(No Model.)

J. M. PRICE.

MECHANICAL MOVEMENT.

No. 466,923. Patented Jan. 12, 1892.

Fig. 1.

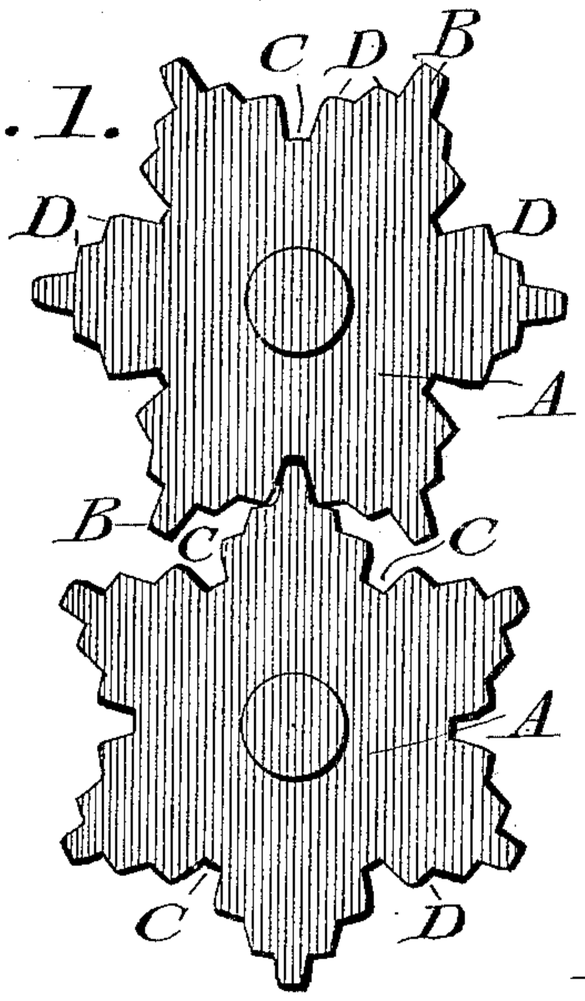


Fig. 2.

