

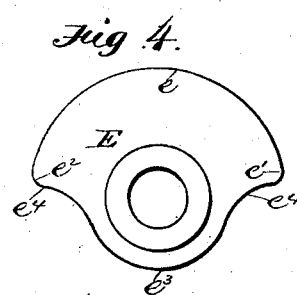
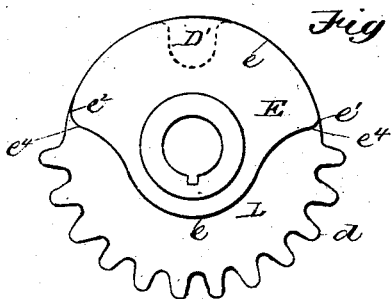
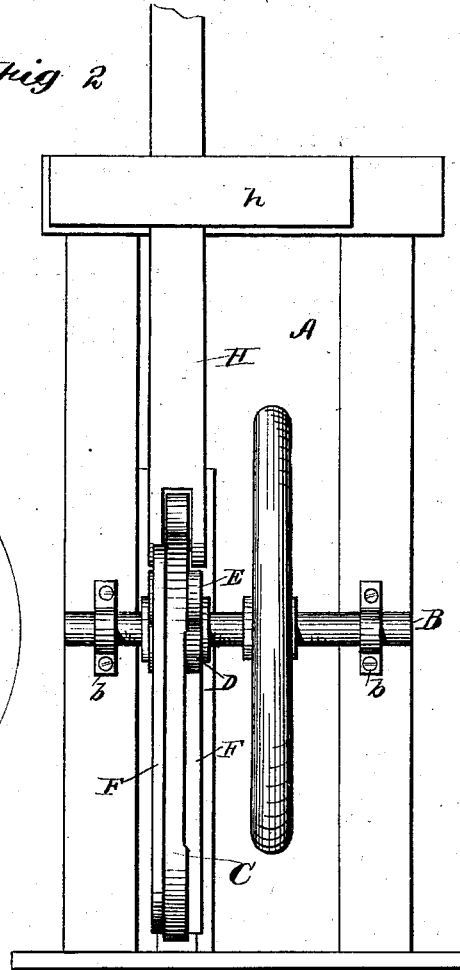
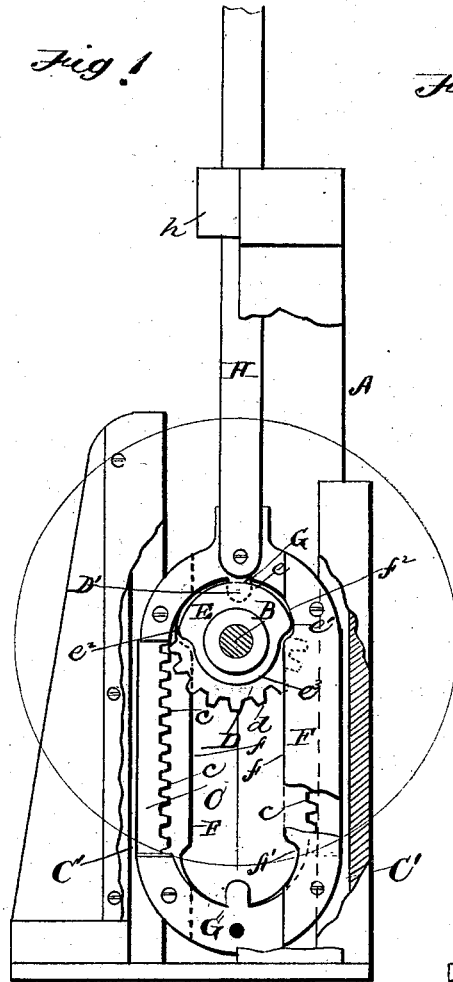
(No Model.)

J. T. RICHARDSON.

DEVICE FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

No. 261,384.

Patented July 18, 1882.



WITNESSES

WITNESSES
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UNITED STATES PATENT OFFICE.

JOHN T. RICHARDSON, OF PALESTINE, TEXAS,

DEVICE FOR CONVERTING RECIPROCATING INTO ROTARY MOTION.

SPECIFICATION forming part of Letters Patent No. 261,384, dated July 18, 1882.

Application filed October 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. RICHARDSON, a citizen of the United States, residing at Palestine, in the county of Anderson and State of Texas, have invented certain new and useful Improvements in Devices for Converting Reciprocating into Rotary Motion; and I do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

In the drawings, Figure 1 represents a side elevation, partly in section, of my improved method of converting motion. Fig. 2 represents a front elevation of the same, and Figs. 3 and 4 represent detached portions of the machine.

