

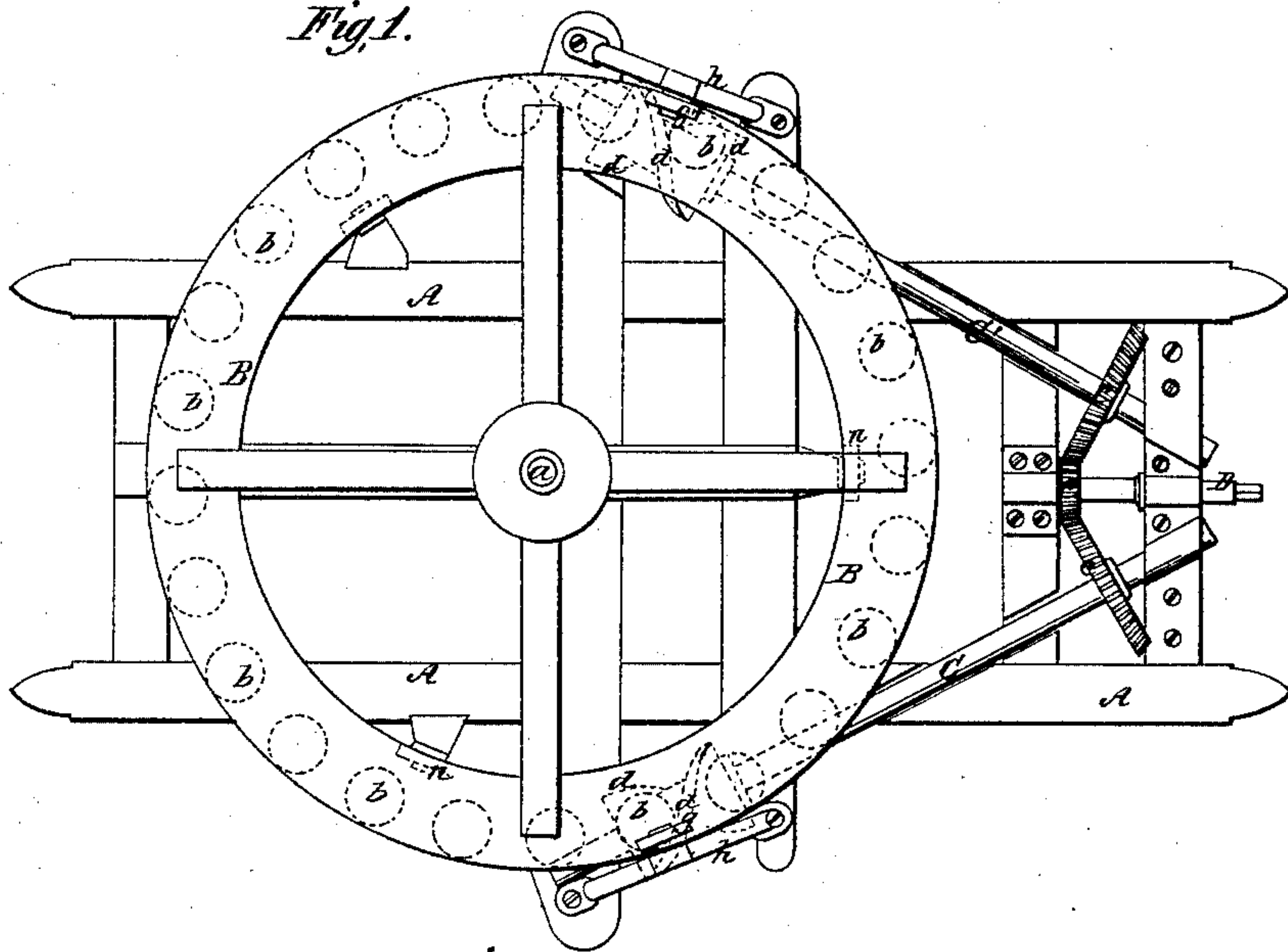
*A. W. Tooker,*

*Horse Power,*

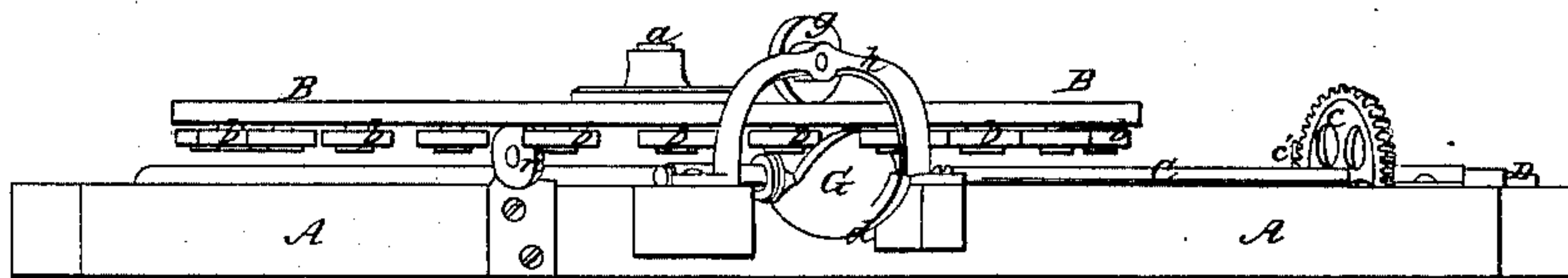
*No. 45,540,*

*Patented Dec. 20, 1864.*

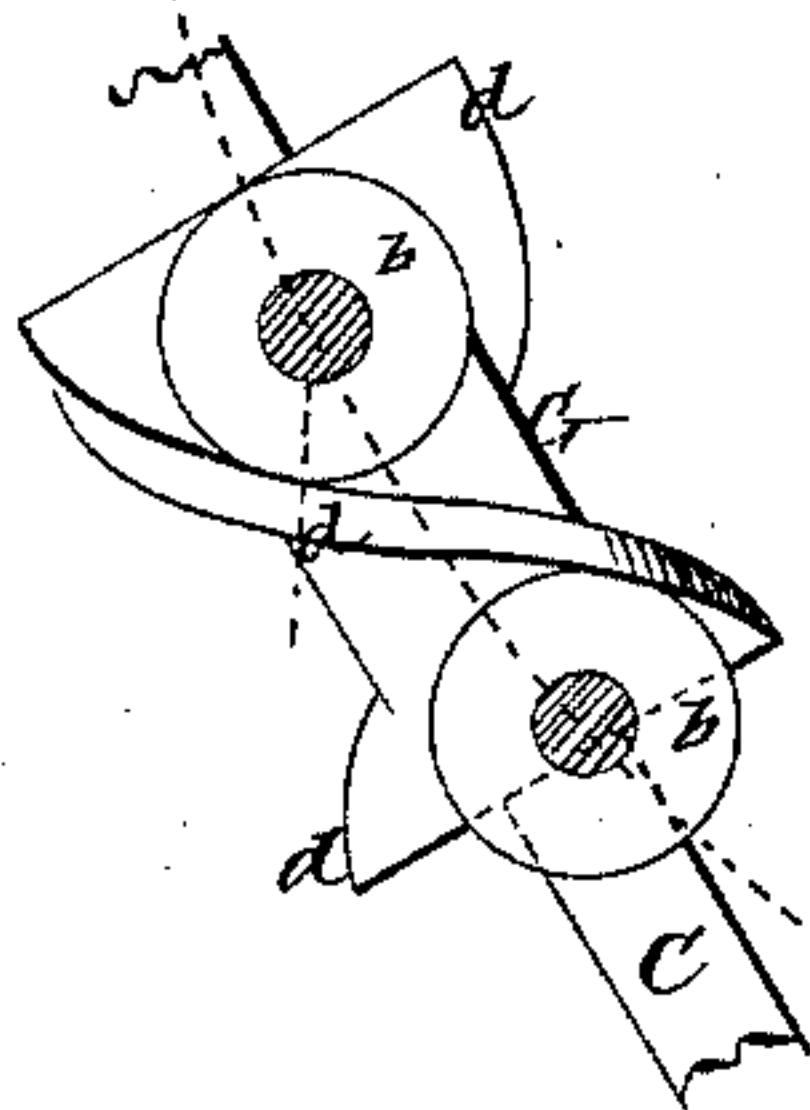
*Fig. 1.*



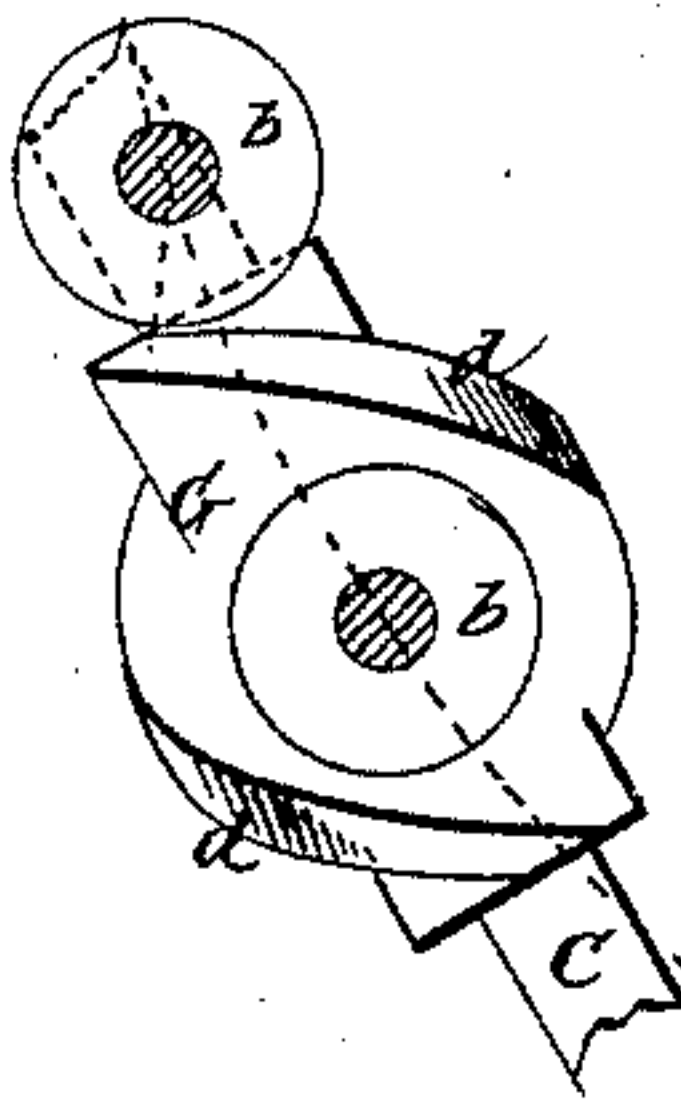
*Fig. 2.*



