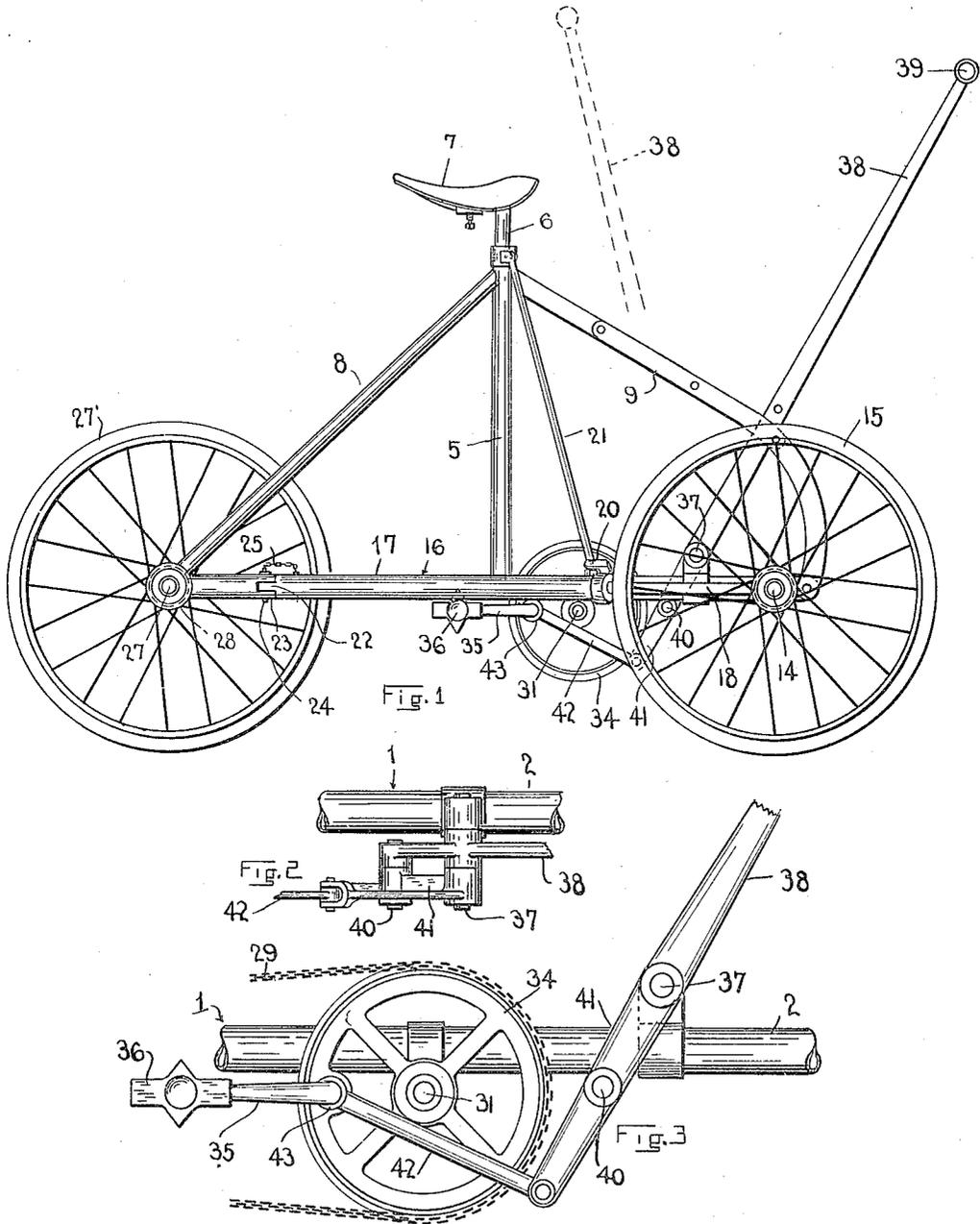


F. BRADY.
 RAILWAY VELOCIPEDÉ.
 APPLICATION FILED JUNE 16, 1913.

1,107,579.

