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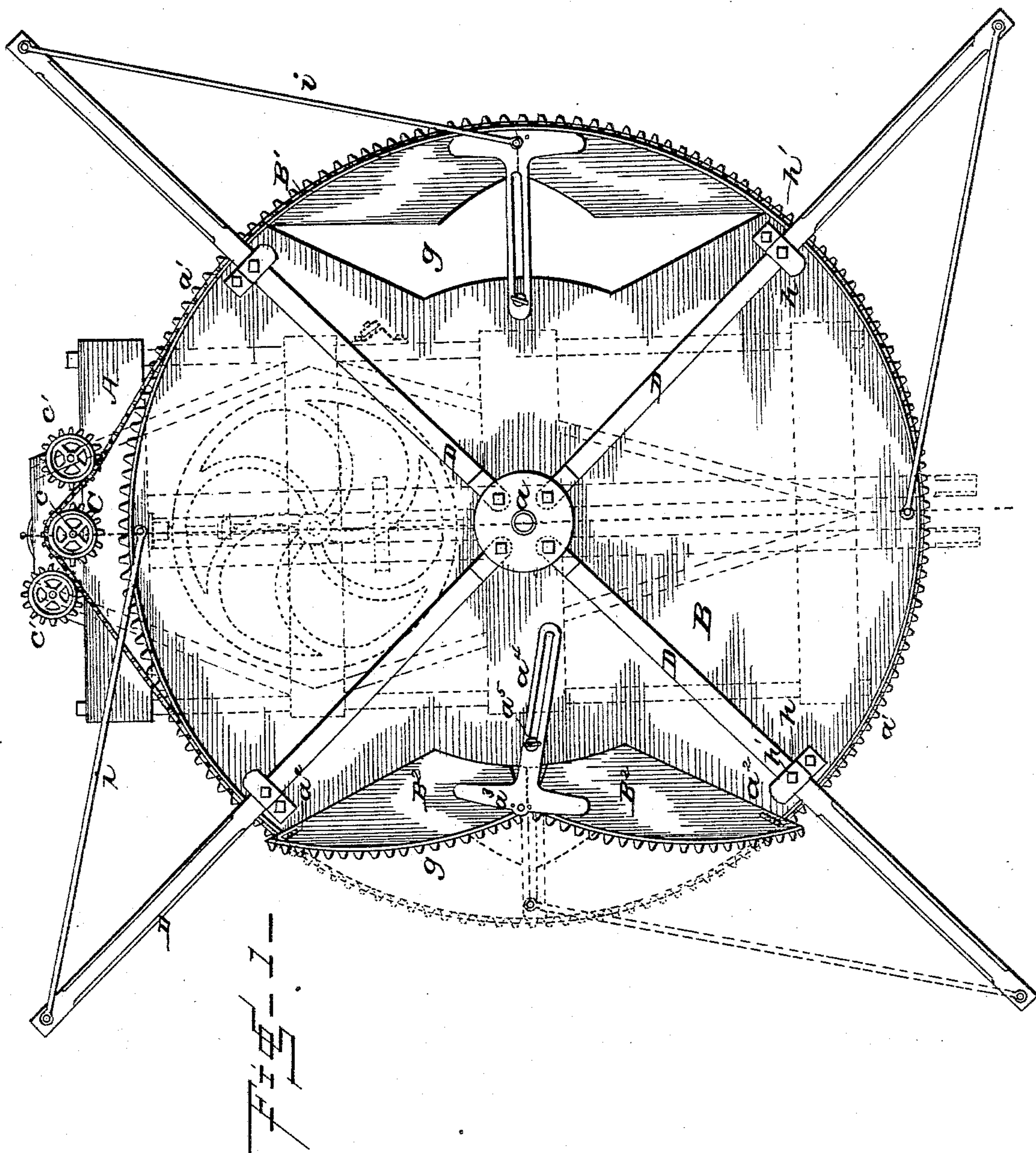
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D. KAUFMAN.

HORSE POWER.

No. 300,610.

Patented June 17, 1884.



WITNESSES:

*Fred. G. Dieterich*  
*A. H. Dieterich*

INVENTOR.

