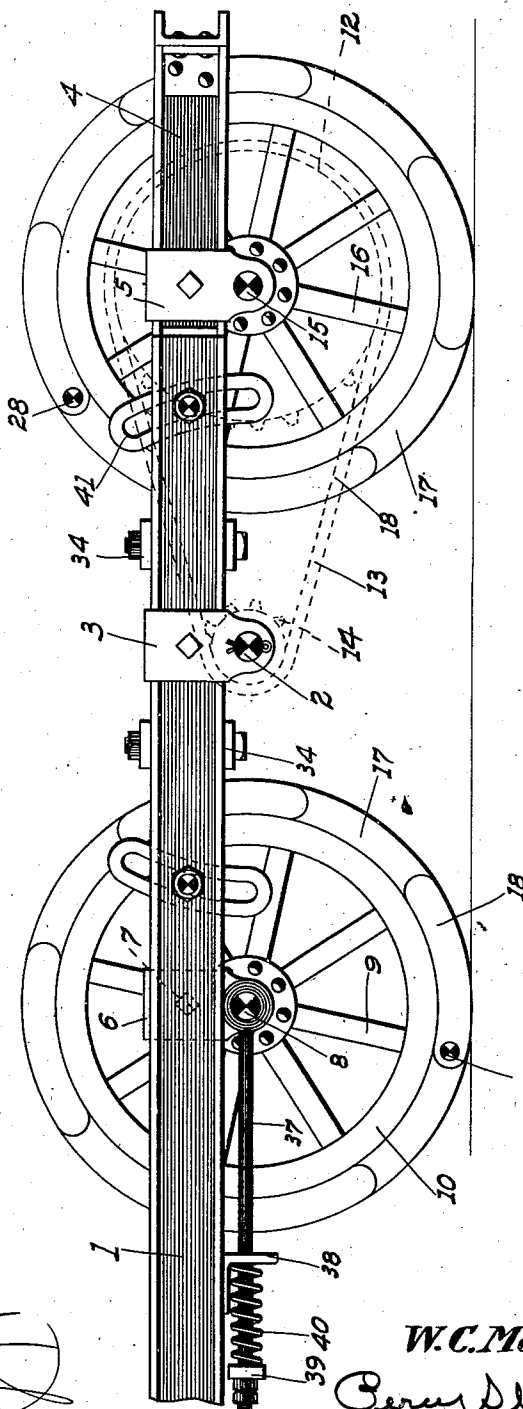
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8 SHEETS—SHEET 3.

Fig. 3



Witnesses

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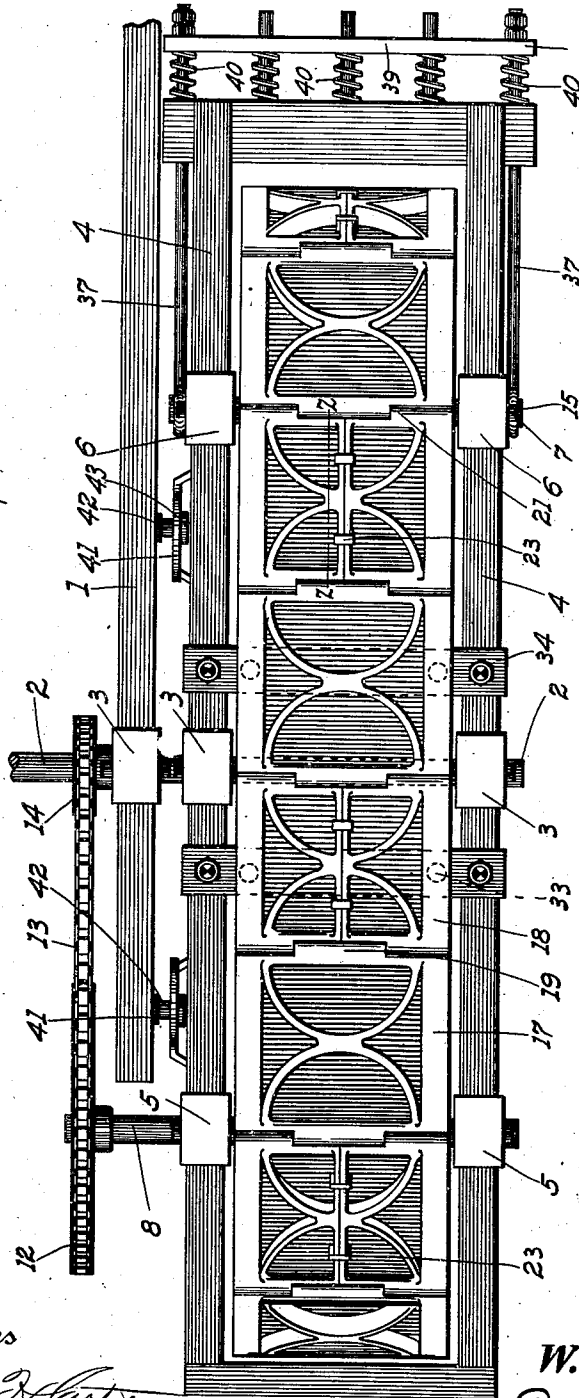
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8 SHEETS-SHEET 4.

