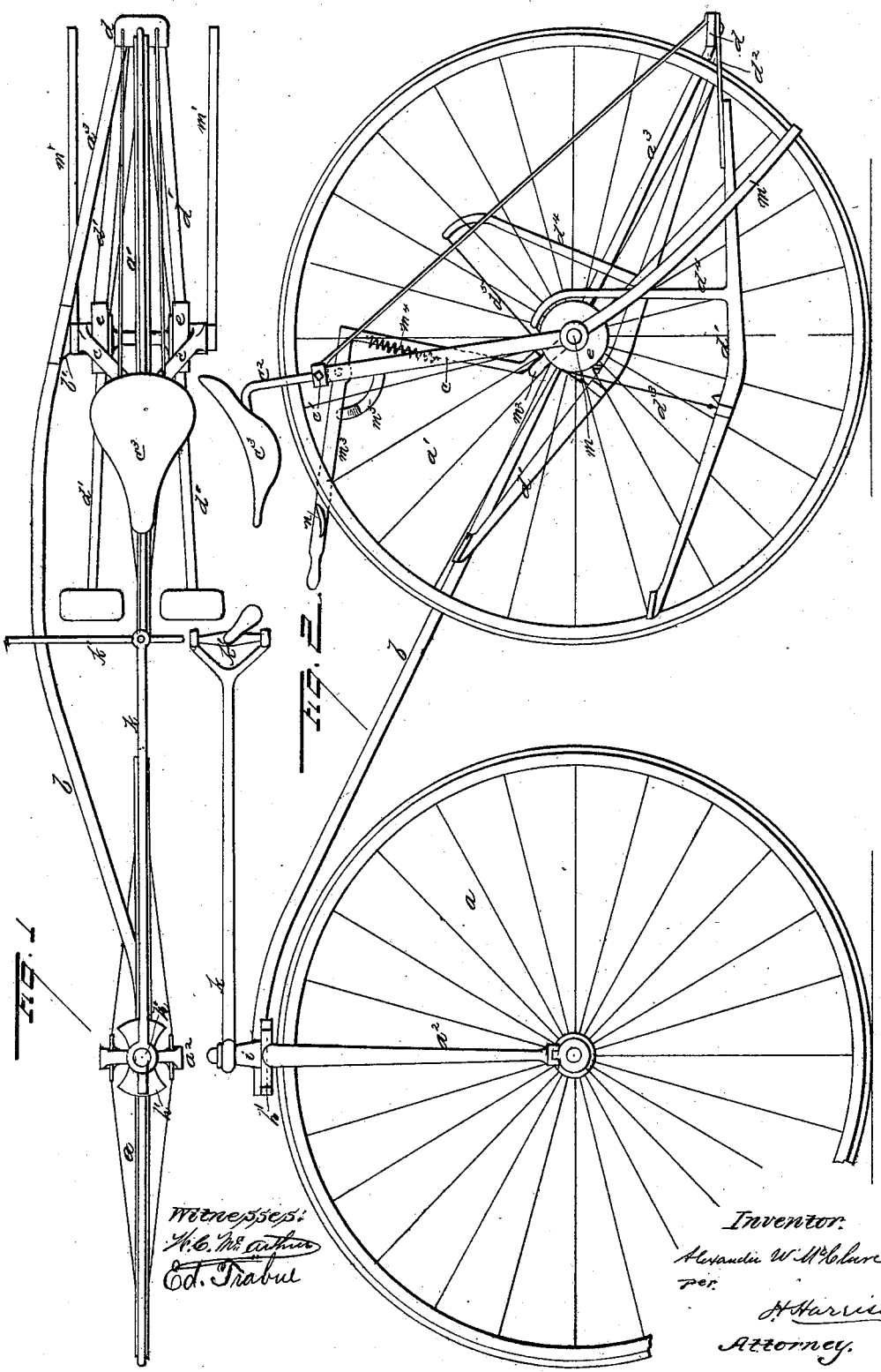
(No Model.) 2 Sheets—Sheet 1.

A. W. McCLURE.

VELOCIPEDE.

No. 342,620. Patented May 25, 1886.



