(No Model.)

2 Sheets—Sheet 1.

R. FLACHS.

VELOCIPEDE.

No. 437,026. Patented Sept. 23, 1890.

Fig. 1.

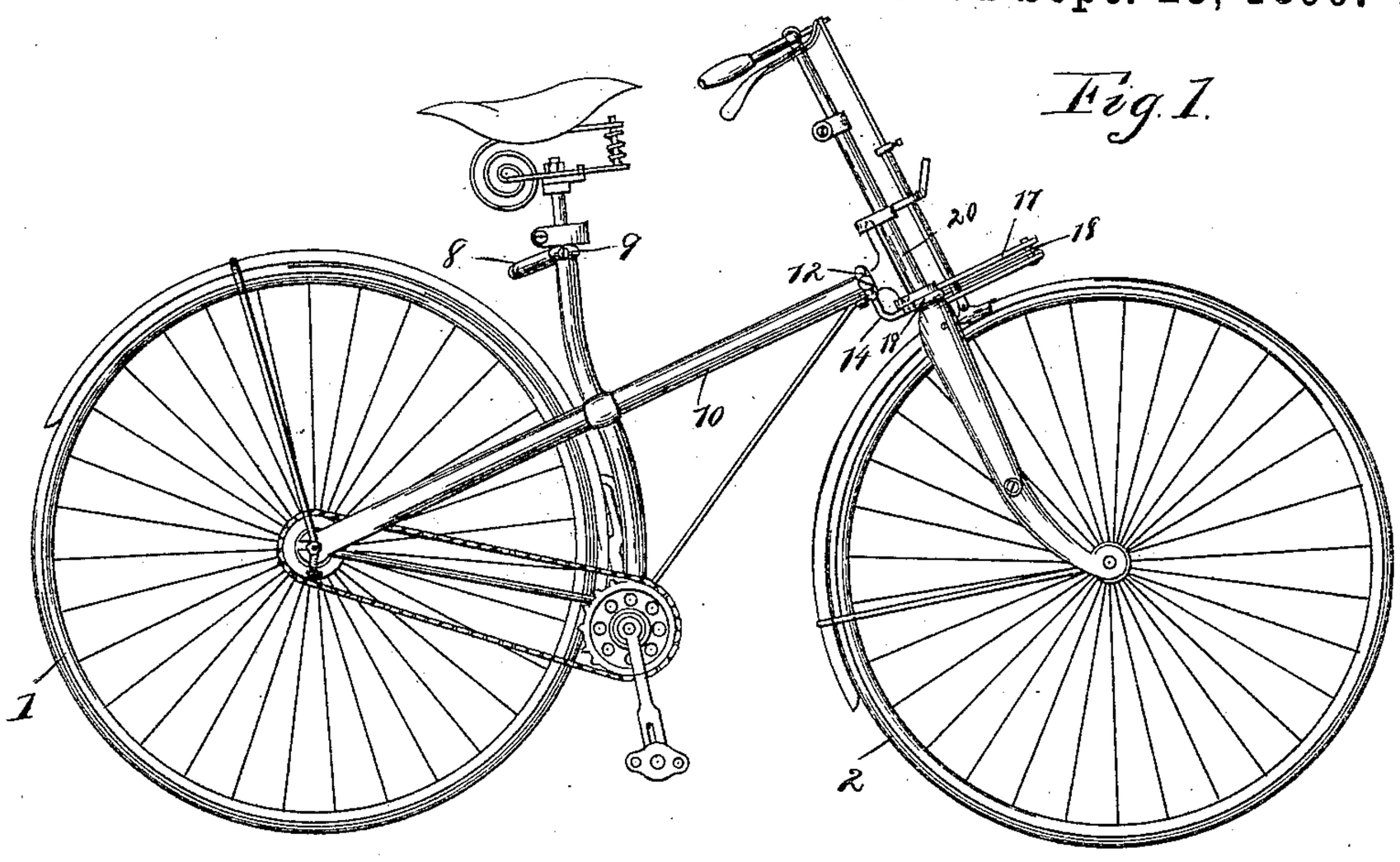
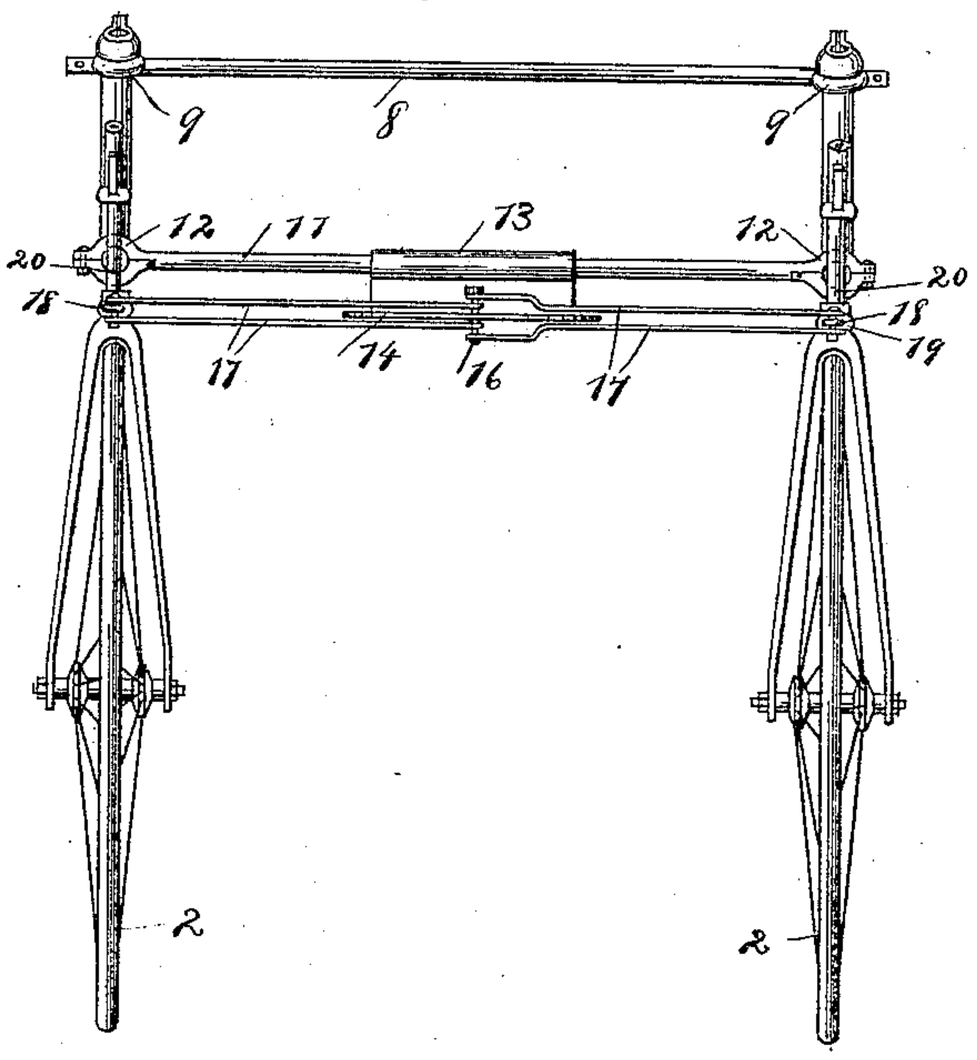