Fig. 4



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8 SHEETS—SHEET 5.

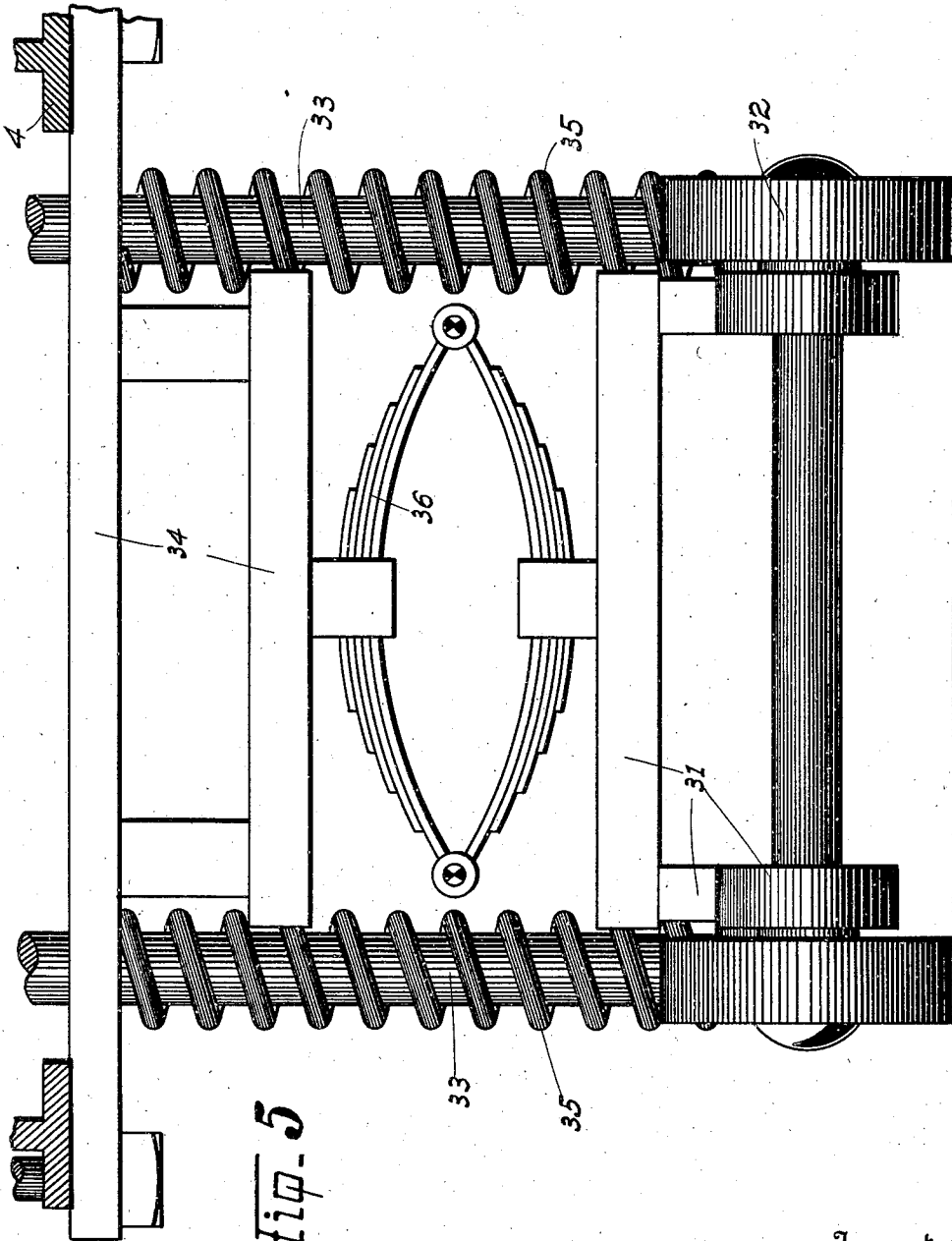


Fig. 5

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8 SHEETS—SHEET 6.

Fig. 6