Witnesses:
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Inventor:
Alexander W. McClure
per
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(No Model.) 2 Sheets—Sheet 2.

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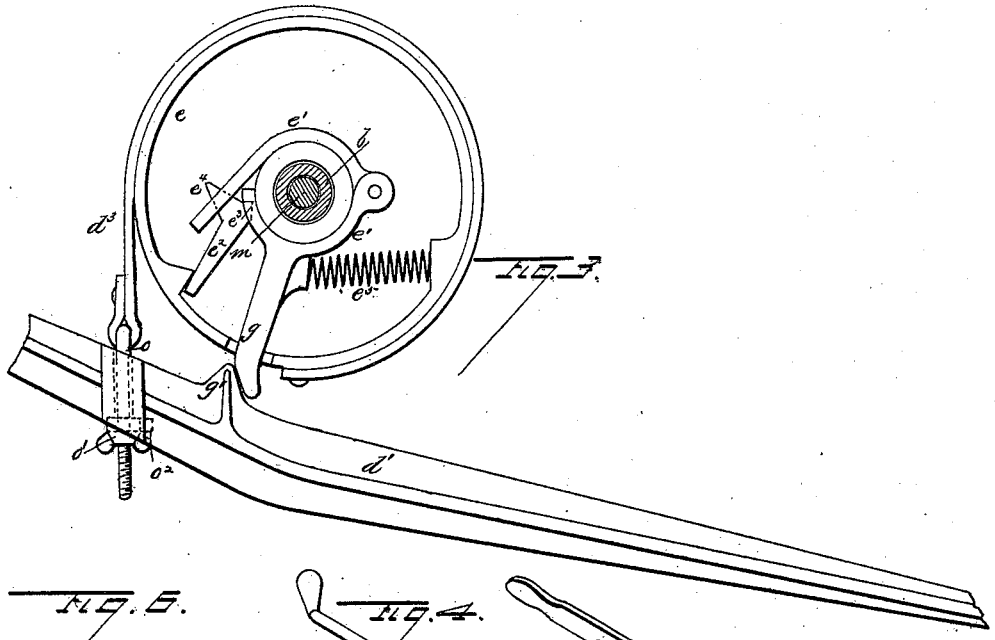

FIG. 3.

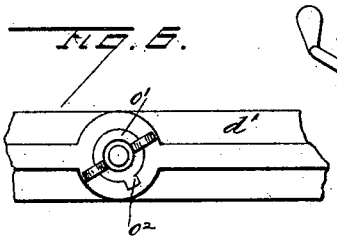

FIG. 6.

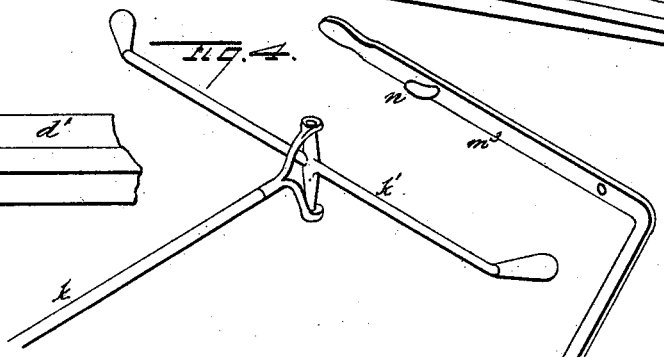

FIG. 4.

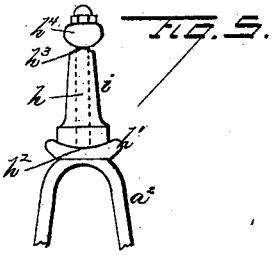

FIG. 5.

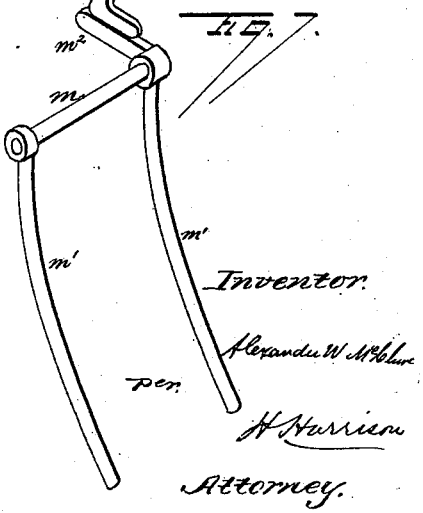

FIG. 7.

