

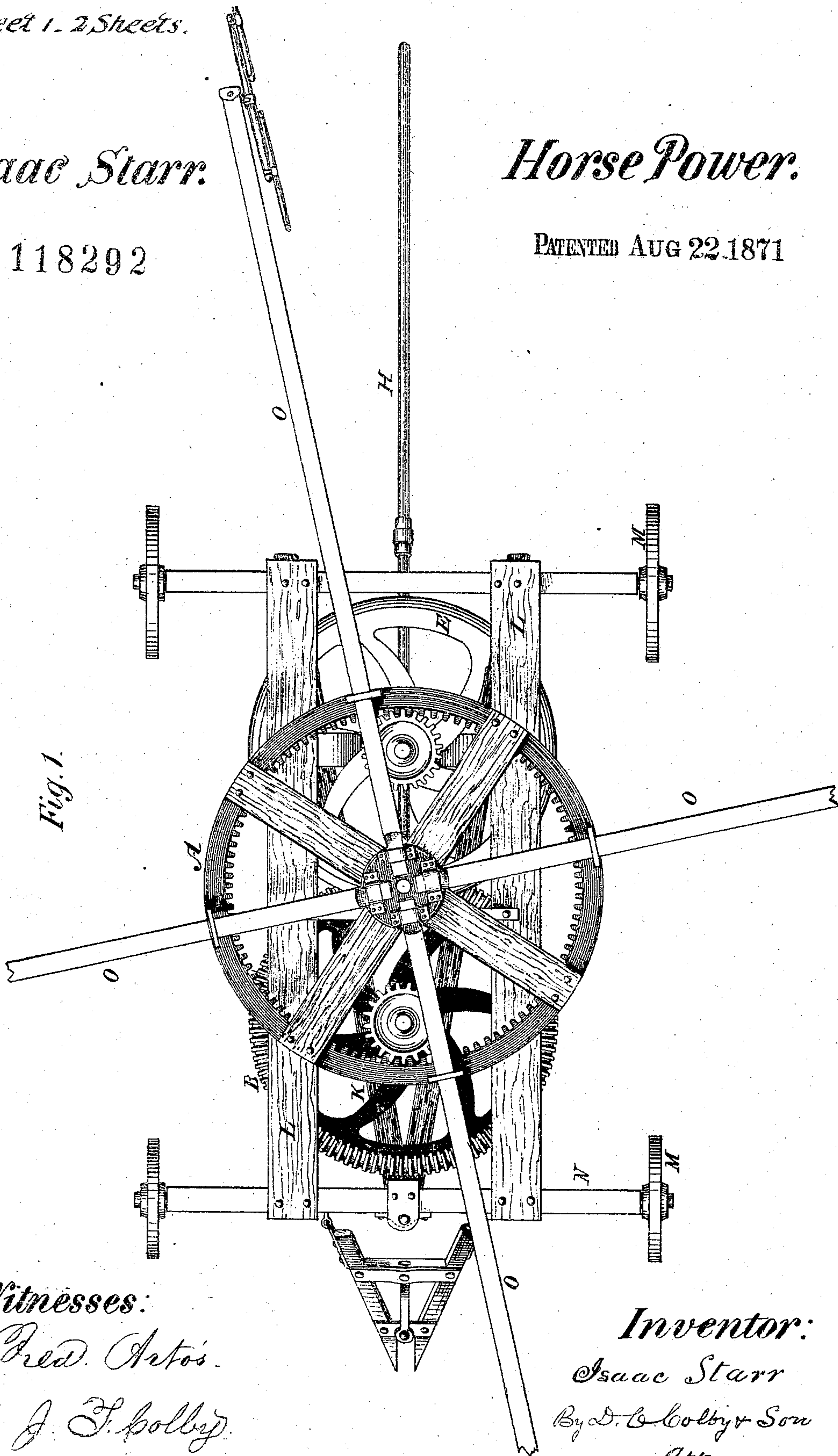
Sheet 1. 2 Sheets.

Isaac Starr.

118292

Horse Power.

PATENTED AUG 22. 1871



Witnesses:

Pred. Artois.