Patented Aug. 18, 1914.

4 SHEETS-SHEET 1.



WITNESSES:
Wm. Johnson
N. G. Davis

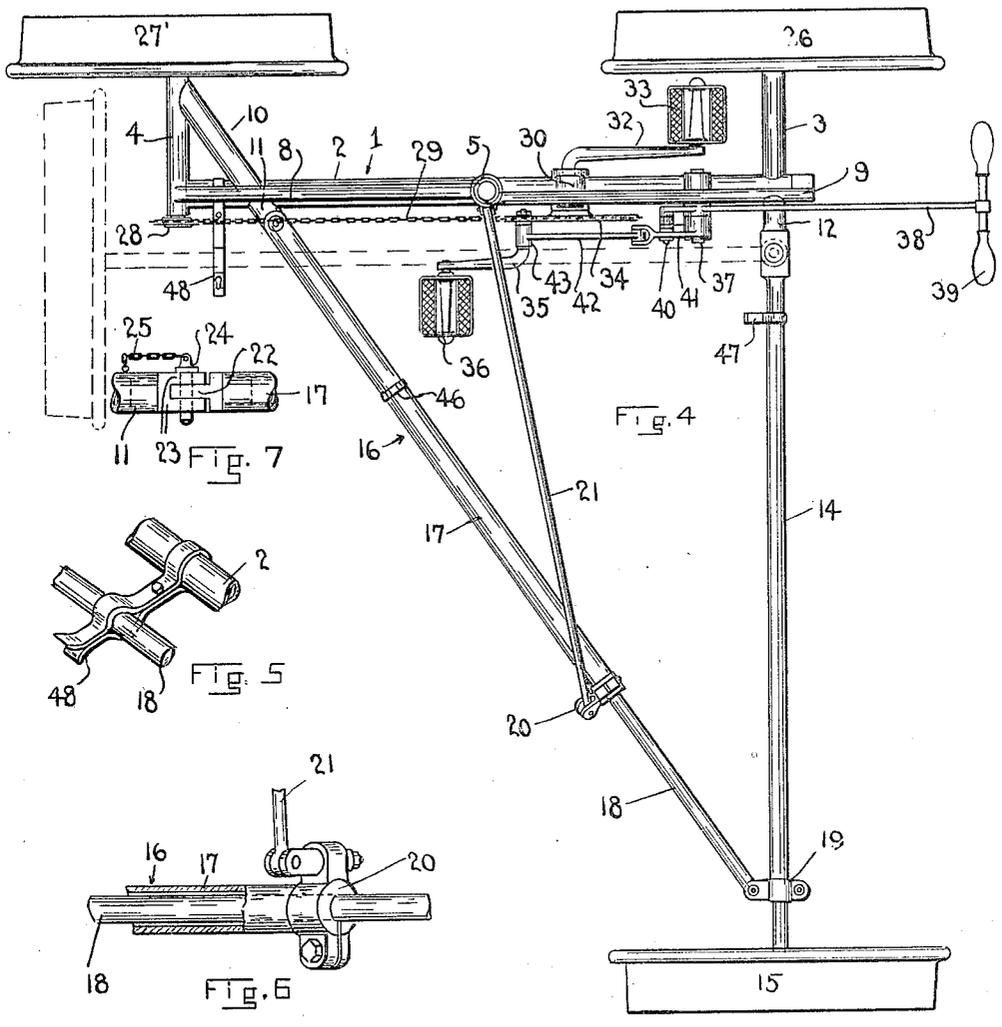
INVENTOR.
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4 SHEETS-SHEET 2.



