(No Model.)

2 Sheets—Sheet 1.

F. H. RICHARDS.

GEARING.

No. 480,671. Patented Aug. 9, 1892.

Fig. 1

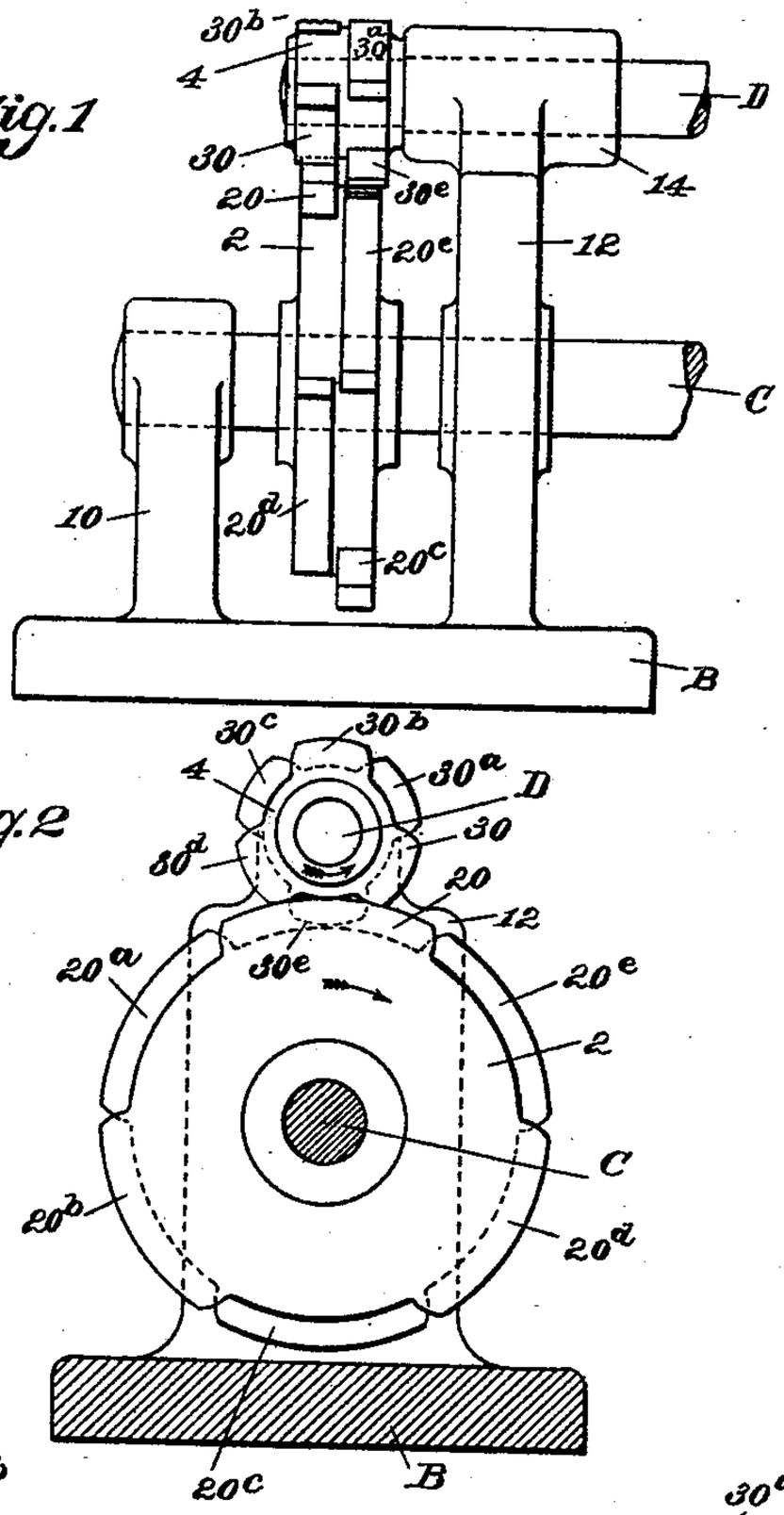


Fig. 2

Fig. 3

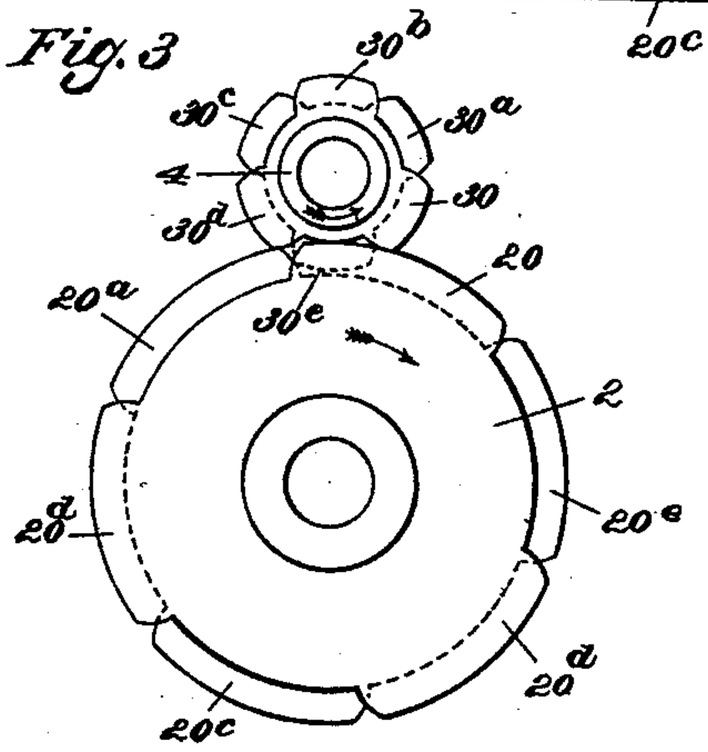