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UNITED STATES PATENT OFFICE.

ALEXANDER W. McCLURE, OF CHICAGO, ILLINOIS.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 342,620, dated May 25, 1886.

Application filed February 4, 1886. Serial No. 190,827. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER W. McCLURE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification, to wit:

This invention relates to velocipedes; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a plan view of my device; Fig. 2, a side elevation of the same; Fig. 3, a view of the clutch-drum with its face removed; Fig. 4, a detail view of the swiveled handle-bar; Fig. 5, a detail section of the steering-head. Fig. 6 is a bottom view of the pedal-lever and its band attachment. Fig. 7 is a detail view of the adjustable supporting-legs and their operating-lever.

The object I have in view is to provide a velocipede of simple and cheap construction, and of such peculiar form as will permit its being ridden by different riders of varying size and of either sex. To this end I prefer to use wheels of small size, which I deem better for various reasons; but I may of course use any size of wheel desired.

The front wheel, *a*, is provided with the usual fork, a^2, in which it is hung, and to which is hinged the backbone or connecting-frame, *b*, which connects the front and rear wheels, *a a'*. This connecting-frame or backbone is, however, in this machine carried back entirely and only upon one side of the position occupied by the rider, as shown clearly in the drawings. This enables me to use a much lighter connection, as no weight is placed upon it, and it is entirely out of the way of the rider in mounting or dismounting, or while upon the machine. The rear wheel is mounted on a spindle or projecting arm, *b'*, secured to the connecting-frame or backbone in any desired or suitable way, and upon this same spindle I mount a seat-support, consisting of a standard or standards, *c*, which may rise on one or both sides of the wheel, in this case being shown on both sides. These standards are hollow, and in them are held adjustably by set-screws *c'* extension-rods c^2, the upper ends of which are bent forward, and on these ends is secured the saddle c^3, which may be adjusted back and forward to suit the rider in the manner usual with such articles, and not necessary to more fully detail at this point.

The backbone or connecting-frame is extended back, or an extension-arm is secured to it, as at a^3, to the rear periphery of the wheel, where it is provided with a suitable cross-block or casting, *d*, to which the pedal-levers are secured. These levers *d'* are hinged or otherwise attached; but I have here shown them as provided at their rear ends with a spring section or leaf, d^2, which is secured rigidly to the block *d*, and acts not only as a spring to lift the lever to its highest and normal position, but as a support and hinge, its flexibility serving to give as free play to the pedal as an ordinary pivot. It may be a separate piece, as herein represented, or it may be an integral portion of the lever-arm drawn down, and suitably tempered.

The levers are each represented as formed or provided with an arm, d^4, which projects upward either before or behind the clutch-drum, and is connected with said drum by a flexible connection, d^5, which is wound upon the drum (or on an auxiliary one secured to it or formed with it) as the lever is depressed and unwinds as the lever rises, thus serving to return the drum to its proper position after each stroke without the use of any returning-spring on the clutch, as is usual.

Upon the hub of the wheel are suitable clutches, which are connected to the operating pedal-levers by straps or similar flexible connections, d^3, to form driving-bands, as in the drawings; and it will be particularly noticed that the weight and power applied to or carried by the machine is all supported from or upon the axle or spindle or the hub of the wheel, and little or no strain is thus brought upon the connecting-frame, which is thus enabled to be made very light, as it is simply a connection to retain the two wheels in the desired relative position. The saddle is also supported upon this spindle, and connected by braces to the rear extension of the frame,

so that none of the weight is supported directly by the frame.

