

(No Model.)

C. FELL.
VELOCIPÈDE.

No. 479,064.

Patented July 19, 1892.

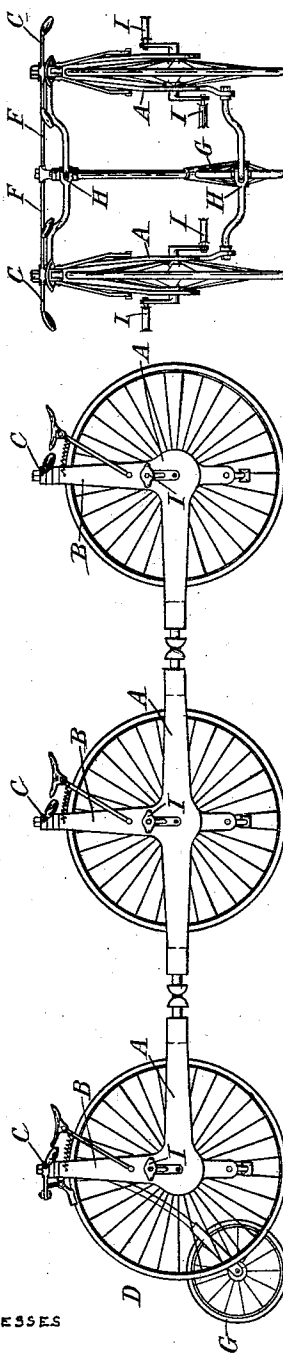


Fig. 1.

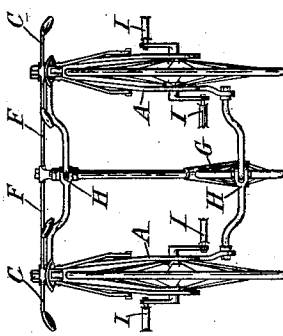


Fig. 3.

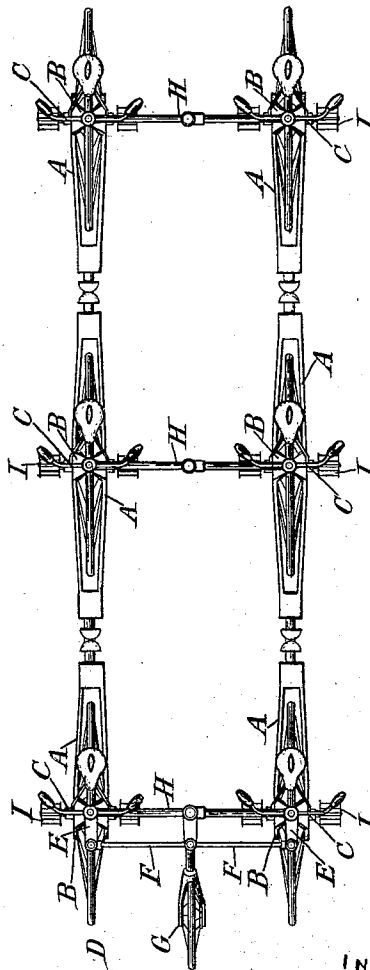


Fig. 2.

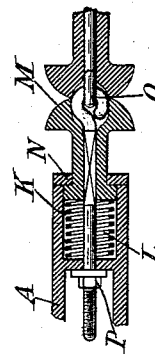


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES FELL, OF SOUTHPORT, ENGLAND.

VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 479,064, dated July 19, 1892.

Application filed November 23, 1891. Serial No. 412,889. (No model.) Patented in England October 8, 1891, No. 17,101.

To all whom it may concern:

Be it known that I, CHARLES FELL, a citizen of the United Kingdom of Great Britain and Ireland, residing at Southport, in the county of Lancaster, England, have invented certain new and useful Improvements in Velocipedes, (patented in Great Britain October 8, 1891, No. 17,101,) of which the following is a specification.

This invention relates to that type or class of velocipedes which are driven simultaneously by several riders; and its objects are to construct the machine in such a manner that it may be steered by one or two only of the riders and that it may be perfectly flexible in a horizontal plane, but only slightly flexible in a vertical plane.

The machine constructed according to these improvements consists of a number of sections, each of which sections includes two wheels arranged parallel with each other at a sufficient distance apart to insure the requisite amount of stability to the machine. Each of the wheels is mounted in a suitable frame or fork and is fitted upon an axle provided with a crank or other means for propulsion—such as suitable chains and chain-wheels or other gearing. The riders sit above the wheels, and for each of them a saddle is provided. For each rider, also, except the leader or leaders, rigid handle-bars are also provided. The sections are connected together by means of cross-rods, each section having two of these rods, one arranged above and the other below the level of the wheel-axles. Each of these rods is hinged horizontally or is connected to the frames or forks in such a manner as to be capable of motion in a horizontal direction, so as to produce complete flexibility of the machine as a whole, and thus to facilitate the steering and turning. There should be no hinge or joint permitting the cross-rods to move in a vertical direction beyond what is just sufficient to allow for differences of level in the ground ridden over or to enable one of the wheels to surmount a local obstacle. If vertical motion is permitted to a greater extent than is necessary to allow for irregularities in and obstacles on the road, the machine will be deficient in self-supporting power, which is an important consideration. The

cross-rods may have arrangements—such as tightening-screws—to lock their hinges and pivots in any desired position for the purpose of preserving the gage of the several sections, or the leading section may have rigid instead of hinged cross-rods for the same purpose, in which case the locking devices for the hinged rods may or may not be used. Each section, except the leading section, is provided at each of its ends with a buffer and coupling, and preferably, also, with a draw-bar, so that all the sections may be flexibly connected in much the same manner as the various coaches are coupled to form a railway-train. The first or leading section will generally require the buffers and couplings at the trailing end only.

