

W. J. F. LIDDELL.
Horse Powers.

No. 154,057.

Patented Aug. 11, 1874.

Fig. 1

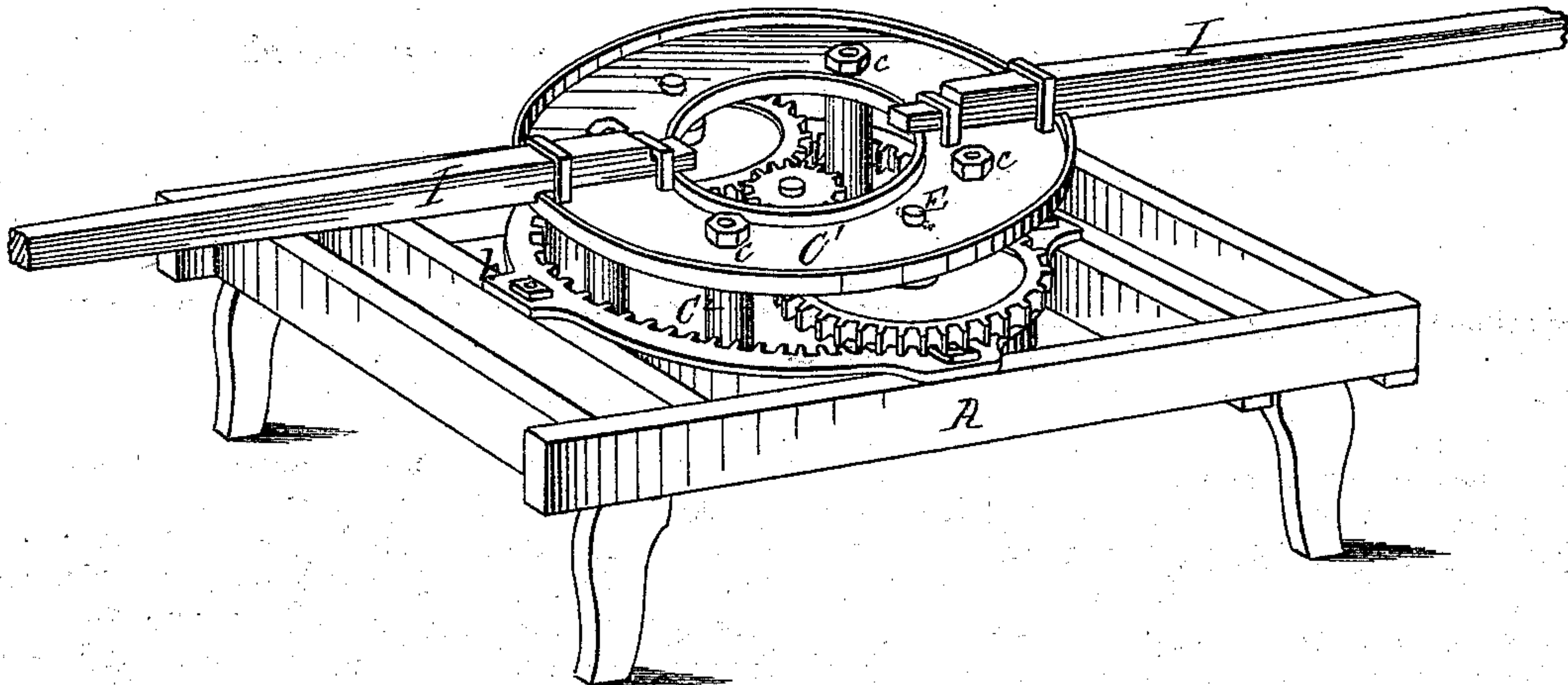


Fig. 2.

