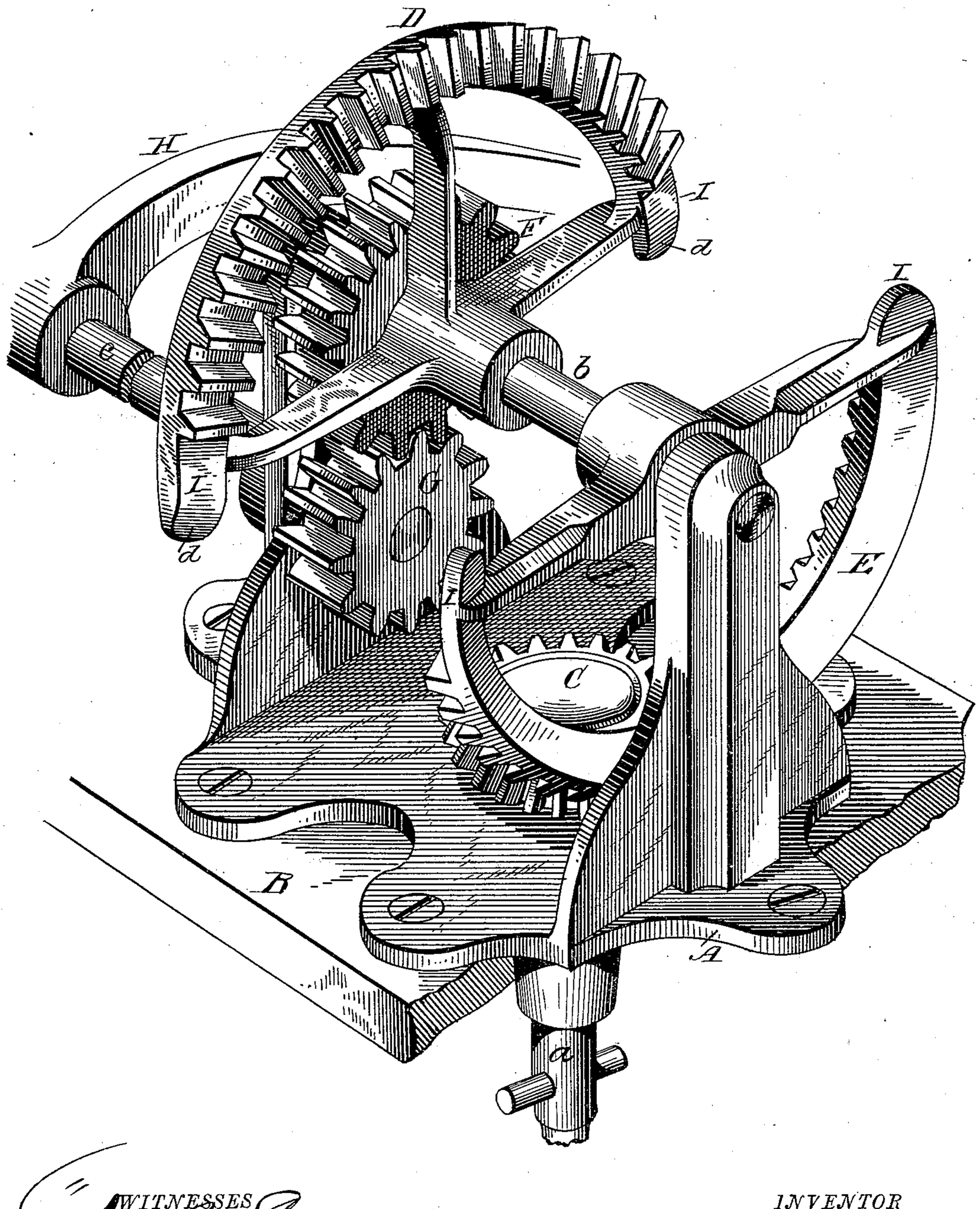
(No Model.)

G. H. ASHBY.

GEARING.

No. 312,064. Patented Feb. 10, 1885.



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GEARING.

SPECIFICATION forming part of Letters Patent No. 312,064, dated February 10, 1885.

Application filed December 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. ASHBY, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented certain new and useful Improvements in Gearing; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making a part of this specification, and to the letters and figures of reference marked thereon.

