

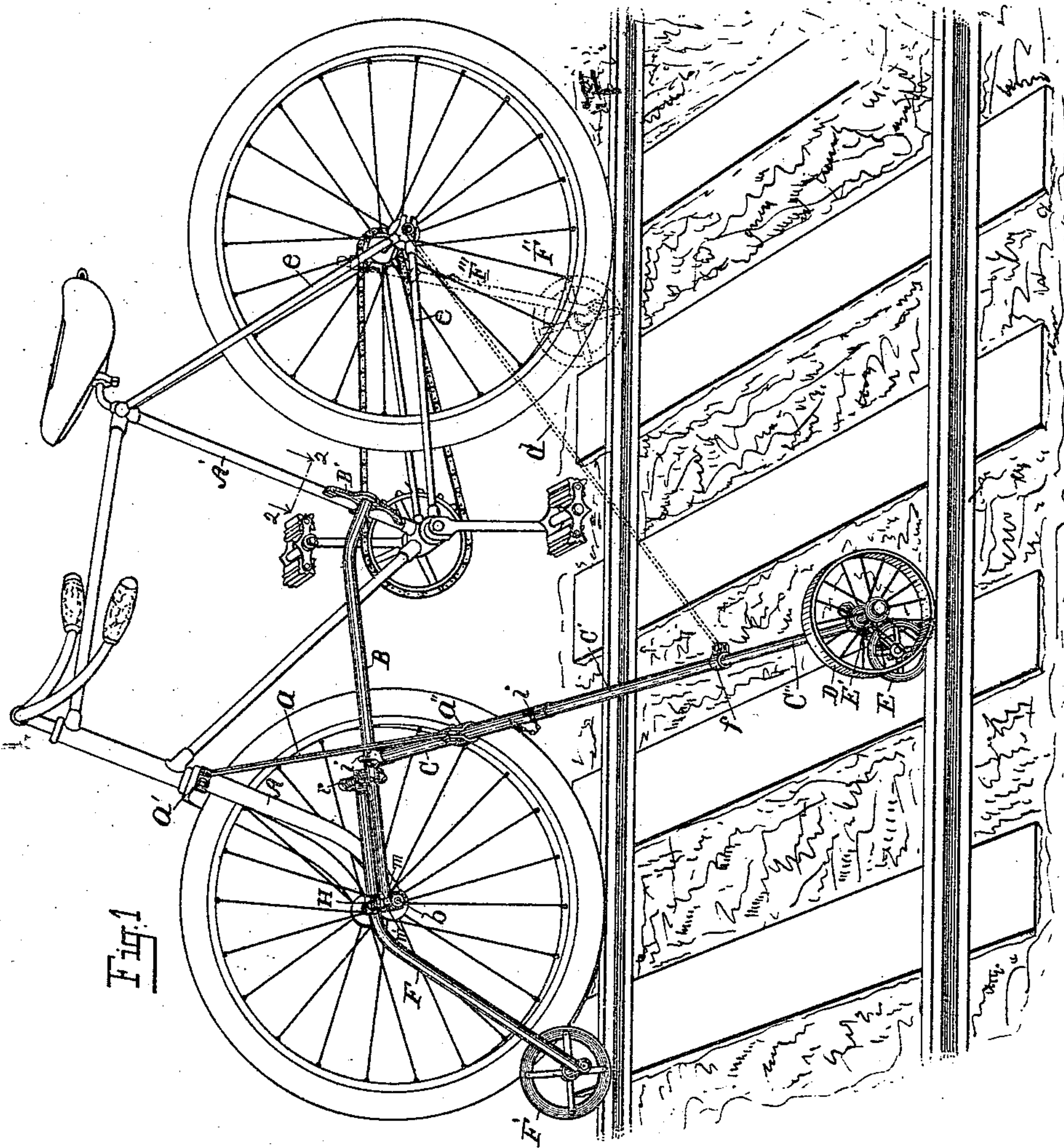
(No Model.)

2 Sheets—Sheet 1.

G. E. HEATON.
BICYCLE ATTACHMENT.

No. 542,254.

Patented July 9, 1895.



Witnesses:

Walter S. Wood
Ure E. Chappell

Inventor,

George E. Heaton
By *Fred L. Chappell*
Att'y.