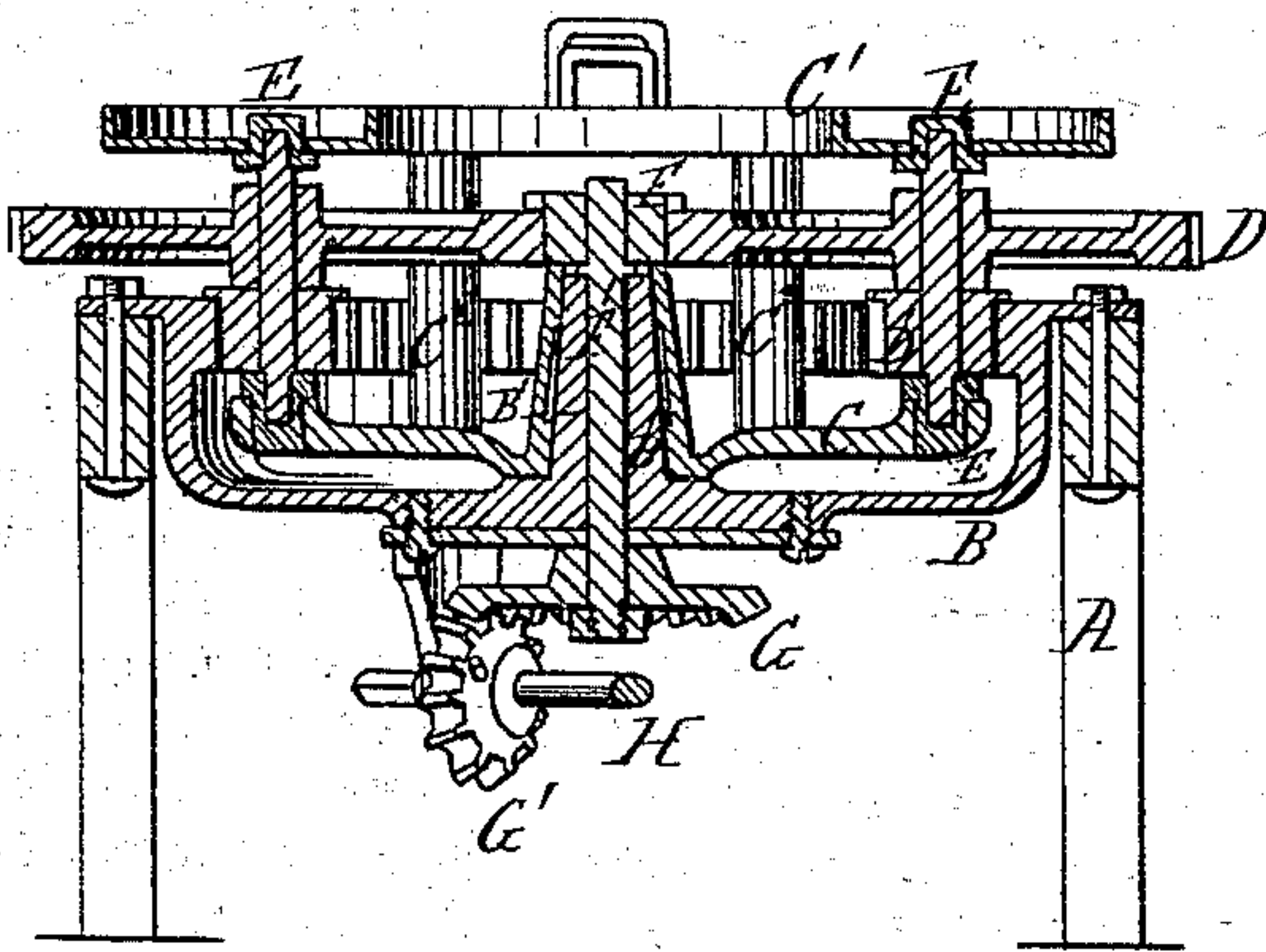


Fig. 3