Fig. 2.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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Fig 3.

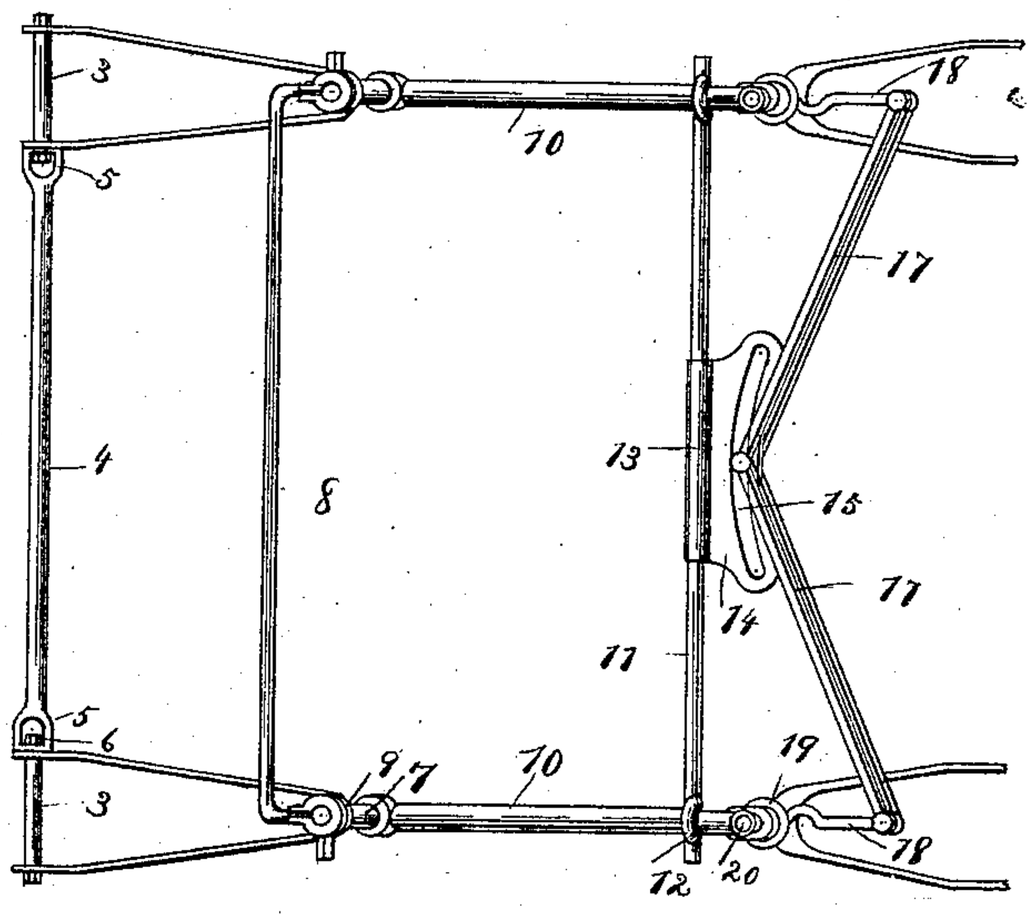


Fig. 4

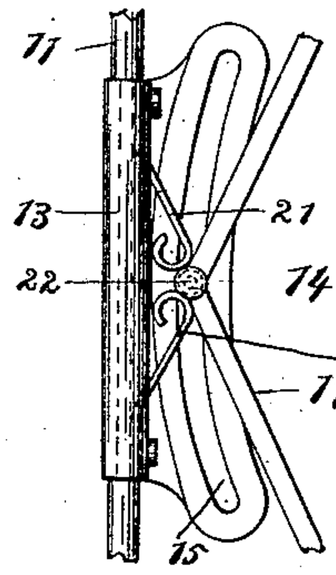
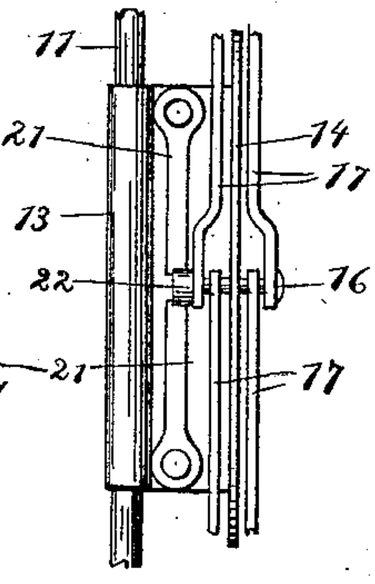


Fig. 5.



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UNITED STATES PATENT OFFICE.

RICHARD FLACHS, OF OBERLÖSSNITZ-RADEBEUL, NEAR DRESDEN, GERMANY.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 437,026, dated September 23, 1890.

Application filed May 1, 1890. Serial No. 350,210. (No model.)

To all whom it may concern:

Be it known that I, RICHARD FLACHS, advocat of Oberlössnitz-Radebeul, near Dresden, a citizen of Germany, residing at Oberlössnitz, in the Kingdom of Saxony, have invented certain new and useful Improvements in Velocipedes; and I do hereby 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 four-wheeled velocipedes having two forward guiding-wheels, and has for its object to provide a simple and convenient means for causing the two guiding-wheels to move in proper relation to each other in turning the vehicle without liability of tilting it over.

It is also another purpose of my invention to provide means for detachably connecting two bicycles in such a way as to form a four-wheeled velocipede and yet permit them to be disconnected and used separately, if desired.

The invention consists in the construction and combination of parts, hereinafter described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a side view of a velocipede composed of two Safety bicycles coupled together to form a four-wheeled machine. Fig. 2 is a front elevation of the guiding-wheels and their coupling-connections and the saddle-supports and their coupling-bar. Fig. 3 is a plan of the coupling mechanism for the forks of the guiding-wheels, for the saddle-supports, and for the axles of the driving-wheels. Fig. 4 is a plan, and Fig. 5 a front elevation, on an enlarged scale, of the central portion of the coupling-connections for the forks of the front of guiding-wheels.

Referring to the drawings, the reference-numeral 1 designates the rear or driving wheel, and 2 the front or guiding wheel of an ordinary so-called "Safety" bicycle.

It is the purpose of my invention to provide detachable couplings for connecting two of these bicycles side by side to form a four-wheeled machine or sociable, in which the guiding-wheels can be controlled in such a manner as to be capable of turning together in proper relation to each other on curves of short or long radius without liability of tilting over the machine.