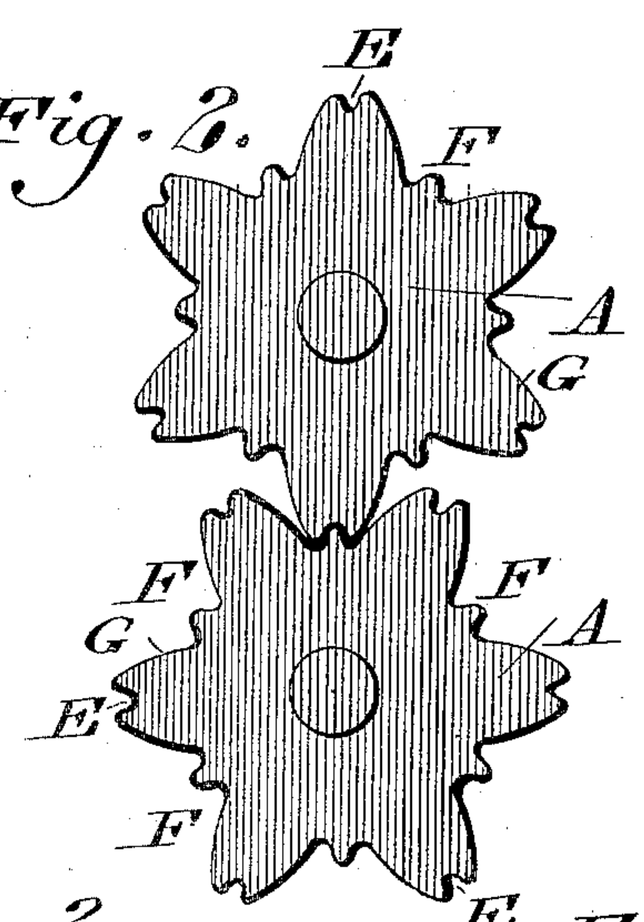
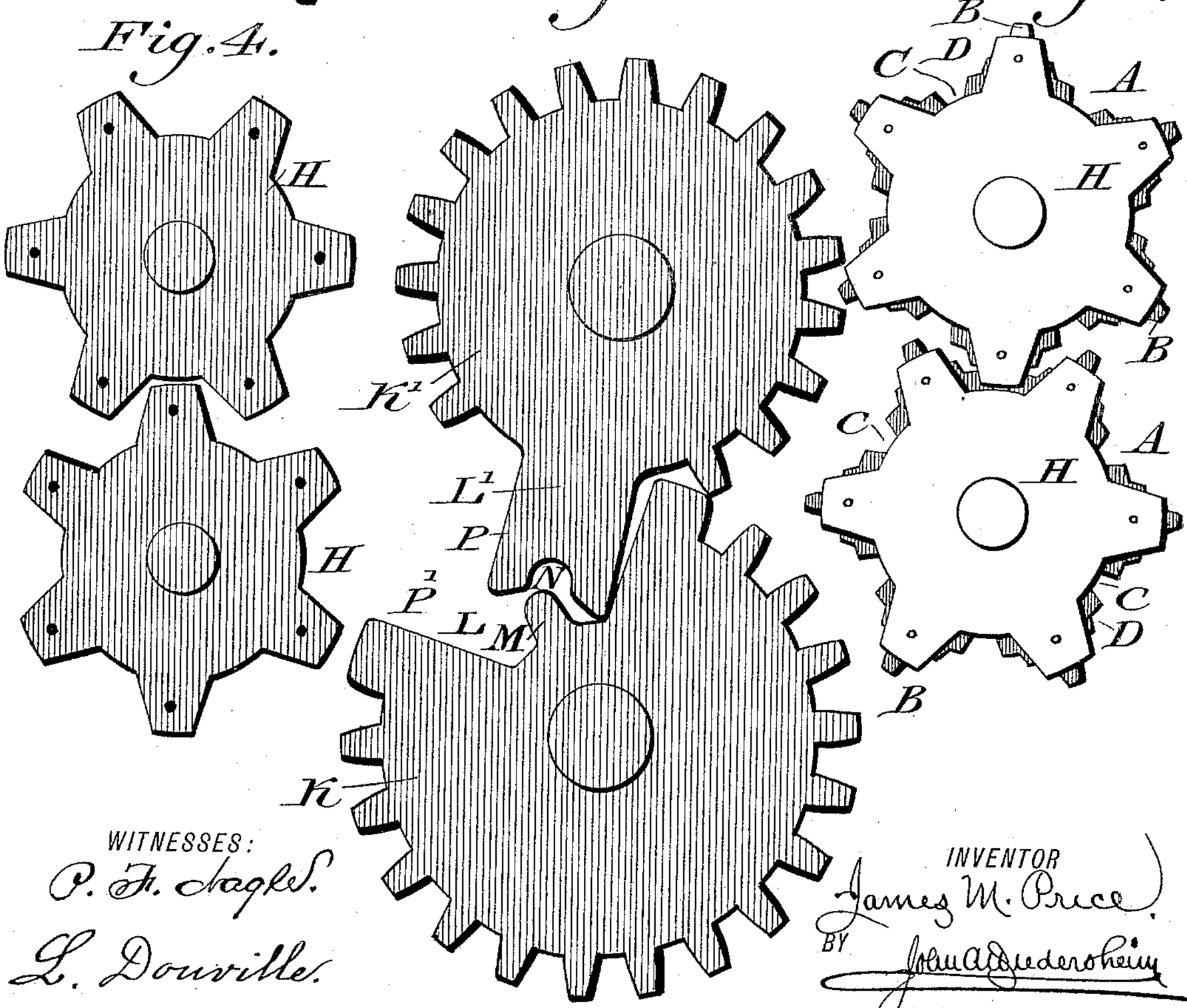


Fig. 3.

Fig. 4.

Fig. 5.



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MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 466,923, dated January 12, 1892.