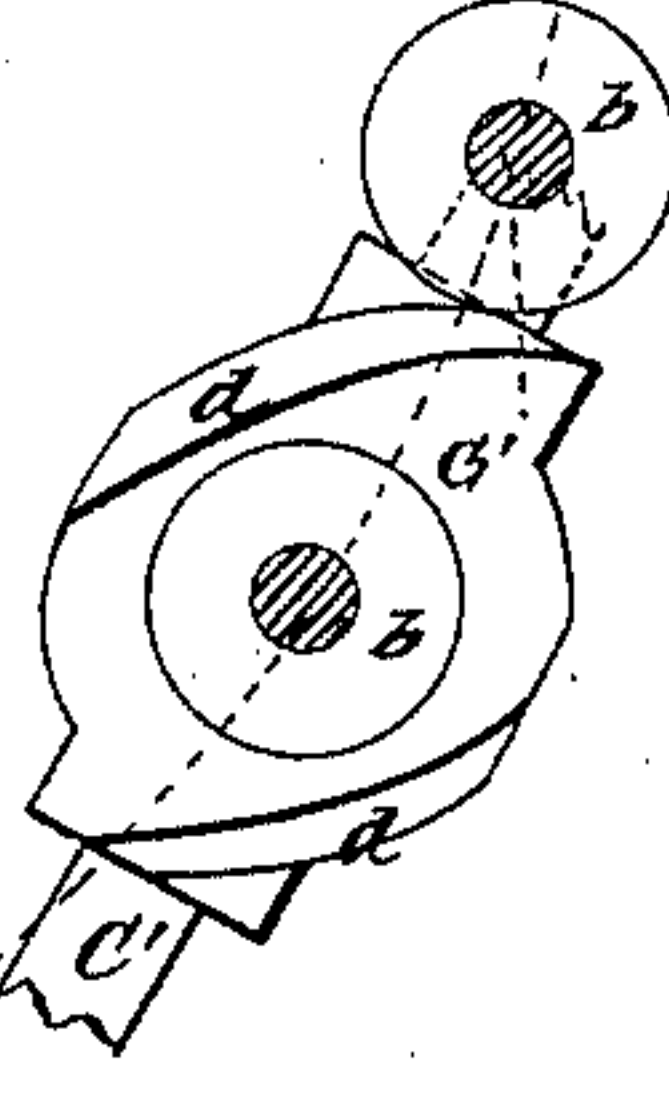
*Fig. 3.*



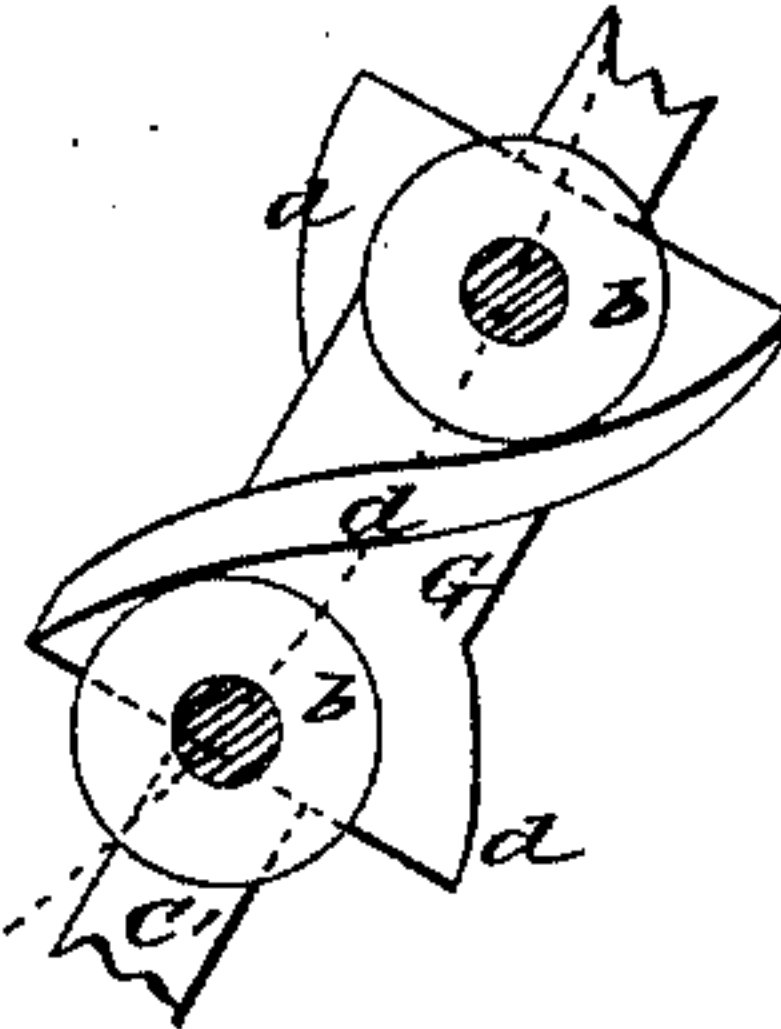
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



*Witnesses:*

*R. H. Campbell,  
C. Schaefer*

*Inventor:*

*A. W. Tooker  
by his Attys  
Maxim, Pannell & Lawrence*



# UNITED STATES PATENT OFFICE.

A. W. TOOKER, OF CHEMUNG, ILLINOIS.

## IMPROVED HORSE-POWER.

Specification forming part of Letters Patent No. 45,540, dated December 20, 1864.

*To all whom it may concern:*

Be it known that I, A. W. TOOKER, of Chemung, McHenry county, State of Illinois, have invented a new and useful Improvement in Horse-Powers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top view of my improved horse-power complete. Fig. 2 is an elevation of one side of the same. Figs. 3, 4, 5, and 6 show the manner of transmitting a rotary motion to two driving-shafts.