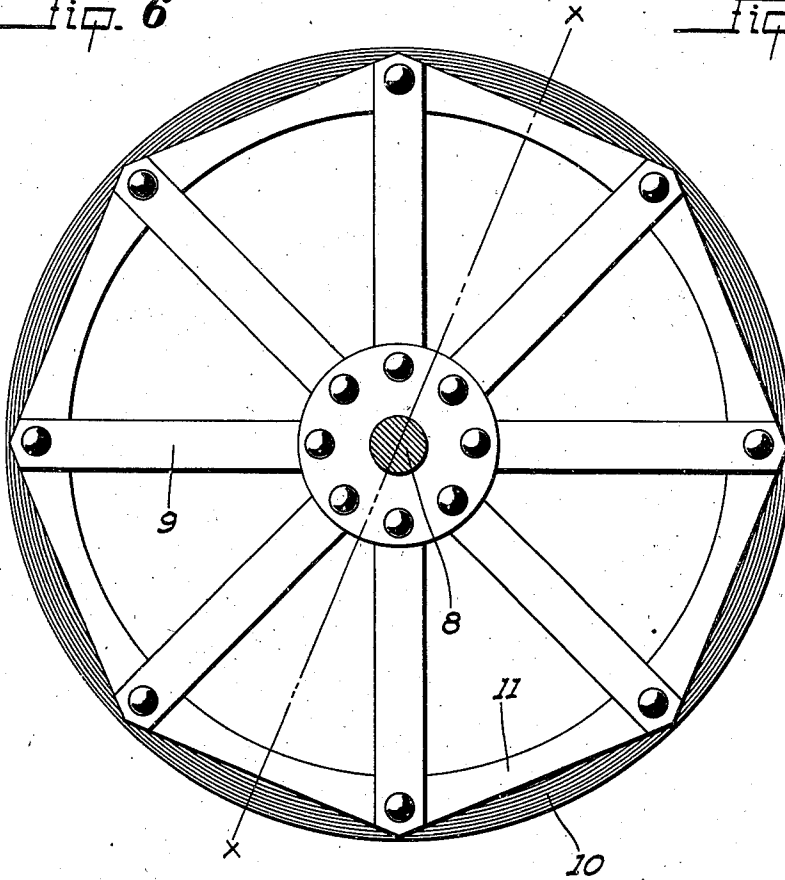


Fig. 7

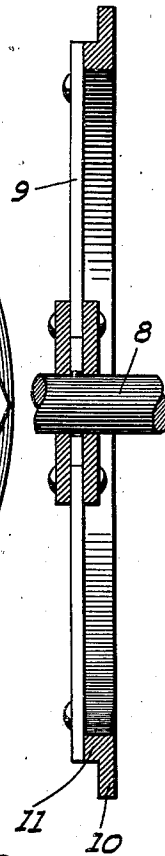
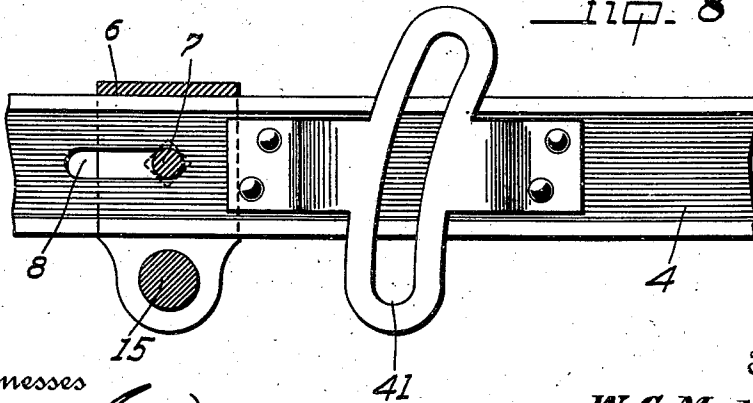


Fig. 8



Witnesses

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8 SHEETS—SHEET 7.

