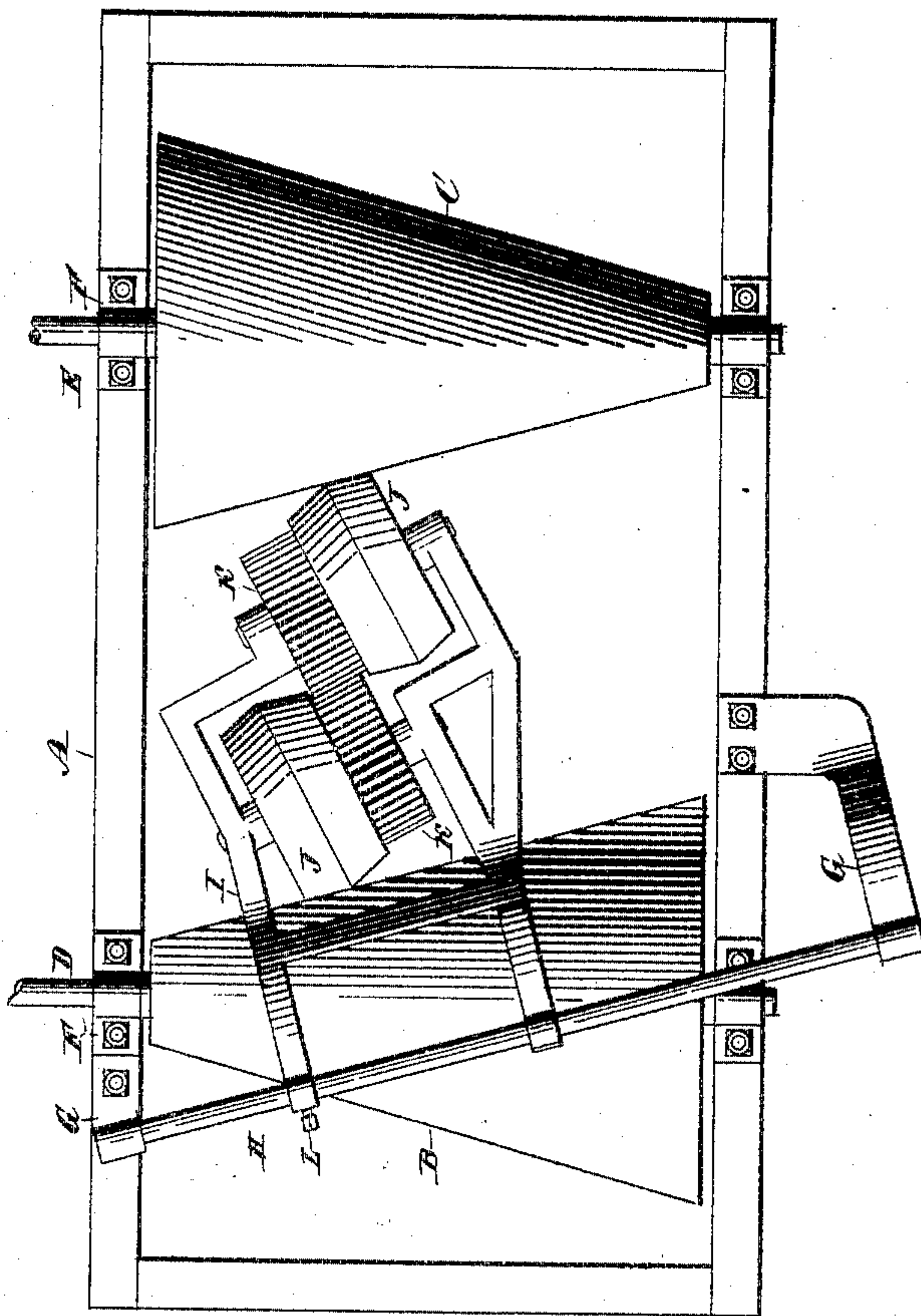


No. 777,663.

PATENTED DEC. 20, 1904.

