

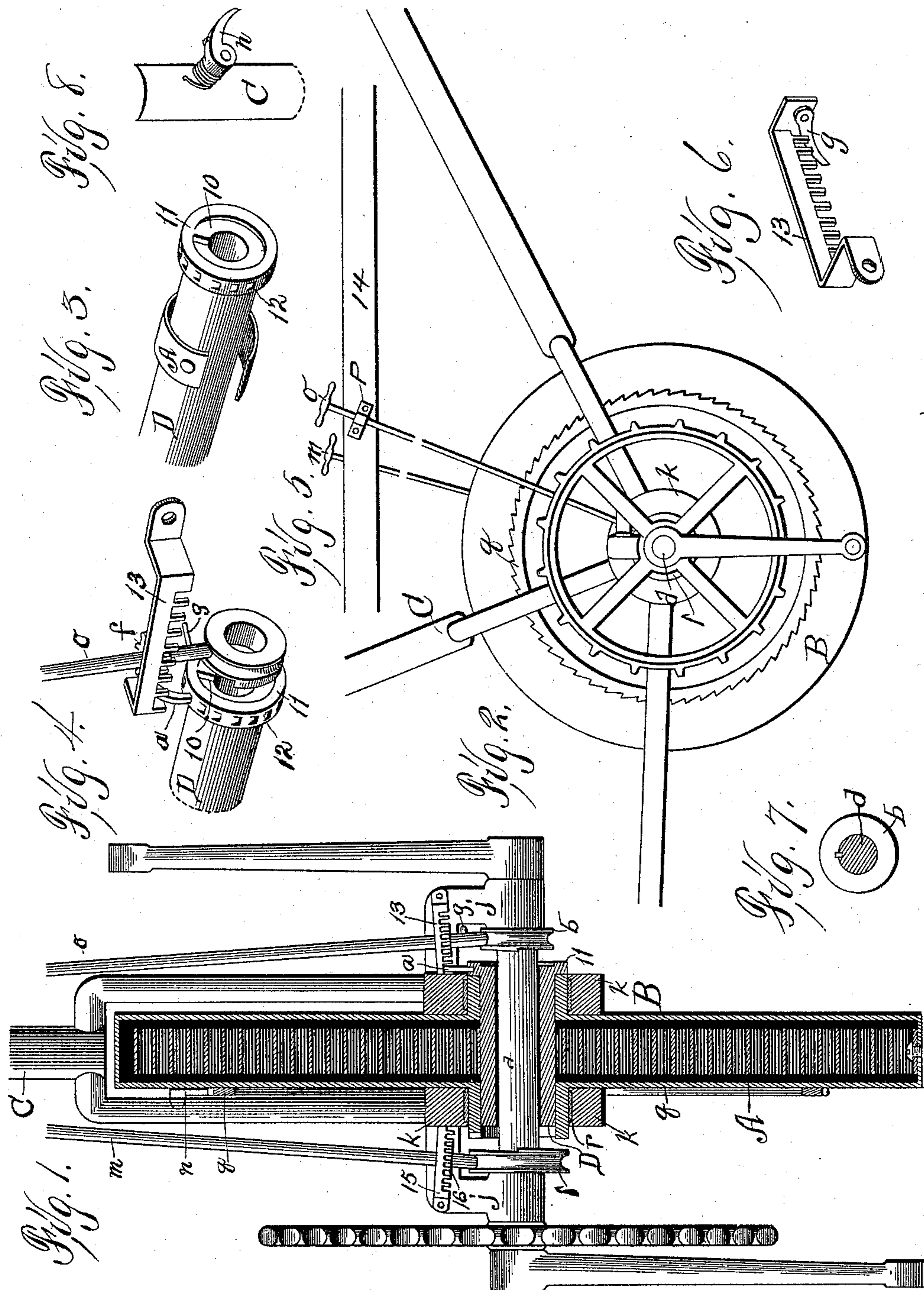
(No Model.)

P. SELLEG.

SPRING BRAKE AND UP-GRADE PROPELLER.

No. 584,796.

Patented June 22, 1897.



Attest:
" " " " "
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UNITED STATES PATENT OFFICE.

PETER SELLEG, OF VALLEY, WASHINGTON.

SPRING-BRAKE AND UPGRADE PROPELLER.