According to my invention the two bicycles are connected side by side a convenient distance apart by means of detachable coupling-bars in such a manner that if desired they can be disconnected and used separately. The axles 3 of the two driving-wheels are connected by a detachable coupling-bar 4, having at each end a stirrup-shaped yoke 5, that is perforated to receive the end of the axle to which it is attached by means of a nut 6, as shown in Fig. 3. The saddle-supports 7 are connected in a similar manner by a detachable coupling-bar 8, provided at its ends with clips 9, that are adapted to embrace the saddle-supports. In a similar manner the forward ends of the backbones 10 are connected by a detachable coupling-bar 11, having clips 12 on its ends.

On the center of the forward coupling-bar 11 is secured a sleeve 13, provided with an angle-plate or knee 14, which projects downward from said sleeve and then horizontally forward. In the forward projecting horizontal portion of the angle-plate or knee 14 is an arc slot 15, having its ends curved forward, as shown in Figs. 3 and 4. This arc slot 15 receives a vertical guide-pin 16, Figs. 2 and 5, which connects above and below said slot with the inner ends of toggle-links 17, the outer ends of which extend obliquely forward and are pivotally connected with the forward ends of arms 18, that are removably attached by clips 19 to the necks 20 of the guiding-wheel forks. The links 17 are preferably provided in pairs that connect, respectively, with the upper and lower ends of the guide-pin 16, as shown in Figs. 2 and 5, to equalize the draft on said pin. The links of one side have their inner ends spread apart, as shown, to receive the inner ends of the links of the other side, and, if desired, each link may have a series of holes to provide an adjustable connection with the guide-pin 16, to vary the lengths of said links to variations in the distance between the guiding-wheels.

It is obvious that by means of the forwardly-curved arc slot 15, the guide-pin 16, engaged

therewith, and the toggle-links 17, that connect said pin with the guiding-wheel forks, the guiding-wheels will move in proper relation to each other in turning a curve, so that there will be no liability of tilting over the machine even when making a short turn. When turning the machine either to the right or left, the guide-pin 16 is drawn toward the pivotal wheel and at the same time moves slightly forward in the corresponding end of the arc slot 15; but as the pivotal wheel moves on a shorter circle than the outer guiding-wheel the two guiding-wheels will assume a greater distance apart at the front than at their rear, which is permitted by the usual pivotal connection of the fork-necks 20 with the backbones, and the machine will be readily turned without dragging of either wheel and with no liability of tilting over. This result is of course facilitated by the flexible or pivotal connection of the oblique links 17 with the guide-pin 16 and with the arms 18 on the fork-necks of the guiding-wheels.

In order to render unnecessary a continual guidance of the two guiding-wheels, two spring-stops 21, Figs. 4 and 5, are secured to the vertical portion of the angle-plate 14 in such position that their free ends will project forward and toward each other and impinge on a boss or enlargement 22 on the upper end of the guide-pin 16, thereby holding the same fast and causing the guide-wheels to maintain a forward movement until said wheels are turned to the right or left in guiding the machine, when the springs will yield to permit the required movement of the guide-pin. If desired, the guide-pin 16 may be surrounded with an anti-friction sleeve to obviate wear.

It is obvious that the herein-described guiding apparatus is not only applicable to a machine composed of two bicycles coupled side by side, but to any velocipede having two guiding-wheels.

What I claim as my invention is—

1. The combination, in a four-wheeled velocipede, of the two backbones, the two rear axles, the two guiding-wheel forks, the two saddle-supports, the detachable coupling-bars connecting the rear axles, the saddle-supports and the backbones of the opposite sides, the forward projecting arms mounted on the necks of the guiding-wheel forks, the angle-plate mounted on the forward coupling-bar and provided with the arc slot, the guide-pin engaged in said slot, and the toggle-links connecting said guide-pin with the arms on the guiding-wheel forks, substantially as described.

2. The combination, in a four-wheeled velocipede having two guiding-wheels and a forward coupling-bar, of a plate mounted on said bar and provided with an arc slot, a vertical guide-pin engaged in said slot, and toggle-links that connect said guide-pin with the forks of the two guiding-wheels, substantially as described.

3. The combination, in a four-wheeled velocipede having two guiding-wheels and a forward coupling-bar, of a plate mounted on said bar and provided with an arc slot, a guide-pin engaged in said slot, toggle-links that connect said guide-pins with arms on the forks of the two guiding-wheels, and spring-stops to engage and hold the guide-pin, substantially as described.

4. The combination, in a four-wheeled velocipede having two guiding-wheels, of detachable coupling-bars for connecting the opposite sides of the machine, a plate mounted on the forward coupling-bar and provided with an arc slot, a guide-pin engaged in said slot, links that connect said guide-pin with the forks of the guiding-wheels, and spring-stops to engage and hold the guide-pin, substantially as described.

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

RICHARD FLACHS.

Witnesses:

PAUL DRUCKMÜLLER,

CARL FR. KEICHETT.