

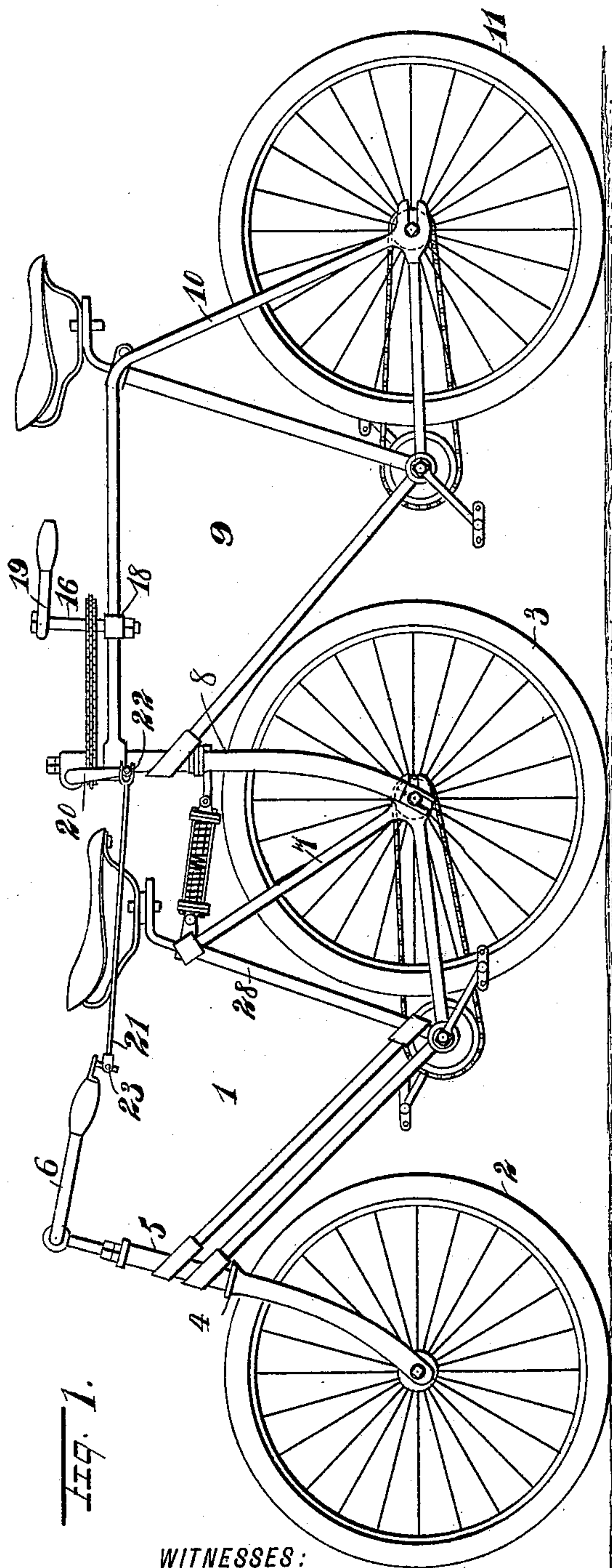
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2 Sheets—Sheet 1.

H. M. HUNT.
TANDEM.

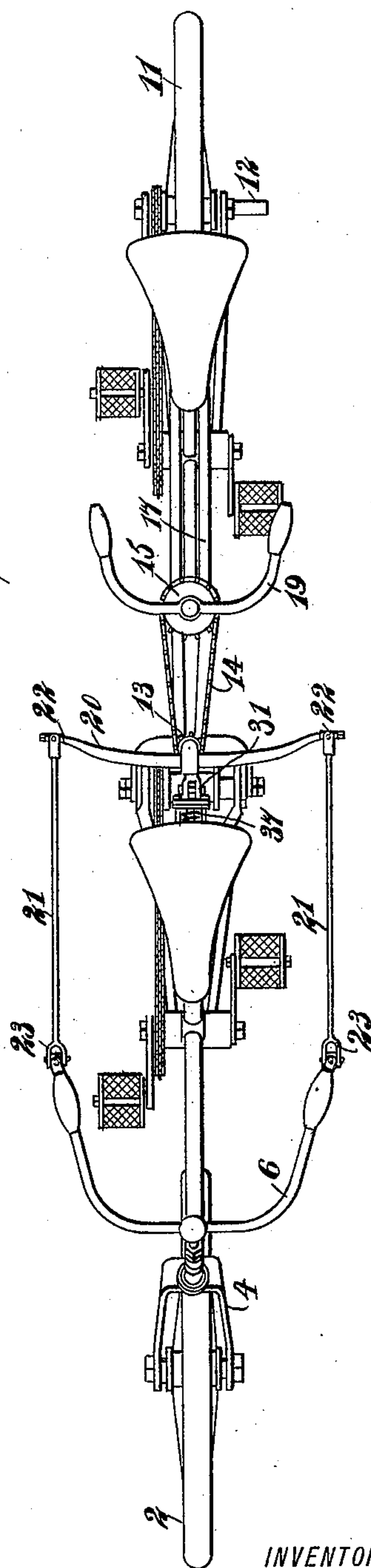
No. 598,872.

