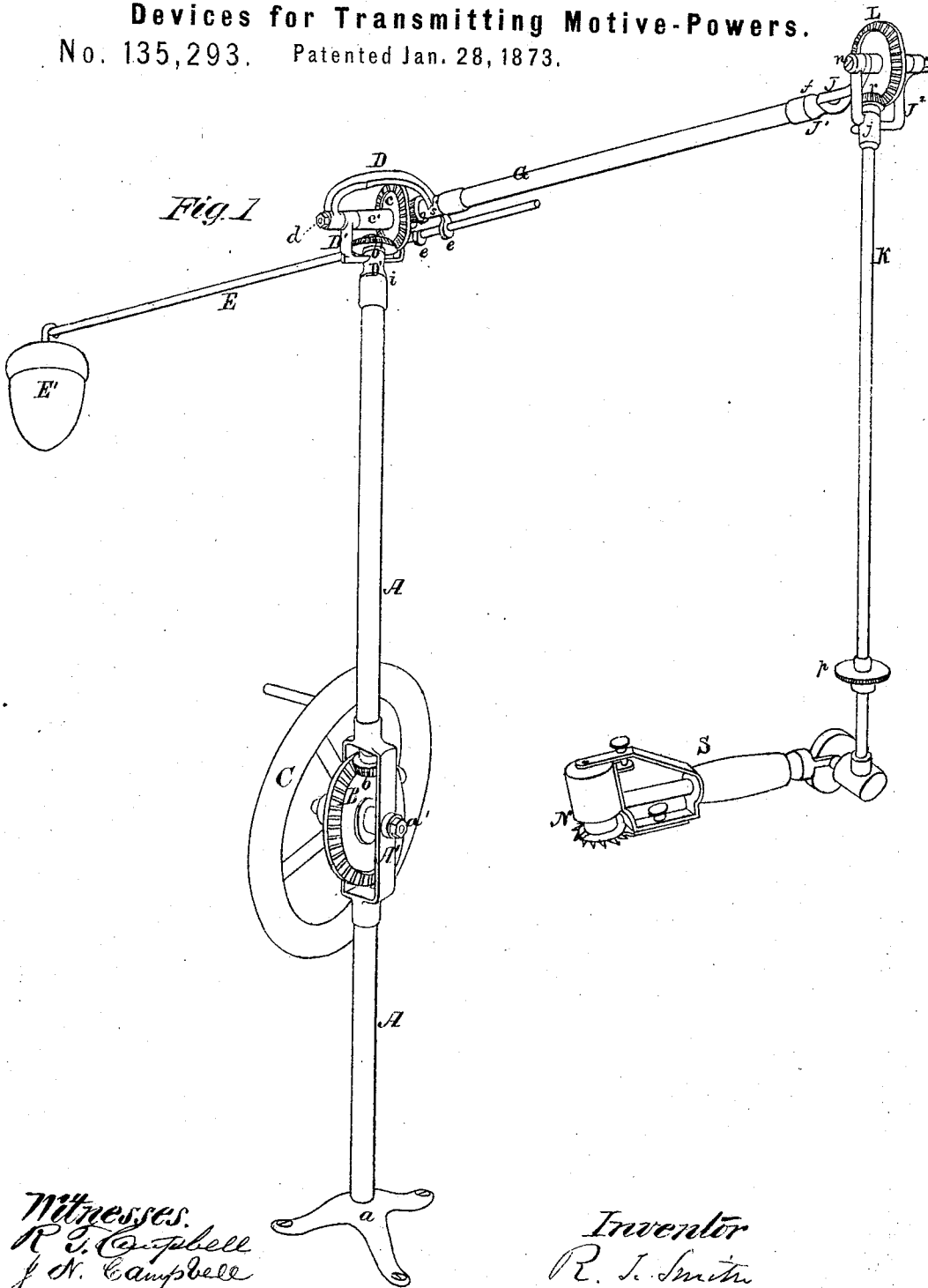


R. T. SMITH.

Devices for Transmitting Motive-Powers.

