

*J. Huermann,
Horse Power.*

No. 93,438.

Patented Aug 10. 1869.

Fig. 1.

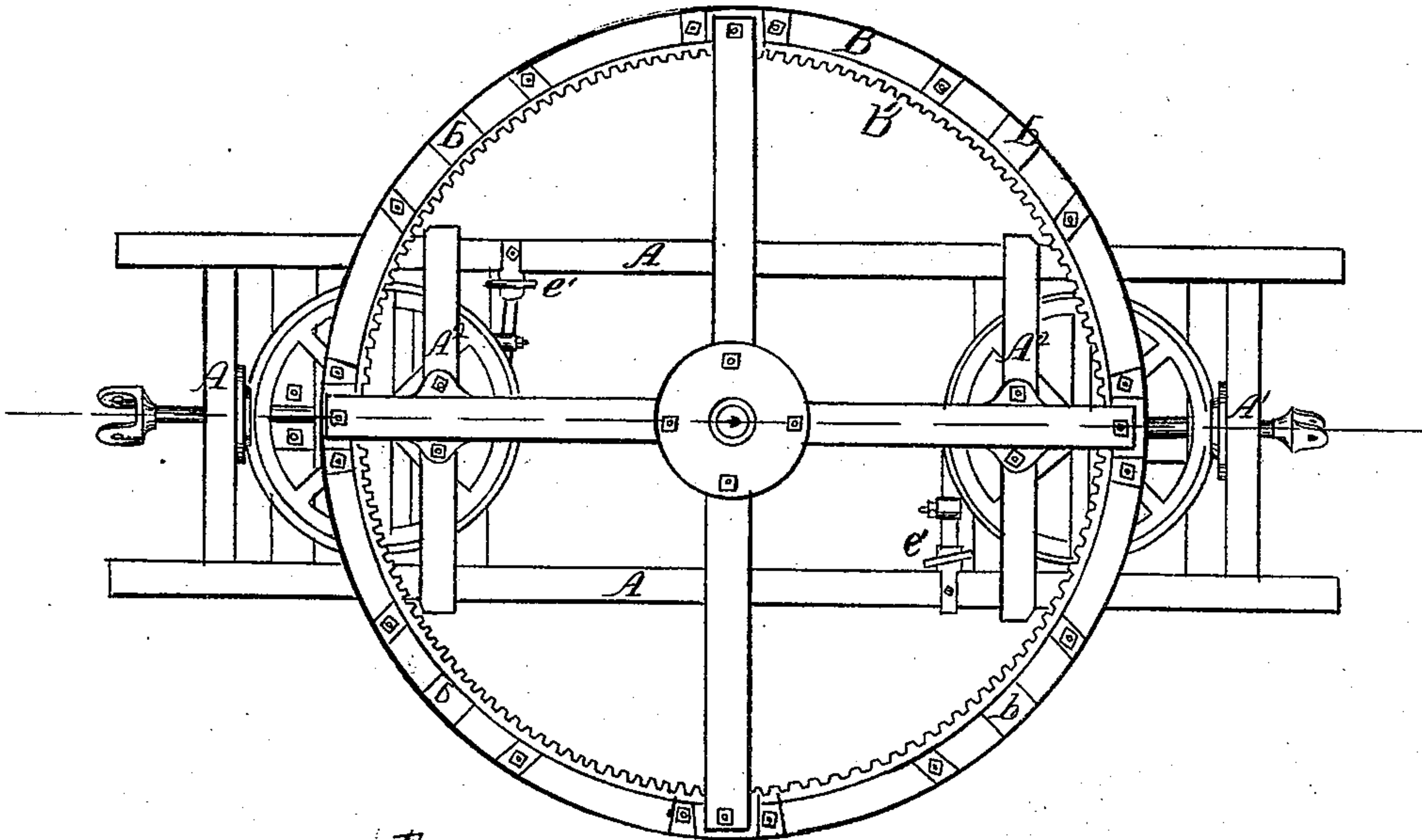


Fig. 2.

