

No. 614,146.

Patented Nov. 15, 1898.

A. E. F. VONHAUSEN.

DRIVING AND GUIDING MECHANISM FOR BICYCLES.

(Application filed Apr. 9, 1897.)

(No Model.)

4 Sheets—Sheet 1.

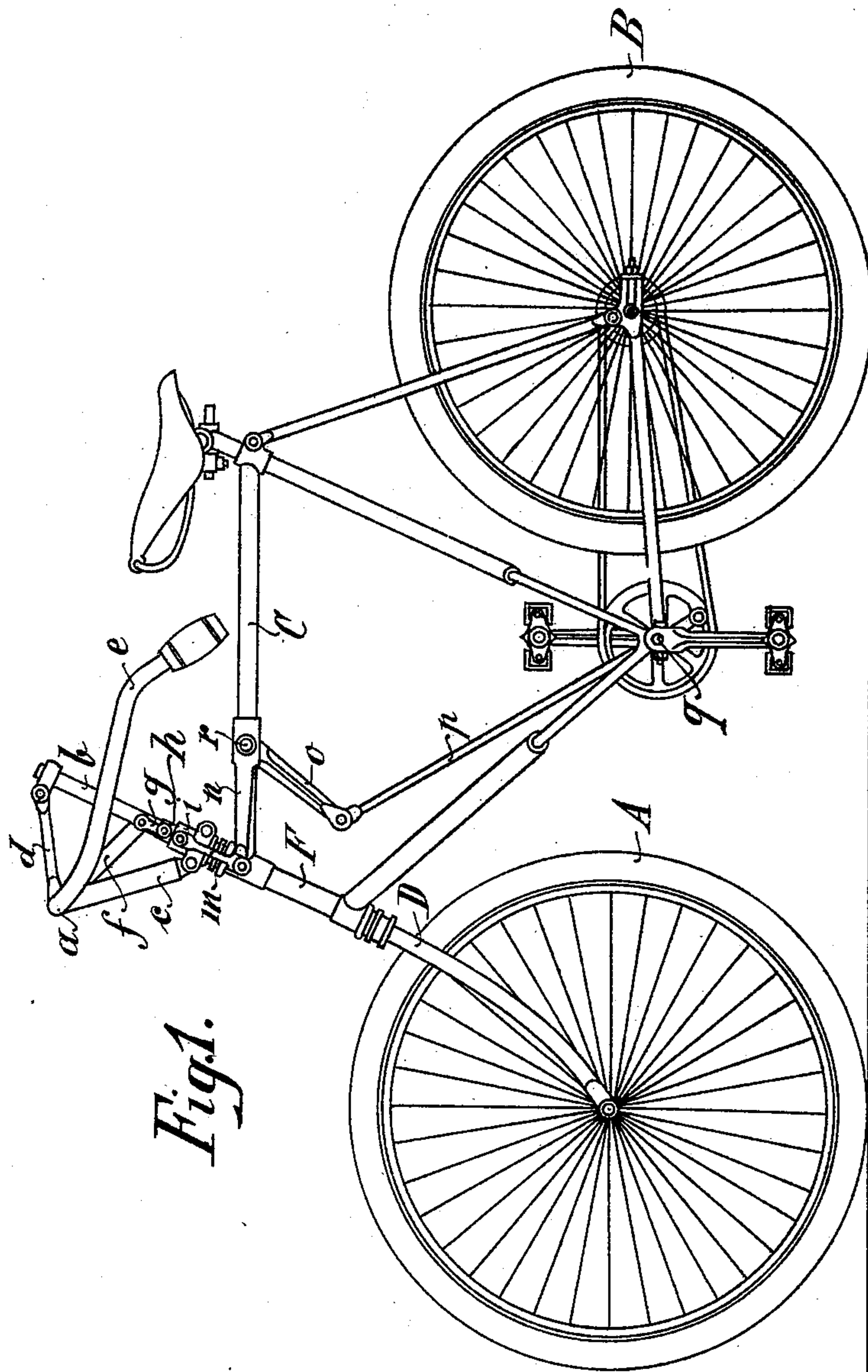


Fig. 1.

