(No Model.)

E. A. MOON.

DEVICE FOR CONVERTING MOTION.

No. 381,160. Patented Apr. 17, 1888.

Fig. 1.

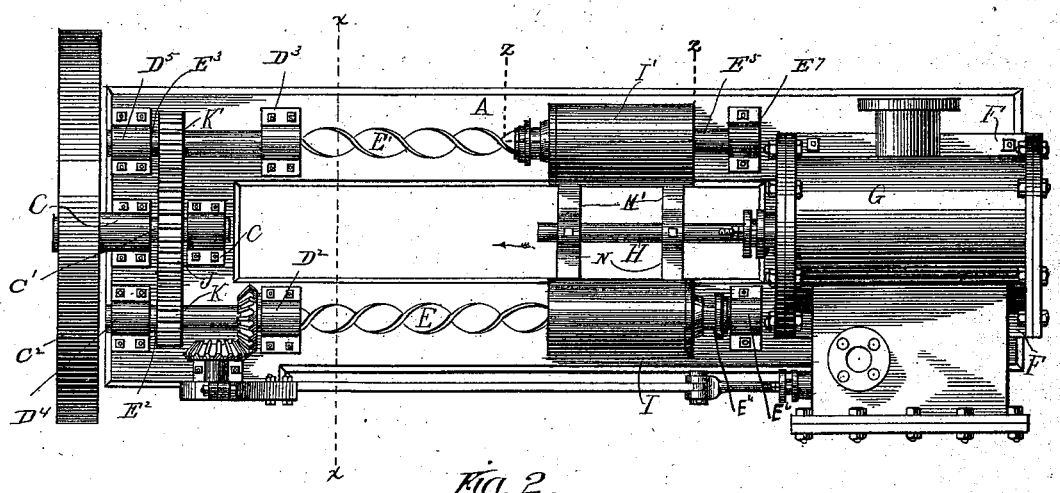


Fig. 2.

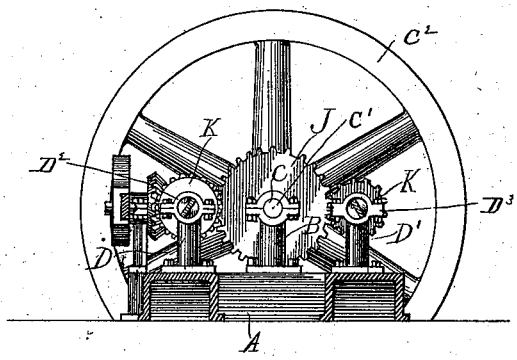
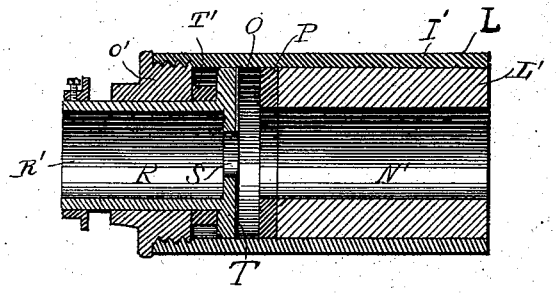


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

EDWARD ALMERON MOON, OF CHICAGO, ILLINOIS.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 381,160, dated April 17, 1888.

Application filed May 27, 1886. Serial No. 203,358. (No model.)

To all whom it may concern:

Be it known that I, EDWARD ALMERON MOON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Devices for Converting Motion, of which the following is a specification.

My invention relates to machines for changing reciprocating into rotary motion, and has for its object to provide convenient devices therefor.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the device embodying my invention. Fig. 2 is a cross-section through the line *x x*. Fig. 3 is a sectional view through the line *z z*, with the spiral shaft removed.

Like parts are indicated by the same letter in all the figures.

A is a frame or bed-piece, shaped as shown in Figs. 1 and 2. Upon this bed-piece the operative parts rest. B is a short standard thereon, supporting the boxing C, a similar standard being placed adjacent to the fly-wheel and supporting a similar boxing, C. Journaled in this boxing C is the shaft C′, upon which the fly-wheel C^2 is supported.

