(No Model.) 2 Sheets—Sheet 1.

E. CATLIN.

DEVICE FOR CONVERTING MOTION.

No. 292,471. Patented Jan. 29, 1884.

Fig. 1.

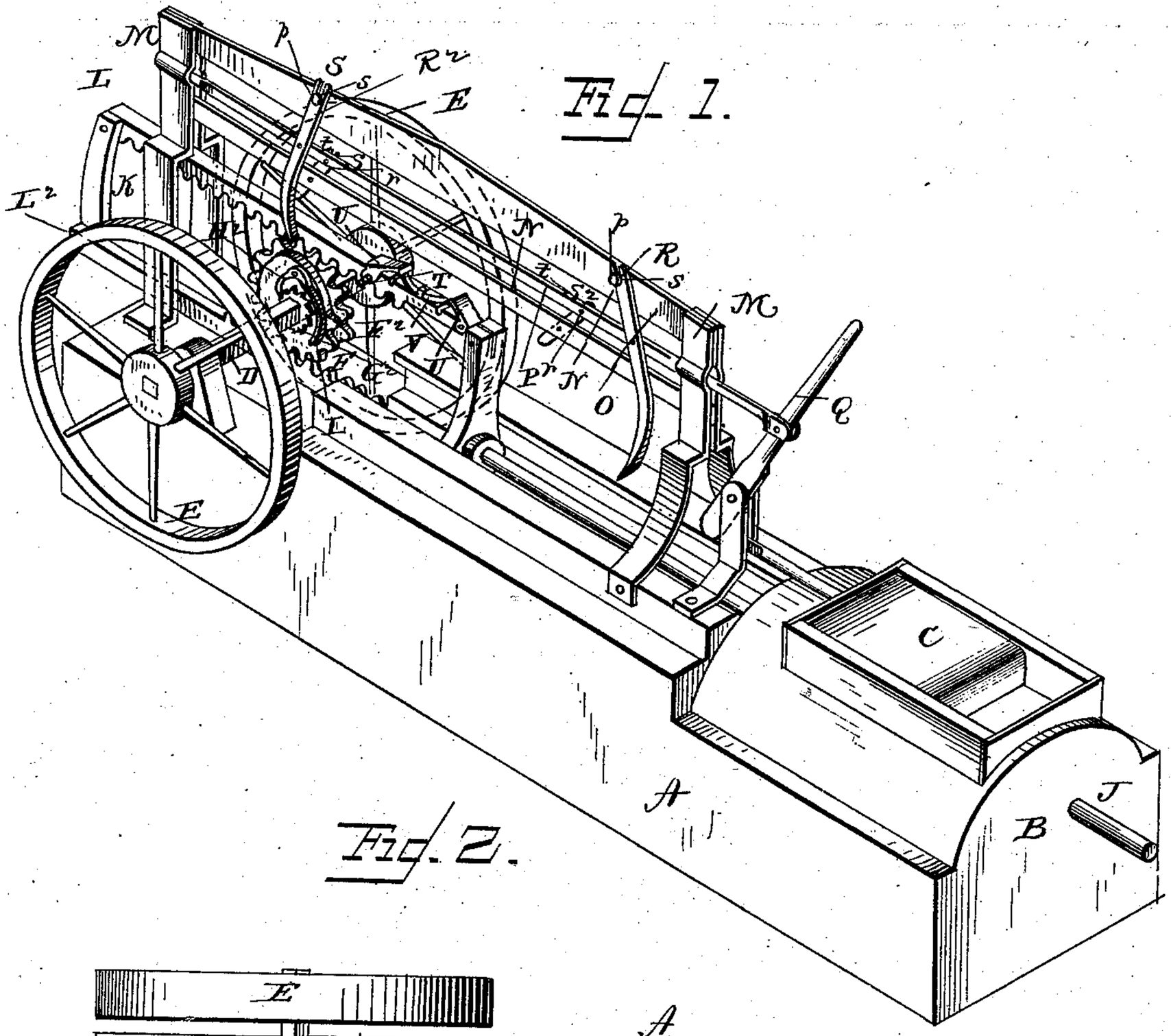
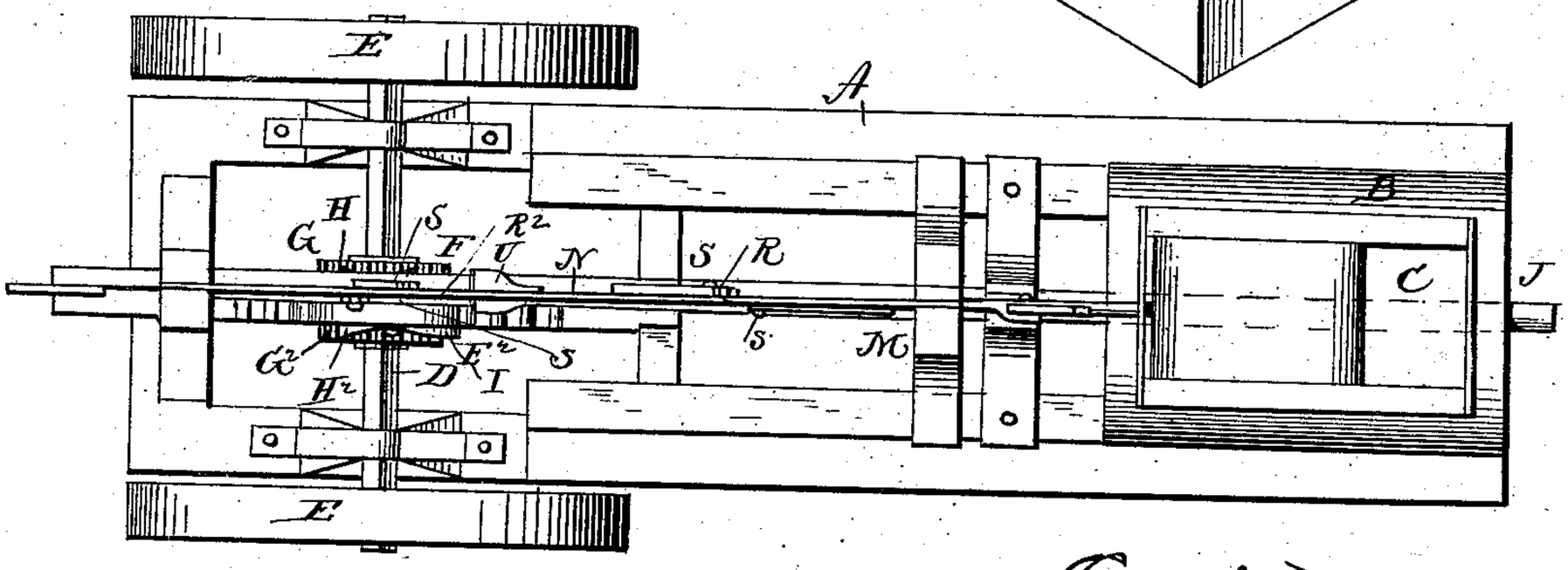