No. 135,293. Patented Jan. 28, 1873.



Witnesses.
R. J. Campbell
J. N. Campbell

Inventor
R. T. Smith
by
Wm. H. H. H. H. H.

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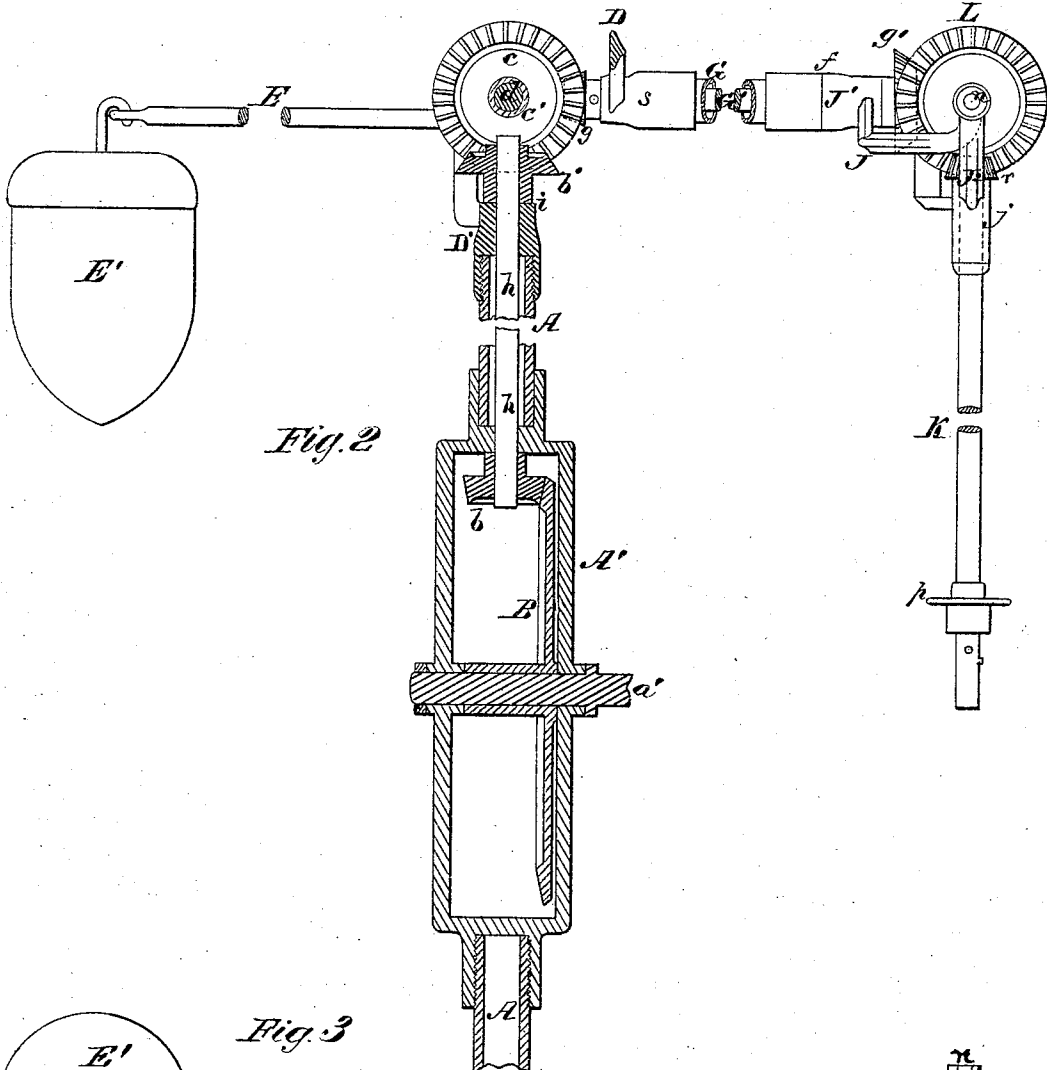