Witnesses:
C. G. Gersh
S. L. Hawkshurst.

Inventor:
August F. E. F. Vonhausen
By Edgar Tait & Co
Attorneys.

No. 614,146.

Patented Nov. 15, 1898.

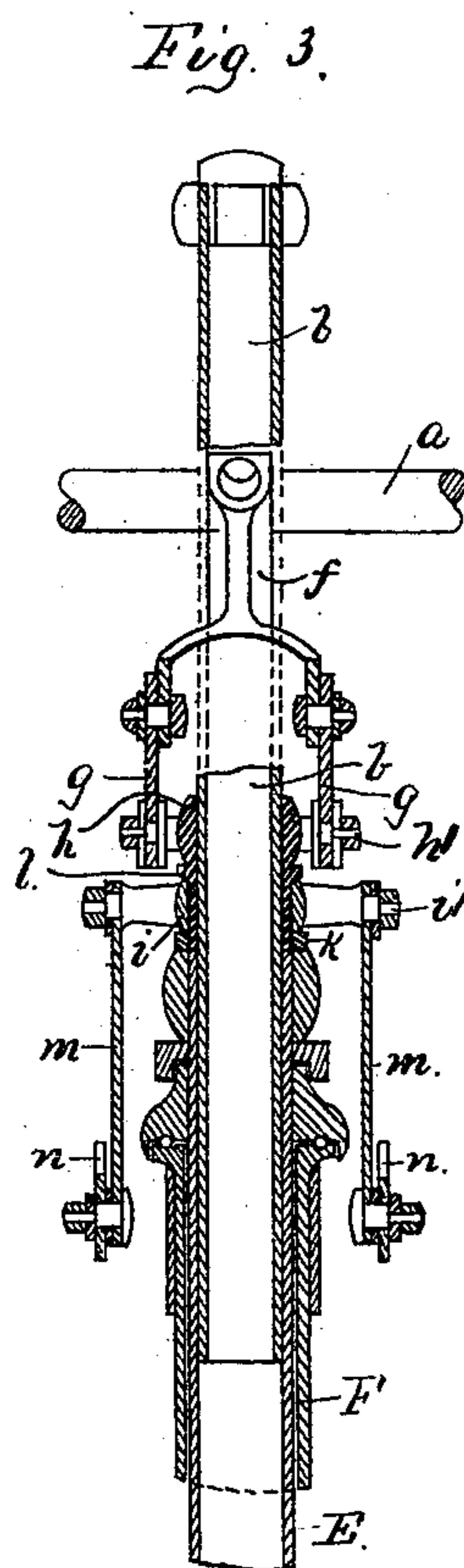
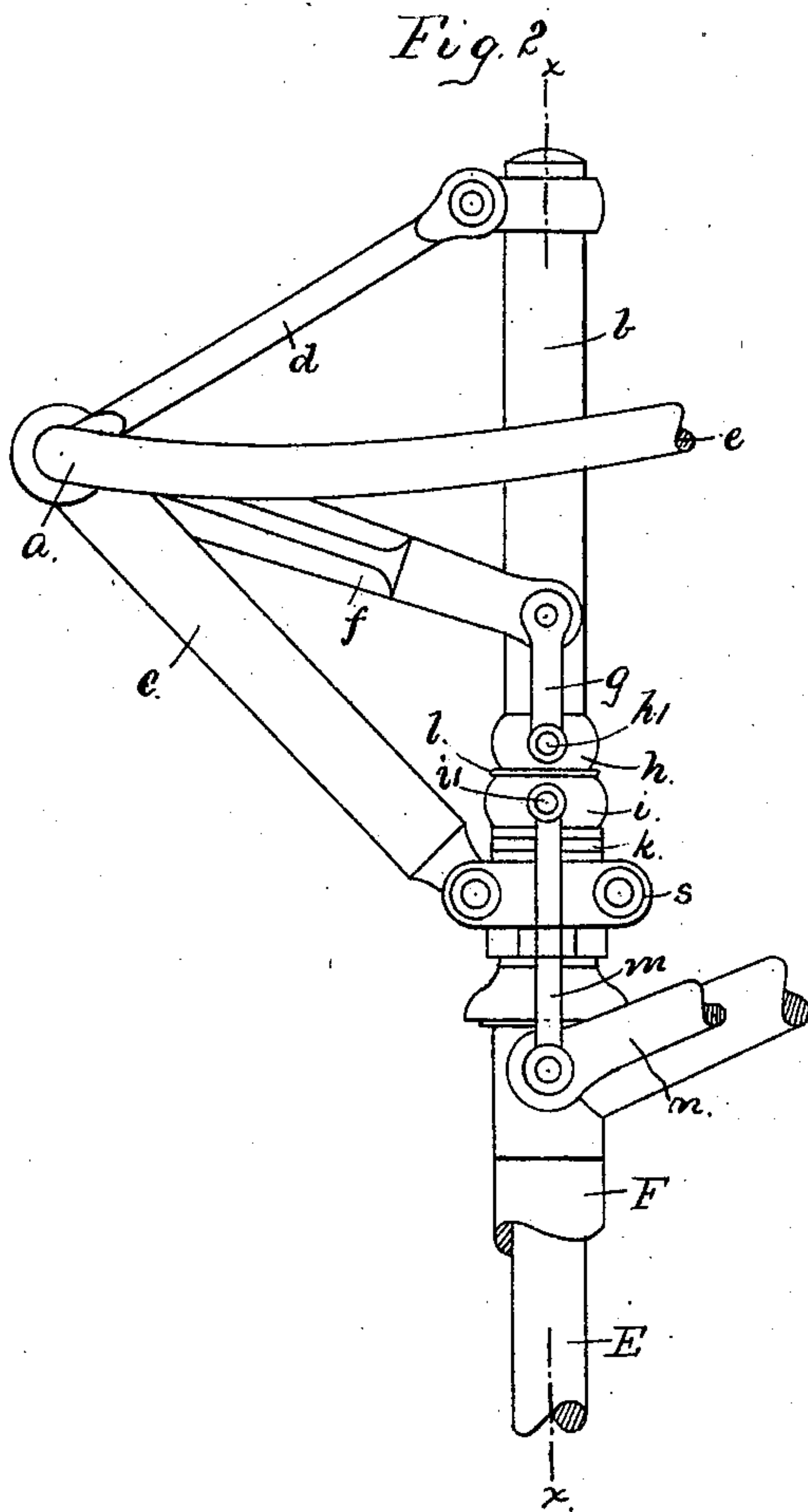
A. E. F. VONHAUSEN.