J. T. Colby.

Inventor:

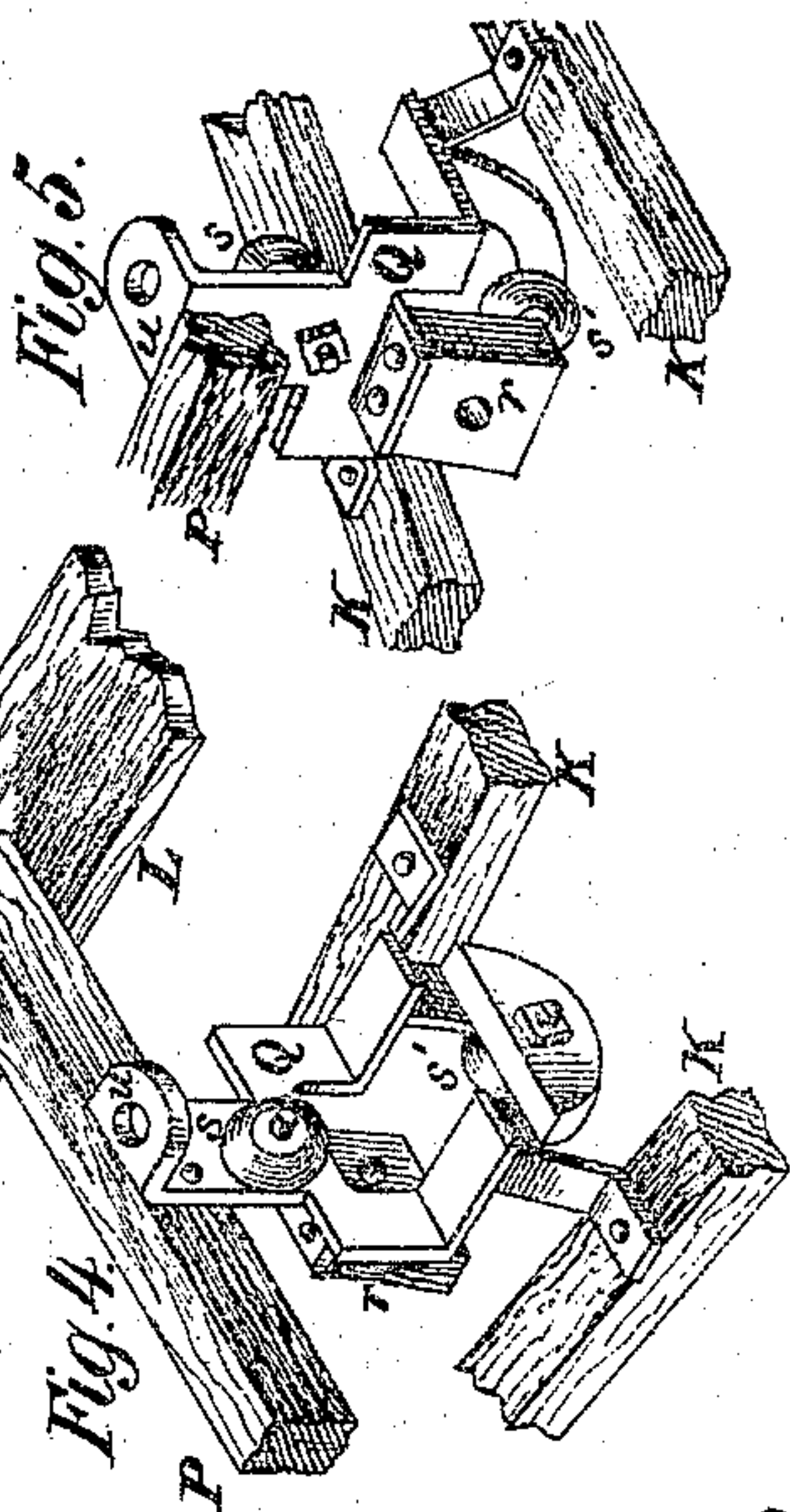
Isaac Starr

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*Citrus*



# UNITED STATES PATENT OFFICE.

ISAAC STARR, OF WOOSTER, OHIO.

## IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 118,292, dated August 22, 1871.

*To all whom it may concern:*

Be it known that I, ISAAC STARR, of Wooster, in the county of Wayne and State of Ohio, have, as I believe, invented new and useful Improvements in Horse-Powers; and I do hereby declare the following to be a full and exact description of the same, reference being had to the drawing that accompanies and forms a part of this specification.

The object of my invention is to improve the method of placing and arranging the line-shaft of horizontal-sweep mounted horse-powers; also, in arranging and combining parts so as to economize space and secure a more desirable proportion and size in such of the working parts as suffer the more rapid wear and deterioration. My invention consists, in part, in arranging the line-shaft upon an incline to the plane of the revolving wheels, as exhibited in Fig. 3, by the structure and arrangement of certain parts in manner and for the purposes hereinafter set forth. Again, my invention consists in overlapping the two crown-wheels in connection with a peculiarly-constructed foot or bridge to support the master-wheel, the inner bearing for the line-shaft, and two transverse rollers, as and for the purposes specified and explained hereinafter.

In the drawing, Figure 1 represents a plan of the machine, all parts being in position; Fig. 2, plan of the two crown-wheels and the two pinions that mesh into them; Fig. 3, longitudinal vertical section, presenting manner of arranging the crown-wheels, pinions, and line-shaft; Fig. 4, the central support for the line-shaft and anti-friction rollers detached and on an enlarged scale; Fig. 5, the same opposite side.

A, the master-wheel; B, one of the crown-wheels, lying lower than the inner end of the line-shaft and facing upward; C, shaft of crown-wheel B; D, a pinion on upper end of shaft C, which meshes into the master-wheel A; E, another crown-wheel, lying higher than the inner end of line-shaft and facing downward; F, shaft of crown-wheel E; G, a pinion plying into master-wheel A; H, the line-shaft; I, a pinion fixed upon the inner end of said line-shaft and engaging with crown-wheel E; J, a pinion on said line-shaft, near to pinion I, and provided for adjustability, as and for reasons explained elsewhere in this specification; K, reaches of the running-

gear of the wagon part of the apparatus, serving also as a bed upon which the main working parts of the power rest and are supported; L, other parts of the frame supporting the master-wheel; M, the wheels on which the machine is transported; N, the axles for these wheels; O, the sweeps, to which the teams are attached; P, a cross-bar, resting upon the longitudinal bars L, and itself supporting in conjunction with reaches K the part Q, in which is the block *r*, which provides the bearing for the inner end of the line-shaft, upon which are the anti-friction conical rollers *s s*, and in the upper end of which is the bearing *u* for the journal of master-wheel A. For form and manner of attaching this supporting-piece Q see Figs. 4 and 5.

In arrangement I place the crown-wheels overlapping one the other, in order to be able to enlarge the pinions D and G to a proper size for durability and to work well in meshing into master-wheel A, and all without enlarging the said master-wheel, and thus economizing space.

As all the parts must be arranged with relation to the size of the master-wheel I, in order that all the gears shall properly mesh, not slip, nor work too close, fit one of the pinions on the inner end of the line-shaft for adjustment on said shaft, and this is necessary for the reason of the variations in different samples of the crown-wheels and master-wheels, although always molded from the same patterns—a matter which those who are accustomed to fitting large gear-wheels fully understand.

To fasten pinion J I have represented a key, *v*, but any other suitable means may be adopted.

The arrangement of the line-shaft upon an incline, as it leads away from the working parts, is to provide for the horses stepping over it without the necessity of a universal joint to provide an offset or dropping down, as some have heretofore made use of, or the bridging up for the horses to walk up over—an exceedingly unsatisfactory way adopted by others.

I do not claim in this invention two crown-wheels, one lying on a higher plane than the other, one facing upward and the other downward, with a pinion working into each.

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

1. The crown-wheels B and E, when overlap-

ping one the other, and operating the two pinions I J, one fixed and the other adjustable, as and for the purposes specified.

2. The line-shaft H, when provided with fixed pinion I and adjustable pinion J, and arranged to lie inclining, as specified and set forth.

In testimony whereof I have signed my name

to this specification in the presence of two subscribing witnesses.

ISAAC STARR.

Witnesses:

R. H. MARSH,

D. C. COLBY.