WITNESSES:
[Signature]
 W. S. Downs

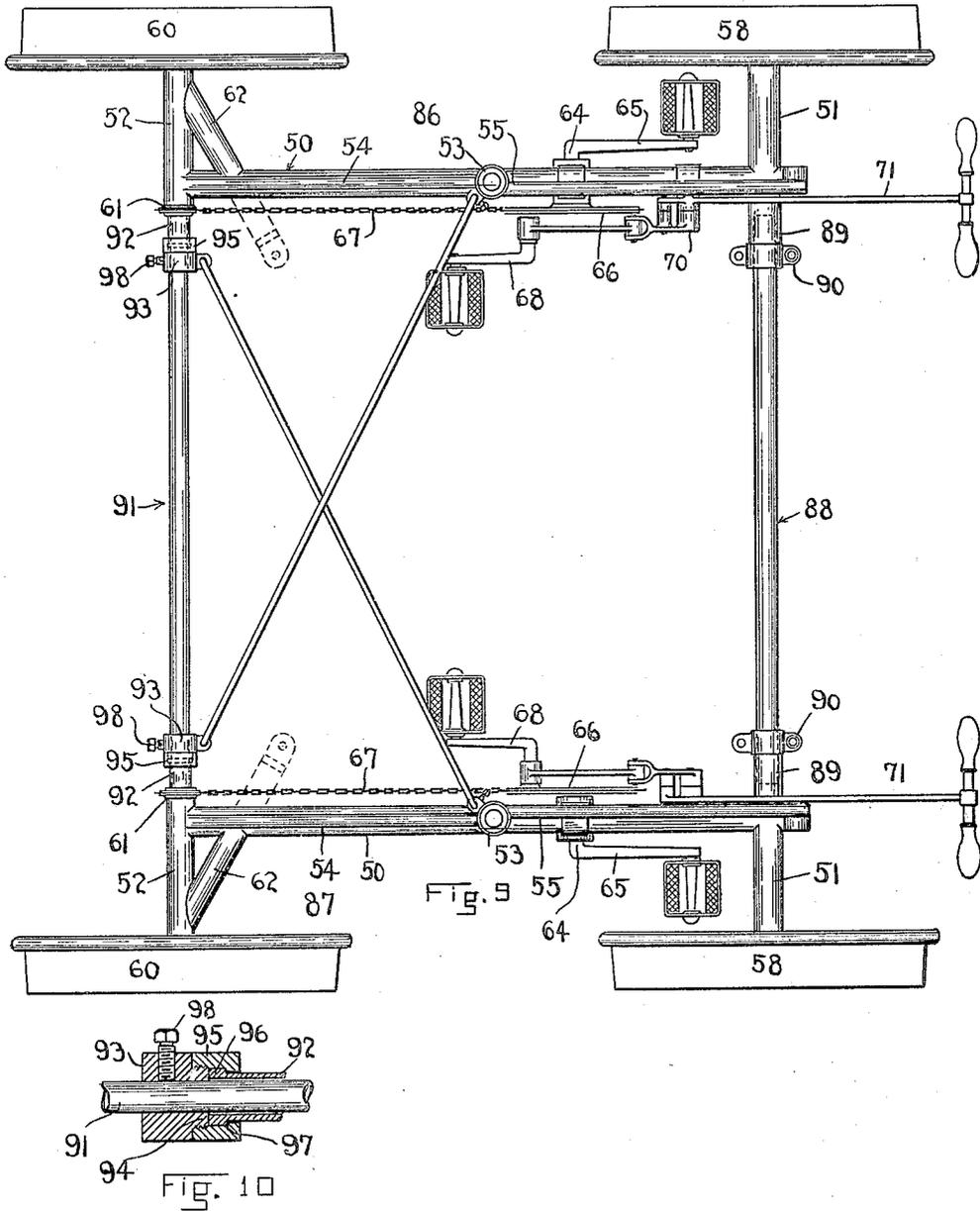
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4 SHEETS-SHEET 4.



WITNESSES:
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FRANK BRADY, OF DENVER, COLORADO.