DRIVING AND GUIDING MECHANISM FOR BICYCLES.

(Application filed Apr. 9, 1897.)

(No Model.)

4 Sheets—Sheet 2.



WITNESSES

Wm. C. MacJennett.
M. A. Knowles.

INVENTOR

INVENTOR
August E. F. Vonhausen

BY

BY
Edgar Sater
ATTORNEYS.

ATTORNEYS.

No. 614,146.

Patented Nov. 15, 1898.

A. E. F. VONHAUSEN.

DRIVING AND GUIDING MECHANISM FOR BICYCLES.

(Application filed Apr. 9, 1897.)

(No Model.)

4 Sheets—Sheet 3.

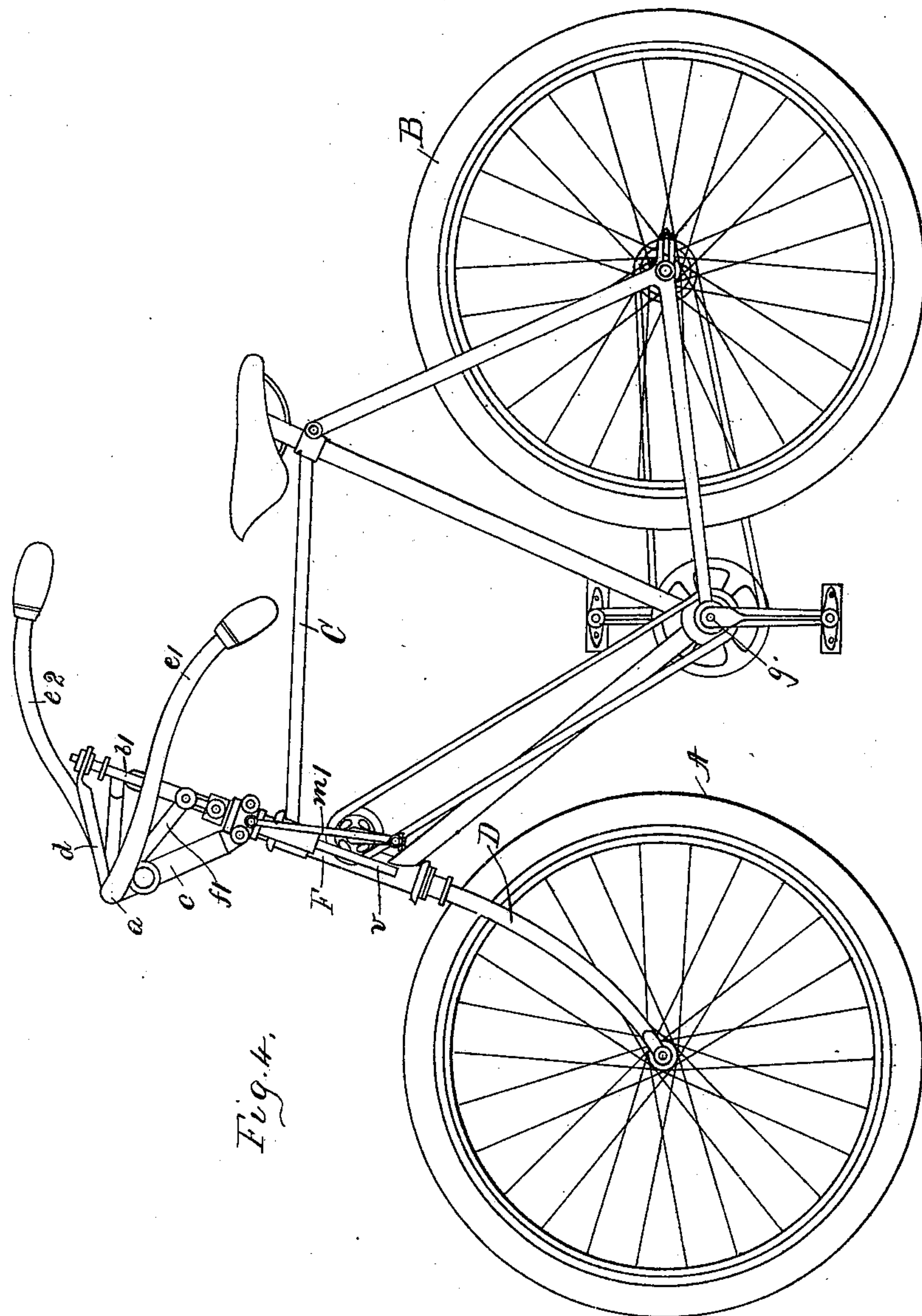


Fig. 4.

WITNESSES

Wm. D. McJannett.
M. A. Knowles

INVENTOR

August E. F. Vonhausen,

BY

Edgar T. C.

ATTORNEYS

UNITED STATES PATENT OFFICE.