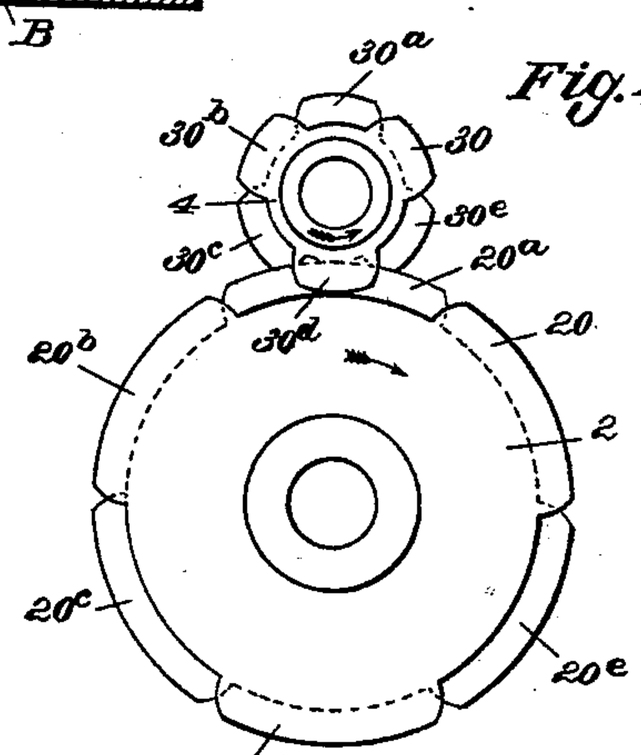


Fig. 4



Witnesses:

Henry L. Reckard.

George E. Mills

Inventor:

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(No Model.) 2 Sheets—Sheet 2.

F. H. RICHARDS.

GEARING.