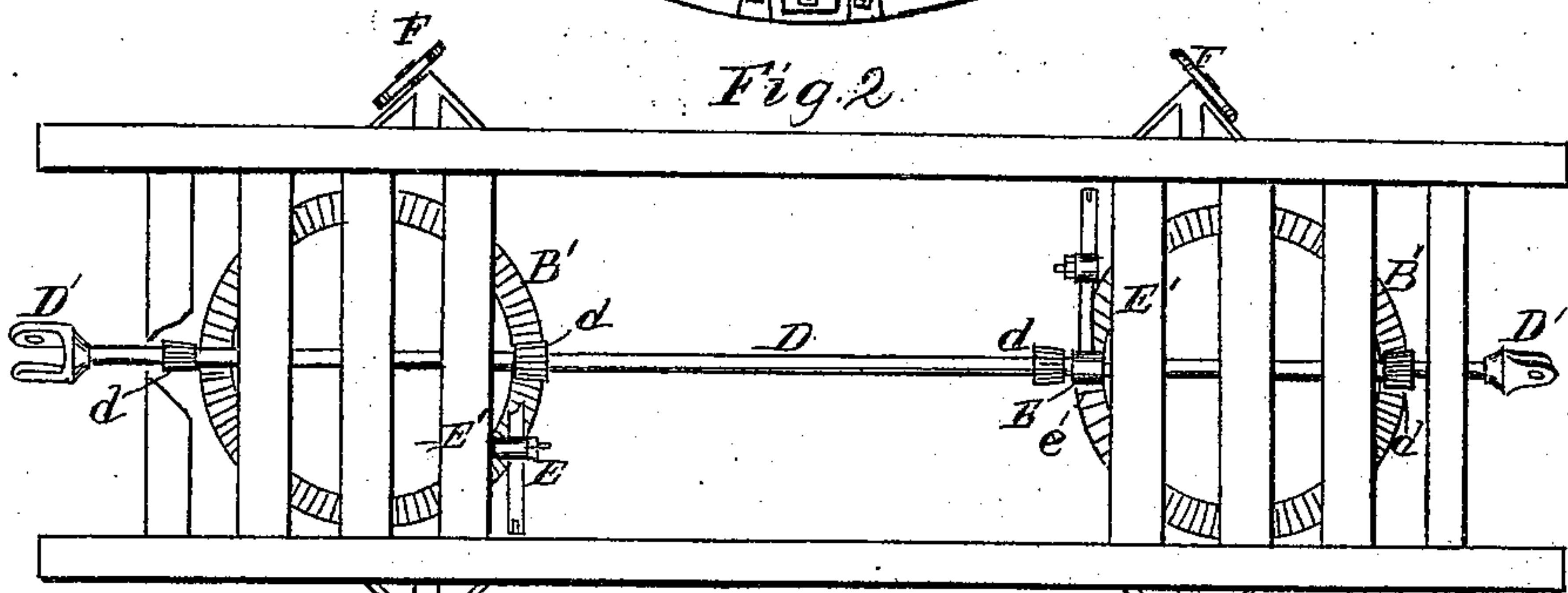
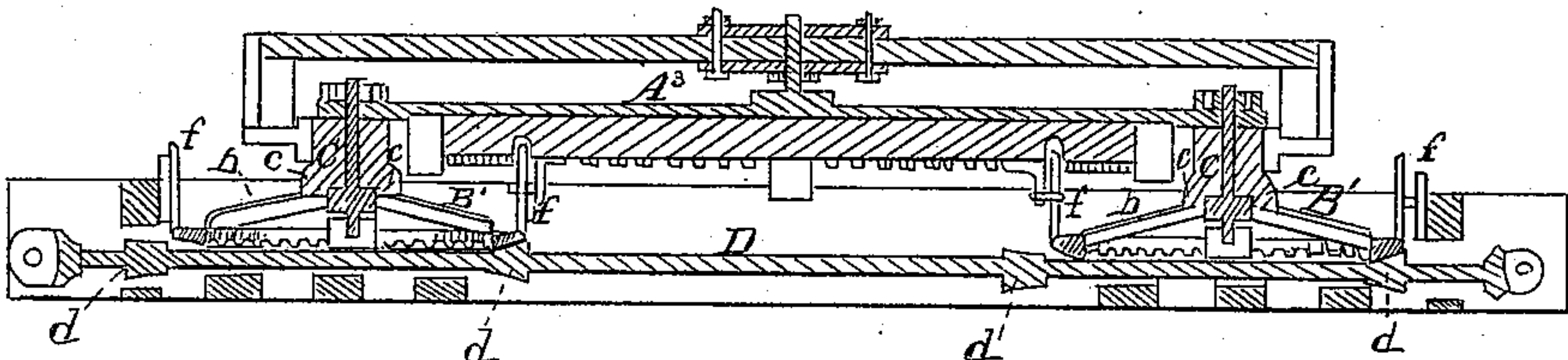


Fig. 3.