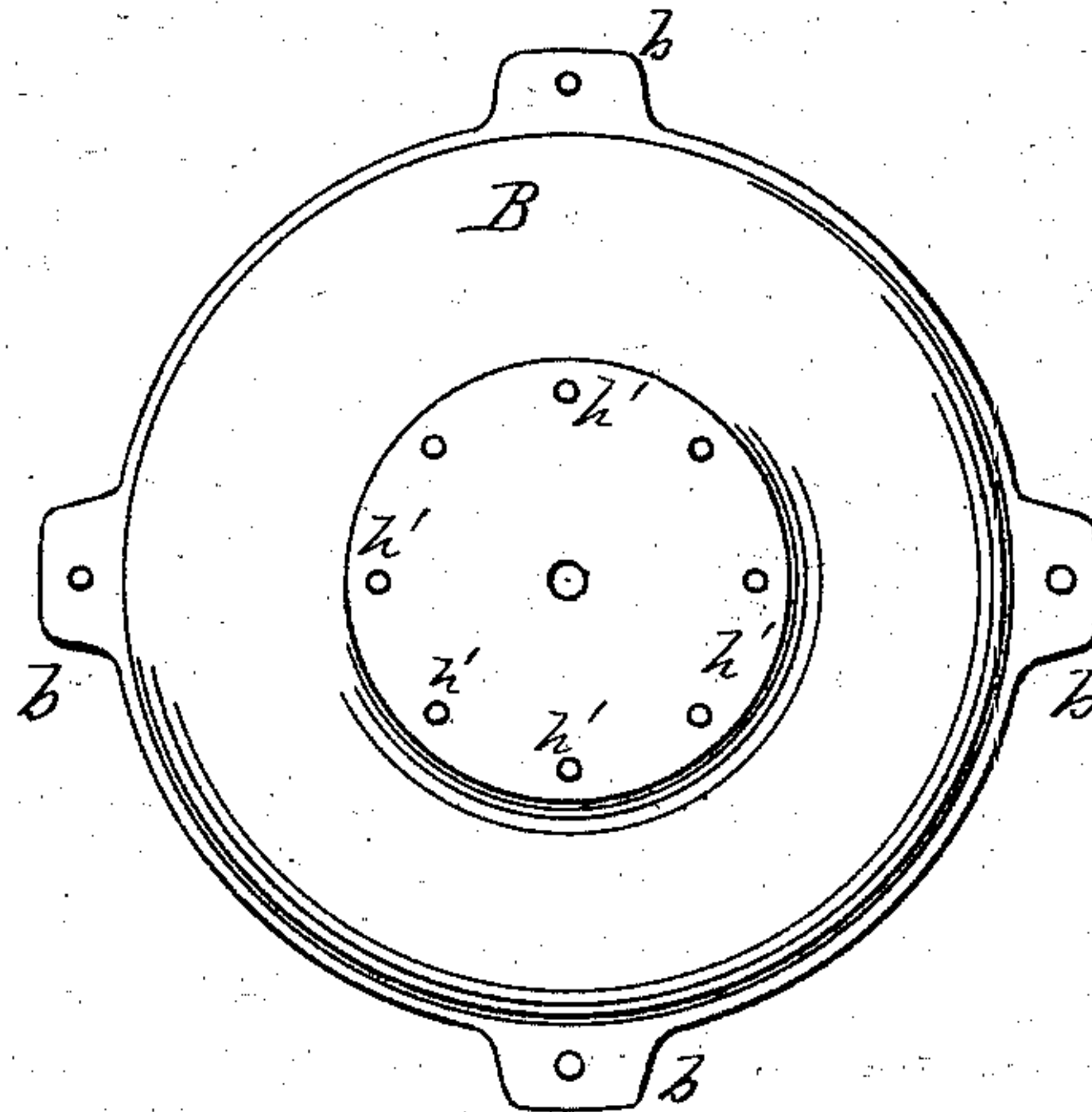


Fig. 4.