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Fig. 5

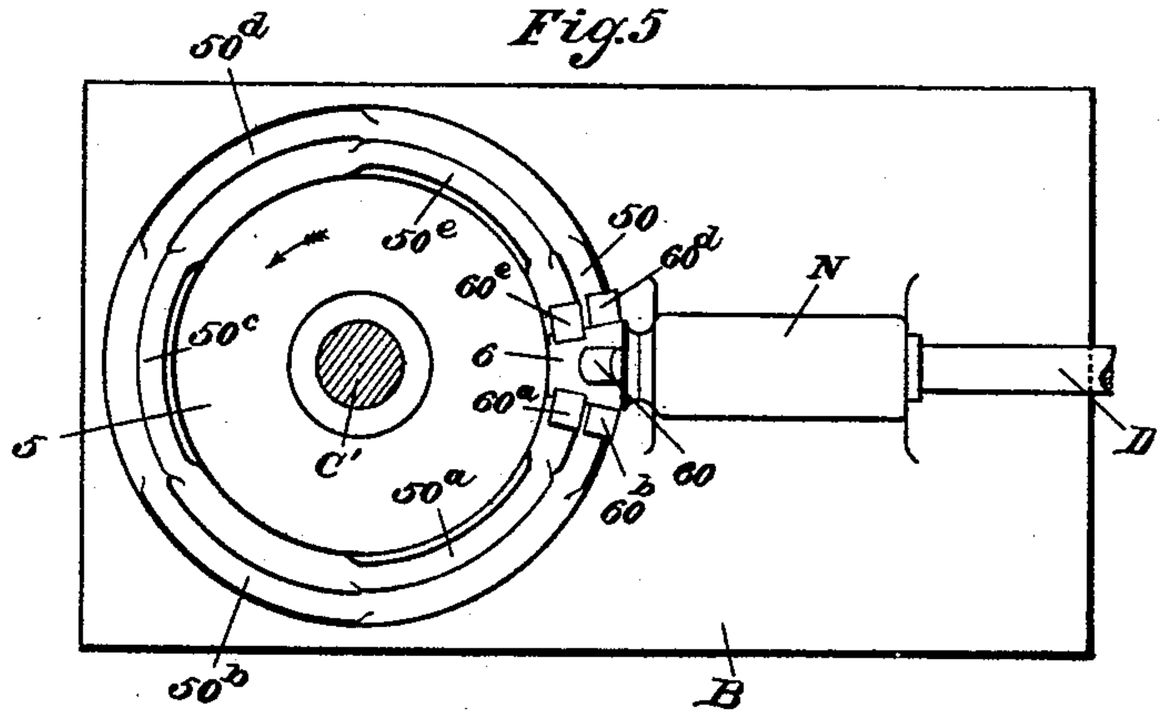


Fig. 6

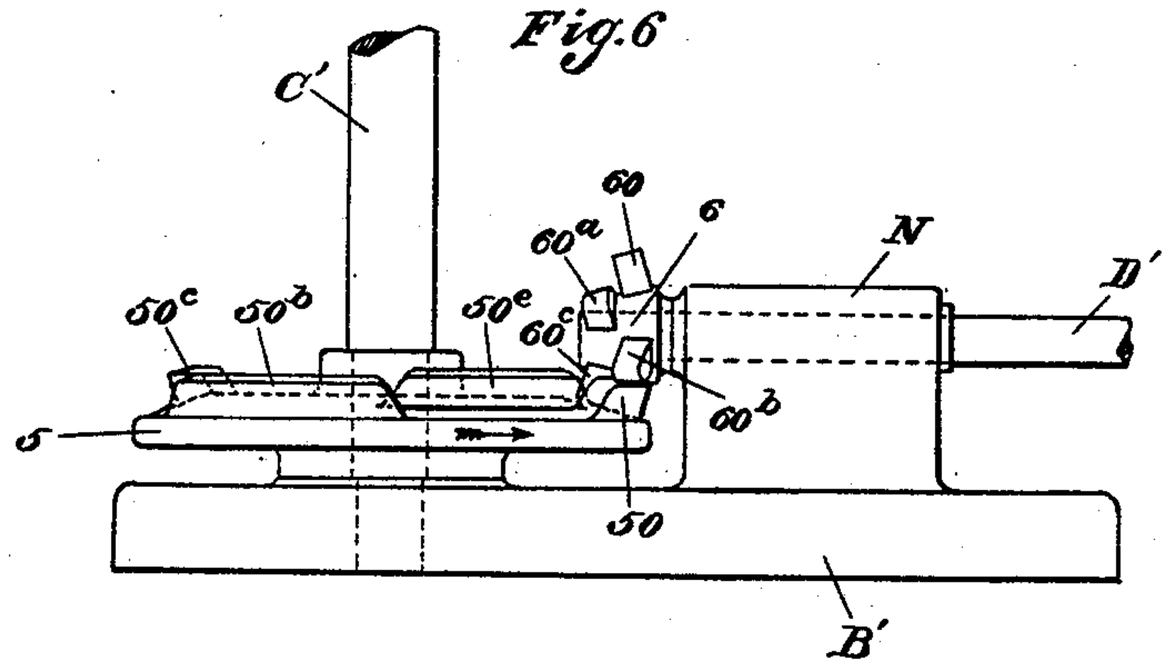


Fig. 7

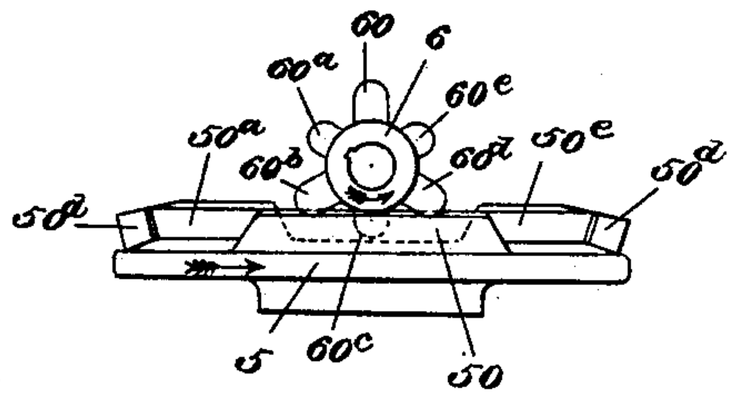
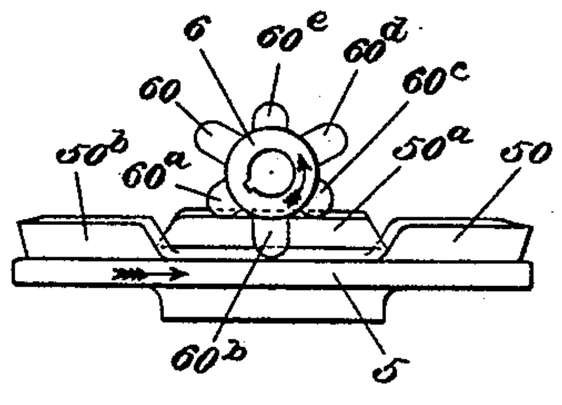


Fig. 8



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

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GEARING.

SPECIFICATION forming part of Letters Patent No. 480,671, dated August 9, 1892.

Application filed March 24, 1892. Serial No. 426,211. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Gearing, of which the following is a specification.

This invention relates to gearing for imparting an intermittent rotary movement to one shaft from another continuously-revolving shaft.

The improved gearing herein described is adapted for use in connection with the stop mechanism for turret-lathes described in my prior application, Serial No. 412,865, filed November 23, 1891.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of spur-gearing embodying my present invention. Fig. 2 is an end elevation of the same as seen from the left hand in Fig. 1. Figs. 3 and 4 are views similar to a portion of Fig. 2, illustrating the operation of the gearing. Fig. 5 is a plan view, and Fig. 6 a side elevation, of bevel-gearing embodying my present invention. Figs. 7 and 8 are similar views of the gear-wheels as seen from the left hand in Fig. 6 and illustrate the operation of this form of the gearing.

Similar characters designate like parts in all the figures.