RAILWAY-VELOCIPEDA.

1,107,579.

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Application filed June 16, 1913. Serial No. 774,030.

To all whom it may concern:

Be it known that I, FRANK BRADY, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Railway-Velocipedes; and I do 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.

This invention relates to improvements in railway velocipedes.

One object of the invention is to provide a velocipede of this character having means whereby the same may be operated by hand or foot power or by both hand and foot power.

Another object is to provide a railway velocipede adapted to be folded into small compact form when not in use and to facilitate the carrying of the same in railway cars.

A further object is to provide a velocipede of the character described which may be readily coupled with another similarly constructed velocipede to form a double machine.

Still another object is to provide a machine of this character which will be simple, strong, durable and inexpensive in construction, efficient and reliable in operation, and which in case of accident to trains carrying the same, may be quickly arranged and put in action.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a side view of a railway velocipede constructed in accordance with my invention; Fig. 2 is a detail plan view of a portion of the frame of the machine illustrating more clearly the connection of the hand operated propelling mechanism; Fig. 3 is a detail side view of a portion of the frame illustrating the arrangement of the hand and foot power propelling mechanism and the means whereby these parts are connected to permit the velocipede to be propelled by both hand and foot power; Fig. 4 is a plan view of the velocipede shown in Fig. 1 and illustrating in dotted lines the position of the parts when folded; Fig. 5 is a detail perspective view of

a portion of the main frame and one of the supporting bars of the side wheel illustrating the clip for holding the side wheel supporting mechanism in folded position; Fig. 6 is a detail perspective view partly in section of a portion of the telescoping section of the side wheel brace bar and the clamp for holding said sections in their extended or operative positions; Fig. 7 is a detail side view of a portion of the main frame and the inner end of the side wheel bracing bar illustrating the detachable connection between these parts; Fig. 8 is a plan view of the velocipede illustrating a slightly different construction of supporting frame; Fig. 9 is a similar view of two of the velocipedes shown in Fig. 8 coupled together to form a double machine; Fig. 10 is a detail sectional view through the rear axle of one of the machines shown in Fig. 9 and through a portion of the rear coupling bar thereof illustrating the manner in which the coupling bar is attached to the rear axle tube of the machine.

Referring more particularly to the first seven figures of the drawings, 1 denotes the main frame of my improved velocipede, said frame comprising a lower horizontal bar 2 on the forward end of which is formed a right angular laterally projecting front axle bearing tube or sleeve 3 and on the rear end of which is formed a rear axle bearing tube or sleeve 4. To the bars 2 midway between the front and rear axle bearing tubes 3 and 4 is an upright seat post tube 5 in the upper end of which is secured a seat post 6 on which is fastened any suitable form of seat 7. The seat post tube 5 is connected at its upper end with the rear axle bearing tube and rear end of the bar 1 by a rear inclined brace 8 and said seat post tube 5 is further connected to the forward end of the bar 1 and to front axle tube 3 by a front inclined brace bar 9 as shown. The rear axle bearing tube 4 is connected to the bar 1 by a short diagonal brace 10. On the opposite side of the bar 2 from the brace 10 and projecting from the bar 1 in line with the brace 10 is a short pivot stud 11, a similar stud 12 being formed on the same side of the bar 2 adjacent to its forward end and in line with the front axle bearing tube 3. Pivotaly connected at its inner end to the end of the stud 12 is a side wheel attaching bar 14 the outer end of which forms an axle or spindle for a side wheel 15. The outer end of the

bar 14 is connected by a diagonal brace bar 16 with the stud 11 on the rear end of the bar 2 of the main frame. The brace bar 16 comprises inner and outer telescopically engaged sections 17 and 18, said section 18 being pivotally connected at its outer end to the rear apertured ears of a clip 19 secured to the bar 14 near its outer end as shown. Engaged with or formed on the outer end of the inner section 17 of the brace bar 16 is a combined clamp and brace attaching bracket 20 by means of which the end of the outer section of the brace is tightly clamped onto the outer section 18 when said sections are in their extended or operative position.