*Daniel Kaufman*  
*De Witt C. Allen*  
ATTORNEY

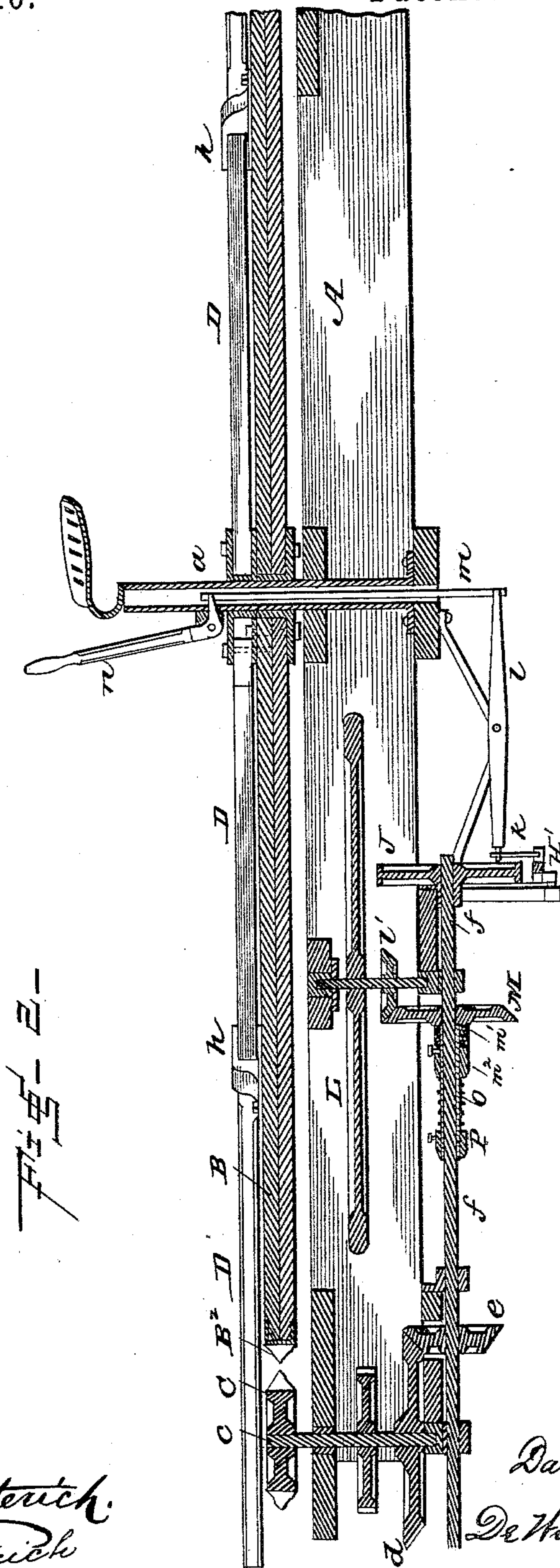
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*A. H. Dieterich*

INVENTOR.

*Daniel Kaufman*  
*De Witt C. Allen*  
ATTORNEY



(No Model.)