*Witnesses
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United States Patent Office.

JOHN HEUERMANN, OF DAVENPORT, IOWA.

Letters Patent No. 93,438, dated August 10, 1869.

IMPROVED HORSE-POWER.

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, JOHN HEUERMANN, of Davenport, in the county of Scott, and State of Iowa, have invented a new and useful Improvement in Horse-Power; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to certain improvements in horse-power, whereby the motion imparted may be readily changed from right to left hand without changing the direction of draught, as will be more fully described hereinafter.

In the drawings—

Figure 1 is a plan view of my invention;

Figure 2 is a similar view, inverted, the master-wheel being removed;

Figure 3 is a longitudinal vertical central section, through line *x-x*, fig. 1; and

Figure 4 is a detached view of one of the master-wheel pinions.

To enable others skilled in the art to make and use my invention, I will now describe fully its construction and operation.

A A represent the longitudinal beams, which, with the cross-beams A¹ A¹, form the foundation of the machine.

A² A² represent additional cross-beams, between which is a longitudinal central beam, supporting the metal plate A³, in the centre of which is the bearing of the master-wheel B, and at the end the bearings of the bevel-wheels B'.

The former, B, consists of an annular rim, provided with suitable draught-attachments *b*, and the cogs *b'* on its inner face, which mesh with the pinions C on the shafts of the bevel-wheels B'.

D represents the main shaft, which runs parallel with the beams A, and has suitable bearings in cross-beams between the same.

The shaft D is provided with four bevel-pinions, *d*, two for each of the bevel-wheels B', which pinions are so arranged that only one can come in contact with each wheel at the same time, the others projecting beyond the opposite sides thereof. The shaft, however, admits of a sufficient longitudinal motion, to change the position of the pinions at will, and, by sliding it in one direction, two of the pinions *d* will engage with one side of each of the bevel-wheels B'; and when the shaft is moved in the opposite direction the remaining two will engage with the opposite sides of the same, thus reversing the motion of the mechanism without changing the draught.

E E represent stops or clutches, near the two mid-

dle pinions *d*, which are pivoted to the sides of the beams E', and are provided with the curved ends *e*, which are of the same width as the pinions *d*, and are operated by the handles *e'*. Their position is such that when one of the pinions *d* is pushed out from one of the beams E' the clutch is pushed up between the pinion and the beam, thereby preventing the same from sliding back until the stop is removed.

The other stop is located in the opposite side of the shaft D, and works in a similar manner.

The master-wheel pinions C are loosely sleeved on the shafts of the bevel-wheels B', and are provided with the teeth or projections *c*, which engage with the arms *b* of the bevel-wheels, and are revolved thereby.

F F, &c., represent friction-wheels on the beams A, in which the master-wheel runs, and *f f*, similar wheels, to keep the bevel-wheels B' in position.

The shaft D is provided with suitable coupling-ears D' on both ends.

The operation of my invention is as follows:

The master-wheel being revolved in any suitable manner, operates the pinions C and bevel-wheels B', which, being in connection with two of the pinions *d*, cause the shaft D to revolve in a direction corresponding to the position of the pinions *d*; their position being altered by the above-described means, the motion of the shaft is reversed.

By this arrangement, the wear of the cogs can be equalized on each side, making the machine much more durable.

By the construction of the pinions C, they can be easily removed when worn out, without the necessity of removing the bevel-wheels, the pinions being subjected to the greatest amount of wear. They also admit of a slight play on their bearings, which relieves, in a measure, any sudden strain.

I am also enabled to attach coupling-shafts at both ends of the main shaft, and, if necessary, to operate two separate machines.

Having thus fully described my invention,

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

1. The sliding shaft D, provided with four pinions, *d*, and coupling-ears D' at each end, substantially as and for the purpose set forth.

2. In combination with the above, the stops E E, substantially as described.

This specification signed and witnessed, this 14th day of May, 1869.

JOHN HEUERMANN.

Witnesses:

BL. PETERS,

JOHN WUNDERLIST.