

H. J. FERGUSON.

Velocipede.

No. 88,703.

Patented April 6, 1869.

Fig. 1.

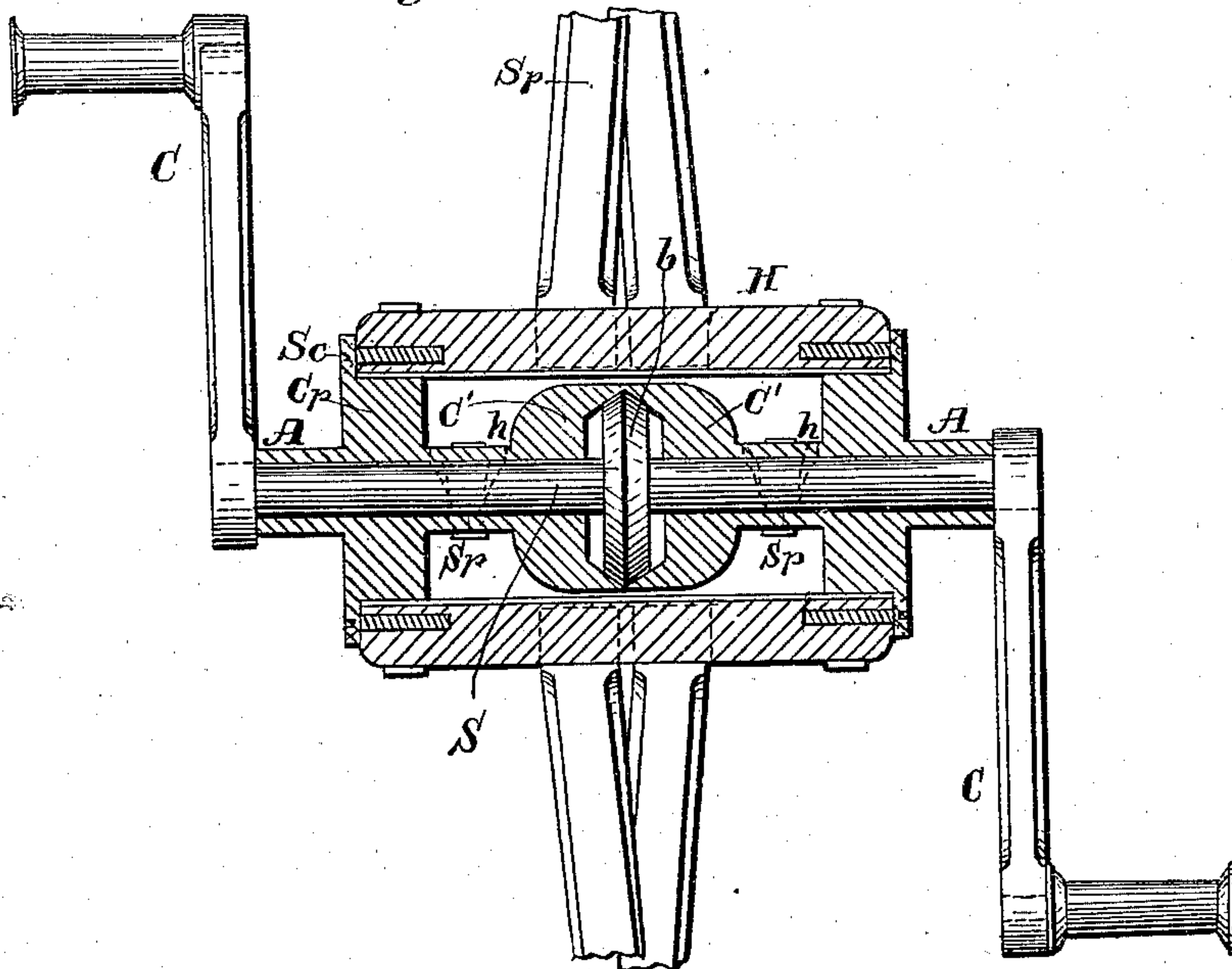
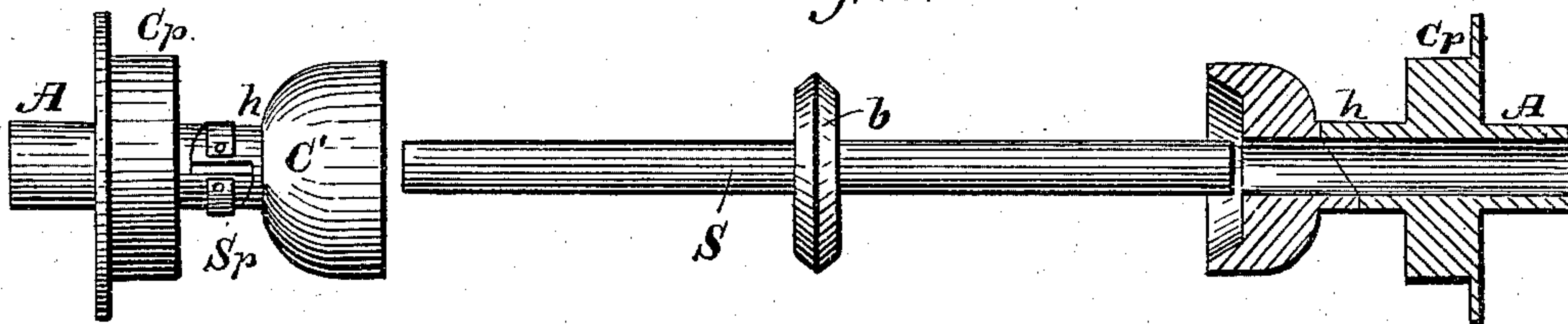


Fig. 2.