It is evident that any desired form of clutch is readily applicable to the machine; but I prefer to use the clutch herein shown, which is substantially the same as secured to me by a former patent dated December 1, 1885, No. 331,518, the changes herein made being such details of construction as enables me to apply and operate it to better advantage than the precise form shown in that patent. It consists of a loose cylindrical drum, *e*, upon the hub or axle, having within it a band, *e'*, which surrounds and clasps the hub or axle, as in Fig. 3. This band I have shown made in two parts hinged together; but may, if desired, make it in one piece, this being a matter of preference with the maker. In any case the two ends of the clutch-band do not quite meet, but one end lies close upon the axle, and the other is extended at a tangent thereto, passing as closely past the opposite end of the band as may be, in order that it may have as large a frictional contact with the hub or axle as possible. This band is tightened or caused to grip by means of a small dog, e^2, which is at its outer end engaged by a lug or projection of the drum or case *e*, and at its inner end formed with a heel, e^3, engaging the short end of the band, and a toe, e^4, engaging the extended end of the band, and it will be seen that as the dog lies, as shown, between the band ends, as the drum is revolved the dog is rocked to press the short end of the clutch-band down on its work and at the same time draws the ends together and causes it to clutch firmly the surface to be driven. As soon as the forward action of the drum ceases the natural spring of the band expands it just sufficient to release its grip and allow the wheel to run free, while the drum is turned back to its normal position, which is done either by the action of a return-spring, (not herein shown,) and which is a common and well-known feature of reciprocal driving-clutches, or by the means hereinbefore described. The expansion and contraction of the clutch-band is so slight as to be almost imperceptible to the eye, and for this reason its action is almost instantaneous, and there is no unpleasant lost motion, as is often the case with ratchet-clutches, besides which it is perfectly noiseless. To insure the clutch-band returning with its drum or case on the backward motion, I provide a spring, e^5, which lies between a projection or shoulder on the band and a similar one on the case, and acts, as in Fig. 3, to keep all the parts in exact position for proper and instant action. It will be evident that this spring holds the dog in constant contact with the projection on the drum, and therefore the machine or its wheel cannot be moved backward, as this motion of the wheel acts at once to close the band and clutch the axle in the same way as would the forward motion of the clutch-drum. It is, however, a great advantage to permit the backing of the wheel when desired, and to accomplish this I provide the clutch-band with a projecting arm, *g*, which I have represented as protruding through the shell of the drum, and it is evident that any pressure upon this arm in the same direction as the driving-power is applied will move the clutch-band forward sufficiently to prevent pressure between the clutch-dog and drum, and the wheel may then be freely backed. This pressure may be applied by hand when desired; but I prefer to render the disengagement of the clutch automatic; and to this end I have provided the operating pedal-levers with a spur or projection, *g'*, which, when the lever is lifted to its highest and normal position, will strike and move forward the clutch-arm *g*, a very slight movement being all that is required. The clutches are thus thrown out of gear automatically whenever the levers are at their point of rest, and the machine is freely backed, yet is always ready for instant use and forward motion.

It will be understood that it does not matter to what part of the clutch-band the arm is secured, and this arm may well be a continuation of the tangent extension of the band; but the movement of the band to accomplish the object sought must always be in the same direction as the application of power in driving. Neither do I desire to confine myself to causing this disengagement of the clutch by means of the pedal-levers, as it is evident that a stop for this purpose and of suitable character may be attached upon any convenient point of the frame or spindle, and this in some instances will be done, depending somewhat upon the especial form of frame, levers, and other accessories which the judgment of the builder will dictate.

The flexible driving-bands are liable to stretch with use, and as in the general use of the machine it is better and in this case necessary to take up the slack and always return the levers and drums to the same point, I secure the driving-bands to the levers by means of screws *o*, passing loosely through the lever, and provided with nuts *o'*, to adjust them. These nuts are preferably formed angular, or with a projection, o^2, to fit a corresponding socket in the levers, and thus prevent any accidental turning of the nuts on the screws when in use.