Fig. 2.



WITNESSES

F. L. Durand.

[illegible]

E. Catlin
INVENTOR

by Lee & Snow
Attorney

(No Model.)

2 Sheets—Sheet 2.

E. CATLIN.

DEVICE FOR CONVERTING MOTION.

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Fig. 3.

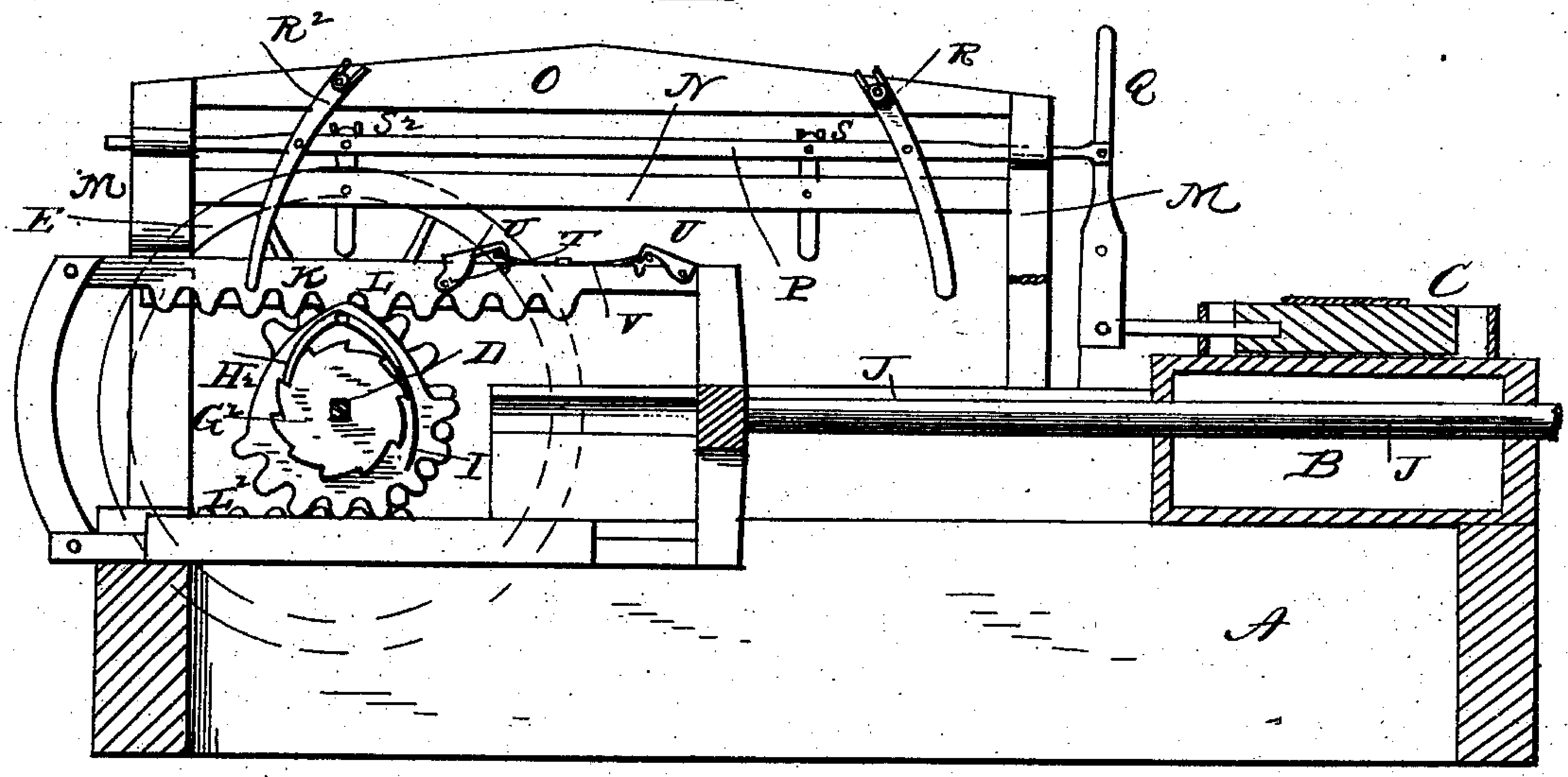
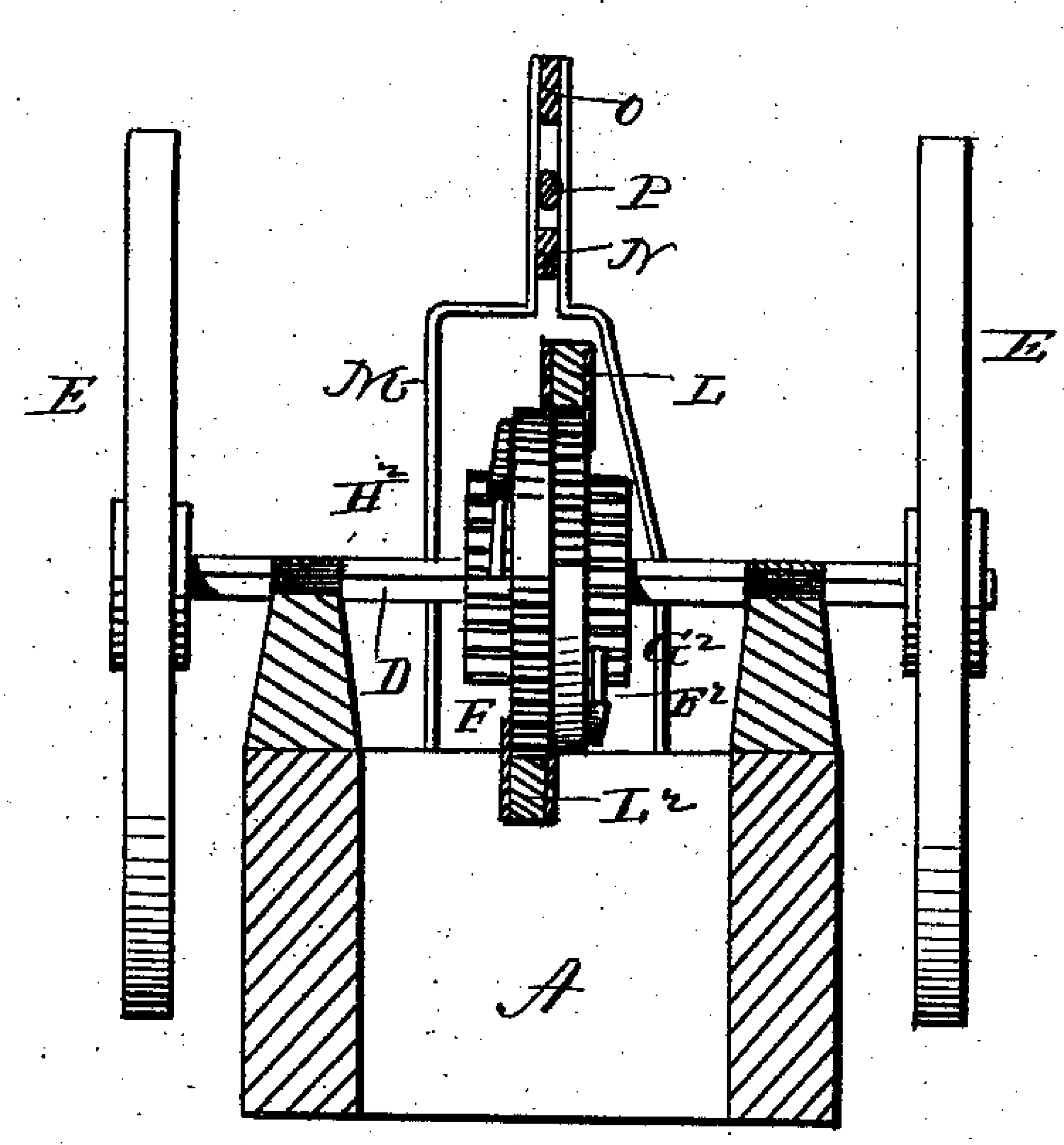