AUGUST EMIL FRIEDRICH VONHAUSEN, OF WIESBADEN, GERMANY.

DRIVING AND GUIDING MECHANISM FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 614,146, dated November 15, 1898.

Application filed April 9, 1897. Serial No. 631,387. (No model.)

To all whom it may concern:

Be it known that I, AUGUST EMIL FRIEDRICH VONHAUSEN, a subject of the Emperor of Russia, residing at Wiesbaden, Germany, have
5 invented certain new and useful Improvements in Driving and Guiding Mechanism for Bicycles, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains
10 to make and use the same.

This invention relates to the driving and guiding mechanism of bicycles which are driven by hand and foot power; and the object thereof is to provide an improved mechanism for this purpose by means of which it
15 is made possible to arrange the hand-operated device effectively on the front-fork shaft of the vehicle and to transmit the power to the rear or driving wheel, which is also driven by
20 foot-power, so that with the retention of the ordinary frame and foot-gear the steering capacity of the front wheel is not impaired when the hand-gear is operated.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by the same letters of reference in each
25 of the views, and in which—

30 Figure 1 is a side view of a bicycle provided with my improved guiding and driving mechanism. Fig. 2 is a detail side view of the front fork with the hand driving mechanism connected therewith. Fig. 3 is a longitudinal
35 section on the line *xx* of Fig. 2; Fig. 4, a view similar to Fig. 1 of a modified form of construction; Fig. 5, a detail side view, on an enlarged scale, of the construction shown in Fig. 4; Fig. 6, a longitudinal section on the line
40 *yy* of Fig. 5, and Fig. 7 a detail view of the construction shown in Fig. 5 with the front wheel turned to the right side.

In the practice of my invention as shown in Figs. 1 to 3 in order to obtain the most
45 effective hand-gear, with as long an arm-lever or hand-bar as possible, the shaft *a* of the arm-lever swinging up and down is moved forward from the shaft of the front wheel and is so arranged that it is held by the supports *c*, connected with the fork-shaft *b* and
50 bars *d*. The arm-lever or handle-bar can then act on the front wheel A in the same

manner as a stationary handle-bar, and the transmission of the hand-power to the driving-wheel is effected as follows:

Referring to the drawings, the two arm-levers *e'* form a handle-bar which moves
55 about the shaft *a* and has a simultaneous up-and-down movement, which is transmitted by a rocker-arm *f*, which ends in a fork and
60 carries the two connecting-rods *g* to the ring or sleeve *h*, which is movably connected by its pins *h'* with the rods *g*. The ring *h* is provided with a downwardly-directed extension, on which is movably mounted a second ring *i*,
65 which is held to the felly *l* of the ring *h* by a washer-disk or nut *k*. The ring *i* carries on its pins *i'* the connecting-rods *m*, which are articulated with the cranks *n* of the elbow-levers *no*. The rod *p*, connected with the
70 crank *o* of the elbow-levers *no*, suitably transmits the movement of the elbow-lever to the shaft *q* of the foot-crank bearing. By this peculiar arrangement of the double ring *h i* it becomes possible to transmit the upward
75 and downward movement of the rocker-arm *f* to the elbow-lever, which is rotary with its shaft *r* in the frame C, without influencing the steering capacity of the front wheel.

To decrease the friction between the rings
80 *i* and *h*, the same can be advantageously connected by a ball-bearing, in which case the nut *k* presses a cone against the lower ball-bearings instead of the washer-disk.

From the above description it is evident
85 that by the power of the arm a ring or other sliding piece is actuated, which, on the one hand, is led up and down on the shaft of the front-wheel fork-tube or its extension, while at
90 the same time when steering the wheel it can follow in a second ring connected with it, the rotation of the front wheel carrying the hand driving device, which second ring can only
95 move up and down parallel to the shaft of the steering-tube without following the rotation of the steering-wheel, so that the second ring guided on the frame of the wheel transmits the arm-power acting on the guiding-ring or sliding piece to the pedal-crank bearing without influencing the steering capacity
100 of the wheel thereby and making use of the arm-power to the greatest limit.