While the steering-head of an ordinary bicycle is readily used on this machine, I desire to render the steering nearly automatic, or, in other words, to give the steering-wheel a tendency to automatically return to its proper position when deflected from that position; and for this purpose I terminate the front fork in a vertical spindle, *h*, (shown in dotted lines in Fig. 5,) at the base of which is a supporting-plate, *h'*, having a depression across its face, as at h^2, or, in other words, the upper face of this bearing-plate inclines from the sides toward a depressed line through the center of the same. The backbone or connect-

ing-frame is provided with a sleeve, *i*, which surrounds the spindle *h*, and is on its lower end formed to correspond with the plate on which it rests, as seen in Fig. 5. The sleeve rests in the depression of the fork when the wheels are in a line, as is their normal position, and when the steering-wheel is turned to one side or the other, it will be seen that the sleeve rides upon the inclines or cams of the fork or plate, and, always having a tendency to slip down into place again, aids in returning the wheel to its normal position and retain it there. It will be evident at once that it does not matter whether the depression of the plate radiates in a longitudinal, a transverse, or other direction, or if the parts are reversed and the elevation be placed on the plate and corresponding depressions in the sleeve, as the effect sought to be obtained is had in either case. To prevent the sleeve from jumping and rattling when passing over rough ground, I form its upper end with an elevation, h^3, also radiating or crossing the sleeve in any desired direction, and fixed upon the spindle. Above this is a nut or disk, h^4, formed on its lower side with a similar elevation, the two elevations resting upon each other, as in Fig. 5. It will be evident from this that as the sleeve lies in position it is held down by the disk above it; but as it lifts in turning it freely follows the contour of the disk and is always in contact with it, being firmly held, but freely turned, as will be at once understood.

The steering-bar *k* is secured upon the standard or spindle *h*, and allowed to extend rearward as far as desired. At its rear end it is forked, and swiveled therein is the transverse handle-bar *k'*. This construction enables the rider to move the steering-bar freely from side to side without the handle-bar interfering with the body, as would be the case if this bar were rigidly attached. This swiveled motion of the handle-bar must, however, be wholly in a horizontal plane, as it must be rigidly held against any tendency to twist or move in a vertical direction.

Too much stress cannot be laid upon the connecting-frame, which is passed entirely upon one side of the rider's position, and I do not desire to confine myself to any particular shape to accomplish this, as the result is the same whether the frame be formed as herein shown or looped or bent around the rider, and brought back to a central position and forked to the rear wheel; but I do not deem such construction a desirable one, as it materially lengthens the machine, and is of no advantage.

In machines of this character, having two trailing-wheels, it is obvious that the equilibrium is preserved chiefly by the motion of the machine, and that it will not retain an upright position when not in motion. To obviate this, which is an especial objection in the use of the machine by ladies, I have formed the axle or spindle of the driving-wheel hollow, and passed loosely through it a rock-shaft, *m*, which is upon each end provided with an arm or rest, *m'*, of sufficient length to rest upon the ground when desired. This rock-shaft is also provided with a crank-arm, m^2, connected with the end of a lever, m^3, which is fulcrumed on the main frame, and provided with a spring, m^4, to return the parts to position after use. When the lever is moved, it allows the legs or supports to drop to the ground, where they brace and support the machine in proper position while the rider mounts or dismounts or stops to talk. When the machine moves forward, these legs simply drag, and are lifted at any time by the return action of the spring-actuated lever. I provide a catch, n^5, to hold the lever down when desired, and I secure upon the lever the brake-spoon *n*, which bears upon the rim of the wheel when depressed and checks the speed. As the braces or legs are required when the motion is checked or stopped, it is evident that it is a great convenience to operate them and the brake at the same time. A stop of any kind may be provided to prevent the too great swing of these legs or braces.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a velocipede, a main connecting-frame located entirely on one side of the driving-wheel, substantially as and for the purpose set forth.

2. In a velocipede, the combination, with a main connecting-frame located at one side of the driving-wheel, of a seat supported wholly on said wheel independent of the frame, substantially as and for the purpose set forth.

3. In a velocipede, a driving-wheel secured upon an arm or spindle projecting laterally from one side of the main frame, substantially as and for the purpose set forth.

4. In a velocipede, the combination, with a main connecting-frame located at one side only of the rider's position and provided with an extension to or beyond the rear of the rear driving-wheel, of the operating pedal-levers fulcrumed on said extension, substantially as and for the purpose set forth.