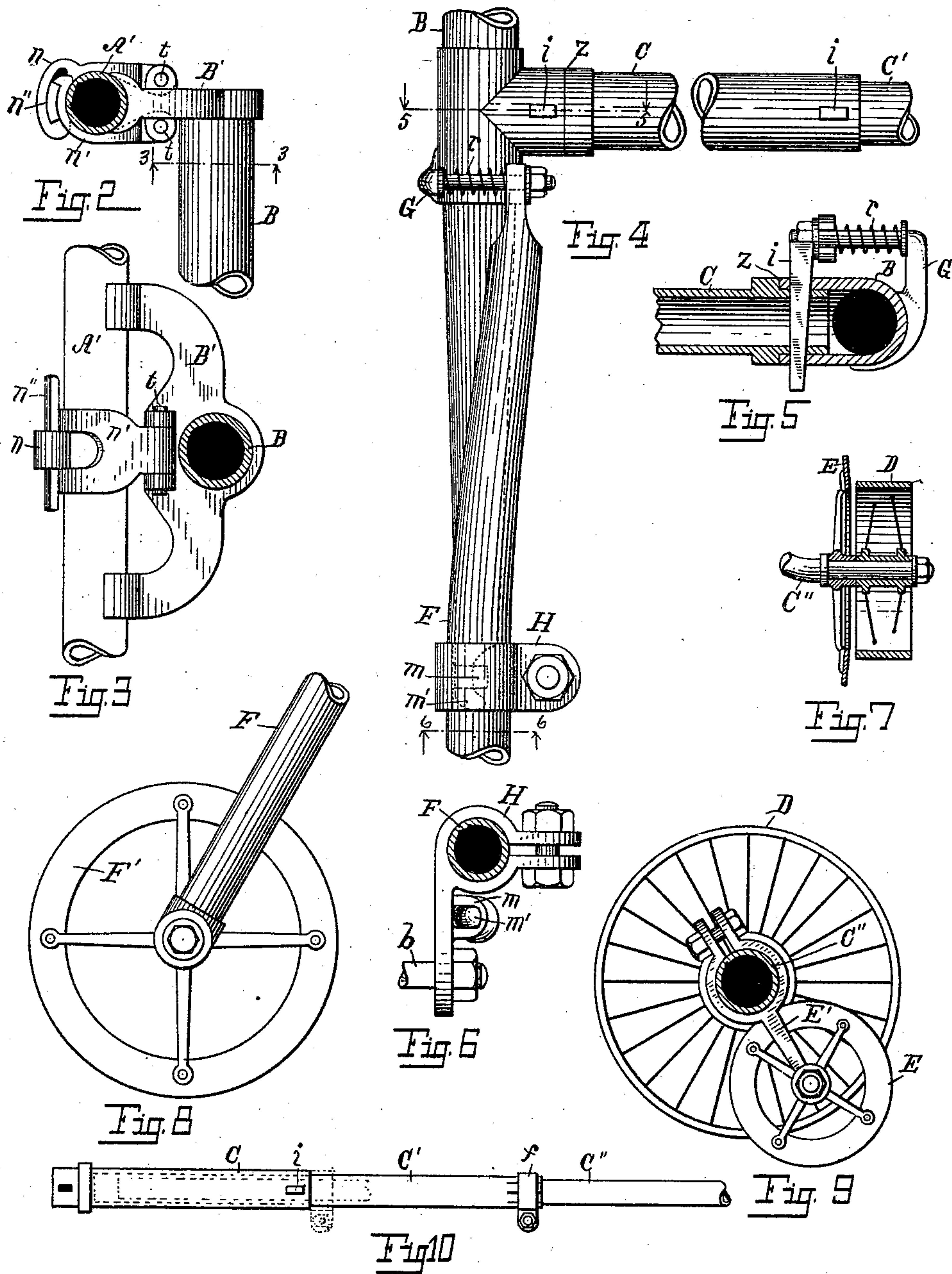
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Walter S. Wood
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Inventor,

George E. Heaton
By *Wm L. Chappell*
Att'y.

UNITED STATES PATENT OFFICE.

GEORGE E. HEATON, OF KALAMAZOO, MICHIGAN.

BICYCLE ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 542,254, dated July 9, 1895.

Application filed July 7, 1894. Serial No. 516,837. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. HEATON, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Bicycle Attachments, of which the following is a specification.

My invention relates to bicycles, and more particularly to a construction for bicycles that will make it possible to operate the same on a railway-track.

