

No. 662,702.

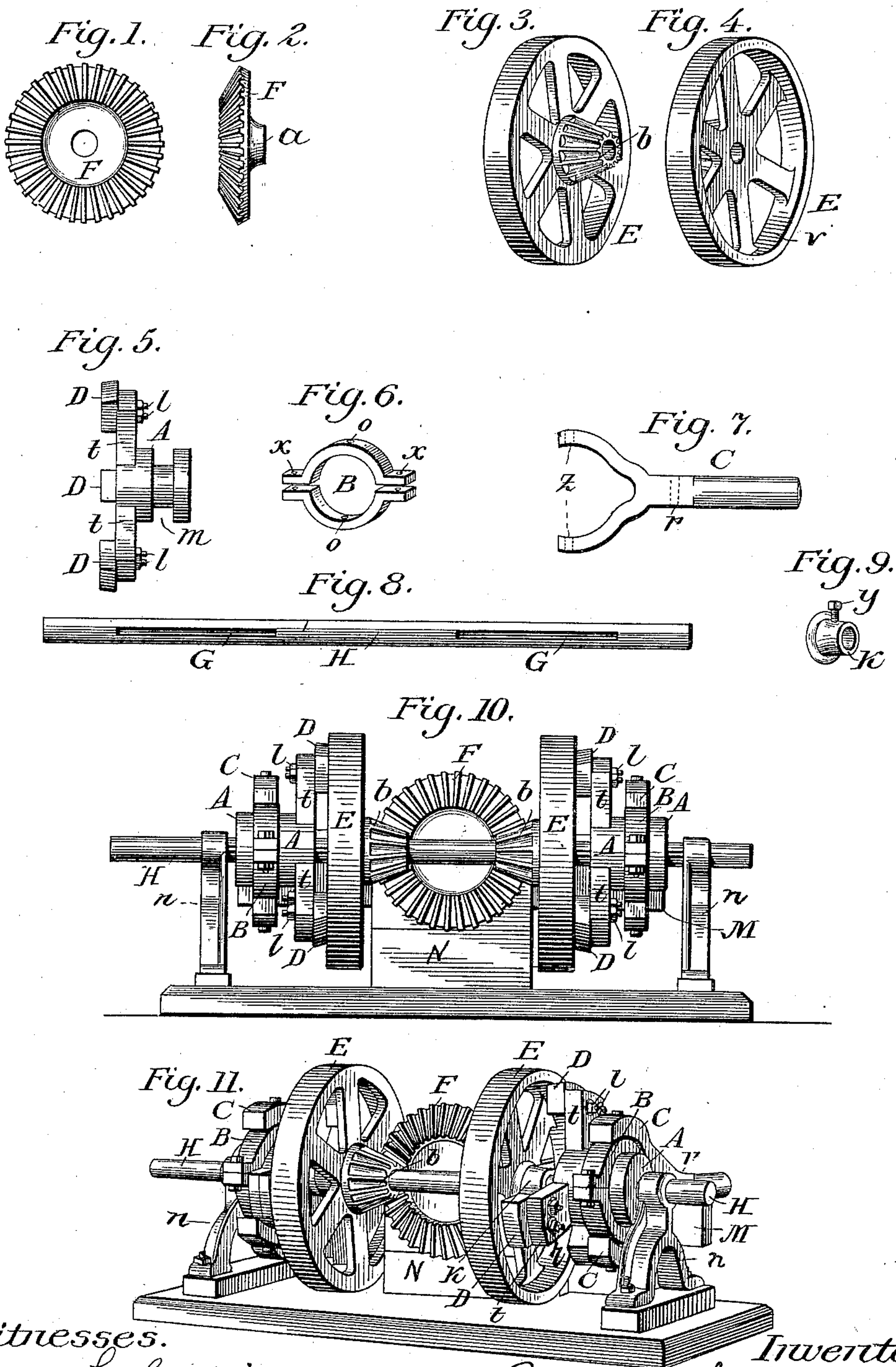
Patented Nov. 27, 1900.

R. J. SMITH.

REVERSIBLE FRICTION CLUTCH GEARING.

(Application filed Oct. 16, 1899.)

(No Model.)



Witnesses.

Mary L. Spaulding  
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# UNITED STATES PATENT OFFICE.

RICHARD J. SMITH, OF NEW HAVEN, OHIO.

## REVERSIBLE FRICTION-CLUTCH GEARING.

SPECIFICATION forming part of Letters Patent No. 662,702, dated November 27, 1900.

Application filed October 16, 1899. Serial No. 733,851. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD J. SMITH, a citizen of the United States, residing at New Haven, in the county of Huron and State of Ohio, have invented a new and Reversible Friction-Clutch Gearing, of which the following is a specification.