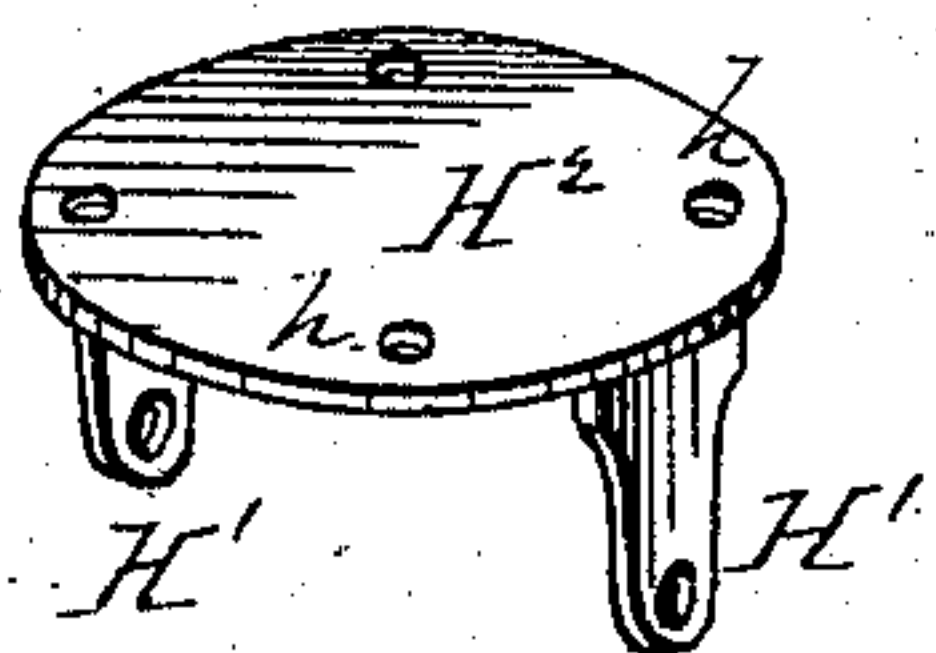
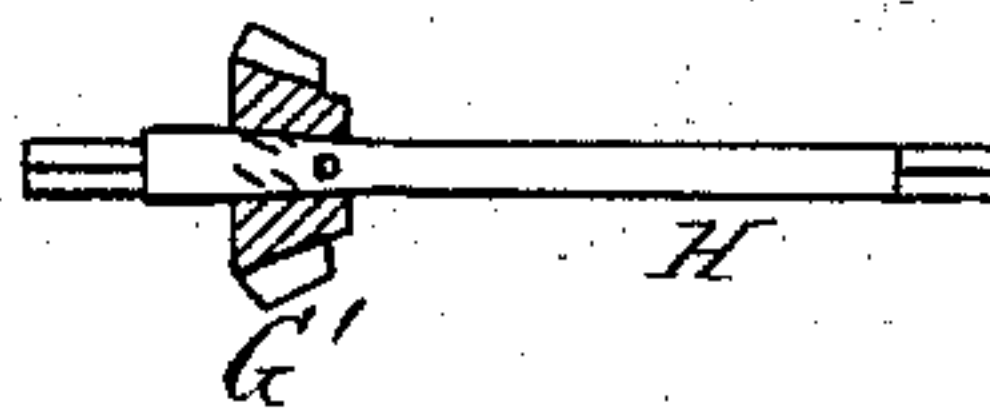


Fig. 6.



Fig. 5.



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WALTER J. F. LIDDELL, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN HORSE-POWERS.

Specification forming part of Letters Patent No. 154,057, dated August 11, 1874; application filed July 10, 1874.

To all whom it may concern :

Be it known that I, WALTER J. F. LIDDELL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Horse-Powers; 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.

Figure 1 is a perspective view of my improved horse-power. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a bottom view of the inclosing casing to which the master-wheel is attached. Fig. 4 is a perspective view of the bracket in which the shaft that drives the tumbling-rod is mounted. Fig. 5 is a side view of the pinion-shaft with the pinion in section, and Fig. 6 is a perspective view of one of the movable bearing-sockets.