The objects of my invention are, first, to provide such a device that can be attached to an ordinary bicycle and will guide it upon the rails of a railroad and keep it there, no matter how rapidly the same may be operated; second, to provide such a mechanism which shall dispense with flange-wheels on the main wheels and also on the guide-wheel, but as to the guide-wheel the dispensing with the flange is not so important in this construction; third, to provide such an attachment that can be readily attached to or detached from an ordinary bicycle, so that it will be possible for an operator running the machine to operate it either on the railway or on the highway, as desired, with very little delay consequent on his equipping his machine for one road or the other.

Another object, apart from the matter of the attachment or adapting an ordinary machine for use on the railway, is to provide a railway-velocipede that shall operate easily, that shall be cheap of construction, and will be so light that an ordinary individual can handle it with ease, and that will be also very compact. I accomplish these objects of my invention by the mechanism shown in the accompanying drawings, in which—

Figure 1 shows a view in perspective of a velocipede and the attachment embodying all the ideas of my invention. Fig. 2 is a sectional view on line 2 2 of Fig. 1, showing the construction of the clamps B'. Fig. 3 is a sectional view on line 3 3 of Fig. 2, showing a side view of the same clamp. Fig. 4 is an enlarged detail plan view of the arm to the guide-wheel and the brace to which it is attached and also the upper end of the lever which carries the small guide-wheel in the front of the front main wheel of the bicycle.

Fig. 5 is a sectional view on line 5 5 of Fig. 4, showing the method of attachment of the arm to the guide-wheel to the brace and also the method of construction. Fig. 6 is a sectional view on line 6 6 of Fig. 4. Fig. 7 shows a modified form of the guide-wheel D. Fig. 8 shows an enlarged detail view of the guide-wheel F'. Fig. 9 shows a view of the guide-wheel D and its attachment. Fig. 10 shows the transverse arm that extends across the track from the main machine to the guide-wheel D. The sectional views are all taken looking in the direction of the little arrows at the ends of the section-lines.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, in Fig. 1 an ordinary pneumatic-tire safety-bicycle is shown on a railroad-track with my improvement attached. It is guided on the rails of the track by the small guide-wheel F' and is supported by the wheel D, attached to the transverse arm. These guide-wheels, the one F', located in front of the main wheel of the bicycle, comes down and presses normally against the inner side of the rail, and the wheel D across the track serves merely to support the machine and keep it in place. A small guide-wheel E on the inside serves to keep the wheel D from slipping off to the outside of the track.

Attached to the hub of the bicycle and extending back to the vertical brace A' through the center of the frame is a brace B, to which the transverse arm, which bears a small guide-wheel on the opposite rail, is attached. Attached at the same point on the hub b is the lever F, which extends down in front of the machine bearing the small, thin guide-wheel F'.

The parts are attached together in the manner indicated in Figs. 4, 5, and 6. To the axle of the forward wheel of the bicycle B is bolted a little bracket H, and just above the axle is a small loop m, and in this small loop m a hook m', formed at the end of the brace, is inserted. The bracket H is formed into a clip at its upper part, and in this clip is inserted the lever or arm F, which extends down and in front of the machine and carries the thin guide-wheel F' close against the inside of the rail.

Attached to the brace B is an arm G, projecting up, and it is formed at the end into a

bolt which extends transverse to the bicycle. The end of the lever *F* is made forked and slipped onto this bolt when it is put into position, and a spring *r* presses the end of the lever normally away from the wheel and frame, and thus causes the guide-wheel *F'* to press with a constant pressure against the inner side of the rail, and also at the same time causes the forward wheel of the bicycle to tend to draw the guide-wheel against the rail by its steering effect. The rear end of the brace *B* is attached by the clamp *B'* to the vertical brace-rod *A'* of the frame. As this brace-rod is usually made of thin tubing, it is necessary to extend the clamp along a considerable distance of its length. This clamp is made of the main portion *B'* and two hinged portions *nn'* at the center, which clasp around the vertical brace *A'*. In the ends of the hinged portion *nn'* are openings made for the key, and the key *n''* is driven into the same to draw them together, as will be seen in Figs. 2 and 3. This forms a very efficient and secure clamp, which can be very easily detached by simply tapping the lower end of the key. The key should be attached by a little chain (similar to the chains indicated in the keys on the cross-arms) to the clamp.

