

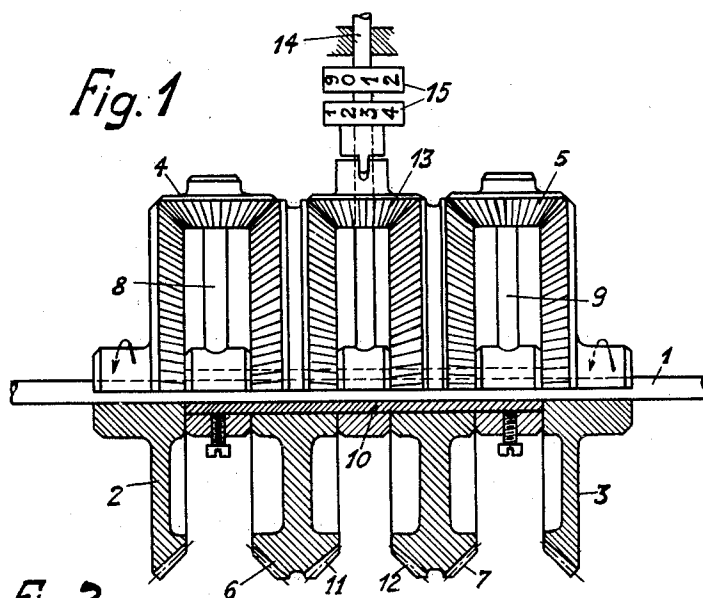
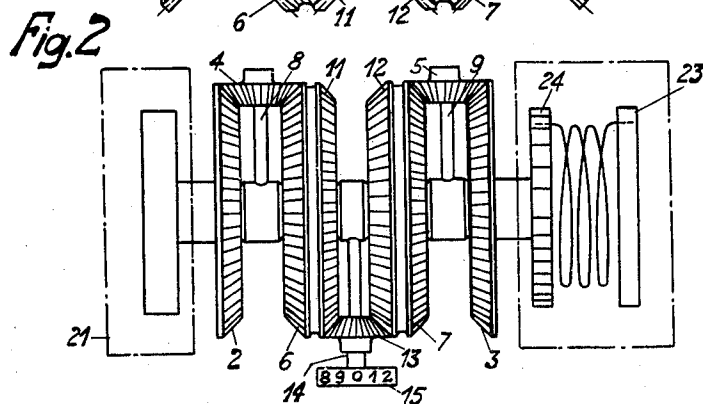
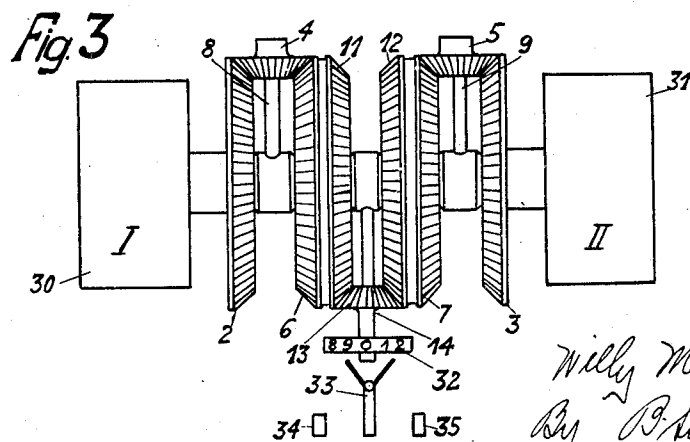
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W. MAAG

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GEARING

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Inventor
Willy Maag
By P. Singer, atty.

UNITED STATES PATENT OFFICE

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GEARING

Willy Maag, Zurich, Switzerland

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4 Claims. (Cl. 74—282)

The invention relates to a gearing with at least two differential wheel gears, which are arranged co-axially and which drive a common counting or switch shaft. The two differential wheel gears are driven independently of one another from different power sources and as a rule at different speeds. The counting or switch shaft is rotated at a speed corresponding with the difference in operation of the two gears and it also rotates in one direction or the other according as to whether one or other of the two differential wheel gears moves faster than the other. The counting or feed shaft may, for example, be used for driving a counting mechanism, a switch and so forth.

In the drawing Fig. 1 shows diagrammatically the gearing according to the present invention.

Fig. 2 is a plan of a modified construction of the same.

Fig. 3 is a similar view of another modified form of the same.