The framework for supporting the shafts carrying the gear-wheels may be constructed in any convenient manner to meet the requirements of any particular case. In Figs. 1 and 2 the framework consists of the base-plate B and the uprights 10 and 12. The shaft C is shown journaled in two bearings, formed one in each of said uprights. The shaft D is shown journaled in the bearing 14, formed on the upright 12, the two shafts being set parallel. The gear-wheels 2 and 4, of similar construction and in the present instance of different diameters, are shown fixed on the shafts C and D, respectively. Each gear-wheel is furnished with two series of teeth or cogs, the teeth of one series being opposite the spaces of the other series. The entire number of said teeth in the driven wheel, which in the present instance is supposed to be the wheel 4, should of course be equal to the number of intermittent movements made during the revolution of said wheel, which number in the present instance is six. On the wheel 2 one set of cogs are designated by 20 20^b 20^d and the alternating set are designated by 20^a 20^c 20^e, the two sets or series being arranged side by side, as will be understood by comparison of Figs. 1 and 2. On the wheel 4 the two corresponding sets of teeth or cogs are designated by 30 30^b 30^d and by 30^a 30^c 30^e, respectively. The cogs of the driving-wheel 2 are elongated, being of the form of segmental ribs, as will be understood from comparison of Figs. 1 to 4, inclusive, and operate after the manner of cam-faces upon the corresponding cogs of the driven wheel 4.