3 Sheets—Sheet 3.

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Fig-3-

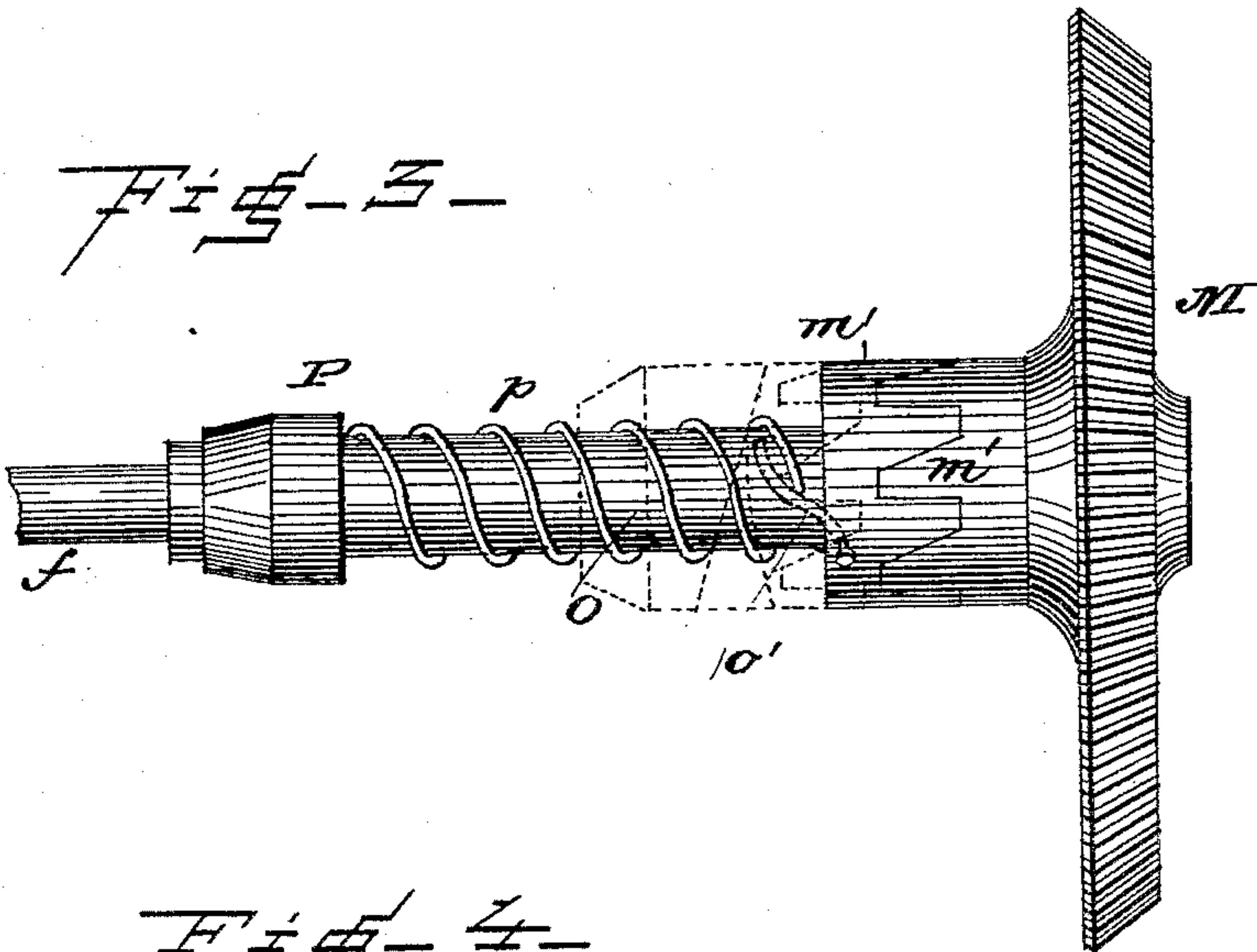


Fig-4-

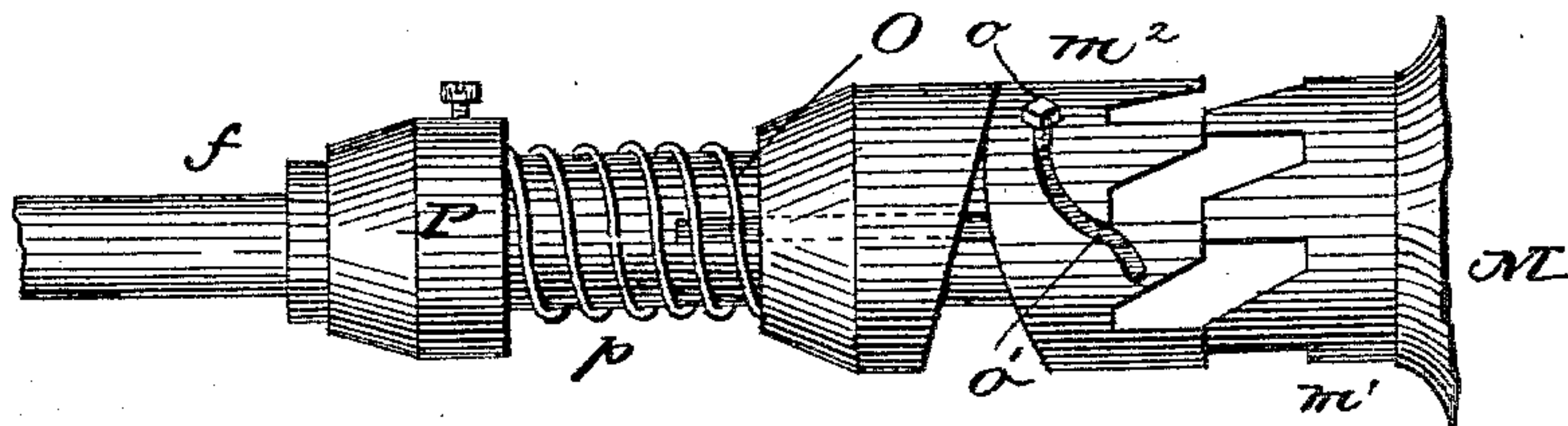