On a common shaft 1 are loosely mounted two sun wheels 2, 3 which are driven from two different power sources at a uniform speed or also at suitable time intervals. The rotations of the two wheels 2, 3 are transmitted by the rotating planet wheels 4, 5 to the sun wheels 6, 7. The planet wheels 4, 5 are mounted on shafts 8, 9 which are secured to a common hollow shaft 10. The sun wheels 6, 7 are rotatably mounted on the hollow shaft 10. They transmit their rotary movement by means of toothed flanges 11, 12 to a common wheel 13. This is mounted on a shaft 14 which is stationary, that is to say which does not rotate about the shaft 1. From the shaft 14 there may be driven, for example, a counting mechanism of known type, indicated in the drawing by the numeral wheels 15. The power sources rotate the sun wheels 2, 3 in the same direction.

If now a difference occurs in the speed of rotation of the two wheels 2, 3 this difference becomes visible on the numeral wheels 15. To the shaft 14 there may be connected, in addition to the numeral wheels 15, also a switch which in the known manner opens or closes an electric circuit as soon as the shaft is moved into or out of the zero position.

The new gearing may be used for various purposes.

In Fig. 3 is shown a further application of the new gearing. It may be used for synchronizing alternating current generators and motor, for arranging in parallel electrical aggregates and so forth. 30 indicates a generator I which is coupled to the shaft 14 by the differential wheel gear 2, 4, 6. 31 indicates the generator II which is also

coupled to the shaft 14 by means of the differential wheel gear 3, 5, 7. On the shaft 14 is mounted a regulating member 32, which may be constructed in any suitable manner but which according to its direction of rotation and the amount of rotary movement actuates a switch 33 which co-operates with contacts 34, 35.

What I claim is:—

1. In a device for the purpose specified the combination with a shaft, of a pair of sun-wheels loosely mounted on said shaft, a hollow shaft loosely mounted on said shaft, a pair of shafts secured to said hollow shaft, a pair of planet wheels mounted one on each of said shafts, said planet wheels meshing one with each of said sun-wheels, a second pair of sun-wheels mounted loosely on said hollow shaft, said second pair of sun-wheels meshing one with each planet wheel, toothed flanges on said second pair of sun-wheels, a bevel wheel meshing with said toothed flanges, and a stationary driven shaft on which said bevel wheel is mounted.

2. In a device for the purpose specified the combination with a shaft, of a pair of sun-wheels loosely mounted on said shaft, a hollow shaft loosely mounted on said shaft, a pair of shafts secured to said hollow shaft, a pair of planet wheels mounted one on each of said shafts, said planet wheels meshing one with each of said sun-wheels, a second pair of sun-wheels mounted loosely on said hollow shaft, said second pair of sun-wheels meshing one with each planet wheel, toothed flanges on said second pair of sun-wheels, a bevel wheel meshing with said toothed flanges, and a stationary driven shaft on which said bevel wheel is mounted, said first mentioned sun-wheels being adapted to be driven in the same direction by different sources of power whereby the stationary shaft is rotated in accordance with the difference in rotation of said first mentioned sun-wheels.

3. In a device for the purpose specified the combination with a shaft, of a pair of sun-wheels loosely mounted on said shaft, a hollow shaft loosely mounted on said shaft, a pair of shafts secured to said hollow shaft, a pair of planet wheels mounted one on each of said shafts, said planet wheels meshing one with each of said sun-wheels, a second pair of sun-wheels mounted loosely on said hollow shaft, said second pair of sun-wheels meshing one with each planet wheel, toothed flanges on said second pair of sun-wheels, a bevel wheel meshing with said toothed flanges, and a stationary driven shaft on which said bevel wheel is mounted, and a plurality of

actuating devices associated one with each of said first-mentioned sun-wheels and with said bevel wheel.

4. Gearing of the class described, comprising a shaft, a pair of sun wheels spaced apart and mounted for rotation on said shaft, a tubular shaft on said shaft and arranged between said sun wheels, a pair of intermediate sun wheels loosely mounted on said tubular shaft, a pair

of planet wheels each engaging one of the sun wheels on the shaft and one of the sun wheels on the tubular shaft, a planet wheel engaging the sun wheels which are on the tubular shaft and shafts for the planet wheels, each having a bearing at its inner end on the tubular shaft, the bearings for the shafts of the first named sun wheels being secured to said tubular shaft.

WILLY MAAG.

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