Pivotally connected to the projecting portion of the clamp 20 and with the upper end of the seat post tube 5 is an inclined side brace 21, said brace having a detachable connection with the seat post tube 5 whereby the brace may be disconnected from the seat post tube when the parts are folded as will be hereinafter more fully described. The detachable connection between the inner end of the brace bar 16 and the stud 11 on the bar 2 is preferably constructed by forming on the end of the stud 11 an apertured ear 22 and forming on the adjacent end of the section 17 of the brace 16 a pair of apertured ears 23 which are adapted to be engaged with the ear 22 on the stud 11 and with the apertures in said ears when thus arranged is removably engaged a coupling pin 24 whereby these parts are detachably connected. The pin 24 is preferably provided with a short chain 25 which is connected with the brace 16 and thus prevents the pin from being lost or mislaid when not in use.

Revolubly mounted in the front axle bearing tube 3 is a front supporting wheel 26. In the rear axle bearing tube 4 is revolubly mounted a rear axle 27 on the outer end of which is fixed a rear supporting and driving wheel 27'. On the opposite end of the axle 27 is fixed a rear sprocket gear 28 with which is engaged a sprocket chain 29.

Arranged on the lower bar 2 of the main frame 1 a short distance ahead of the seat post tube 5 is a crank shaft bearing 30 in which is mounted a crank shaft 31 having on the end adjacent to the outer side of the machine a pedal crank 32 on which is mounted the left hand pedal 33. On the opposite or inner end of the crank shaft 31 is fixed a driving sprocket 34 with which is engaged the sprocket chain 29. Connected eccentrically to the outer side of the sprocket gear 34 is a right hand pedal crank 35 on which is mounted a right hand pedal 36. This arrangement of the pedals and driving sprocket constitutes the foot power propelling mechanism of the velocipede.

The hand power propelling mechanism for the machine comprises a bearing stud 37

which is secured to the bar 1 of the main frame between the crank shaft 31 and the front axle of the machine and projects laterally from the inner side of the bar as shown. Pivotally mounted on stud 37 is a hand lever 38 which projects upwardly alongside of and for a suitable distance above the front brace bar 9 and has on its upper end handles 39 adapted to be gripped by the operator on the seat 7 for swinging the lever 38 backwardly and forwardly on the pivoted stud 37. The lever 38 projects a short distance below the stud 37 and is connected by a pin 40 with a short supplemental hand operated lever 41 which is also pivotally mounted at its upper end on the stud 37 as shown. The lower end of the supplemental lever 41 is forked and has pivotally connected thereto one end of a link 42 the opposite end of which is pivotally connected with the pedal crank 35 adjacent to one side of the sprocket gear 34 as shown at 43 in Figs. 3 and 4 of the drawings. By thus arranging the hand operating mechanism it will be seen that when the hand lever 38 is swung on the stud 37 the movement of said lever will be imparted to the supplemental lever 41 and through the latter and the link 42 to the sprocket gear 34 whereby the latter is revolved for propelling the velocipede in the desired direction.

When the hand lever is connected with the supplemental lever in the manner described it will be seen that the velocipede may be propelled by both hand and foot power. If either the foot power or the hand operated propelling mechanism should be broken or disabled from any cause or if it should be desired to operate the machine by foot power alone it is simply necessary to disconnect the lower end of the hand lever 38 from the supplemental lever 41 by removing the connecting pin 40 whereupon the supplemental lever 41 will swing idly on the stud 37 when the sprocket gear 34 is revolved by the pedals. When the hand lever is thus disconnected it is swung upwardly to the dotted line position shown in Fig. 1 in which position the same is held by a pin or bolt which is engaged with apertures 44 and 45 formed respectively in the lever 38 and in the front brace bar 9 and which register when the hand lever is swung to the dotted line position shown. When it is desired to operate the machine by hand power alone the hand lever is connected to the supplemental lever in the manner described and the feet are removed from the pedals as will be readily understood. By thus providing both hand and foot power propelling mechanism and arranging the same in the manner described it will be seen that the machine may be propelled by both hand and foot power or by either, so that on long runs the operator will be enabled to

rest by changing the power as will be readily understood.