SPECIFICATION forming part of Letters Patent No. 584,796, dated June 22, 1897.

Application filed December 9, 1895. Serial No. 571,559. (No model.)

To all whom it may concern:

Be it known that I, PETER SELLEG, a citizen of the United States, residing at Valley, in the county of Stevens and State of Washington, have invented a new and useful Spring-Brake and Upgrade Propeller, of which the following is a specification.

The object of this invention is to provide improved means for storing the power generated by a bicycle in descending a grade and utilizing the said power so stored in assisting the bicycle in ascending a successive grade or in advancing over an approximately level surface after the descent of the grade is consummated.

My invention consists in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is an elevation, partly in section, longitudinally of the crank-shaft of a bicycle, showing my attachment secured thereto and operating thereon. Fig. 2 is an elevation illustrating portions of my device mounted upon a bicycle. Fig. 3 is a perspective of a sleeve and a portion of a spring attached thereto. Fig. 4 is a perspective illustrating the means whereby in the rotation of a key-rod a dog is released from the cylinder shown in Fig. 3 and a clutch is caused to engage said cylinder. Fig. 5 is an elevation illustrating the means of attaching the key-rods to the bicycle-frame. Fig. 6 is a perspective illustrating the rear face of one portion of the device shown in Fig. 4. Fig. 7 is an end elevation illustrating a clutch feathered to the crank-shaft, the shaft being shown in section. Fig. 8 is an elevation illustrating a portion of one of the forks, a pawl, and a spring whereby said pawl is held downwardly and in engagement with a revolving element. (Not shown.)

In the construction of the device, as shown, *d* designates a crank-axle mounted for rotation in bearings *j j*, which bearings are rigidly connected to the lower end portion of a fork C. The fork C forms the central portion or post of the bicycle, and the lower bar, inclined upwardly and forwardly of the frame of the bicycle, may also be forked, as shown in Fig. 2, and rigidly attached to the bearing-

boxes *j j*. The crank-shaft *d* is provided with oppositely - extended cranks on each end, which cranks are to be employed with pedals on their outer ends, as is common in the construction and operation of bicycles. The crank-shaft *d* also is provided with a sprocket-wheel adjacent to one of the cranks, as is common in the construction of bicycles.

A sleeve D is mounted loosely on the central portion of the crank-shaft *d* and is of a diameter greater than the diameter of said crank-shaft about one-eighth of a linear inch. A clutch member is formed on one end of the sleeve D, as clearly shown in Fig. 3, and is designated as 10. A peripheral flange 11 is formed on the cylinder D outside of and concentric with the clutch member 10, and a series of notches or detent-seats 12 are formed in the periphery of said flange at equal distances of separation.

A slotted plate 13 is mounted on one of the bearing-boxes *j*, adjacent to one arm of the fork C, and a dog or detent *a* is pivoted on said plate and engages in one or another of the detent-seats 12 in the flange 11. A key-rod *o* extends through the space between the slotted plate 13, which plate is arched, and the bearing-box *j*, and has a gear-wheel *f*, rigidly mounted thereon and engaging with the bars formed by slotting the said plate 13. The engagement of the gear-wheel *f* with the slotted plate 13 retains the key-rod *o* against ascent, and the upper end portion of said key-rod is retained against lateral movement by a strap *p*, fixed to the top bar 14 of the bicycle-frame, which strap, as also a strap (not shown) that holds the key-rod *m* to the bar 14, engages frictionally with and prevents accidental rotation of the respective key-rods. The lower end portion of the key-rod *o* is provided with a laterally-extending arm *g*. A clutch member *b* is feathered to the crank-shaft *d* and provided with a grooved periphery arranged and so shaped as to receive the lower extremity of the key-rod *o*. Now in the rotation of the key-rod *o* the gear-wheel *f* will engage with the slotted plate 13 and cause the lower end portion of said key-rod to move laterally coincident with its rotation, thus bringing the clutch member *b* into contact with the clutch member 10 and at the same time causing the arm *g* to travel beneath and