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

My invention has for its object to provide means whereby rotary motion may be converted into reciprocating motion or reciprocating motion into rotary motion without the intervention of cranks; and to this end it consists in a mutilated gear pinion secured to a rotating shaft and provided with suitable cams, whereby the gear-teeth upon the pinion are caused to engage with gear-teeth upon a yoke embracing said pinion, as hereinafter described.

It further consists in suitable cam tracks or faces cast with or otherwise secured to the sides of the yoke, and operating in conjunction with the cams upon the pinion to alternately present the internal geared sides of said yoke to the geared portion of the pinion, as hereinafter described.

It further consists in means whereby the forward or continuous motion of the wheel is maintained when the yoke is at the "dead-point," and in means whereby the proper adjustment of the gear is automatically allowed at such point, as hereinafter described; and it finally consists in the arrangement and combination of the parts as a whole, substantially as hereinafter described.

Referring to the drawings, A represents the

frame; B, the rotating shaft, mounted in bearings *b* in said frame.

C represents the yoke, held and guided in its to and fro movements by guideways C'.

D represents the pinion, provided with gear-teeth *d* about half the distance around its perimeter, as shown, the said gear-teeth *d* engaging with corresponding gear-teeth, *c*, in the inner sides of the yoke C.

Thus far described my invention does not differ essentially from others at present in use, inasmuch as many machines have been invented and patented each and all having in common the parts above described.

I will now proceed to describe the parts which I claim as my invention.

E E represent cam-segments cast with or otherwise secured to the sides of the pinion D. The cam-segments E are properly segments of true circles, as shown. The larger portion, *e*, between the points *e'* *e''* is of the same diameter as the pinion at the base of the gear-teeth, while the portion *e'* between the points *e'* *e''* is considerably smaller, as shown, the two portions *e* *e'* being joined by the curved portion *e''*, and said curved portion *e''* forming practically a spur or tooth, the purpose of which will be hereinafter described.

To the yoke C, and upon each alternate side thereof, I secure the blocks F, the front edges, *f*, of which form cam tracks or faces, against which the cam-faces *e* *e'* bear as the pinion revolves.

I provide recesses *f'* *f''* in the face *f* of the blocks F, and at the upper and lower ends thereof, as shown. When the pinion D is revolved the portion *e'* of the cams E enters the recesses *f'* *f''*, and, sliding up the inclosed sides thereof, bears against one of the faces *f* of the cam-blocks F, thus pressing the gear-teeth *c* out of engagement with the gear-teeth *d* upon that side and pressing the gears into engagement upon the opposite side, as will be readily understood from the drawings.

I provide the yoke C, at both its upper and lower ends, with spurs or teeth G, the said teeth being cast with said yoke, and upon its inner surface I also provide the pinion D with a suitable recess, D', at a point midway between the gear-teeth *d* on the smooth surface of the pin-

ion. The sides d' of the recess D' are slightly beveled from their outer edges to the bottom thereof.

The purposes of the tooth G and recess D' are as follows: When the pinion D is revolved the tooth G enters the recess D' , and, passing downward against the beveled or inclined side thereof, aids to assist the cam E in throwing the pinion into and out of gear, as before described. The tooth G and recess D' further serve to prevent the pinion from moving backward when so locked, as will be readily seen.

It will be clearly understood from the foregoing description that when the wheel or pinion D is rotated the yoke C will be moved to and fro in its guides, or when the yoke C is moved to and fro the pinion D will be rotated.

H represents a pitman-rod connected at one end to the yoke C , and moving to and fro in a suitable box, h , on the frame A .

Having thus described my invention, what I claim is—

1. In a machine for converting motion, the

cam E , having the concentric faces e e^3 , each extending half around the cam and shoulders e' e^2 , in combination with the mutilated gear pinion D , having recess D' in the side opposite the gear-teeth, substantially as described. 25

2. In a machine for converting motion, the combination of the cam blocks or tracks F , having recesses f' f^2 , with the yoke C , having gear-teeth G , substantially as described, for the purpose specified. 30

3. In a machine for converting motion, the combination of the pinion D , having the recess D' and cams E , with the yoke C , having teeth G and cam-block F , provided with cam faces or tracks f and recesses f' f^2 , substantially as described, for the purpose herein set forth. 35 40

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

JOHN T. RICHARDSON.

Witnesses:

J. C. MCKAY,

HENRY DAVIS.