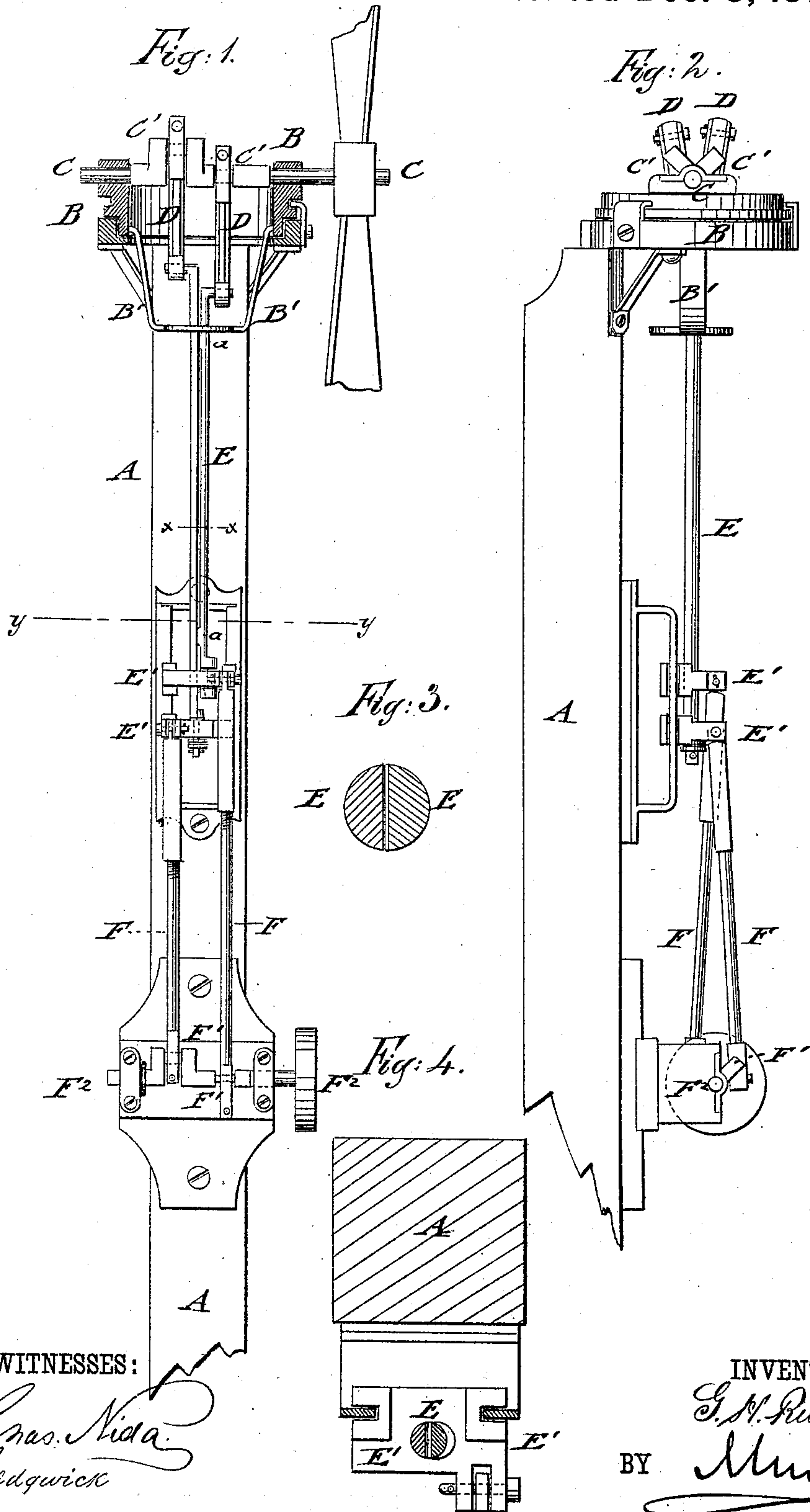


G. H. RUSSELL.
Device for Transmitting Motion.

No. 210,469.

Patented Dec. 3, 1878.