Patented Feb. 8, 1898.



WITNESSES:

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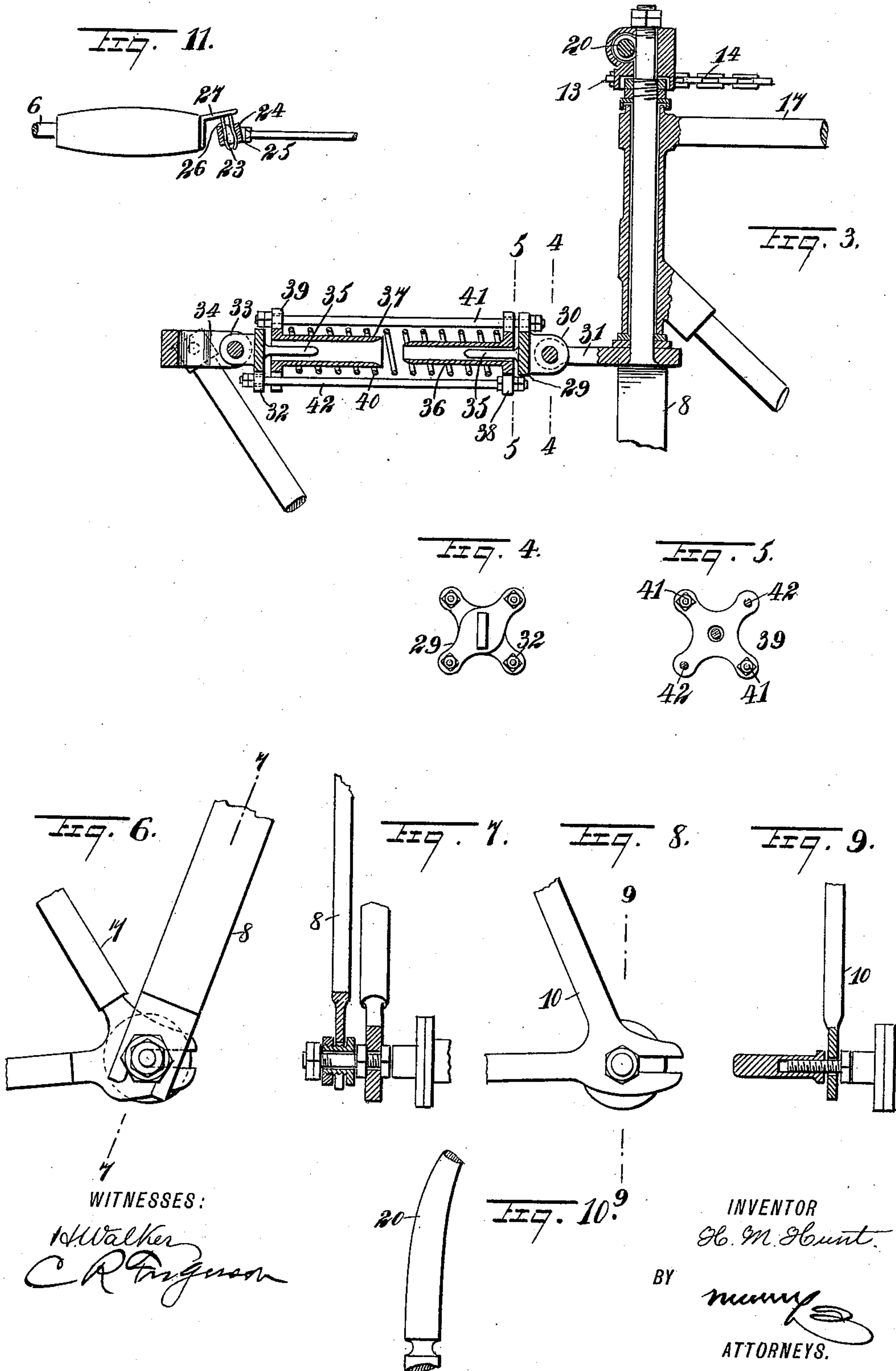
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UNITED STATES PATENT OFFICE.