The operation of the described gearing is illustrated in Figs. 2, 3, and 4, representing successive positions of the two gear-wheels, which turn in the direction of the arrows shown thereon. In Fig. 2 the gear 2 is supposed to be revolving while the wheel 4 is stationary. During this period of the operation of the gearing the segmental cog 20 of the driving-wheel slides against the ends of the cogs 30 30^d of the wheel 4, as shown in Fig. 2. As the driving-wheel advances to the position shown in Fig. 3, the segmental cog 20 of the driving-wheel passes from under the driven-wheel cog 30^d, while the driving-wheel cog 20^a strikes the intermediate driven-wheel cog 30^e, and through this drives forward the driven wheel to the position shown in Fig. 4, when said driving-cog 20^a passes under the two successive cogs 30^c and 30^e, as shown in Fig. 4, thus holding the driven wheel firmly in this position one-sixth of a revolution in advance of its position in Fig. 3. At this time the alternating driven-wheel cog 30^d stands in the space between the driving-wheel cogs 20 20^b, as shown in Fig. 4. In this manner the continuous movement of the driving-wheel successively turns and locks the driven wheel.

My invention is applicable not only to spur-gearing, but also to bevel-gearing, as illustrated in Figs. 5 to 8, inclusive. In Figs. 5 and 6 the framework for carrying the gear-

ing consists of the base B′ and the bearing N. The vertical shaft C′, corresponding to the shaft C of Figs. 1 to 4, is journaled at its lower end in the base, while the shaft D′ corresponding to the shaft D of Figs. 1 to 4, is journaled in said bearing N.

The beveled driving-wheel 5 corresponds with the wheel 2 of Figs. 1 to 4 and the beveled driven wheel 6 corresponds with the driven wheel 4 of said figures. Said beveled driving-wheel has two series of segmental cogs, of which one series is designated by 50 50^b 50^d, while the other series is designated by 50^a 50^c 50^e, the teeth or cogs of one series being set opposite the spaces of the other series after the same manner of those of the gear-wheel 2, hereinbefore described. The beveled driven wheel 6 is provided with two corresponding series of cogs, of which one series is designated by 60 60^b 60^d, while the other series is designated by 60^a 60^c 60^e. The mode of operation of this form of the gearing is the same in principle as the operation of the gearing shown in Figs. 1 and 4. In Fig. 7 the driving-wheel segmental cog 50 is shown bearing against the two successive driven-wheel cogs 60^b and 60^d, the intermediate driven-wheel cog 60^c of the other series of driven-wheel cogs standing in the clear space between the driving-wheel cogs 50^a and 50^e, as indicated by dotted lines in Fig. 7. In Fig. 8 the wheels are shown advanced to a succeeding position, the movements being in the direction of the arrows shown thereon. In this position two adjacent cogs 60^a 60^c of the other set of driven-wheel cogs bear against the face of the driving-wheel cog 50^a, as shown in Fig. 8, the intermediate driven-wheel cog 60^b standing in the clear space between the driving-wheel cogs 50 50^b.

It should be observed in connection with the gearing shown in Figs. 5 to 8 that the driving-wheel cogs are of segmental form and of a considerable length relative to the height thereof, while the driven-wheel cogs are reduced substantially to the form of gear-teeth; but this modification of form is an incident merely of the modified arrangement of the parts and does not alter the principle of or the essential character of the gearing.

Having thus described my invention, I claim—

1. The improved gearing herein described, consisting in the combination, with the driving-wheel having two series of alternating cogs and spaces set with the cogs of one series opposite the spaces of the other series, of a driven wheel having corresponding cogs and spaces and meshing with the driving-wheel, substantially as set forth.

2. The improved bevel-gearing herein described, consisting in the combination, with a bevel driving-wheel having two series of alternating cogs and spaces, the cogs of one series being set opposite the spaces of the other series, of the bevel driven wheel having two corresponding series of cogs and spaces, the cogs of one series being set opposite the spaces of the other series and meshing with the bevel driving-wheel, substantially as set forth.

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Witnesses:
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EMMA G. FOWLER.