Fig-5-

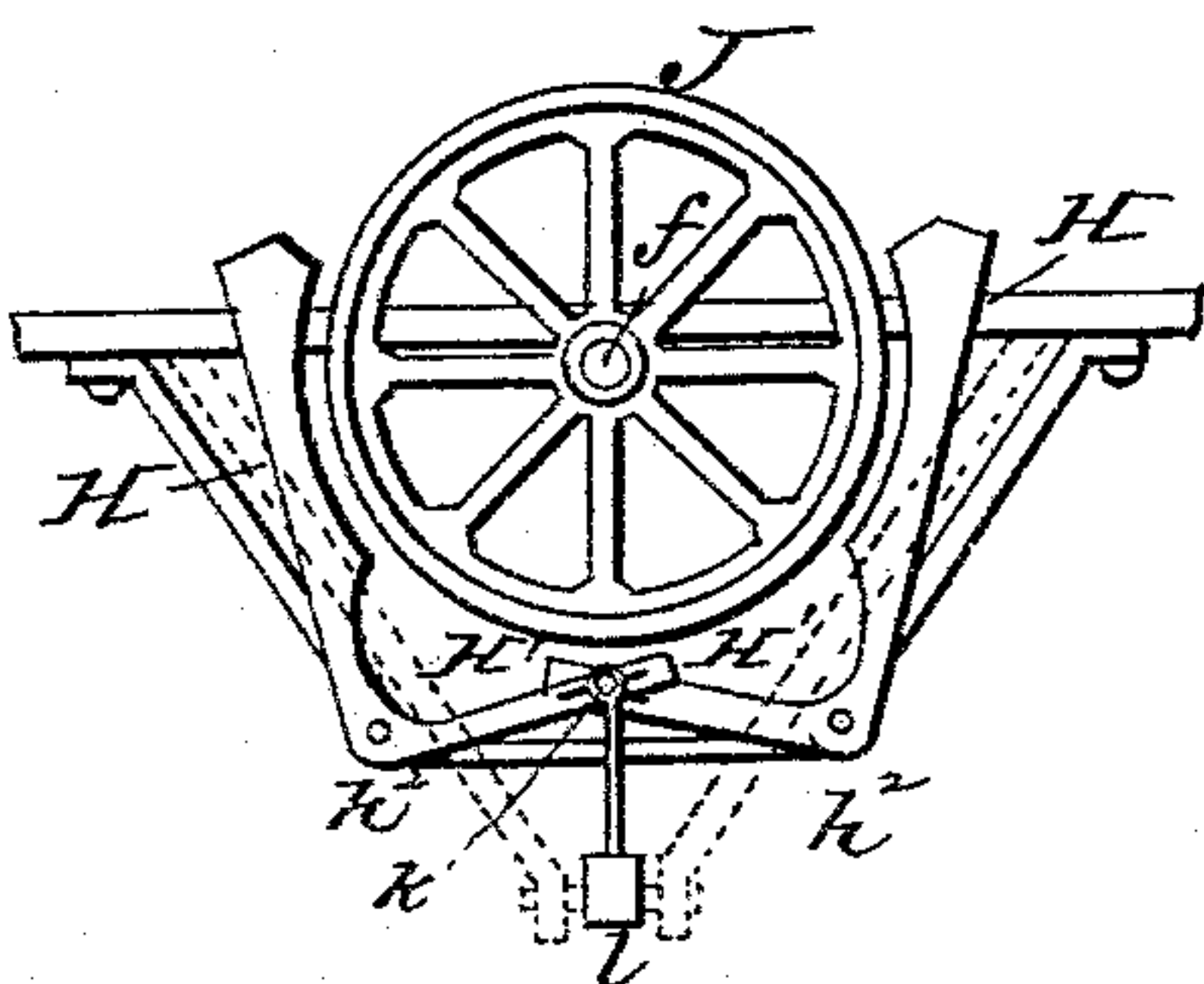
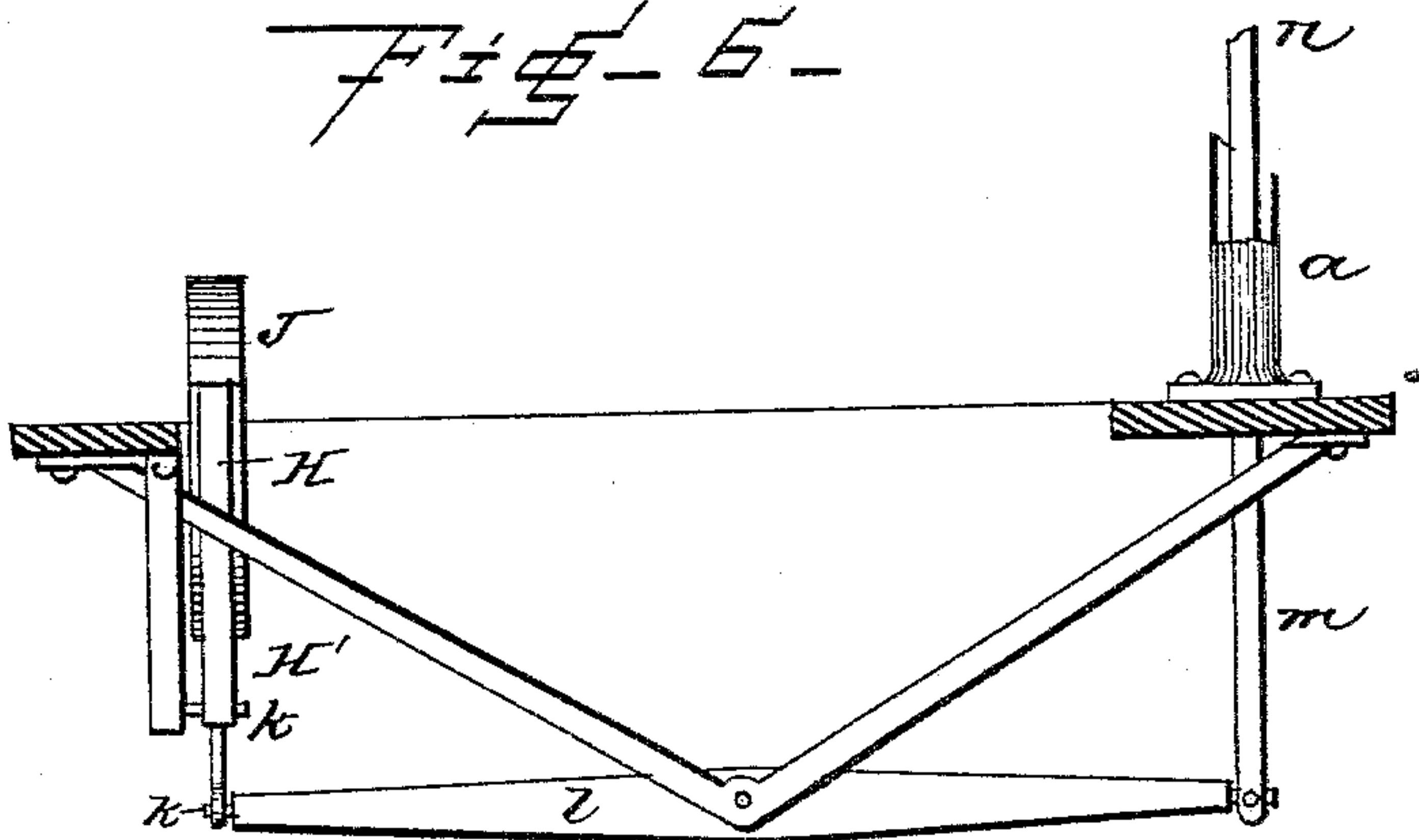