Fig. 9

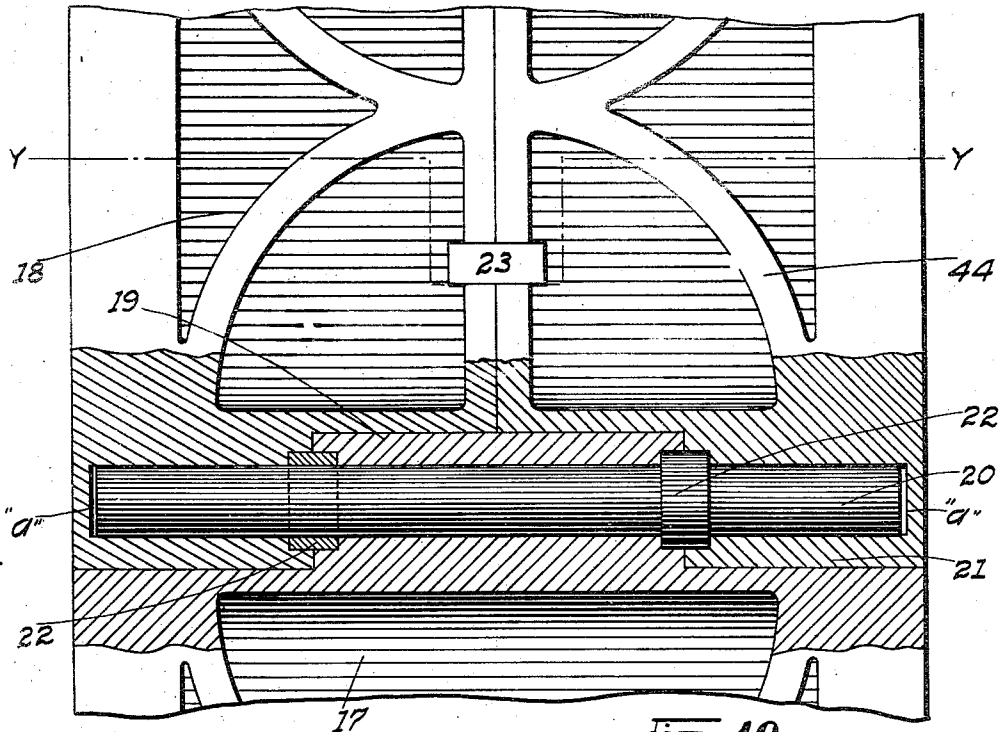


Fig. 10

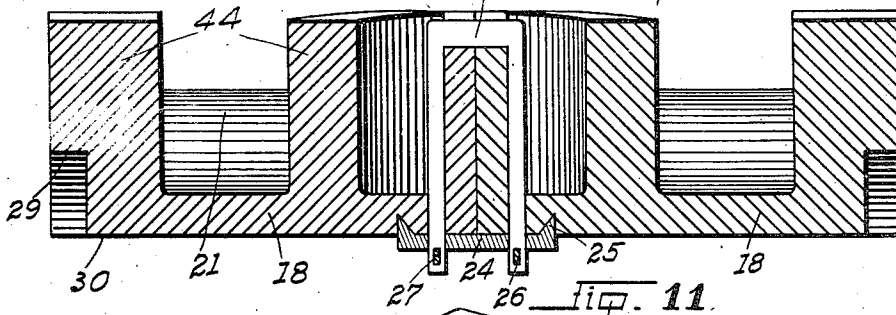


Fig. 11

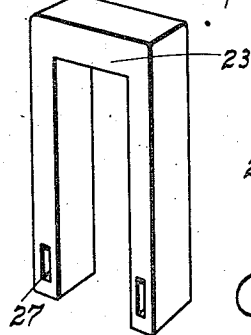
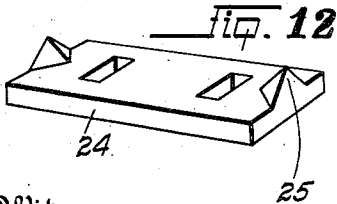


Fig. 13

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APPLICATION FILED MAR. 23, 1910.