Application filed December 31, 1890. Serial No. 376,352. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. PRICE, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Mechanical Movements, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to mechanical movements, and has for its object a machine by which alternate motions and regular or irregular alternations of speed may be effected; and for this purpose it consists of the combination of parts hereinafter set forth.

Figure 1 represents an end view of a pair of driving-wheels, either of which may impart motion to the other. Fig. 2 represents an end view of a modification of the said wheels. Fig. 3 represents another modification thereof. Fig. 4 represents end views of anvil-rolls adapted to be used with the driving-wheels. Fig. 5 represents a vertical sectional view of the combined anvil-rolls and driving-wheels.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates a pair of driving-wheels for a rolling-mill or other device, said wheels having, as shown in Fig. 1, two series of cogs or teeth, each of the said series being on a different but concentric circumference, the cogs on the larger circumference projecting, as B, while those on the smaller circumference being hollow or female, as C. Between each of the said projecting cogs B and its adjacent hollow cog C are the shoulders D, rising like a series of steps and adapted to sustain the forward movement by impulsion at each, while subdividing the work and annulling or minimizing the "shock" otherwise connected with the rapid transference of power and action from a cog C to a cog B and in immediate succession from B to the following cog C.

In Fig. 2 it will be observed that hollow or female cogs E are placed upon the larger circumference, or at the centers of the greatest projections of the wheel, while F, the associate and ordinary cogs, of projecting contour, are seated upon the minor circumference, or centrally to the greatest depression in the periphery of the driving-wheels. In this form of driving-wheel curved shoulders G are substituted for the angular ones D, (shown in Fig. 1,) the said curved shoulders having the same function as the said angular ones—viz., to carry the transfer of motion easily from the cogs E to the cogs F without shock, hesitation, or interruption.

It will be understood that any number of projections with cogs on their outer circumference, with the corresponding or associate cogs on their inner circumference, may be employed; or, in other words, the number of transitions or alternations of movement in a single revolution of a wheel is not limited. In Figs. 1 and 2 constructions adapted for twelve transitions are shown.

The anvil-rolls H, of which end views are shown in Fig. 4 and which are of the form shown and described by me in a pending application, filed June 26, A. D. 1890, Serial No. 356,758, may be used in connection with the gearing shown in Fig. 1, and a sectional view of such combination is shown in Fig. 5, the said parts being in condition to receive and shape the transmitted strip or plate of metal, which will enter between the rolls.

The modification shown in Fig. 3 is of exceptional irregularity of shape, the drivers not being duplicates, and the driver K, which imparts motion to its fellow K′, has the circumference of its periphery outside of the cavity L thereof equal to that of the periphery of the wheel K′ outside of the projection L′ thereon, so that the wheel K will so rotate the wheel K′ that the male cog M of the cavity of the wheel K will at all times coincide with the female cog N of the projection L′. The projecting portion L′ and the side walls of the cavity L have straight sides or shoulders, as P P′, respectively, instead of curved or angular sides.

In using the driving-wheels herein described several anvil-rolls may be placed on the one axle and rotated by one set of drivers, or two pairs of drivers may be employed with one or more sets of anvil-rolls between them.

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

1. A pair of driving-wheels, each having two series of cogs on concentric circles, with intermediate shoulders, the said cogs being on each wheel and the shoulders being be-

tween the inner and outer series of cogs, substantially as described.

2. A pair of driving-wheels of equal diameter, each having two series of teeth on concentric circles, with intermediate shoulders forming steps, substantially as described.

3. A pair of driving-wheels of equal diameter, each having series of teeth on arcs of concentric circles with intermediate shoulders, the teeth of one series being male and the teeth of the other series being female, said parts being combined substantially as described.

4. A pair of driving-wheels of equal diameter, having two series of teeth on arcs of concentric circles, the teeth of one series being male and the teeth of the other series being female, and connecting-shoulders between each adjacent male and female tooth, substantially as described.

5. A pair of duplicate driving-wheels, each having teeth on arcs of different concentric circles, the teeth of the inner circle of each wheel meshing with the teeth of the outer circle of the other wheel, and shoulders on each wheel between and connecting said inner and outer arcs, said parts being combined substantially as described.

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