When it is desired to fold the machine or to reduce the size thereof to permit the same to be readily placed in a car it is simply necessary to loosen the clamp 20 and to disconnect the brace 21 from the upper end of the seat post tube and to engage said brace with a clip 46 arranged on the inner section 17 of the brace 16, after which the pin 24 is removed and the inner end of the section 17 of the brace disconnected from the stud 11 whereupon said section 17 of the brace is slipped outwardly on the outer section 18 and the brace then swung inwardly alongside the side wheel supporting bar 14 and engaged with a clip 47 arranged on said bar 14 and which securely holds the brace bar in operative position. After the brace bars 17 and 21 have thus been arranged, said brace bars together with the bar 14 are folded inwardly on the stud 12 and alongside or parallel with the bar 2 of the main frame in which position these parts are held by a double clip 48 which is secured to the bar 2 of the main frame and is adapted to receive the bar 14 and brace bar 16 as shown in dotted lines in Fig. 4 of the drawings.

In the form of the invention disclosed in Fig. 8 of the drawings a slightly different construction of supporting frame is shown, said frame comprising a lower bar 50 on the forward end of which is formed a lateral outwardly projecting front axle bearing tube or sleeve 51 and on the rear end of which is a rear axle bearing tube or sleeve 52. Formed on the bar 50 is a seat post tube 53 which is connected at its upper end to the bar 50 by a rear brace bar 54 and a front brace bar 55. On the inner side of the bar 50 and in line with the front axle tube 51 is a short tubular extension 56 having on its outer end a clamp 57 the purpose of which will be hereinafter described. In the tube 51 is revolubly mounted the axle of the front wheel 58 while in the rear axle bearing tube 52 is revolubly mounted the axle 59 of the rear supporting wheel 60. The inner end of the axle 59 projects a short distance beyond the inner end of the tube 52 and has fixed thereon a sprocket gear 61. The rear axle bearing tube 52 is held rigid on the bar 50 by a diagonal brace 62 and on the inner side of the bar 50 and in line with the brace 62 is a brace connecting extension 63.

Revolubly mounted in a suitable bearing on the bar 50 of the frame is a pedal crank shaft 64 having on its outer end a pedal crank 65 and on its inner end a sprocket gear 66 which is connected by a sprocket chain 67 to the sprocket pinion 61 on the rear supporting wheel shaft 59. The sprocket gear 66 has eccentrically arranged

thereon the inner pedal crank 68 which is connected by a link 69 to a hand propelling mechanism 70 which comprises a hand lever 71, said hand propelling mechanism corresponding to the hand propelling mechanism 70 shown and described in connection with the first figures of the drawings and a further description thereof is not thought to be necessary.

Telescopically engaged with the tubular extension 56 and tubular front axle bearing sleeve 51 is the inner tubular section 72 of a side wheel supporting bar 73 the outer section 74 of which has a telescoping engagement with the inner section 72. Telescopically engaged with the outer end of the section 74 of the bar 73 is the axle 75 of a side wheel 76 which is adapted to engage and travel on the opposite track from that on which the main wheels 58 and 60 of the velocipede travel. On the outer end of the inner section 72 of the bar 73 is a clamp 77, a similar clamp 78 being arranged on the outer end of the outer section 74. By means of the clamps 57 on the extension 56 and the clamps 77 and 78 on the ends of the sections 72 and 74 of the wheel supporting bar 73, said sections may be securely fastened in their extended or retracted positions as will be readily understood.