In the construction shown in Figs. 4 to 7 the arm-levers *e* describe opposite movements,

so that it is possible to make the same movement or systematically opposite movements with the hand and foot at the same time. In this construction the shaft a of the arm-levers e , formed into a double shaft, is also solidly connected in like manner by supports c and rods d with the forked shaft b of the front wheel A. The shaft b of the front-wheel fork D is, however, formed as a double shaft b' b^2 , and the lower portion b thereof passes into the forked tube and is tightly connected with the same by a rings. In this construction the rings t' and t^2 , similar to the ring h , (shown in Figs. 1 and 3,) move on a double shaft b' and b^2 , while their up-and-down sliding movement is effected by the cranks f' and f^2 , which are connected, by means of the rods g' and g^2 , with the pins t^3 and t^4 of the rings t' and t^2 . The rings t' and t^2 are provided at their lower ends with segment-like disks t^5 , the edge n' and n^2 of which forms the segment of a ring which does not have its central point in common with the rings t' and t^2 , but has its center in the shaft of the steering-fork tube E. The push-rods v , engaging the rim u' and u^2 with their claws v' , are located in slides w , running parallel to the shaft b of the steering-fork tube, and as the slides w are tightly fixed to the steering-device support F of the frame C the rods v can only move upwardly and downwardly, while their claws v' slide on the rim u' u^2 when the front wheel, and with it the double shaft b' and b^2 , is turned about its shaft b . To decrease friction, the connection between the claws v' and the rim of the disk u' and u^2 can also be effected by ball-bearings or rollers similar to the ring connection h i . In this case the movement of a double ring running up and down on the fork-shaft is also transmitted to push-rods which are led along one side of the wheel and are not influenced in their movement and effect when the front wheel is turned to the side. The connecting-rods m' and m^2 are articulated with the push-rods v and act on the cranks n^2 and n^3 , which articulate with a chain-wheel z , having its shaft r^2 on the steering-device support F, and the rotation of which is transmitted by a chain to the shaft of the pedal-crank bearing.

My improvement is simple in construction and operation and is perfectly adapted to accomplish the result for which it is intended, and it will be apparent that changes in and

modifications of the construction described may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. An auxiliary hand-operated driving mechanism for bicycles, consisting of hand-levers or handle-bars supported in front of the upper end of the forward fork of the frame, a rocker-arm operated by said hand-levers or handle-bars, a vertically-movable sleeve operated by said rocker-arm, a rotating part mounted thereon, a rod connected with said rotating part and a crank-lever connected with said rod, said crank-lever being geared in connection with the pedal mechanism, substantially as shown and described.

2. The combination with a bicycle provided with the usual pedal driving mechanism, of a hand propelling mechanism consisting of a handle bar or bars supported in front of the upper end of the forward tubular head of the frame, a rocking lever connected with said handle bar or bars, a vertically-movable part connected with said rocking lever, and mounted on the steering-rod of the forward fork, a rotating part mounted on said vertically-movable part, rods pivotally connected with the rotating part, and elbow-levers pivotally connected with said rods, said elbow-levers being in operative connection with the pedal mechanism, substantially as shown and described.

3. The combination with a bicycle provided with the usual pedal driving mechanism, of a hand propelling mechanism consisting of a handle bar or bars supported in front of the upper end of the forward tubular head of the frame, a rocking lever connected with said handle bar or bars, a vertically-movable part connected with said rocking lever and mounted on the steering-rod of the forward fork, a rotating part mounted on said vertically-movable part, and devices connecting said rotating part with the pedal mechanism, substantially as shown and described.

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

AUGUST EMIL FRIEDRICH VONHAUSEN.

Witnesses:

FRITZ HULIGARTEN,
JEAN GRUND.