D and D′ are short standards resting on the frame or bed-plate and supporting the boxings D^2 and D^3, respectively. Similar standards are erected on the frame near the fly-wheel, supporting the boxings D^4 D^5. In these boxings are journaled the shafts E^3 E^2, each of which has a projecting end which is made in the form of a spiral, and lettered, respectively, E and E′. At the opposite end these spiral portions E and E′ terminate in short shafts E^4 and E^5, which are journaled in the boxings E^6 E^7, which boxings are supported upon short standards similar to the standards D D′. Upon the shaft E^2 is placed the pinion K, which meshes with the pinion J on the shaft C′, which in turn meshes with the pinion K′ on the shaft E^3.

G is a steam-cylinder, from which protrudes the piston H, having the arms N′ and N, to which are secured, respectively, the friction-clutches I′ and I. These clutches, as will be seen by inspection of Fig. 1, are turned in opposite directions, and, as will be seen by the description hereinafter, are calculated to operate in opposite directions.

Referring to Fig. 3, a cross-section on the line *z z* of Fig. 1, and in which the parts are the same as in the clutch I, though turned in the opposite direction, L is an outer sheath or cylinder containing the inner cylindrical portion, L′, rigid therewith, the packing P, the space O, and the end piece, O′.

R is a sliding cylindrical clutch-piece, having the aperture R′ and the hole S, the flanged inner end, T, and is encircled by the packing T′.

N′ is a central aperture through the cylindrical portion L′.

The use and operation of my invention are as follows: The shafts having the central spiral portion and their ends circular in cross-section are mounted, respectively, upon the bearings provided for them, as shown in Fig. 1, and the short shaft to which the fly-wheel is attached is mounted upon the bearing or supporting posts between them, the three pinions K, J, and K′ meshing. The piston H is now set in operation by means of the steam-cylinder G in the usual manner, so as that it reciprocates backward and forward parallel with the shafts. To its arms N and N′ are secured the clutches I and I′, each internally structured as shown in Fig. 3, while the clutch I is in the opposite or reversed position, as indicated in Fig. 1. When the piston moves in the direction indicated by the arrow in Fig. 1, the spiraled portion of the shaft passes through the aperture R′, the hole S of the aperture N′, and thus through the clutch I′ and through the clutch-piece R. The hole S, as indicated in Fig. 3, is smaller than the aperture R′ and N′, and is adapted to just receive the spiral shaft. Now, when the motion in the direction of the arrow is imparted to the clutch I′ and the spiral shaft passes through the hole S by reason of the friction between the sides of the said shaft and the sides and edges of the hole S, the clutch-piece R is forced back, so that its enlarged end T rests against the packing-ring P, thereby being locked in position so as not to rotate within the clutch proper, I′. The further motion of the clutch I′ in the direction of the arrow will of course cause the shaft to rotate so long as its spiraled portion is within the hole S, which is until the end of the stroke.

Thus the shaft E^3 is rotated and pinion K′ is put in motion, thus imparting motion to the short shaft and to the fly-wheel, from which motion is communicated by belt or crank, as it may be desired, so that the reciprocating motion of the steam-engine is transformed into the rotary motion of the fly-wheel. The reverse motion of the steam-cylinder piston carries the friction-clutch I′ in the opposite direction and immediately frees the flange T from the packing-ring P, so that, instead of the shaft rotating, the clutch-piece R′ will rotate within the end piece, O′. During this action of the clutch I′ the clutch I will of course operate its shaft, as they are set so as to reverse. As seen by inspection, the spiraled portions of the two shafts are spiraled in opposite directions, so that the operation of both shafts and both pinions K′ and K is to drive the pinion J always in the same direction; hence continuous rotary motion is imparted to the fly-wheel C^2.

Relative to some of the parts shown in Fig. 1, I have not entered upon any elaborate description thereof, for the reason that said parts are too well known to require description.

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

In a device for transforming reciprocating into rotary motion, the combination of a piston for imparting reciprocating motion with two spiraled shafts journaled parallel with the reciprocating part, two clutches, one on each spiral shaft, set so as to operate the shafts, one while moving in one direction, the other in the other, both of said clutches being secured to the reciprocating part, and suitable pinions, shafts, and wheels, whereby the rotary motion of the spiral shaft is communicated, so as to impart a continuous rotary motion to a fly-wheel.

Signed this 19th day of May, 1886, at Chicago, Illinois.

EDWARD ALMERON MOON.

Witnesses:

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