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

This invention relates to a new horse-power wherein the power which is applied to a horizontal master-wheel is transferred to a single driving-shaft through the medium of converging shafts in such manner that the intermediate shafts take their motion directly from two points near the circumference of said wheel and transfer this motion directly to the single driving-shaft, thus preventing lateral strain and undue friction in consequence thereof, as will be hereinafter described.

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

In the accompanying drawings, A represents the frame of the machine, which is made of stout timber strongly put together and braced, as represented in Fig. 1. B is a master-wheel, to which the power of the horse is applied by means of a "sweep," or in any other convenient manner. This wheel B is supported upon the intermediate beams of frame A in a horizontal plane, and it turns around a fixed stud, *a*, which projects up from said frame.

On the lower side of the master-wheel, and near the circumference thereof, I have applied a number of friction wheels or rollers, *b b*, which are arranged at regular intervals apart in a circle concentric with the axis of the stud *a*, as indicated by the dots in Fig. 1. These rollers *b b*, which turn freely about their own centers, are intended for communicating a rotary motion to the two horizontal converging shafts C C', and through the medium of these shafts giving a rotary motion to the driving-shaft D. The two diagonal shafts C C' are supported at

their extremities in suitable boxes on the frame A and these shafts are arranged tangentially to a circle touching the axes of all the friction-rollers *b b* on the bottom side of the master-wheel, and, being arranged at opposite angles, said shafts C C' will gradually converge as they leave the wheel B, so that a bevel-wheel, *c*, applied to each shaft C C', can be made to engage with and drive the pinion-wheel *c'*, which is keyed on the intermediate driving-shaft D, and from this latter shaft motion can be obtained for driving various kinds of machines.

On those ends of the shafts C C' which extend under the outer edge of the master-wheel A, I have applied spiral flanges, the object of which is to receive and transmit a rotary motion from the master-wheel to their respective shafts. These contrivances consist of two compound spirally-flanged drums, G G', both of which are constructed alike in principle, but receive a rotary motion in opposite directions to each other—*i. e.*, the flanged drum on shaft C turns this shaft in one direction, and that on shaft C' turns this shaft in a contrary direction. The flanges *d d* on these drums or hubs G G' have such obliquity that the impulse which they receive from the friction-rollers *b b* pressing against them will be as nearly at right angles to the line of shafting as it is possible to apply it. These flanges each extend half-round their hubs, and, as each hub has two flanges, *d d*, formed on it, one will come into operation as soon as the other moves out of operation, and consequently the motion will be continuous. In order, however, to carry this principle out perfectly, the friction-rollers *b b* on the master-wheel B should be arranged at such a distance apart that one wheel, *b*, will commence to act on one flange, *d*, a little before the preceding wheel ceases to act on the opposite flange. The diameter of the friction-wheels *b* should be such as will freely admit them between the flanges *d d* of the hubs G G'. The arrangement of the flanged hubs on opposite sides of the master-wheel has the effect of balancing this wheel by making the resistance equal on each side, and the power which is applied to turn this wheel will be uniformly communicated to the longitudinal driving-shaft D.

On one side of the master-wheel B the force which is applied to turn one of the shafts C C'

is outward and toward the main driving-shaft D, while on the opposite side of said wheel this force is inward and toward the divergent end of the shaft. We thus have a drawing and a pulling force acting upon the two shafts C C' in directions obliquely to their axes; hence these shafts are turned in opposite directions to each other.

Directly over the flanged hubs G G', I have arranged wheels *gg'*, which have their bearings in bridged supports *h h*. These two wheels roll upon the top surface of the master-wheel and prevent it from springing up at said points and disengaging the rollers *b b* from their respective spirally-flanged hubs. The three wheels *n n n* are intended as supports for keeping the master-wheel in a horizontal plane and allowing it to turn freely.

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

Communicating a rotary motion to the driving-shaft D from the master-wheel B by means of convergent shafts C C', carrying spirally-flanged drums G G', which are acted upon by means of friction-rollers applied to the master-wheel, substantially as and for the purposes described.

Witness my hand in the matter of my application for a patent on an improved horse-power this 7th day of October, 1864.

A. W. TOOKER.

Witnesses:

R. T. CAMPBELL,  
E. SCHAFER.