The invention consists, first, in the combination, with the stationary master-wheel, of an inclosing case or shell, cast with, or otherwise firmly attached to, said master-wheel, and in providing said case at the center with an upright standard or shaft for receiving the hub of the rotating frame, in which the gearing is mounted, as hereinafter explained; second, in the combination, with the lower revolving plate, of an upper plate or disk secured together by standards, and between which plates the gearing is secured, the upper plate being provided with sockets for the insertion of the draft-arms, all as hereinafter described; third, in the combination, with the inclosing case or shell, of an adjustable hanger, in which the pinion-shaft that drives the tumbling-rod is mounted, arranged in such manner that the tumbling-rod is made to run at any angle, or the motion reversed, in a manner hereinafter explained.

In the accompanying drawing, A represents the frame, and B is the casing, to which the master-wheel is secured, or it may be cast in one piece with said casing. This casing is provided with lugs or ears *b* upon its edge for securing it to the frame, and has also cast with it a central standard or axle, B', upon which the revolving frame C C' is mounted. The revolving frame is composed of a lower box or plate, C, and an upper disk or plate,

C¹, the two parts being secured together by upright standards C², rigidly secured to the lower plate, and provided with a shoulder and screw-thread upon their upper ends, said ends passing through perforations in the disk, and the disk resting upon the shoulder, and being held in place by nuts *c*. D are the spur-wheels, and D' the pinions, only two being shown, but any number desired can be used, according to the power required. The shafts of these spur-wheels and pinions are mounted in movable bearings E, one for each end of the shaft in the plates C C¹. These bearings are made in the form shown in Fig. 6, and fit closely in holes or perforations formed in the plates C C¹, and are each provided with a spur or projection, *e*, on their outer face, which, when the bearing is driven into place, fits into one of a number of sockets formed in the plate, and around the edge of the perforation, into which the bearing is driven, and prevent said bearing from turning; but when the bearings become worn, and it is desired to turn them around to a new wearing-face, or substitute a new one, they are either driven out far enough to release the spur, when they can be turned until the spur is brought opposite another socket when the bearing can be driven, or the bearing can be driven entirely out and a new one substituted. The spur-wheels D and pinions D', which are keyed to the same shaft, travel with the revolving frame C, the pinions meshing into the master-wheel, and being driven by it, while the spur-wheels, which move with said pinions, mesh into and drive the pinion F, mounted upon the central shaft F'. This shaft has its bearings in the standard B', and passes through it and has connected to it at its lower end a bevel-wheel, G, which drives a bevel-pinion, G', mounted upon a pinion-shaft, H, to which is connected the tumbling-rod. This shaft H is mounted in bearings in brackets H¹, which are secured to a circular plate or disk, H². This plate is perforated around its outer edge, as shown at *h*, and the casing is also provided with screw-threaded perforations *h'* on a circle corresponding to those in the plate, but having double the number. This plate is secured to the casing by means of screws or bolts, and by means of the perforations above described the plate

can be moved and secured at any point on said casing for setting the shaft H at any desired angle, or by giving the plate a full half-turn the motion of the shaft can be reversed. I are the levers, mounted in loops or sockets on the plate C¹, only two of these levers being shown, but any desired number can be used.

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

1. The inclosing-case H, provided with an internal gear and a center shaft or axle, upon which the frame carrying the gearing revolves, constructed substantially as described.

2. The revolving frame, composed of the

parts C C¹ C², in which the gearing is mounted, and provided with sockets on the upper part C¹ for the levers or arms I, for operating the same, as described.

3. The adjustable bracket, in which the driving-shaft is mounted, in combination with the casing, arranged and operating substantially as and for the purpose described.

This specification signed and witnessed this 27th day of June, 1874.

WALTER J. F. LIDDELL.

Witnesses:

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