Fig-6-



WITNESSES:

*Fred. G. Dieterich*  
*A. K. Dieterich*

INVENTOR.

*Daniel Kaufman*

*Dr. Hitt C. Allen*

ATTORNEY



# UNITED STATES PATENT OFFICE.

DANIEL KAUFMAN, OF BLOOMINGTON, ILLINOIS.

## HORSE-POWER.

SPECIFICATION forming part of Letters Patent No. 300,610, dated June 17, 1884.

Application filed April 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL KAUFMAN, a citizen of the United States, residing at Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Horse-Powers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of horse-powers in which motion is communicated to the driving-shaft by means of a master-wheel and chain and intermediate gearing; and it has for its object, first, to provide a horse-power in which a master-wheel of great diameter can be employed to drive the machinery, said master-wheel being capable of being reduced in diameter for transportation and to enable it to pass through gates of narrow width, and to be stored within houses or sheds of small capacity; second, to provide means for quickly and readily stopping or retarding the machinery; and, third, to provide a fly-wheel with means for automatically disconnecting the same from the horse-power and the driving-shaft in the event of a sudden stoppage of the machinery from any cause, as will be fully hereinafter described, due reference being had to the accompanying drawings, wherein—

Figure 1 is a plan view of my machine, one portion of the master-wheel being shown in its contracted position ready for transportation, and the other portion being shown in its expanded position ready for operation. Fig. 2 is a vertical section taken on the line  $x x$  of Fig. 1. Figs. 3 and 4 are detail views showing a portion of the driving-shaft and the means employed for coupling the same to the fly-wheel, and Figs. 5 and 6 are detail views of the brake for stopping or retarding the machinery and the means for applying the same.

Similar letters of reference in the several figures denote the same parts.

In the drawings, A A indicate the frame of the horse-power, constructed in the usual or any desirable manner.

B is the master or main wheel mounted by means of suitable boxing upon the central stud

or journal,  $a$ . This master-wheel is preferably constructed of wood in the usual manner, and is of a very large diameter—say twelve feet, more or less—and is provided upon its periphery with cogs or teeth  $a'$ , which are adapted to engage with the links of an endless chain,  $B'$ , which partially encircles said master-wheel. Said chain  $B'$  passes from the master-wheel to and partially around a spur-wheel, C, mounted upon and rigidly secured to a vertical shaft,  $c$ , provided at its lower end with a gear-wheel,  $d$ , which meshes with a gear-wheel,  $e$ , mounted upon the driving-shaft  $f$ , which imparts motion to the thrasher or other machine to be driven.

$c' c'$  are guide-wheels to insure the chains proper engagement with the spur-wheel C. It will be readily seen that by employing a very large master-wheel, B, and small spur-wheel C, great speed can be attained by a limited amount of power, and a large toothed surface is afforded by the master-wheel to engage the chain. In order to employ a master-wheel of such large diameter it is necessary to construct the same so as to enable it to be reduced in size when transporting the machine from place to place where narrow gates or passages have to be entered or passed, or when but limited space is available for storing the machine, and to accomplish this result I construct the master-wheel as follows: From opposite sides of the master-wheel B are cut away segments, leaving recesses  $g g$ , thus reducing the diameter of the wheel between these recesses. Within said recesses  $g g$  are placed the segments  $B^2 B^2$ , said segments being pivoted at their outer ends to the master-wheel, as at  $a^2 a^2$ , and at their adjacent ends are pivoted to a plate,  $a^3$ , having a slotted extension,  $a^4$ , and secured to the body of the master-wheel by a set-screw,  $a^5$ . It will be seen that by loosening the set-screws  $a^5$  and forcing the plates  $a^3$  toward the center of the master-wheel the segments  $B^2 B^2$  will be contracted toward the center of the master-wheel and the diameter of said wheel between these two points will be reduced. To admit of said segments being freely expanded and contracted, their outer pivoted ends are provided with elongated slots, through