WITNESSES:

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GEORGE H. RUSSELL, OF CHEYENNE, WYOMING TERRITORY.

IMPROVEMENT IN DEVICES FOR TRANSMITTING MOTION.

Specification forming part of Letters Patent No. **210,469**, dated December 3, 1878; application filed September 26, 1878.

To all whom it may concern:

Be it known that I, GEORGE H. RUSSELL, of Cheyenne, in the county of Laramie and Territory of Wyoming, have invented a new and Improved Device for Transmitting Motion, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a front view, partly in section, of my improved device for transmitting motion, shown as applied to a windmill. Fig. 2 is a side view of the same; Fig. 3, a detail horizontal section on line *x x*, Fig. 1, of the sliding sections of the transmitting-shaft; and Fig. 4, a detail horizontal section and top view of the shaft-sections and cross-heads on line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention refers to an improved device for transmitting motion, the device being especially adapted for windmills, so that the rotary motion of the wheel-shaft is transmitted in a steady, even, and noiseless manner, whatever be the position of the wheel, and either a rotary or reciprocating motion imparted to the machines, pumps, or other appliances to be driven thereby.

The device works with little friction, has no dead-centers, and is very durable, as it has no weak parts that are liable to break.

Referring to the drawings, A represents the supporting-mast, and B the turn-table, of a windmill. The shaft C of the wind-wheel turns in bearings of the turn-table, and is provided with two cranks, C', at right angles to each other. The cranks C' connect by short pitman D with a split perpendicular shaft, E, whose semicircular rods slide up and down alongside, but independently of, each other. The lower ends of the semicircular shaft-rods are attached to separate cross-heads E', the rod connecting with the crank next to the wind-wheel being attached by shoulders or otherwise to the upper cross-head, while the other rod passes through the center of the upper cross-head, and is secured to the lower cross-head. Both rods are so attached to the cross-heads as to be firmly secured in a longitudinal direction, but admit the free axial turning therein, so as to follow the motion of

the turn-table and wind-wheel. The center of the lower end of the rod, attached to the lower cross-head, forms also the center of the split shaft, and is the axis on which the turn-table, the wind-wheel, the upper connecting-pitman, and the split shaft rotate to accommodate the wind-wheel to the wind.

The split shaft E is kept in position and guided at the upper part by a brass shoe, B', which is attached to the revolving portion of the turn-table. Any other guide or device may, however, be used when the transmitting mechanism is applied to other constructions of windmills, or to any other shaft. The two cross-heads are held in position and slide on two guide-rods, which are fastened by a bed-plate to the mast A. Each cross-head E' is again connected by pitmen F with similar cranks F¹ of a lower horizontal shaft, F², by which rotary motion is imparted to the same. The lower shaft, F², turns in boxes lined with Babbitt metal, the boxes being attached to a head-block, which is also fastened to the mast.

The motion of the different parts is steady and noiseless, owing to the sliding motion of the same and the absence of cog-wheels. There is very little friction between the shaft-rods, as the same are kept apart by shoulders or faces *a* near the upper and lower ends. By the rectangular position of the cranks dead-centers are avoided and the motion equalized.

The rotary motion of the lower shaft may be transmitted in any suitable manner to the machinery to be driven. To the lower shaft may be again applied another double crank, in a reverse position to each other. To these reverse cranks may be attached two piston-rods, which are extended downward to a double-cylinder pump. One of the pistons moves upward while the other moves downward, so that they throw a continuous stream of water, and utilize the entire revolution of the wind-wheel, discharging twice the quantity of water raised by the common single crank and rod.

The motion of the wind-wheel shaft is thus transmitted and effectively utilized without interfering with the wheel or vane or their

method of rotating, whether on a turn-table or otherwise.

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

The combination, in frame A, of the two shafts C F², each having two cranks at right angles to each other, the two pairs of pitmen

D E, the cross-bars E', and the split perpendicular shaft E, guided in a shoe, B', the latter shaft being composed of two independent slide-rods, as and for the purpose specified.

GEORGE HALE RUSSELL.

Witnesses:

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