The cross-arm of the machine is attached to the brace *B*, preferably a little forward of the center. An ordinary T-elbow attachment is used to the brace *B'*, the cross-arm being tubular in construction. The cross-arm is composed of three sections *C C' C''*, the sections telescoping together, so that when the device is detached from the machine to be packed the section *C''* will push into the section *C'* and the section *C'* into the section *C*, as indicated by dotted lines in Fig. 10. The section *C* is attached to the elbow by forming a shoulder *Z* thereon. The end of the section *C* is then inserted into the elbow and the key *i* driven into a suitable key-slot and draws the tube in until the shoulder *Z* is tight against the tube of the T-piece. The section *C'* is fastened by a key in much the same way, except the key serves to wedge both pieces together and no shoulder is shown. The shoulder *Z* can be dispensed with in the first instance, but I prefer that construction, as it is more stable.

Between the sections *C'* and *C''* I show a different means of attaching the sections together. The section *C'* is slotted at the end, and a clip *f* is placed around the same and drawn up by an ordinary bolt. This secures the section *C''* by merely clamping the same, and this makes the length of the arm adjustable, so that it can be adjustable to suit different gages of roads, whether they be broad or narrow gage. The cross-arm is braced inwardly by the brace *a*, attached to the clip *a''* on the cross-arm and to the clip *a'* on the side fork *A* of the bicycle. This brace-rod *a* will not be needed where a machine is operated by a skillful rider.

To the outer end of the cross-arm, resting

on the opposite rails from the main wheels, is a broad small wheel *D*, designed to support the machine and keep it in place on the rails, as it would not be possible for a rider to guide and balance the machine on a single rail without this aid. To a little arm *E'*, attached to the outer end section *C''* of the cross-arm, is another small guide-wheel *E* to insure that the wheel *D* does not slip over to the outside of the track. This small guide-wheel *E* will very seldom come in contact with the rail and would only be needed in case of accident, and hardly ever by expert riders, and very seldom by the inexperienced riders.

When the track is very icy, it would be well to prevent the slipping of the hind wheel of the machine by means of the additional guide-wheel *F''*, placed to the rear and held by an arm *F'''*, similar to the arms *F* and the wheel *F'* in front; but such additional attachments will only be found necessary on very rare occasions, and when it is used it would be advisable to place an additional brace-rod *d* from the arm back to the hub of the rear wheel of the machine. Where the machine is to be used exclusively for railway purposes without detaching the cross arm, this additional brace *d* should be placed upon it to give it greater strength and security. The small guide and support wheel *D* across the track from the main machine can be greatly varied in its construction.

In Fig. 7 I show a modified form on which the guide-wheel *E* is mounted on the same axle with the broad wheel *D*, and as this wheel *E* will be very little used it would be very detrimental to the machine to make the wheel *D* a flanged wheel; but the construction I have here indicated is the best.

The small guide-wheels *F'* can be used, in the way I have indicated with almost any variety of wheels that it is necessary to use upon a rail-track and will be found to be superior to flanged wheels for that purpose where they can be made to act as a guide and are not required to stand the heaviest strains.

The form of the guide-wheel *F'* should be saucer-shaped—that is, the outer edge of the same should be curved slightly out away from the rail. This will present a limited surface to the side of the rail for contact, and the more nearly perfect to a saucer shape the wheel approaches the better its action will be. The exact position of it on its axle is not material to my invention so long as it comes in contact with the side of the rail in front of the forward wheel of the bicycle to steer the same.

My improved machine can be greatly varied in its construction without departing from my invention. Any ordinary flat-faced wheel or unflanged wheel can be used in combination with the guide-wheel; and various other changes will readily suggest themselves to those skilled in the construction of these devices.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a bicycle, of the brace rod, B, hooked into a bracket attached to the forward axle and clamped to the vertical brace rod of said bicycle; a lateral arm projecting across the track from said brace rod; a support wheel, D, at the end of said brace rod; a guide wheel, E, on the arm, E'; a lever, F, supported on the bracket attached to the axle of the forward wheel and pressing against a spring, r, on the bracket, G, and bearing a guide wheel, F', adapted to press against the inside of the rail of the railroad in front of the forward wheel of said bicycle, all substantially as described for the purpose specified.