which pass the pivot-bolts, as shown at  $a^2 a^2$ , Fig. 1 of the drawings. Said segments  $B^2 B^2$  are provided upon their peripheries with cogs or teeth to correspond with the teeth of the master-wheel, and when said segments are in their expanded position a perfectly annular periphery will be presented by the wheel to engage the chain. The master-wheel is provided with draft-levers  $D D$ , which are pivoted to the hub of the master-wheel, and are secured at the periphery of the master-wheel by means of a cleat,  $h$ , and pin  $h'$ , or other suitable means, and are braced in position by rods  $i$ , pivoted to said levers and to the master-wheel. During transportation the rods  $i$  are detached from the master-wheel and the pins  $h'$  removed, when the levers  $D D$  may be folded lengthwise, or in a line with the frame, so that the machine, after the segments  $B^2 B^2$  have been folded in or contracted, occupies but little space. As before described, motion is imparted to the spur-wheel  $C$  by means of the master-wheel and chain, and the spur-wheel  $C$  imparts motion to the shaft  $f$  by means of gear-wheels  $d$  and  $e$ . Upon the end of the shaft  $f$  is mounted a brake-wheel,  $J$ , rigidly secured to said shaft.

$H H$  indicate brake-shoes, pivoted to a suitable frame, as at  $h^2 h^2$ , Fig. 5, and extending on each side of and partially surrounding the brake-wheel  $J$ . Said brake-shoes are provided with arms or levers  $H' H'$ , extending toward each other at substantially right angles to the brake-shoes, and having their adjacent ends slotted and pivoted to the end of a short rod,  $k$ , the other end of said rod  $k$  being pivoted to a lever,  $l$ , fulcrumed at its center to the framework. Pivotally connected to the lever  $l$  is a rod,  $m$ , extending up through the central stud or journal,  $a$ , of the master-wheel, which is made hollow for the purpose, and its upper end provided with a brake-lever,  $n$ , of common construction. The driver's seat is mounted upon the central stud or journal,  $a$ , as usual in machines of this class, and the brake-lever  $n$  is in easy and convenient reach of his hand. In order to stop or retard the motion of the machinery, the horses are checked and the driver depresses the brake-lever  $n$ , thus raising the rod  $m$ , which, through the medium of lever  $l$ , depresses the rod  $k$ . The rod  $k$  in descending depresses the arms or levers  $H' H'$ , causing the brake-shoes  $H H$  to tightly hug or embrace the periphery of the brake-wheel  $J$ , retarding the motion of the driving-shaft  $f$ , and when sufficient force is applied to the brake-lever  $n$  stopping the machinery entirely.

In order that the driving-shaft  $f$  may receive a regular and steady motion, it is provided with a fly-wheel, which is constructed and arranged in the following manner:

$L$  indicates a fly-wheel, of sufficient size and weight to give steadiness to the driving-shaft, said wheel being mounted in suitable bearings in the frame underneath the master-wheel and at a point between the brake-wheel  $J$  and gear-

wheel  $e$ . Rigidly secured to the shaft carrying said fly-wheel is a gear-wheel,  $l'$ , meshing with a gear-wheel,  $M$ , secured to the driving-shaft,  $f$ , in the manner hereinafter described. Said fly-wheel  $L$  being geared to the driving-shaft, as described, it will be readily seen that the motion of the driving-shaft when driven by the horse-power will be uniform and steady, whereby the machinery being driven will not be strained and racked, as would be the case if said machinery were subject to the variable speed necessarily communicated from the horse-power without some suitable means for governing the same.