Fig. 2

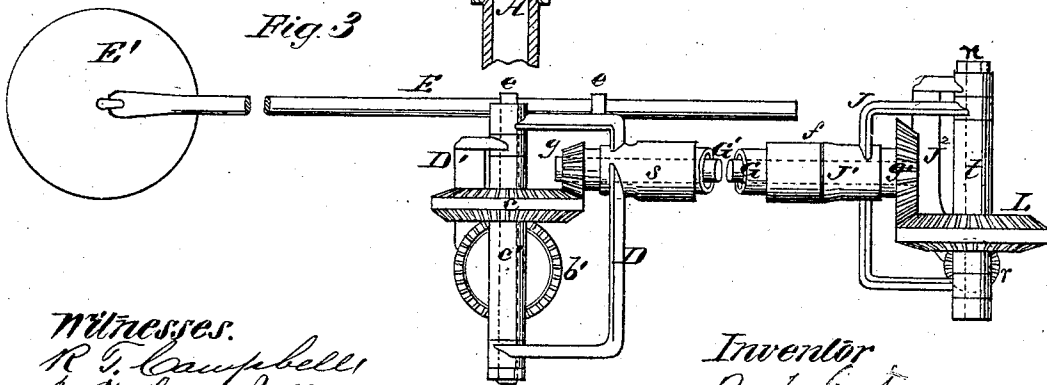


Fig. 3

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UNITED STATES PATENT OFFICE.

ROSWELL T. SMITH, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR TO HIMSELF,
J. G. BLUNT, J. K. PRIEST, AND WILLIAM EARL, OF SAME PLACE.

IMPROVEMENT IN DEVICES FOR TRANSMITTING MOTIVE POWER.

Specification forming part of Letters Patent No. 135,293, dated January 28, 1873.

To all whom it may concern:

Be it known that I, ROSWELL T. SMITH, of Nashua, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Transmitting Motive Power; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, Plate 1, is a perspective view of the machine complete, having a shearing device applied to it. Fig. 2, Plate 2, is a vertical section through the standard of the machine, with parts of it broken away, showing also the means for transmitting rotary motion to a pendent shaft on a vibrating balanced arm. Fig. 3, Plate 2, is a top view of the machine, with parts of its shafts broken away.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel means for transmitting motion positively through the medium of jointed or articulating rods to a sheep-shearing, horse-clipping device, or other device which is guided and controlled by the hand. My object is to carry into practical effect, for the purpose above described, the universal joint for which Letters Patent were granted to me, bearing date June 25, 1867, whereby rotary motion can be transmitted from one shaft to another when these shafts are connected together by a joint; also, to effect the same ends, as described in the Letters Patent No. 59,089, and reissued November 7, 1871, by means of shafting and cog-wheels, as will be hereinafter explained.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawing, A represents a standard which is mounted on a foot-piece, *a*, and preferably made hollow throughout. This standard is made of two pieces connected together by loop-section A', across which a shaft, *a'*, passes, carrying a beveled spur-wheel, B, and a crank-wheel, C. The wheel B engages with the teeth of a pinion spur-wheel, *b*, which is keyed on a shaft, *h*, that passes up through the upper section of the standard, and has keyed on its upper end a beveled

