

UNITED STATES PATENT OFFICE.

BENJAMIN F. BRUBAKER, OF LARNED, KANSAS.

MOTOR FOR BICYCLES OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 554,650, dated February 18, 1896.

Application filed October 15, 1895. Serial No. 565,780. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. BRUBAKER, a citizen of the United States, residing at Larned, in the county of Pawnee and State of Kansas, have invented certain new and useful Improvements in Motors for Bicycles or the Like; 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 attachments for bicycles, tricycles, and the like, and is designed to furnish a spring-power device which will aid the rider in hill-climbing, as well as traveling over heavy and rough roads, and also ease the operation of the wheel generally, so as to reduce to a minimum the force required from the rider.

The invention will be fully understood from the following description and claim when taken in connection with the accompanying drawings, in which—

Figure 1 is a side view of a bicycle, showing my improvements applied. Fig. 2 is a sectional view taken in the plane indicated by the dotted line *x x* on Fig. 1. Fig. 3 is a sectional view taken in the plane indicated by the dotted line *y y* on Fig. 2. Fig. 4 is a perspective view of the winding-crank and spool or head removed from the shaft; and Fig. 5 is a perspective view of the winding-shaft or power-shaft, illustrating the same broken.

Referring by letter to said drawings, A indicates a bicycle, which is here shown as having a diamond frame. Such bicycle, however, forms no part of my invention, and is here shown simply for the purpose of illustrating one type of wheel upon which my improvements can be applied. It is obvious that the improvements can be applied to tricycles or even four-wheel devices.

My improvements comprise a cylindrical casing B, which is here shown as secured to the top bar *a* of the bicycle-frame by means of brackets *b*. In this casing is arranged a spring C, which may be of the type commonly employed in clock-movements. This spring is secured at one end to the inner side of the circumference of the casing, as shown at *d*, and its opposite end is secured to the periph-

ery of a spool or head D, as shown at *e*. This spool or head has a lateral fixed or integral sleeve *f*, which passes through a lateral central aperture *g* in one side of the casing B, and carries at its outer end a crank-handle *h*, having a hand grasp or knob *i*, by which the same may be turned. The opposite side of the casing B is provided with a central hole or aperture *j*, which registers with the hole or aperture *g* in the opposite side thereof, and passing through these apertures and also through the sleeve *f* and head or spool D is the power-shaft E. This power-shaft, as better shown in Fig. 5 of the drawings, has formed on or fixed to it a clutch-section F, and the spool or head D carries a corresponding clutch-section G, as better shown in Fig. 4 of the drawings. The head or spool D is allowed a sliding movement on the shaft E and is backed thereon by means of a spring H, held in place by a nut *k* on the screw-tapped end of said shaft.

The casing B is provided at a suitable point in its periphery with a transverse slot *l*, and one of the inner side walls of said casing is provided with a lug or other suitable bearing K, in which is journaled a lever L. This lever has its handle portion or outer end projecting through the slot *l* of the casing, and its opposite or inner end is curved or of cam form, so that it may be pressed against the side of the spool or head carrying the clutch-section. It is obvious that the shape of the lever may be changed as a mechanic may see fit.

M indicates a chain or sprocket wheel. This wheel is secured to one end of the shaft E, and may be held in place by means of a nut *m* or the like. This wheel is connected with a chain or sprocket wheel N on the crank or pedal shaft, as shown at P.

While I have shown my improvements as applied to the top bar of a bicycle-frame, I do not wish to confine myself to such application of the same, as it may be attached to any suitable part of the frame, it being simply necessary that it should be connected with the power or driving mechanism of the wheel.

In operation by simply grasping the lever L and moving it in the position shown in Fig. 2, so as to disengage the sections of the clutch, and then grasping the handle *i* of the crank-arm H and turning the same in the proper

direction the spring will be wound upon the spool or head D. By then releasing the lever L the spring H will throw the clutch-sections in engagement with each other, and the spring 5 will turn the said spool or head, which will impart a rotary motion to the shaft E, and consequently the wheel M thereon, when such motion, through the medium of the chain P, will be communicated to the crank or pedal 10 shaft by means of the chain N.

While I have described very specifically and in detail the parts of the precise construction as shown, yet I do not wish to be understood as confining myself to such exact construction of parts or combinations of parts, as I 15 am aware that many of them might be changed without departing from the spirit of my invention.

Having described my invention, what I 20 claim is—

The combination with a bicycle comprising a frame and a crank-shaft having a sprocket-wheel for connection with the drive-wheel and also having a sprocket-wheel N, of the casing 25 fixedly connected to the frame of the bicycle and having a slot in its periphery, the shaft E, journaled in the side walls of the casing

and having the clutch-section F, within the casing, the sprocket-wheel M, fixed on one end of said shaft E, a sprocket-chain connecting 30 said wheel M, and the wheel N, the laterally-movable spool or head D, loosely mounted on the shaft E, within the casing and having the clutch-section G, adapted to engage the section F, and also having the lateral sleeve *f*, 35 extending through one of the side walls of the casing and having the crank *h*, at its outer end, the power-spring C, coiled around the spool D, and having one end connected to said spool and its opposite end connected to the 40 casing, the coiled spring H, surrounding the shaft E, and interposed between a nut and the outer end of the sleeve *f*, and the lever L, fulcrumed in and connected to the casing and extending through the slot therein and en- 45 gaging the spool D, all substantially as and for the purpose set forth.

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

BENJAMIN F. BRUBAKER.

Witnesses:

B. S. WINCHESTER,
G. P. CLINE.