2. The combination, with a bicycle, of a brace rod, B, with a hook, m', adapted to hook into the loops, m, on the bracket, H, attached to the axle of the forward wheel of the bicycle; a clamp, B', with hinged portions, n, n', connected by a key, n'', around the vertical brace rod, A', of the frame of said bicycle; a lever, F, supported in a clip in the bracket, H, and bearing a flat guide wheel, F', at its lower end adapted to bear against the inner side of one of the rails of the railroad track; a spring, r, at the rear end of said lever to throw it out; and a lateral arm adapted to project across a railroad track and having a wheel, D, to rest upon the opposite rail thereof; a guide wheel, E, supported on the arm, E', to rest against the inside of the opposite rail, the said lateral arm being constructed of sections C, C', C'', of telescope tube that can be shoved together; and suitable brace rods for bracing said arm, all co-acting together substantially as described for the purpose specified.

3. The combination, with a bicycle, of a thin saucer-shaped guide wheel, F', suitably supported below and in front of the forward wheel of said bicycle to engage the side of the rail; a lateral arm from said bicycle adapted to project across a railroad track; a wheel on said arm adapted to rest upon the opposite rail of said track to balance the machine to enable a bicycle to be operated on the rails of a railroad track.

4. The combination, with a bicycle, of the guide wheel, F', suitably supported below and in front of the forward wheel of said bicycle to rest against the side of the rail; a lateral arm from said bicycle adapted to project across the railroad track; a support wheel on said arm adapted to rest upon the opposite rail of said track to balance the machine; and a guide wheel and an arm adapted to rest inside of the rail to guide the said support wheel in place to enable the bicycle to be operated on the rails of the railroad track.

5. The combination, with a bicycle, of a lateral arm from said bicycle; a wheel at the end of said lateral arm adapted to rest upon one rail of the railway track; an arm, F, attached to the axle of the front wheel of said

bicycle projecting down and forward; a wheel, F', on said arm adapted to come in contact with the inside of the rail on which the main part of the vehicle is traveling; a spring, i, suitably attached to the frame and tending to throw the rear end of said arm away from the machine so as to cause the front wheel of the machine to steer toward the rail and bring the guide wheel, F', in contact with the side of the rail so that the wheel will be constantly guided upon the track so that the machine can be operated upon the track, for the purpose specified.

6. The combination, with a bicycle, of a brace, B, adapted to hook in a loop on a bracket attached to the axle of the front wheel; a saddle, B'; a clamp, n, n', with a key, n'', adapted to attach the rear end of said brace to the vertical brace, A', of said bicycle; a lateral arm attached to said brace and projecting across the track and bearing a support wheel at the opposite end in combination with suitable guide mechanism for keeping the main part of the bicycle upon one rail, substantially as described.

7. In a railway velocipede, a main frame bearing two wheels adapted to rest upon one rail of the track; the forward of said wheels being pivotally connected to the frame; a lateral arm bearing a guide support wheel on the opposite rail of said track; a small guide wheel in front of the forward main wheel of said velocipede; an arm connected to said guide wheel and to the axle of said forward wheel; a spring between the rear end of said arm and frame tending to throw the guide wheel against the side of the rail and to steer the forward pivoted wheel of the machine onto the rail so as to guide the same and cause it to keep upon the track, substantially as described.

8. In a railway velocipede, the main frame with wheels and propelling gear to rest upon one rail of the railway track; and pivotal bearing and connection for the forward of said wheels; a wheel adapted to rest upon the opposite rail of said track on bearings and connected to the main frame; a small saucer-shaped guide wheel in front of the forward main wheel on said velocipede adapted to rest against one side only of the rail to guide the main wheel upon the track; and suitable means of propelling the same, for the purpose specified.

9. In a railway velocipede, the frame bearing wheels adapted to rest upon the rails of the railway track; suitable means of revolving the wheels to propel the said machine; and a saucer-shaped guide wheel below and in front of the wheels of said machine adapted to rest against the inside of the rail only, to guide the same upon the track, for the purpose specified.

10. In a railway velocipede, the combination with a wheel, of a thin, saucer-shaped guide wheel attached to a suitable support and adapted to rest against the inside of the

rail below and in front of the said wheel to guide the same and keep it upon the track, for the purpose specified.

11. The combination with a bicycle, of an
5 arm attached thereto; a wheel on said arm so that the main wheels of the bicycle can rest upon one rail of the track and the wheel upon the arm upon the opposite rail; a thin guide adapted to press on the inner side only of the
10 rail in front of the forward main wheel of the bicycle; and suitable connections therefrom

to the fork and axle of the forward wheel to serve as a guide for the same to keep the whole upon the track and reduce the friction, as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

GEORGE E. HEATON. [L. S.]

Witnesses:

WALTER S. WOOD,
JOHN W. ADAMS.