The present invention has relation to that class of gearing for imparting to a shaft an alternating rotary motion by a continuous revolution of the crank-handle for operating the gearing. This motion of the shaft is more especially adapted to the operation of washing-machines, churns, and other like machines, and has been accomplished by the employment of two wheels or circular bands with gear-teeth upon one half only of the circumferential face of each wheel or band, the remaining half being smooth and without teeth. These wheels or bands were suitably keyed to a horizontal shaft provided with an operating crank-handle, so that the geared or toothed portions of each wheel or band would be brought in engagement with a pinion of the vertical shaft and impart to it an alternating rotary motion. The great objection to this class of gearing is the unnecessary weight of the wheels or bands, requiring more weight to overcome when turning the crank-shaft, thus rendering it necessary to exert increased power or force in operating the gearing, as well as adding materially to the cost of manufacture.

It is the object of the present invention to improve the construction of these wheels or bands by dispensing entirely with that portion of the wheels or bands that are smooth or without teeth; also, providing the bands with guides at their extremities, to more effectually assist the teeth in their engagement with the pinion when they are first brought in contact therewith.

A further object of the invention is to additionally decrease the power necessary to operate the gearing by supporting the toothed bands or segments upon an independent shaft and casting one of said bands or segments with a pinion adapted to engage with the pinion on a second horizontal shaft provided with a crank-handle for turning it, as will be hereinafter described and claimed.

In the accompanying drawing, A represents a bracket of any suitable form and construction, secured to the base B by screws or other fastenings.

Through the bracket A passes a vertical shaft, *a*, having upon its upper end a pinion, C, with which engage the teeth of semicircular bands D E, suitably keyed to the horizontal shaft *b*, which has its bearings in the upright portions of the bracket A. The toothed band D is cast with a pinion, F, the teeth of which mesh with those of a similar pinion, G, but slightly smaller, said pinion being connected to the horizontal shaft *c* at its inner end, while its outer end is provided with an operating crank-handle, H. Unlike the toothed bands heretofore employed, the bands D E are semicircular in form, or simply a segment of a circle, and not continuous, or, in other words, describe a complete circle. Thus it will be seen that there is no unnecessary material used in the construction of the toothed bands; consequently a very great economy in the metal is obtained, not only materially lessening the cost of manufacture, but making the bands much lighter and easier operated, there being less weight to overcome, and consequently less friction. The extremities of the toothed bands D E terminate in projecting guides I, having a beveled face, *d*, so that when the teeth of the bands are brought around to engage with the pinion the beveled guides will first bear against the pinion-teeth and steady the band while the first tooth thereof meshes with those of the pinion, thus insuring a perfect action of the toothed bands with the pinion. As previously stated, a single horizontal operating-shaft was employed, to which the gear-wheels were keyed, the crank-handle being connected to the same shaft carrying the wheels. As will be seen, I employ two horizontal shafts, the shaft *b* being wholly for the purpose of supporting the toothed bands D E, and in place of attaching the crank-handle to this shaft I provide a second shaft, *c*, to which I attach a pinion, G, and upon its opposite

end a crank-handle, H. This necessitates a second pinion to engage with the pinion G, which I provide by casting the toothed band D with the pinion F, thus reducing the power of running the gearing or operating the shaft *a*, while the motion of the gearing is much steadier.

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

1. A gearing consisting of two semicircular toothed bands mounted on a horizontal rotary shaft and adapted to engage with the teeth of a pinion on a vertical shaft, the toothed bands being arranged on the horizontal shaft in relation to each other as shown, and for the purpose set forth.

2. In a gearing for imparting to a vertical shaft an alternating rotary or semi-rotary motion, the combination, with a pinion connected to the upper end of said shaft, of two semicircular toothed bands terminating at their extremities in projecting guides to act in conjunction with the pinion, substantially as and for the purpose specified.

3. In a gearing, a horizontal rotary shaft carrying two semicircular toothed bands, arranged thereon as shown, and adapted to engage with a pinion on the end of a vertical shaft, one of said bands being cast with a pinion, in combination with a second horizontal shaft having a crank-handle at one end and a pinion at the other to engage with the pinion of the toothed band, substantially as and for the purpose described.

4. In a gearing, a horizontal rotary shaft carrying semicircular toothed bands terminating at their extremities in projecting beveled guides, one of said bands having cast thereon a pinion, in combination with a second horizontal shaft provided with a crank-handle and pinion; and a pinion secured to a vertical shaft, with which engage the toothed bands, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

GEORGE H. ASHBY.

Witnesses:
W. R. LACEY,
JOHN F. LACEY.