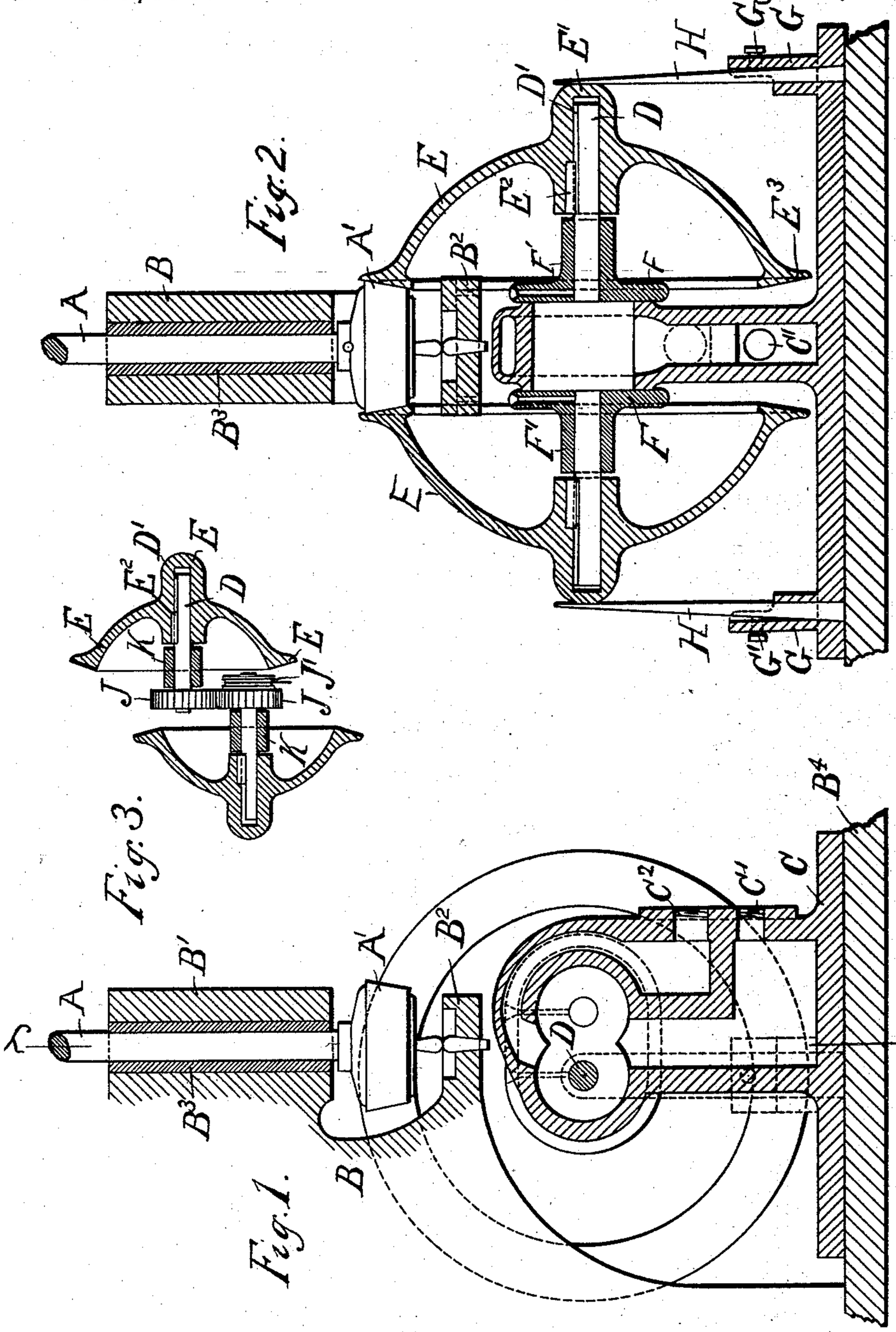
(No Model.)

P. M. SHARPLES.

DRIVING DEVICE.

No. 388,456. Patented Aug. 28, 1888.



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DRIVING DEVICE.

SPECIFICATION forming part of Letters Patent No. 388,456, dated August 28, 1888.