1,011,634.

Patented Dec. 12, 1911.
8 SHEETS—SHEET 8.

Fig. 14

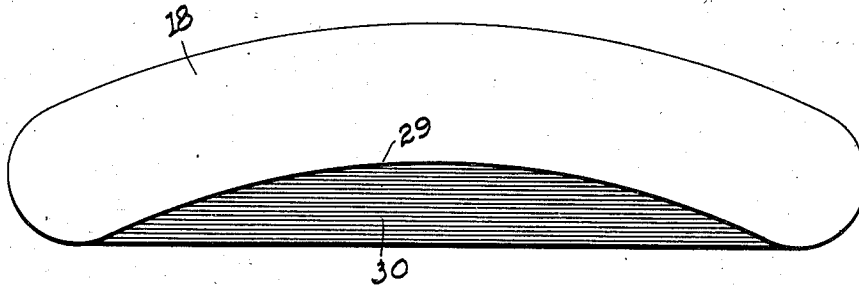


Fig. 15

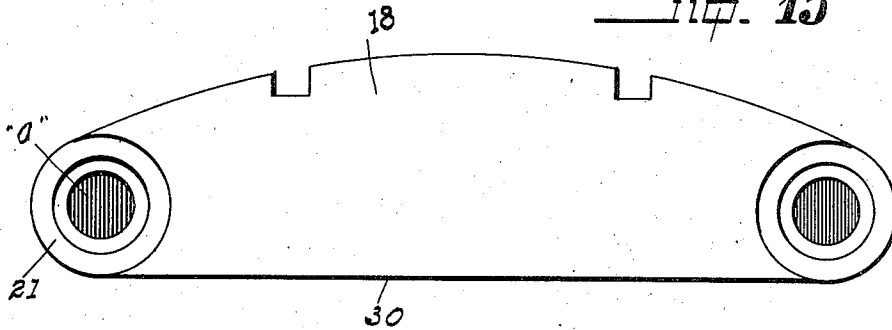


Fig. 16

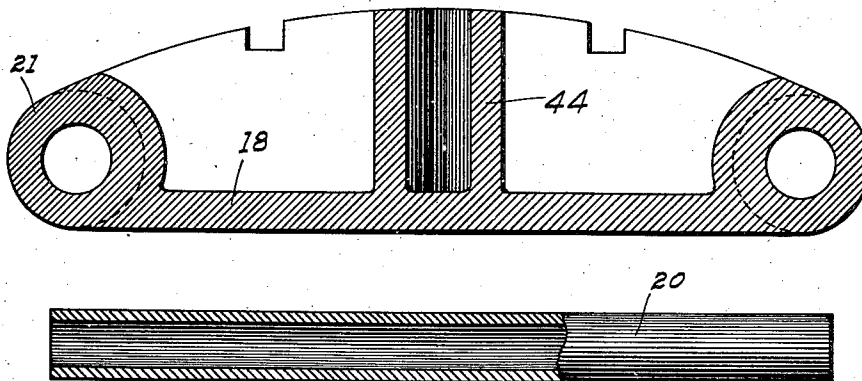


Fig. 17



Witnesses
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UNITED STATES PATENT OFFICE.

WALTER C. MATTESON, OF SAN JOSE, CALIFORNIA.

FLEXIBLE-BAND WHEEL.

1,011,634.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed March 23, 1910. Serial No. 551,093.

To all whom it may concern:

Be it known that I, WALTER C. MATTESON, a citizen of the United States, residing at San Jose, in the county of Santa Clara, State of California, have invented certain new and useful Improvements in Flexible-Band Wheels; and I do declare the following to be a full, clear, and exact description of the same, 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, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in wheels used for all purposes the object of the invention being to produce a simple and inexpensive flexible wheel truck the same being substantially elongated in shape and having a flexible endless band to present a long flat tread to the ground surface such truck having a center hub and spaced outer operating wheels over which the band is operated one of which wheels is driven by the power from the vehicle to which the truck is attached, the entire band wheel truck being flexible to conform to all unevenness of surface and being also flexibly secured to the vehicle to which it is attached to permit such vehicle to at all times remain in substantially an even plane regardless of what rough and uneven surfaces the band wheel truck passes over the weight of the load being carried by an auxiliary spring truck secured to the frame of said flexible band truck and bearing against the upper side of the lower portion of such flexible band.