5. In a velocipede, the combination, with a light connecting-frame, of means, substantially as described, for supporting the weight wholly upon the rear wheel independent of said frame, substantially as and for the purpose set forth.

6. In a velocipede, a seat-support independent of the main frame and supported upon the hub or axle of the rear wheel, substantially as and for the purpose set forth.

7. In a velocipede, a seat-support secured upon the rear wheel hub or axle, and projecting upward on one or both sides of the wheel, substantially as and for the purpose set forth.

8. In a velocipede, a seat-supporting standard supported upon the wheel hub or axle,

and connected by suitable braces with a rear extension of the main connecting-frame, substantially as and for the purpose set forth.

9. In a velocipede, the combination, with a steering-arm, of a handle-bar pivoted to the same so as to oscillate and turn freely in a horizontal direction, but rigidly held against any vertical oscillation or twist, substantially as and for the purpose set forth.

10. In a velocipede, a steering head and main frame pivoted together and having their contacting-surfaces formed with alternate intermeshing elevations and depressions radiating from the pivot, in combination with a disk upon the pivot-spindle, formed with similar cam elevations bearing upon the upper side of the main frame, substantially as and for the purpose set forth.

11. In a velocipede, the combination, in a steering-spindle or neck provided at each end with a plate or disk having radial cam elevations or depressions, of a sleeve surrounding said spindle and formed to fit closely between said cam-surfaces, substantially as and for the purpose set forth.

12. In a velocipede, the combination, with a driving-wheel shaft or hub, of a clutch-band thereon formed in parts hinged together, substantially as shown and described.

13. In a velocipede, the combination, with the driving shaft or hub, of a loose case or drum thereon, an open band on said shaft provided with a tangent extension, and a dog having one end between and engaging the ends of said band and the other engaged by a projection of the case, substantially as and for the purpose set forth.

14. In a velocipede, the combination, with the drum or case provided with the projection, of the clutch-band having a tangent extension and the dog formed with the heel and toe, substantially as and for the purpose set forth.

15. In a velocipede and a clutch drum or case, a clutch-band therein, in combination with an arm secured to or formed on said band, by which it may be thrown out of gear, substantially as and for the purpose set forth.

16. In a velocipede, a clutch-band provided with an extension or arm, in combination with a stop on an adjacent part of the machine, against which this extension or arm impinges to disengage the clutch, substantially as and for the purpose set forth.

17. In a velocipede, a clutch-band provided with an extension or projection, in combination with an operating-lever, which in its normal position engages said projection to disengage the clutch and permit backing the wheel, substantially as and for the purpose set forth.

18. In a velocipede, the combination, with a clutch-band provided with an arm or extension, of an operating pedal-lever provided with a lug or projection, which in the normal position of the lever engages and moves slightly the arm of the band, substantially as and for the purpose set forth.

19. In a velocipede, a pedal-lever formed or provided on its fixed end with a spring-section secured to the frame or an extension of the same, substantially as and for the purpose set forth.

20. In a velocipede, the combination of a pair of trailing wheels, a connecting-frame passed wholly at one side of the rider's position, and a rear extension of the same to or beyond the periphery of the rear driving-wheel, with a steering-bar, driving-clutches, and the pedal-levers fulcrumed on the rear frame-extension and flexibly connected to the clutches, substantially as and for the purpose set forth.

21. In a velocipede, a hollow axle or spindle, in combination with a rock-shaft therein provided on each end with a support or leg, an operating arm on said shaft, and an operating-lever within reach of the rider, substantially as and for the purpose set forth.

22. In a velocipede, a leg or support pivoted on the machine, in combination with a lever for operating the same provided with a brake spoon, whereby the brake and supports are operated at the same time, substantially as and for the purpose set forth.

23. In a velocipede, the combination, with a clutch-operating band provided with a screw-threaded rod having an irregularly-formed nut thereon, of an operating-lever formed with a hole for the free passage of the rod, and a socket of proper form to receive and hold the nut, substantially as and for the purpose set forth.

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

ALEXANDER W. McCLURE.

Witnesses:

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ED. TRABUE.