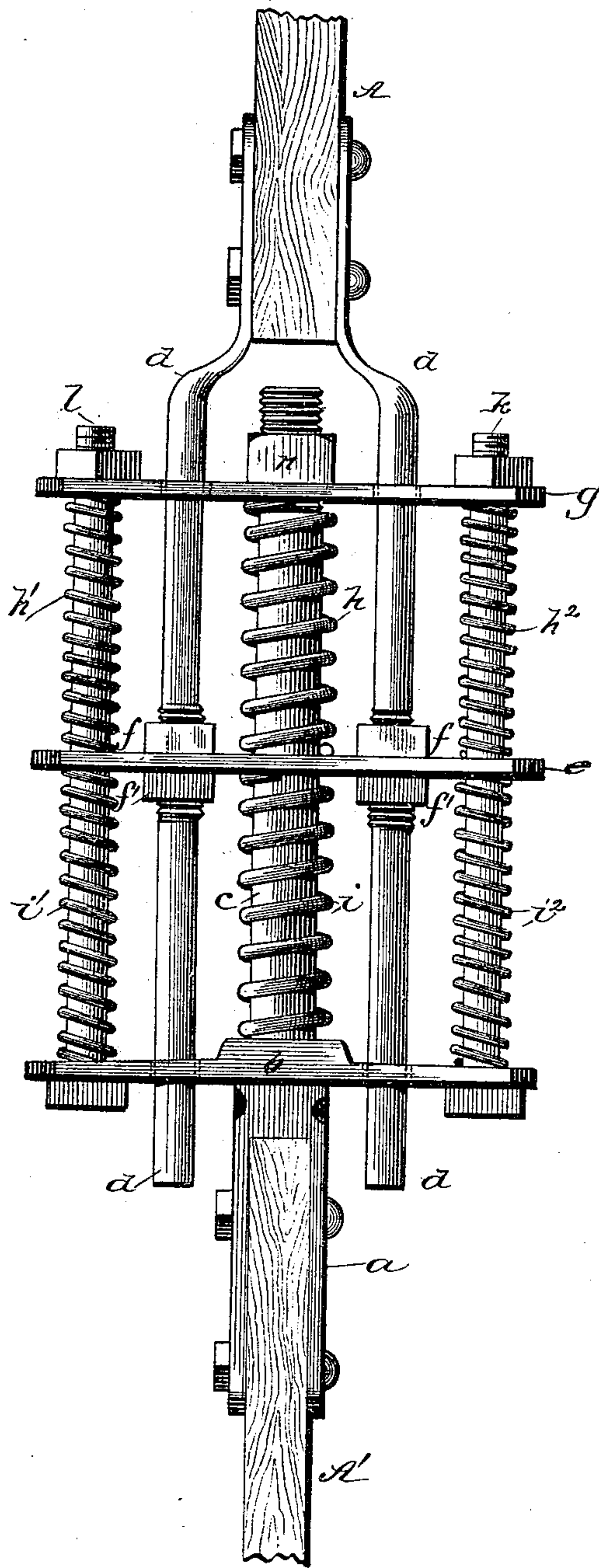


(No Model.)

G. D. PIERCE.  
ELASTIC PUMP ROD.

No. 389,320.

Patented Sept. 11, 1888.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE D. PIERCE, OF SHELBY, IOWA.

## ELASTIC PUMP-ROD.

SPECIFICATION forming part of Letters Patent No. 389,320, dated September 11, 1888.

Application filed July 2, 1888. Serial No. 278,776. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE D. PIERCE, of Shelby, in the county of Shelby and State of Iowa, have invented a new and useful Improvement in Elastic Pump-Rods, of which the following is a specification.

My invention relates to that class of pump-rods or pitmen (for windmills and other uses) which are made elastic in the direction of their length, so as to cushion the stroke, and by reducing the hammering action obviate much of the wear and tear on the working parts.

It consists in the peculiar construction and arrangement of springs and sliding guides for forming a connection between the two sections of the pump-rod, as will be hereinafter fully described.

The figure is a side elevation of my improved devices applied in the length of a pump-rod to its adjacent sections.

A A' represent the adjacent sections of the pump-rod, between which is interposed my improved devices. The lower section, A', of the pump-rod is bolted between the branches of a socket-piece, *a*, that is made of metal, and is rigidly connected to a cross-head, *b*, and elongated stem *c*. The upper section, A, has bolted to its opposite sides the parallel rods *d d*, which carry about their middle a cross-plate, *e*, rigidly clamped to the two rods between nuts *f f'*, which fit upon a screw-thread of larger diameter than the rod. The central stem, *c*, is screw-threaded at its upper end and is provided with a nut, *n*, that retains a cross-plate, *g*. Between this cross-plate *g* and the middle cross-plate, *e*, there is disposed a spiral spring, *h*, wound around the screw-stem *c*, and between the cross-plate *e* and the cross-head *b* there is disposed a spiral spring, *i*, wound about the same stem, *c*. The parallel rods *d d* being rigidly attached to the middle cross-plate and sliding freely through openings or guide-holes in cross-head *b* and cross-plate *g*, it will be seen that an upward pull on the section A of the pump-rod compresses the upper spiral spring, *h*, and cushions the rod on the upstroke, while the other spiral, *i*, is compressed by and cushions the downstroke. These two springs may be of equal tension, or they may vary in tension, so as to secure a stiffer action for the downstroke and a more elastic action for the upstroke, or vice versa.

To vary the tension of the springs, so as to make a more stiff or more elastic action, the nut *n* on the cross-plate *g* may be turned on the threaded end of the stem to give more or less compression to the two springs *h* and *i*.

I may, for greater stiffness and strength of spring action, increase the number of spiral springs *h* and *i* by providing other stems, *k*, and *l*, connecting the extended ends of the cross-head and cross-plates, and placing around these stems supplemental spiral springs *h' h''* and *i' i''*, which act in unison with the springs *h* and *i*. These supplemental springs also serve a good purpose for varying the tension of the strokes. Thus by leaving off the supplemental springs *h' h''* there will be one spring, *h*, for the upstroke and three, *i' i''*, for the downstroke.

Having thus described my invention, what I claim as new is—

1. A sectional pitman or pump rod having an elastic connection in its length composed of two parallel rods, *d d*, attached to one section of the pitman and rigidly attached to a cross-plate, *e*, the cross-head *b*, with screw-stem *c*, attached to the other section of the pitman and provided with cross-plate *g* and nut *n*, and the two spiral springs *h* and *i* wound upon the central stem on opposite sides of the middle cross-plate, substantially as and for the purpose described.

2. An elastic pitman or pump rod consisting of section A, with parallel rods *d d*, bolted to the same, and having in the middle enlarged screw-threads with nuts *f f'*, clamping a middle cross-plate, *e*, a section, A, having perforated cross-head *b* and stem *c*, attached to the same, and the perforated cross plate *g*, the bars *d d* being guided through holes in cross-plate *g* and head *b*, and the two spiral springs *h i*, arranged upon the stem *c* on opposite sides of the middle cross-plate, substantially as and for the purpose described.

3. The combination, with the cross-head *b*, stem *c*, and plate *g*, and the rods *d d*, with cross plate *e* and springs *h* and *i*, of supplemental stems and springs arranged at the outer ends of the cross-plate and head, substantially as and for the purpose described.

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Witnesses:

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