HENRY MATHEW HUNT, OF INDIANAPOLIS, INDIANA.

TANDEM.

SPECIFICATION forming part of Letters Patent No. 598,872, dated February 8, 1898.

Application filed March 21, 1896. Serial No. 584,205. (No model.)

To all whom it may concern:

Be it known that I, HENRY MATHEW HUNT, of Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Road-Vehicles, of which the following is a full, clear, and exact description.

This invention relates to road-vehicles of the cycle class; and the object is to provide a construction whereby two bicycles may be easily connected to form a tandem and also disconnected and employed as bicycles independently.

I will describe a road-vehicle embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a road-vehicle embodying my invention. Fig. 2 is a plan view thereof. Fig. 3 is a section, on an enlarged scale, of a portion thereof. Fig. 4 is a section on the line 4 4 of Fig. 3. Fig. 5 is a section on the line 5 5 of Fig. 3. Fig. 6 is a fragmentary view drawn on an enlarged scale. Fig. 7 is a section on the line 7 7 of Fig. 6. Fig. 8 is a fragmentary view of the rear fork. Fig. 9 is a section on the line 9 9 of Fig. 8. Fig. 10 shows a portion of a steering-arm employed, and Fig. 11 shows a method of attaching steering-rods to the front handle-bar.

Referring to the drawings, 1 designates what may be termed the "leader section" of the vehicle, comprising a front or steering wheel 2 and a rear wheel 3. The front fork 4 extends upward from the axle of the front wheel 2 and has a shank portion passing through the front post 5 of the frame, and to the upper end of this shank portion is secured a handle-bar 6. The rear fork 7 of the frame engages with the axle of the wheel 3, and this axle is elongated on each side of the wheel to receive the front fork 8 of what may be termed the "trailer" 9. This fork 8 at its lower end is provided with outwardly-opening slots to engage over the axle of the wheel 3, so that said fork may be readily attached to or detached from the axle. The rear fork 10 of the trailer 9 engages with the axle of the trailer-wheel 11, and to this axle is removably attached a step-post 12. As here

shown, this step-post 12 has a tubular threaded portion engaging with the threaded extension of the axle of the wheel 11.

The upper end of the stem portion of the fork 8 is provided with a sprocket-wheel 13, with which a sprocket-chain 14 engages. This chain 14 passes around a sprocket-wheel 15, mounted on a post 16, extended vertically from the frame members 17 of the trailer 9, and preferably this post is adjustable longitudinally of the said frame members 17. As here shown, it has a block 18 engaging over the members 17 and secured thereto. The upper end of the post 16 is provided with a handle-bar 19.

To the upper end of the shank portion of the fork 8 is attached a steering-arm 20. This steering-arm is mounted to rock on a horizontal plane with relation to the stem portion of the fork 8, and it has its ends extended outward and downward. Of course the ends of the said arm may extend upward instead of downward and have the same effect. It will be seen that this steering-arm 20 is adapted to move in two planes, one at right angles to the other—that is, it has a rocking motion relatively to the fork 8 and also has a movement with said fork as it turns. This is made necessary so that the arm can accommodate itself to the movements of the front steering mechanism, with which it is connected by means of steering-rods 21. These steering-rods 21 have a universal-joint connection 22 with the ends of the arm 20, and they also have a universal-joint connection 23 with the handle-bar 6 of the leader 1. This universal joint 23 is here shown as comprising a block 24, having pivotal connection in arms 25, mounted on the end of the rod 21, so that said block may oscillate in a vertical plane with relation to the steering-rod. This block 24 is vertically perforated to engage over spring-fingers 26, extended downward from a bracket 27, secured to the ends of the handle on the front handle-bar 6. The fingers 26 are curved outward and then inward at their lower portions in such a manner that the outwardly-curved portions will engage underneath the block 24 when said block is pushed upward on the fingers. It will be seen by this connection that the steering-bars may be readily detached by the front rider pushing downward on the steering-rods should such detachment become necessary

by reason of an accident or otherwise while the rider is on the saddle of the leader 1.