Fig. 4.



WITNESSES
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UNITED STATES PATENT OFFICE.

ELI CATLIN, OF POST OAK, TEXAS.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 292,471, dated January 29, 1884.

Application filed November 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELI CATLIN, a citizen of the United States, residing at Post Oak, in the county of Jack and State of Texas, have invented a new and useful Device for Converting Motion, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to devices for converting the reciprocating motion of the piston-rod in steam-engines into a rotary motion, and for operating the valve-gear; and it has for its object to produce mechanism which shall be simple, easily applied, and by which unnecessary expenditure of power shall be avoided, as will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of my invention as applied to a steam-engine. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal vertical sectional view. Fig. 4 is a vertical transverse sectional view on the line *x x* in Fig. 2.

The same letters refer to the same parts in all the figures.

A in the drawings designates the base or frame which supports the cylinder B, having valve-chest C, of ordinary construction.

D is the main shaft, which is journaled transversely in the frame B, and which carries the fly-wheels E E and pinions or toothed segments F F^2, which latter are mounted loosely upon the said shaft, so that they may revolve in either direction.

Secured firmly upon the shaft D, adjoining the outer sides of the pinions F F^2, are ratchet-wheels G G^2, that engage pawls or dogs H H^2, pivoted to the sides of the pinions F F^2, and having springs I, which bear against the teeth of the said ratchet-wheels, thus holding the pawls in engagement therewith.

J designates the piston-rod, which is provided at its outer end with a frame, K, the upper and lower sides of which are composed of rack-bars L L^2, engaging the pinions F and F^2, respectively. It will be seen that when the piston-rod moves in an outward direction it serves to revolve the pinion F, which, through its adjacent ratchet-wheel, serves to transmit a rotary motion to the main shaft upon which it is mounted, while the pinion F^2 revolves without influencing the shaft. When the piston-rod moves inward, the operation is reversed, and motion is transmitted to the main shaft through the pinion F^2 and its adjacent ratchet-wheel.

Supported upon the frame A are suitable uprights, M, which carry a pair of longitudinal beams, N and O, arranged one above the other, as shown. The said uprights are also provided with bearings for a longitudinally-sliding rod, P, the rear end of which is pivotally connected with a lever, Q, pivoted to the frame near the cylinder, as shown. Pivoted to the said rod P are two pairs of levers, R R^2 and S S^2. The levers R and S have slots *s*, working upon pins *p* upon the lower frame-beam, N, and the levers R^2 and S^2 are provided with slots *r*, working on pins *t* upon the upper frame-beam, O. The frame K is provided with a laterally-projecting pin, T, adapted to strike and operate the lever R^2. The lever S^2 is operated by the inner end of the frame K, and the upper side of the said frame is provided with a pair of pivoted latches, U U, facing in opposite directions, and held in a raised position by means of springs V V, so as to operate the levers R and S when the frame K reciprocates.

The operation of this invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. The lower end of the hand-lever Q is connected pivotally with the valve-stem W of the engine. When the piston-rod reciprocates, it conveys, through the mechanism herein described, a rotary motion to the main shaft. When the piston-rod, with the frame K, moves in an outward direction, and has nearly completed its stroke, the pin T of frame K will strike the lower end of the lever R^2, thus starting the rod P and partly reversing the valve. The motion, however, will be too quick and sudden to completely reverse the valve, and the reversion of the position of the latter will be completed by the action of one of the spring-latches U against the lever R, under which the said latch has slipped on the outward stroke of the piston-rod. When the piston-rod completes its inward stroke, the operation is repeated, with the exception that the levers S and S^2 are operated or acted against for the purpose of reversing the valve.

This invention is simple, and may be ap-

plied without much expense to steam-engines of ordinary construction. It economizes steam by the avoidance of dead-centers, rendering the action of the piston-rod direct at all points. The valve-gear also is simple and efficient.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The combination, with the piston of an engine and mechanism for converting its reciprocating motion into rotary, of a lever, Q, connected pivotally with the valve-stem, a slide-rod, P, attached to said lever, and a series of levers pivoted to the slide-rod and adapted to operate the valve-gear, substantially as set forth.

2. The combination of the piston-rod having the toothed frame K, the main shaft, the pinions mounted loosely upon the latter, the ratchet-wheels adjoining the said pinions, the spring-pawls pivoted to the latter, the valve, the lever Q, connected pivotally with the valve-stem, the frame-bars N O, the slide-rod P, the levers R R^2 S S^2, the pin T, projecting laterally from the frame K, and the spring-latches U U, mounted on top of the latter and facing in opposite directions, all arranged and operating substantially as and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ELI CATLIN.

Witnesses:
CHAS. H. WHITING,
R. A. CATLIN.