Pivotaly connected at its inner end to the extension 63 is a side wheel brace 79 comprising an inner tubular section 80 and an outer section 81 which has a telescoping engagement with the section 80 and which has its inner end pivotaly and detachably secured to an apertured lug 82 on the clamp 78 of the outer section 74 of the bar 73. On the outer end of the inner section 80 of the brace is a clamp 83 whereby the sections 80 and 81 of the brace are held in their extended or retracted position. Connected at its lower end to the clamp 83 and having a detachable connection at its upper end with the seat post 53 near the upper end thereof is a lateral seat post brace 84. By thus constructing the side wheel supporting bar and brace it will be seen that when it is desired to fold or reduce the size of the machine it is simply necessary to disconnect the outer end of the lug 82 of the clamp 78 and to push said section 81 of the brace back into the tubular section 80 and to disconnect the upper end of the seat post brace 84 from the seat post after which the brace 79 is swung inwardly, and to connect the outer end of the section 81 of the brace with an apertured lug 85 on the clamp 57 of the extension 56. After the brace 79 has thus been folded the clamps 57, 77 and 78 of the side wheel supporting bar are released, thereby permitting the inner section 72 to be slipped back into the extension 56 and front axle tube 51 and the outer section 74 of the bar pushed back into

the inner section 72 after which the axle 75 of the wheel 76 may be pushed back in the outer end of the section 74 of the bar, thus bringing the side wheel to the position shown in dotted lines in Fig. 8 of the drawings. When the parts have thus been folded or collapsed the machine will be reduced to about half its usual width and may be readily placed in a car or stored in a comparatively small space.

In Figs. 9 and 10 of the drawings is shown a double form of my improved velocipede in which two machines 86 and 87 are coupled together in proper position for engaging the opposite tracks of a railway. In constructing the double machine the form of velocipede shown in Fig. 8 is preferably employed and as the main structure of the velocipedes shown in Fig. 9 is the same as that shown and described in connection with Fig. 8 of the drawings, a further description of the construction of the main parts and operating mechanism of these machines is not thought to be necessary, except to state that the arrangement of the parts of the velocipede 87 which travels on the right hand track is just the reverse from the parts of the velocipede which travels on the left hand track.

The coupling mechanism for the velocipedes 86 and 87 comprises a front coupling bar 88 the ends of which have a telescopic engagement with the extensions 89 on the inner sides of the lower bars of the velocipede frames. The extensions 89 are rigidly fastened to the ends of the bar 88 by clamps 90 whereby the forward ends of velocipedes are securely held in properly spaced relation. The rear ends of the velocipedes are connected by a coupling bar 91, the ends of which have a telescoping engagement with the tubular rear wheel supporting shafts 92. The inner ends of the axles 92 are secured to the adjacent portions of the coupling bar 91 by collars 93 having on one end reduced exteriorly threaded extensions 94 on which are screwed the interiorly threaded inner ends of coupling sockets 95 which are engaged with the ends of the axles 92. The ends of the axles are enlarged at their extremities as shown at 96 to form stop shoulders 97 with which the inner ends of the sockets 95 are engaged whereby when the sockets are screwed onto the reduced threaded ends of the collars 93, the latter are securely fastened to the ends of the axles. The collars 93 are provided with set screws 98 which securely fasten the collars to the connecting bar 91 thereby holding the bar in place and holding the rear axles and ends of the machines in proper spaced relation on the bar.

It will be understood that when the machines 86 and 87 are coupled or connected in the manner described that the side wheels and the supporting bars and braces thereof are removed and in place of these braces

other braces 99 are provided, said braces being arranged diagonally between the rear portions of the frames and cross each other as shown. The rear or lower ends of the braces 99 are connected with apertured ears 100 on the collars 93, while the upper ends of the braces are connected with the apertured ears on the upper ends of the seat post to which the upper ends of brace bars 84 are connected in the single form of the machine.