E. J. CHRISTIE.
MOTION TRANSMITTER.
APPLICATION FILED MAY 4, 1904.

NO MODEL.



Witnesses.

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UNITED STATES PATENT OFFICE.

ELZA J. CHRISTIE, OF MARION, IOWA.

MOTION-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 777,663, dated December 20, 1904.

Application filed May 4, 1904. Serial No. 206,422.

To all whom it may concern:

Be it known that I, ELZA J. CHRISTIE, a citizen of the United States, residing at Marion, in the county of Linn and State of Iowa, have
5 invented certain new and useful Improvements in Motion-Transmitters, of which the following is a specification.

This invention relates to mechanism for transmitting motion, especially rotary motion,
10 at any desired change in speed and without shock in starting or stopping.

This invention embodies certain novel means for transmitting motion from one cone to another, changing the relative speeds at will,
15 and reversing the movement of the driven as respects the driving cone.

The full nature of the invention will clearly appear in the description and claims following, reference being had to the accompanying
20 drawing, which shows in one plan view all the essential features of the present invention.

In the drawing, A designates a rectangular frame in which is mounted a pair of alternately-disposed cones B and C on suitable
25 axes D and E, respectively journaled in bearings F. The axes of the cones are parallel and the cones of the same pitch as here represented. In any case the center line of the cone-faces nearest each other should be parallel.
30

In suitable bracket-arms G is mounted a guide-rod H, and on this is mounted to slide endwise and also to turn a limited distance a hanger I. In this hanger is journaled a pair
35 of conical-faced friction-wheels J, to which motion is positively imparted from one to the other by gears K. When in working position, one of these conical wheels bears against the face of the cone B and the other against
40 the corresponding face of the cone C. It is evident that the rotation of the respective cones by contact with said friction-wheels is in opposite directions.

By shifting the hanger endwise on the shaft
45 the relative speed of the cones may be varied at will. This may be done in a simple way

by loosening the set-screw L, raising the hanger, so as to free the friction-wheels from contact with the cones, and then moving endwise as far as desired, again depressing the
50 hanger, and setting it in position.

The invention seeks, in so far as possible, to secure theoretical concurrence of movement between the cones and the engaging friction-wheels. This is not quite possible practically in a speed-shifter; but this invention
55 illustrates a satisfactory approach to it. Attention is called to the fact that the friction-wheels are parts of cones whose taper is in the same direction as that of the cones which
60 they engage. It follows that when set at some point along the cone the projected angles of the cone and friction-wheel will exactly coincide when the action of the cone and wheel are theoretically correct—that is
65 to say, they roll on each other without slippage in any part of the periphery of either. This condition of course changes to some extent as the friction-wheel is moved along the cone in either direction from this point; but
70 for all practical purposes the twisting slip is so slight as to be disregarded. The practical result of the construction is to secure the maximum of frictional surface with the minimum of this twisting slip.
75

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

1. In a motion-transmitter, the combination of a pair of cones alternately disposed, and a
80 pair of conical-faced friction-wheels, mutually engaged, and revolving in opposite directions, mounted between said cones, each wheel engaging a cone, whereby the cones are made to revolve in opposite directions.
85

2. In a motion-transmitter, the combination of a pair of oppositely-revolving, conical-faced friction-wheels provided with intermeshing gearing, and alternately-disposed cones engaging each the outer face of one friction-wheel, substantially as and for the purpose
90 set forth.

3. In a motion-transmitter, the combination
of a pair of alternately-disposed cones, a pair
of alternately-disposed, conical-faced friction-
wheels, mutually engaging, and revolving in
5 opposite directions, mounted between said
cones, each wheel engaging an adjacent cone,
and a hanger in which the wheels are mount-
ed, with a guide therefor parallel with the in-

ner faces of the cones, whereby the friction-
wheels may be shifted, as described. 10

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

ELZA J. CHRISTIE.

Witnesses:

JACOB R. CHRISTIE,

INEZ J. CHRISTIE.