pinion, *b'*. Between the pinion *b'* and the upper end of the upper section of the standard A a collar is loosely applied on the shaft *h*, on which collar two bearings, D', are applied, which form a stirrup-bearing for a horizontal shaft, *d*, on which is a double-beveled wheel, *c*, and a vertically-vibrating stirrup, D. The wheel *c*, which has a long hub *c'*, engages with the wheel *b'* and also with a pinion, *g*, on a shaft, G'. This shaft G' is inclosed in a tubular arm, G, one end of which is secured into a collar, *s*, on which are constructed two arms, constituting the stirrup-bearing D, which is connected loosely by its eyes to the shaft *d*. The outer end of the arm G has secured to it, by means of a collar, J¹, a stirrup-bearing, J, the arms of which receive through them a shaft, *n*, on which is a double-beveled spur-wheel, L, having a long hub, *t*. This wheel L engages with a beveled spur-wheel, *g'*, on the outer end of the shaft G', and it also engages with the teeth of a pinion spur-wheel, *r*, which is keyed on the upper end of a pendent swinging rod, K. The upper end of the rod K is received into a tubular bearing, *j*, on which two arms are constructed that constitute a stirrup, J², the eyes on which receive loosely through them the shaft *n*, on which is the spur-wheel L, as above stated. To the lower end of the pendent rod K a sheep-shearing or horse-clipping device, N, or any other instrument or tool, is attached by means of a coupling, *p*, a swivel, or other suitable device, on the driving-rod of which a handle, S, is applied, which will allow the said rod to rotate freely without being in contact with the hand. It is obvious that a variety of tools may be attached to the pendent rod K, and therefore, while I have represented in Fig. 1, Plate 1, a shearing or clipping device, I do not confine myself thereto. For the purpose of holding up or balancing the arm G, its rod G', the pendent rod K, the tool, and the universal-joint connection between the arm *g* and rod K, I employ a rod, E, which has a weight, E', applied on its outer end, and which is longitudinally adjustable in eyes *e e* cast on one of the arms of the stirrup D. By means of a set-screw, the rod E can be fixed at any desired point. The object of adjusting the loaded rod E is to obtain a balance when tools of differ-

ent weights are employed on the pendent rod K. It will be seen that the loaded rod E is arranged on one side of the axis of the standard A; but, if desired, this rod may be arranged in the same vertical plane as the standard A, by attaching it to arms which could be cast on the stirrup D.

I have described a gravitating weight as a means for balancing, and I prefer to use such means, although a spring might be employed in its stead; but the difficulty attending a spring is that it is not uniform in its action like the weight—that is to say, above the balancing-point the spring gradually loses its force, and below the balancing-point its resistance gradually increases.

It will be seen from the above description that a tool applied on the lower end of the pendent arm K can be moved in any direction without materially affecting the rotation given to the shafts *h* and *G* and said arm K. The arm *G* is allowed free horizontal motion about the axis of the standard A without turning this standard, and this arm is also allowed free vertical motion about the axis of the shaft *d*. The pendent rod K is allowed to rotate about its own axis, and at the same time to receive vertical, lateral, circular, and other motions. It will further be seen that I dispense with belts and pulleys, and transmit rotation from one rigid shaft to another by means of spur-wheels. I am thus relieved from the difficulties attending belts, and I obtain a more direct and positive motion than is afforded when belts and pulleys are used.

I have used the term stirrups in reference

to the jointed bearings D D' and J J', but bearings of any other suitable shape or kind may be adopted.

The hollow or tubular standard A and the arm *G* will protect their respective shafts from dust and other matters which, if the shafts were exposed, would clog their bearings and cause them to work hard.

While I prefer to employ a hollow standard and a hollow arm, I do not confine myself thereto.

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

1. The shaft *h* and spur-wheel *b'*, supported by a standard, A, as means for transmitting rotary motion to a spur-wheel, *c*, on a shaft, *d*, which latter has its bearings in a horizontally-articulating stirrup D', and has pivoted to it the stirrup-D of a vertically-vibrating arm, *G*, substantially as described.

2. The revolving balanced shaft *G'*, applied to articulate or swing on a standard, A, the shaft K, and their intermediate gear-wheels, combined substantially as and for the purpose described.

3. The combination of the vertical shaft *h*, the horizontally and vertically movable shaft *G'*, the pendent swinging rod K, and gear-wheels universally connecting the same, substantially as described.

ROSWELL T. SMITH.

Witnesses:

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H. E. PRIEST.