When it is desired to fold or collapse the double form of the machine the set screws 98 in the collars 93 are loosened and the clamps 90 on the extensions 89 are released. The brace bars 99 are then removed after which the velocipedes 86 and 87 may be drawn toward each other, in which operation the ends of the coupling bars 88 and 91 will slide respectively through the front axle tubes and front axles and the rear axles of the velocipedes as will be readily understood. When the velocipedes have thus been brought together the clamps 90 and set screw 98 may again be tightened up and the velocipedes held in their retracted position.

It will be noted in the various forms of my improved velocipede that the seat post tube and seat are arranged inside the center of gravity, thus obviating to a great extent the danger of the machines jumping the track. It will also be noted that the machines will stand alone both in an operative or in a folded position and thus adapting the machines for use with a motor for propelling the same. The peculiar arrangement of the manually operated propelling mechanism, however, permits the machine to be driven so easily and causes the same to run so smoothly that the use of a motor for propelling the same is not necessary.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as claimed.

Having thus described my invention, what I claim is:

1. In a railway velocipede, a main frame, axle bearing tubes formed thereon, a seat post arranged on said frame, a side wheel supporting bar connected to said main frame, a side wheel brace connected at its inner end to said main frame and comprising a series of telescopically engaged sections, the outer section having a detachable connection at its outer end with said side wheel supporting bar, a seat post brace pivotally connected to said side wheel brace and having a detachable connection with the seat post whereby when said brace is de-

tached from the seat post the sections of said side wheel brace may be telescoped and folded to an inoperative position, means to hold said parts in their folded position, and hand and foot power propelling mechanisms.

2. In a velocipede of the character described, a main supporting frame, axle bearing tubes formed thereon, front and rear axles journaled in said tubes, main supporting wheels mounted on said axles, a side wheel supporting bar connected to said main frame, a side supporting wheel revolubly mounted on said bar, a side wheel brace connected with said main frame and with said side wheel supporting bar, a pedal crank shaft revolubly mounted in said main frame, a pedal arranged on one end of said shaft, a sprocket gear fixed on the opposite end thereof, a sprocket pinion on the axle of the rear supporting wheel, a chain to connect said pinion with said gear, a pedal crank eccentrically mounted on said sprocket wheel, a pivotally mounted hand lever, a pivotally mounted supplemental propelling lever, a link to connect said supplemental lever with the pedal crank on said sprocket gear, and means to detachably connect said supplemental lever with said hand lever.

3. A railway velocipede comprising a main frame, front and rear axle tubes arranged thereon, front and rear axles mounted in said tubes, front and rear supporting wheels mounted on said axles, a seat post tube arranged in said frame, a side wheel supporting bar comprising a series of telescopically engaged sections, clamps to hold said sections in a projected and in a re-

tracted position, a side wheel axle mounted in the outer section of said bar, a side supporting wheel mounted on said side wheel axle, a side wheel brace comprising a series of telescopically engaged sections, said bar having a pivotal connection at its inner end with said main frame, and at its outer end with said side wheel supporting bar, a seat post brace connected to said seat post and to said side wheel brace, a foot power propelling mechanism, an independent hand power propelling mechanism, and means to connect said hand and foot power propelling mechanism whereby they may be propelled in unison.

4. A double railway velocipede comprising main frames, front and rear laterally projecting axle bearing tubes arranged on the ends of said frames, front and rear tubular axles mounted in said axle bearing tubes, said rear axles having their inner ends projecting beyond the inner sides of said main frames, independent foot and hand power propelling mechanisms arranged on said main frames, means to connect said hand and foot power mechanisms whereby they may be used in unison, means to detachably connect the forward ends of said frames, means to detachably connect the rear ends of said frames, and braces detachably connected to said frames.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK BRADY.

Witnesses:

HERBERT S. HITCHMAN,
PERCY P. FINK.