Application filed March 7, 1888. Serial No. 266,397. (No model.)

To all whom it may concern:

Be it known that I, PHILIP M. SHARPLES, a citizen of the United States, residing at West Chester, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Driving Devices; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates, particularly, to the driving of a shaft provided with a pinion by means of two separate shafts placed at right angles thereto and having wheels adapted to gear with the pinion at opposite points; also, to details of construction, as hereinafter fully set forth.

Figure 1 is a vertical section showing the separate shafts adapted to be revolved in opposite direction by a rotary engine. Fig. 2 is a section through X Y of Fig. 1. Fig. 3 shows an equivalent arrangement of the separate shafts placed out of line, so that one may drive the other in an opposite direction by means of gear-wheels.

A represents a vertical shaft, to the lower end of which is secured a friction bevel-pinion, A′. The shaft is guided by a bushed bearing, B′, above the pinion, and the end-pressure is taken on an anti-friction step, B^2, formed integral with the bearing and with a base, B^4. To the latter is secured a rotary engine, C, (indicated by a sectional outline,) having a steam-inlet, C′, and exhaust C^2, and provided with two rotary pistons (not shown) of any desired form adapted to turn their axes or shafts D in opposite directions. These shafts are supported in long bearings F′, projecting from the cylinder-heads F, and have grooves D′, in which the feathers E^2, which are inserted in the bored hubs E′ of the concave friction-wheels E, are guided, so as to permit the latter while revolving with the shafts to be moved horizontally thereon. Springs H are secured to fixed supports G, so as to press against the outside of hubs E′, thus keeping the faces E^3 of the wheels in frictional contact with the pinion A′, the amount of pressure being regulated by a screw, G′. The spring may be made to serve as an end support to the frictional wheels E on the ends of the shafts D. In Fig. 3 these horizontal shafts are represented as out of line, the same as in Figs. 1 and 2; but instead of being revolved by means of a rotary engine acting direct upon them, one of them is represented as provided with a belt-wheel, J′, by means of which it is driven from any outside power, while the other is revolved in the opposite direction through the gearing J J. They are both supported in interior bearings, K, and the wheels E are feathered to the overhanging part, as in Fig. 2.

It is evident that in either of the above-described arrangements, the shafts being out of line, the points of contact of the wheels with the pinion are directly opposite but on a line oblique to the line of the horizontal shafts. The angle of the face E^3 of the wheel is made to suit this position.

The spring which presses the wheel E into contact with the pinion A′ can be placed upon the shaft D if the latter is extended through the wheel-hub, and its pressure be regulated by means of a nut; but I prefer the method shown, which puts no end-strain upon the shaft, as would the above arrangement, and which permits the spring to serve as an end support for the frictional wheels E, as before noted. The fixed support G may be extended upward and an adjustable spiral spring used, if preferred. In either case the frictional contact is kept uniform and there is no movement or strain upon the shaft. This arrangement may be used with either one or two horizontal shafts.

I am aware that Patent No. 192,155 shows friction-wheels on separate horizontal shafts revolved in opposite directions by means of separate belts and pulleys and adapted to turn a vertical shaft by their contact at opposite points in line with the shafts with a bevel-pinion on the vertical shaft.

What I claim as my invention is as follows:

1. The combination, with a shaft provided with a bevel-pinion, of wheels secured to separate shafts at right angles thereto and adapted to gear with said bevel-pinion at obliquely-opposite points, said shafts being out of line

and adapted to be revolved in opposite directions, substantially as set forth.

2. The combination, with a shaft provided with a pinion, A′, of a rotating shaft at right angles thereto, a wheel, E, feathered to the free end of said shaft and adapted to engage said pinion, and a spring, H, attached to a fixed point and in contact with the projecting hub of said wheel, substantially as and for the purpose set forth.

3. The combination, with a shaft provided with a pinion, A′, of separate shafts at right angles thereto and rotated in opposite directions, wheels feathered to the outer ends of said shafts and adapted to engage said pinion, and springs attached to fixed points and adapted to press directly against the projecting hubs of said wheels, substantially as and for the purpose set forth.

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

P. M. SHARPLES.

Witnesses:
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