It will be evident from the foregoing description that by connecting a suitable number of sections together a flexible velocipede-train may be quickly constructed of any length which can be dealt with by the riders and that by suitable appliances the vehicle may be employed for pleasure, for transport purposes, for carrying small arms, ammunition, and baggage, and for ambulance and other like purposes, while its steering is entirely in the hands of one or two leaders only.

I will more particularly describe in what manner my said invention may be carried into effect, with reference to the accompanying drawings, in each of the figures of which similar parts are denoted by similar letters of reference.

Figure 1 represents in side elevation a velocipede-train of three sections constructed according to these improvements. Fig. 2 is a plan of Fig. 1, and Fig. 3 is an end view. Fig. 4 is a longitudinal section, on an enlarged scale, of the construction of the coupling device and buffer which I prefer to employ.

A is the framing, which is preferably constructed of light steel-plate rods or tubes and which may have any convenient and suitable shape and dimensions. This frame carries the fork B, on the top of which is fixed the handle-bar C. Except in the case of the leading section, this handle-bar is fixed. As represented in the drawings, the steering is effected by the leaders, who ride on the first section D. The handle-bars of this section are connected, respectively, with the two similar

links E and the two steering-rods F, which control the position of the steering-wheel G. It will be seen that the steering-rods are connected together as well as to the steering-wheel fork, and that consequently either or both of the leaders on the section D may have command of the steering.

Instead of the arrangement for steering represented by the drawings, the control of the direction of the machine may be in the hands of a single leader riding the central steering-wheel G, which in this case would be larger and be driven in the same manner as the other wheels or not, as may be preferred. The handle-bars of the leading section would then be fixed; also, instead of arranging one rider for each wheel, there may be two riders, in which case there would also be two forks and two saddles to each wheel, and the wheels would be driven by means of chain-wheels and chains.

In the drawings the leading and trailing section frames are represented as terminated on one side at the base of the fork; but this is not essential, and in some cases it may be found more convenient to make all the frames precisely alike.

The two elements of each section are connected by means of the hinged cross-bars H, one of which is arranged as high as convenient and the other preferably below the circuit of the pedals I. These hinged cross-rods not only serve for preserving the stability of the machine, as already hereinbefore described, but they also enable its width to be increased or diminished at will. For example, if the rods are folded to a V-form it will be obvious that the distance between the wheels must be much less than when the rods are straight and that the wheels may be brought as close together as the frames and cranks will permit, or be separated to the full extent of the rods. The rods may be hinged at their centers, as indicated by the drawings, or they may be rigid and hinged to both of the frames.

It will be understood that when the hinged rods are employed they must also be hinged to the frame or be connected thereto in such a manner as to permit the action of folding in the rods. Precautions for preserving the gage of the sections may be employed, if desired, as hereinbefore described.

The successive sections may be coupled together by any convenient means; but I prefer to employ the arrangement illustrated in longitudinal section on an enlarged scale by Fig. 4. A cylindrical cavity K is formed in

each end of each frame, in which there is inserted a spiral spring L. The buffer M has a piston formed upon it, which fits freely within the cavity and is normally pressed against the cover N by the spring. In an axial opening formed through the center of the buffer and of the cavity there is a coupling O, one end of which is screwed and furnished with an adjusting-nut P, the other end being furnished with a hook or other suitable means for engagement. The rotation of the buffer may, if desired, be prevented by making its stem non-circular and forming the opening through which it passes to a similar shape. The adjusting-nut P may lie upon the farther side of the bottom of the cavity, as shown in the drawings, or it may have a spiral spring interposed between it and the bottom of the cavity, in which case the adjusting-nut would abut upon a plate or washer fitted around the rod at the outer end of the spiral spring. The buffers are preferred to have the entrances to the holes through which the couplings pass enlarged, so that the books may lie within the enlargements, as indicated in Fig. 4.

A machine constructed according to these improvements is perfectly articulated in every useful direction, while at the same time possessing great stability and the advantage of being capable of being increased or diminished in width at will.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a velocipede for carrying more than two riders, a series of sections flexibly connected by means of couplings and spring-buffers, the first or leading section only being provided with a steering arrangement, substantially as hereinbefore described, and as illustrated by the accompanying drawings.

2. In an articulated or flexible velocipede, the combination and arrangement, with a spring-buffer, of a coupling passing axially through the buffer, substantially as hereinbefore described, and as illustrated by the accompanying drawings.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 10th day of November, 1891.

CHARLES FELL.

Witnesses:

WILLIAM E. KEYS,
GEORGE W. ROWE.