A further object of the invention is to produce such a band as may be changed from the single elongated band wheel to two round wheels by breaking the same at two points and forming the two remaining parts as a tire around each of the operating wheels above noted.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purposes for which it is designed.

These objects, I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings, similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a side view of a traction en-

gine showing my improved flexible band truck installed thereon. Fig. 2 is a side elevation of the flexible band truck complete. Fig. 3 is a similar view showing the change from a flexible band truck to a two round wheel truck. Fig. 4 is a top plan view of the flexible band truck complete. Fig. 5 is an end elevation of the supporting auxiliary truck. Fig. 6 is an inside elevation of one of the inside truck operating wheels. Fig. 7 is a sectional view taken on a line $x-x$ of Fig. 6. Fig. 8 is a side view of a portion of the main band truck frame showing a sliding box structure and also a slotted yoke. Fig. 9 is a top plan view of a portion of two segments of the flexible band showing the joint between them in section. Fig. 10 is a sectional view taken on a line $y-y$ of Fig. 9. Fig. 11 is a perspective view of a joining yoke. Fig. 12 is a perspective view of a joining plate or bar. Fig. 13 is a perspective view of a split key. Fig. 14 is a side elevation of a male segment of the flexible band. Fig. 15 is an inside view of one portion of a female segment of the flexible band. Fig. 16 is a sectional view taken on a line $z-z$ of Fig. 4. Fig. 17 is a side view partly in section of a hollow joint pin.

Referring now more particularly to the characters of reference on the drawings 1 designates the main frame of the vehicle to which my improved band truck wheel is attached which vehicle may be power driven as a traction engine as shown in Fig. 1 or any other vehicle such as a hauling truck, wagon or other similar vehicle. On said frame 1 is suitably secured a shaft or axle 2 mounted on which is the journal box or hub 3 of my improved flexible band truck which hub carries an elongated or oblong frame 4 carrying rigid journal boxes 5 at its rear end and journal boxes 6 at its forward end such boxes 6 having rods 7 movable in slots 7^a in said frame 4. In the boxes 5 is journaled a shaft 8 on which are secured two spaced wheels 9 having outer round rims 10 and inner octagonal shaped rims 11. The shaft 8 and incidentally the wheels 9 are rotated with the power of the vehicle by means of a sprocket 12 on the shaft 8 driven by a chain 13 connecting with a loose sprocket 14 on the shaft 2 which sprocket 14 may be suitably connected with the operating power of the vehicle in any way desired. In the boxes 6 is journaled a shaft 15 carrying two spaced wheels 16 alined with the

wheels 9 and having similar outer rims 10 and inner rims 11.

Mounted on the wheels 9 and 16 is a band composed of equal solid segments 17 and 18 male and female respectively as described hereinafter, the outer side of each segment being a part of a perfect circle to permit of the band being changed to a round tire for each set of wheels when desired as will appear. The segments 17 and 18 are flexibly joined as follows: Each of the male members 17 has a projecting hollow lip 19 in which is inserted a hollow pin 20 over which are fitted sleeves 21 of the female member 18 which is split into two parts suitably clamped together as will appear. In practice, the hollow pin 20 is filled with oil and collars 22 fit around the same and are countersunk into the members 19 and 21 to form a tight joint therebetween the oil in said hollow pin 20 working through a space "a" between the ends of said hollow pins and the bottoms of the members 21, thus thoroughly lubricating the joints between the segments. The female members 18 as above stated are in two parts which when fitted onto the male members as described are joined by a clamp 23 projecting through both members and receiving a cross bar or plate 24 having wedge shaped lugs 25 which project into recesses in the under side of the two members of the segments 18 to draw the same close together and then the bar 23 is held in place and made to perform its functions by means of split keys 26 which project through key ways 27 in the ends of the clamps 23.