Witnesses:

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HENRY J. FERGUSON, OF WHITING, NEW JERSEY.

Letters Patent No. 88,703, dated April 6, 1869.

IMPROVED VELOCIPED.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, HENRY J. FERGUSON, of Whiting, in the county of Ocean, and State of New Jersey, have invented a new and useful Improvement in Velocipede and Wheel-Propulsion; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a cross-sectional view, and

Figure 2 is a detached perspective view.

The same letters refer to similar parts in the two figures, as follows, viz:

H is the hub.

Sp are spokes.

Sp' are springs.

A are axles.

Cp are caps securing the axles to the hub by screws Sc, and by insertion therein.

C are cranks.

C' are friction-cones, or cups.

b are friction-buttons, firmly secured to the shaft S.

h are helical division lines, separating the helix-shaped ends of caps Cp and cups, or cones C'.

The right-hand portion of fig. 2 represents a cross-sectional view of cone C', cap Cp, axle A, and their helix-shaped parts, in juxtaposition.

The left-hand portion of the same represents the perspective appearance of the same parts entire, and in proper relations to each other. They are each, as it were, slipped off from the shaft S, on which they alternately turn, or are kept stationary.

The bearings, or axles A A are intended to furnish the resting-place for the lower ends of the jaw-bar, depending from the reach, or from any other part of the velocipede-frame, &c.

In velocipede and wheel-propulsion, it has been hitherto customary to chiefly depend on rigid crank, eccentric, pulley, gear, and other similar arrangements of parts, fixed to the axle of the wheel, or to the wheel itself, at some point away from the centre.

In all these cases there is motion in all the parts, if in any of them, resulting frequently in great inconvenience.

To remedy this evil, the ratchet has been used in various ways, as it permits detachment, or break in the continuity of motion, at will, both in time and place. But the ratchet has, in this application, serious inherent faults.

There is, first, almost invariably, lost motion to take up, when said continuity is to be renewed.

Second, there is noise accompanying action, of annoying and irritating character.

Third, it is necessarily of weak construction, disproportionately severe wear, and uncertain action.

The nature of my invention consists in providing means whereby continuity of motion may be maintained or broken, at will, without loss of motion, without noise, with great simplicity of parts, with cheapness, strength, durability, and certainty of action.

The drawing makes the action of my invention clear, but it may be described as follows, viz:

Supposing the foot, hands, or a pitman, or links, placed on the cranks C, fig. 1, and movement made in the direction in which the spiral lines of division, h, move away from and increase their distances from the cranks C, and consequently approach the friction-cups C', the fixed axles A, or caps Cp, with helix-shaped inner ends, having the springs Sp', secured by one end to themselves, and by the other to the helix-shaped end of the cups C', and the helical surfaces being held against each other at all points thereby, extension, or elongation of the parts occurs. the friction-cups C' pressing against the buttons b b, are frictionally gripped, or clutched thereby instantly.

The necessary result of this gripe, or clutch, if the caps Cp be secured to the hub, or wheel, is motion of the wheel corresponding to that of the crank, &c.

But if the crank be stopped suddenly, while the wheel is yet in motion, the action of the helical surfaces is reversed, the spiral ends of C' sliding down or along those of Cp, their length and pressure are diminished, the friction-button b is set free, thus permitting free motion of the wheel upon the shaft S.

The frictional cup, stationary axle, cap, and journal of one side, revolving on the shaft S, are the duplicates of those on the other.

The springs Sp' must be applied to the helical ends of opposite parts.

The axles A must be firmly fixed to the hub.

The frictional cups, with helical opposite ends, must be left free to move to and against, or away from the frictional buttons b, and also slightly on and around the shaft S.

I prefer the arrangement of the parts here given as the best, but the same kind of action may be secured by reversing the parts, so to speak, separating the buttons b into two, attaching the crank or pitman, &c., to the axle A and cap Cp, and locating them without the wheel.

I contemplate the use of my invention, when divided into two parts at the centre line of the button b, and adjusted to an independent wheel or wheels, for the purpose of increasing motion in a velocipede, &c.

I do not limit the application of my said invention to any particular form of velocipede, or kind of wheel-propulsion.

I do not limit myself to feet, hand, pitman-crank, or any other of the known forms by which circular motion is obtained.

I do not claim the crank, as applied to the propulsion of velocipedes, broadly; but

What I do claim, and desire to secure by Letters Patent, is—

1. The frictional button *b*, frictional helical cup *C'*, and helical and axled cap *Cp*, for the purposes and in the manner described.

2. The crank *C*, shaft *S*, and button *b*, in combination, as and for the purposes named.

3. The helical friction-clutch, formed by the button *b*, helical friction-cup *C'*, and the helical and axled cap *Cp*.

4. The combination of the spring *Sp'* with the co-ordinate helical ends of cup *C'* and cap *Cp*.

HENRY J. FERGUSON.

Witnesses:

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A. B. SMITH.