The upper portion of the fork 8 has a yielding connection with the seat-post-supporting portion 28 of the leader-frame. This yielding connection, as here shown, comprises a cross-head 29, which has a lug 30 extended rearward and pivotally connected between the arms 31, extended from the upper end of the fork 8, and a similar cross-head 32 has a lug portion 33 pivotally mounted between clip-arms 34, secured to the portion 28 of the leader-frame. On the inner sides these cross-heads 29 and 32 have stem portions 35, which extend toward each other and are adapted to pass into tubular projections 36 37, extended longitudinally from abutment-plates 38 39.

It will be seen that the tubular projection 36 has a less diameter than the interior diameter of the tubular projection 37, so that it may enter the same as the parts are moved toward each other. A coil-spring 40 passes around the tubular projections 36 37 and abuts at one end against the plate 38 and at the other end against the plate 39. The cross-heads 29 and 32 are projected at right angles to each other.

From the ends of the cross-head 29 opposite rods 41 extend laterally through perforations in the plate 38 and engage at their forward ends with the plate 39, and from the cross-head 32 opposite rods 42 extend loosely through the plate 39 and have their ends engaged with the plate 38. The several rods may be provided with adjusting-nuts on their ends, so that the tension may be increased or diminished at pleasure. The object of this spring yielding connection between the leader and trailer is to provide for an easy movement of the several wheels over uneven roads or over obstructions that may be encountered and also to render the vehicle self-supporting when the wheels 2, 3, and 11 are turned at an angle to each other.

It will be seen that the trailer may be readily detached from the leader by simply removing the screw-pivot, which secures the cross-head 32 to the clip 34, and by removing the fork 8 from its engagement with the axle of the wheel 3, and of course the steering-rods 21 must be detached, and then the two devices—that is, the leader and the trailer—may be used as independent bicycles by simply placing an extra wheel within the fork 8.

The leader 1 may have its frame adapted for either a male or a female rider, and, if desired, the steering mechanism and connections may be omitted from the trailer, and the whole device when used as a tandem may be steered by the rider on the leader.

It is obvious that the trailers may also be constructed for either male or female riders. Both the leader and trailer may have one or more seats, or the seat of the trailer might be omitted and provision made for carrying bundles.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

1. In a road-vehicle, the combination with a bicycle, and a second bicycle having its front wheel removed and its front fork engaging the axle of the rear wheel of the front bicycle, of a rod mounted to rock on the stem of the front fork of the rear bicycle and having downwardly-bent ends, and rods connecting the bent ends of the rod with the steering mechanism of the front bicycle, substantially as described.

2. A road-vehicle, comprising a bicycle or leader, a trailer having its front fork engaging with the extended axle of the rear wheel of the leader, a steering mechanism on the trailer, comprising sprocket-wheels and a sprocket-shank, laterally-extended arms mounted to rock on the upper portion of the trailer-fork stem, and steering-rods having universal-joint connections with said arms and also having universal-joint connections with the handle-bar of the leader, substantially as specified.

3. A road-vehicle, comprising a bicycle or leader, and a trailer having yielding connections therewith, the front fork of said trailer having its ends engaged with the axle of the rear wheel of the leader, an arm or arms mounted to rock on the upper end of the fork-stem, and steering-rods extended from the ends of said arm to a detachable connection with the handle-bar of the leader, said detachable connections comprising spring-fingers mounted on the handles of said handle-bar and adapted to engage with openings in blocks pivotally connected to the ends of the steering-rods, substantially as specified.

4. A yielding connection for a leader and trailer, comprising cross-heads, one adapted for pivotal connection with the leader and the other adapted for pivotal connection with the trailer, plates having telescopic or tubular portions mounted to move between said cross-heads, rods extended from one cross-head to one of said plates, rods extended from the other of said cross-heads to connections with one of said plates, and a coil-spring abutting against said plates, substantially as specified.

5. A steering mechanism for a tandem road-vehicle, comprising arms mounted to rock in a horizontal plane on the upper end of the trailer front fork, steering-rods having universal-joint connection with said arms, blocks mounted to swing in the forward ends of said rods, and spring yielding fingers mounted on the handles of the leader and adapted to pass through openings in the blocks, whereby said blocks may be supported in position and for a rotary motion on the fingers, substantially as specified.

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Witnesses:

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