For joining the flexible band over the wheels 9 and 16 two or more pins 28 project from end to end of the joining places between the segments, (see Figs. 2 and 3) and thus when desired the same may be changed from a band wheel truck as shown in Fig. 2 to a two round wheel truck as shown in Fig. 3 by unjointing the band and forming each part around the wheels 9 and 16.

The under sides of the segments 17 and 18 have circular portions 29 to conform to the rims 10 and square portions 30 to conform to the octagonal rims 11 whereby the operation of the wheel 9 will drive said band around over the wheels 9 and 16.

When the device is used as a band wheel truck the wheels 9 and 16 remain normally above the plane of the ground surface as shown in Fig. 2 the wheels 9 and 16 merely acting as operating wheels to cause said band to travel, the weight of the load being carried by an auxiliary truck comprising a base frame 31 having rollers 32 bearing against the flat under surface of the band said base frame 31 having vertical rods 33 movable through cross frames 34 bolted or otherwise fastened to the frame 4 on each side of the center hub 3, there being spiral springs 35 disposed around the rods

33 and interposed between the frame 31 and 34 and also a nest of elliptical springs 36 is interposed between the said frames 31 and 34. These springs 35 and 36 sustain the load as will readily appear and keep the tread of the band below the plane of the wheels 9 and 16 as above described. When the device is used as a two round wheel truck, then of course this auxiliary truck just described is not used but the load is sustained on the flexible band as tires on the two wheels 9 and 16.

Flexibility of the band member coupled with the sliding box 6 as described permits the band to conform to any unevenness or roughness of surface the said band being held in its normal taut position and being prevented from sagging by means of rods 37 secured to the box 6 and projecting through a flange 38 on the frame 4 and having a cross bar 39 bolted on their outer ends there being a nest of springs 40 interposed between said flange 38 and said bar 39 which springs hold the band in normal taut position but also permit it to adjust itself to the ground surface. Further the whole truck is flexibly disposed with relation to the main frame and body of the vehicle by reason of the same being connected pivotally with the said body by the shaft 2 and the frame 4 having slotted yokes 41 in which bearing pins 42 on the frame 1 project, such pins having retaining flanges 43 holding them in place in said slotted yokes this structure permitting the band wheel truck to move up and down to conform to the ground surface while the body 1 may remain in the same even plane at all times, and still the yokes 41 and pins 42-43 will take the side strain off of the main hub 3 and axle 2 in going around corners or the like.

The use of the octagonal shaped rim 11 on the supporting wheels 9 and 16 to break the joints of the band and tire at each segment as it moves over said wheels requires less joints for the same length of band than would the usual method of using sprockets and chains. The surfaces of the members 17 and 18 are cut or gouged out to form tractive spades or ribs 44. These can be of any form or shape desired.

From the foregoing description it will be readily seen that I have produced such a band wheel truck as substantially fulfils the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention.

Having thus described my invention what I claim as new and useful and desire to secure by Letters Patent is:—

1. A flexible band truck comprising a

frame, a central hub on said frame, two wheels journaled in said frame, a round rim and an octagonal rim on said wheels and a flexible band composed of segments each segment having a round portion and a square portion to fit said round and octagonal rims respectively as described.

2. A flexible band truck comprising a frame having two wheels mounted therein, a flexible band movable over said wheels such band comprising a plurality of segments, male and female, projecting lips on said male segments, hollow pins projecting through said lips, sleeves on said female members fitting over said hollow pins, and collars around said pins and projecting into said lips and sleeves.

3. A flexible band wheel truck comprising a frame, two wheels in said frame, a flexible band disposed over said wheels, such band comprising male and female segments flexibly joined, the female segments being in two parts, U-shaped clamps disposed through

both parts, cross bars on the ends of said clamps, wedge shaped lugs on said cross bars projecting into said parts and split keys disposed through the ends of said clamps and impinging against said cross bars.

4. A device as described comprising a frame, two wheels mounted therein in spaced relation, a flexible band disposed over said wheels, such band comprising male and female sections, such female members being suitably joined and each having a projecting lug having an inner recess forming a sleeve, projecting tongues on said male members projecting between said lugs and having pins projecting into said recesses as described.

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

WALTER C. MATTESON.

Witnesses:

PERCY S. WEBSTER,
JOSHUA B. WEBSTER.