elevate the detent *a* out of engagement with the flange 11. Mounted loosely on the sleeve D is an annular spring-box B, and an annular ratchet-plate *g* is mounted on one side of said
 5 spring-box concentric with the axis of the crank-shaft and is engaged and held against reverse rotation by a spring-pawl *n*, mounted on one arm of the fork C and held down by a spiral spring, as shown in Fig. 8. A clutch
 10 member is formed on the end portion of the hub of the spring-box opposite to the clutch member 10 on the sleeve D, and a clutch member *l* is feathered to the crank-shaft *d* and arranged to engage at times with the said
 15 clutch member on the hub of the spring-box B. A slotted plate 15 is located on the bearing-box *j*, adjacent to the clutch member *l*. The clutch member *l* is provided with a periphery arranged and shaped to receive the lower end
 20 of a key-rod *m*, and said key-rod is mounted in the slotted plate 15 and provided with a gear-wheel 16, corresponding with the gear-wheel *f*, heretofore described, and is held in contact with the top bar of the bicycle-frame
 25 in the same manner as the key-rod *o*, but on the opposite side of the top bar therefrom. The key-rod *m* is not provided with a laterally-extending arm, as is the key-rod *o*. Out-
 30 side of and concentric with the hub of the spring-box B is a hanger *k*, bored concentrically with the axis of the crank-shaft *d* and lined in its bore with a boxing *r*, and within said hanger the spring-box may be rotated, limited in its rotation only by the resistance
 35 afforded by the pawl *n*. A spring A is mounted within the spring-box B, wound convolutely therein, and fixed at one end to the sleeve D, the opposite end of said spring being fixed to the inner face of the peripheral portion of the
 40 spring-box B.

In practical use and operation when the wheel is descending a grade the key-rod *m* is rotated by the operator, its gear-wheel engaging with its slotted plate and causing the
 45 lower end of said rod to move laterally coincident with its rotation and in so moving bring the clutch member *l* into contact with the clutch member on the end of the hub of the spring-box B, thereby communicating the
 50 movement and motion and rotation of the crank-shaft *d* to the spring-box B. The spring-box is revolved and the sleeve D is held against revolution by the engagement of the pawl *a*, which pawl, it will be remembered, is rigidly
 55 mounted on the slotted plate 13, thus winding up the spring upon the sleeve D. When the spring is fully wound or the descent of the grade is completed and it is desired to employ the power stored in the said spring to assist
 60 in advancing the machine either on an approximately level surface or on an ascending

plane, the key-rod *m* is reversely rotated by the operator, thereby moving the clutch member *l* out of engagement with the clutch member on the hub of the spring-box. The key-rod *o* is rotated by the operator to move the clutch member *b* into contact with the clutch member 10 and to release by engagement of the arm *g* the pawl *a*, at which time the spring A expands and the spring-box is held against
 70 the reverse rotation by the engagement of the pawl *m*. Therefore the power stored in the spring will be exerted to revolve the sleeve D, and since said sleeve is connected for rotation with the crank-shaft *d* through the medium of the clutch members it will assist the
 75 said shaft to rotate.

The lower end portions of the key-rods are quite loosely mounted in the grooved peripheries of the clutch members *b l*, and since the crank-shaft is mounted in bearings independent of the remainder of the device and has a great form of movement relative to the sleeve it is apparent that when the key-rods are so moved as to release all the clutch members
 85 from engagement the machine may be propelled by foot-power with a very minimum degree of friction, or, in other words, with very little, if any, friction on account of or traceable to the spring bolter mechanism.

I claim as my invention—

1. The combination with a pedal-driven shaft of a spring-motor comprising a spring-box, a sleeve rotatively relative to said spring-box, a convolute spring connecting said
 95 spring-box and sleeve, means for retaining said spring-box against rotation in one direction, means for retaining said sleeve against rotation in one direction, clutch mechanism arranged to connect the spring-box and pedal-driven shaft at times to wind the said spring upon the said sleeve, and a clutch mechanism arranged to connect the pedal-driven shaft and sleeve at a time when the pedal-driven shaft and spring-box are disconnected, key-
 105 rods for operating said clutches, and an arm on one of said key-rods arranged to release the means of retaining the sleeve against rotation in one direction.

2. In a device of the class described, a sleeve mounted for rotation, a pawl engaging said sleeve and retaining the same against rotation in one direction, a key-rod, a slotted plate, a gear on said key-rod traveling in engagement with said slotted plate, and an arm
 115 formed on and laterally extended from said key-rod and arranged to engage said pawl and release the same from said sleeve.

PETER SELLEG.

Witnesses:

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 CHAS. H. SLIGHTAM.