In order to obviate the danger of breaking or racking the machinery in case of a sudden stoppage of the same from any cause, I provide means for automatically disconnecting the fly-wheel from the driving-shaft as follows: The gear-wheel  $M$ , before described as communicating motion to the fly-wheel, is loosely mounted upon the driving-shaft  $f$ , and its hub or box is provided with one portion or member,  $m'$ , of a ratchet-coupling, commonly employed in detachably coupling shafting, and will therefore need no special description. The other portion or member,  $m^2$ , of said coupling is secured to a hollow shaft or sleeve,  $O$ , by means of a pin or key,  $o$ , permanently affixed to shaft  $O$ , said key  $o$  passing through and playing in an inclined slot,  $o'$ , in the member  $m^2$  of the coupling. This slot I have shown of an ogee shape; but it is evident that it may be a straight slot cut at an angle to the length of the coupling. At the extremity of the hollow shaft  $O$  is secured, by means of a set-screw, a sleeve,  $P$ , and between said sleeve  $P$  and the member  $m^2$  of the coupling is arranged a spiral spring,  $p$ , which is adapted to keep the member  $m^2$  in gear with the member  $m'$  when the machinery is in operation. The sleeve  $P$  can be adjusted laterally to adjust the tension of the spring  $p$  by means of its set-screw. The hollow shaft  $O$  is placed upon the driving-shaft  $f$ , and is rigidly secured to the same by means of a key, or in any suitable manner. Now, suppose, from any cause, the machinery to be suddenly stopped; the tendency of the fly-wheel is to continue to revolve. The driving-shaft  $f$  and the shaft  $O$ , secured to it, being at rest, and the fly-wheel  $L$  and gear-wheels  $l'$  and  $M$  continuing to revolve, the member  $m'$  of the coupling, rigidly secured to the gear-wheel  $M$ , forces the member  $m^2$  back against the action of the spiral spring  $p$ , said member  $m^2$  partially rotating upon the shaft  $O$  by means of the inclined slot  $o'$ , the pin or key  $o$  causing the member  $m^2$  to move laterally upon the shaft against the action of the spring  $p$ , the two members of the coupling being slightly parted from each other until the fly-wheel and gear-wheels  $l'$  and  $M$  have ceased to revolve, thus preventing injury to the parts of the machinery.

Having thus described my invention, what I claim is—



1. In a horse-power of the class hereinbefore described, the master-wheel B, provided with contractile segments B<sup>2</sup> B<sup>2</sup>, and means, substantially as shown and described, for securing them in both their contracted and expanded positions, substantially as and for the purpose specified.

2. In a horse-power of the class hereinbefore described, the master-wheel B, provided with contractile segments B<sup>2</sup> B<sup>2</sup>, pivoted at their outer ends to the master-wheel and at their adjacent ends to the plate a<sup>3</sup>, said plate being removably secured to the master-wheel, substantially as described.

3. In a horse-power, the master-wheel B, provided with contractile segments B<sup>2</sup> B<sup>2</sup>, and means, substantially as shown and described, for securing them in both their contracted and expanded positions, in combination with the draft-levers D D, pivoted to the hub of the master-wheel and detachably secured to the periphery of the master-wheel, substantially as and for the purpose specified.

4. In combination with the master-wheel having contractile and pivoted segments B<sup>2</sup> B<sup>2</sup>, the driving-shaft and intermediate gearing, a brake-wheel mounted upon the driving-shaft, and brake-shoes adapted to embrace the

periphery of said brake-wheel and retard or stop the machinery at the will of the operator, substantially as shown and described.

5. The combination, with the master-wheel, the driving-shaft, and intermediate gearing, of the fly-wheel geared with the driving-shaft, the brake-wheel mounted upon said driving-shaft, brake-shoes pivoted in close proximity to said brake-wheel, and means, substantially as shown and described, under the control of the operator, for applying said brake-shoes to the periphery of the brake-wheel to stop or retard the machinery, substantially as specified.

6. The combination, with the master-wheel, the driving-shaft, and intermediate gearing, of the fly-wheel geared with the driving-shaft, and means, substantially as described, for automatically disconnecting the fly-wheel from the driving-shaft upon the machinery being stopped, for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL KAUFMAN.

Witnesses:

THOS. SLADE,  
J. W. DARES.