My invention relates to improvements in reversible friction-clutch gearing in which an oscillating hub is rotated by means of blocks pressed into a flange gear-wheel; and the objects of my improvement are, first, to provide a forward-and-backward motion on one wheel with a friction-gear; second, to afford facilities for readily operating machines requiring a forward-and-backward or lateral movement; third, to provide a simple device for obtaining reversible motion, and, fourth, to simplify and cheapen the cost of gearing affording reversible motion. These objects I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a bevel gear-wheel. Fig. 2 is the side view of the bevel gear-wheel, showing the receiving-hub. Fig. 3 is the pinion-wheel, having a beveled gear-hub. Fig. 4 is the rear view of the pinion-wheel, having beveled gear-hub, showing the friction-flange. Fig. 5 is a perpendicular view of the friction-hub and arms, showing the grooves cut in for receiving the clamp. Fig. 6 is a detailed view in perspective of the clamp. Fig. 7 is the lever. Fig. 8 represents the main shaft. Fig. 9 represents the band. Fig. 10 is a view in elevation of the device embodying the invention. Fig. 11 is a perspective view thereof.

Similar letters refer to similar parts throughout the several views.

The entire gearing is supported on shaft H, resting on brackets *n n*, which in turn may be attached to any solid bed-piece or boiler-plate or plank, as shown in Figs. 10 and 11. The bevel gear-wheel F receives the motion and power from the pinion-wheels E E, and the bevel gear-wheel F is so adjusted as to rotate in the meshes of the bevel cog-hubs *b b* and has a receiving-hub *a* for receiving the shaft which transmits the power. The pinion cog-wheels E E have a flange *v* for receiving the friction-blocks D D and D D.

The oscillating hub A, Fig. 5, is metallic,

one solid piece of iron *t t t*, to the ends of which are bolted the friction-blocks D D and D. The hub has a groove *m* for receiving the clamp B, Fig. 6. The lever C, Fig. 7, is fork-shaped, with holes *z z* in the end of the forks and a hole *r* in the handle. The shaft H has two grooves G G, in which a stationary key within the hub oscillates. K is the sleeve, with an iron key *y* to secure it rigidly to the shaft H.

In the construction and arrangement of the various parts of my device the brackets *n n* and *n n* (see Figs. 10 and 11) are secured to the base where the device is to be operated. The bevel gear-wheel F is supported by a block N, as shown by Figs. 10 and 11, or by a bracket similar to the brackets *n n*, placed in position for receiving the pinion-wheels E E. The pinion-wheels E E are then placed upon the shaft H H and so adjusted that the cogs of the pinion-wheel F and of the hubs *b b* will mesh into each other. Sleeve K is then fastened onto the shaft H H, stationary behind each of the wheels E E, by bolting the same to the shaft H H with the iron key *y*. The pinion-wheels E E revolve freely and loosely upon the shaft H H. The hubs A A and A A are then placed upon the shaft H H, so that the stationary key inside of the hubs A A will slide in the grooves G G of the shaft H H. The clamp B is then bolted onto the collar *m* by bolts running through the holes *x x*. The lever C is then bolted onto the clamp B with bolts *o o* through the holes *z z*. The friction-blocks D D D and D D D are bolted onto the ends of the arms *t t t* with the bolts *l l l*. The shaft H H, with the gearing-wheels already described, and illustrated in Figs. 10 and 11, is then secured in the brackets *n n*, as shown.

The lever C, Fig. 7, is permanently attached in the center to the bracket *n n* or to a beam or rod M, running behind the gear at *r*, so that by taking hold of the end of the lever C thus attached the hubs A A will oscillate upon the main shaft H H. Each one of the hubs A A on either side of the gearing may be operated by taking hold of the end of the lever C.

The wheel E on one side of the bevel gear-wheel F will always run in the opposite direction from the wheel E on the other side of

the bevel gear-wheel F, and the pinion-wheel E, running up on one side, will turn one of the wheels E forward, while running down on the other side will turn the other wheel E in the  
5 opposite direction, and so the pinion-wheels E E will always run in opposite directions when in motion.

I am aware that a bevel-gear has heretofore been used for obtaining reversible power on  
10 machinery by the ordinary use of jacks and cog-wheels, and I do not claim a patent upon the form of the bevel-gear cog-wheels; but

What I claim as my invention, and desire to secure by Letters Patent, is—

15 In a reversible gear, the combination of a power-shaft, said shaft having grooves, pinion-wheels mounted loosely on the shaft, said wheels having beveled cog-hubs, a bevel gear-

wheel suitably mounted and adapted to mesh with the beveled hubs of the pinion-wheels, 20 sleeve secured stationary to the shaft and adapted to hold the pinion-wheels in mesh with the gear-wheel, hubs having suitable collars mounted on the shaft, said hubs being secured to the shaft by keys adapted to fit in the 25 grooves of the shaft thereby allowing the hubs an oscillating movement, friction-blocks secured to the hubs and so positioned as to engage the flanges of the pinion-wheels, clamps secured to the collars of the hubs and 30 levers secured to the clamps, as and for the purpose described.

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Witnesses:

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