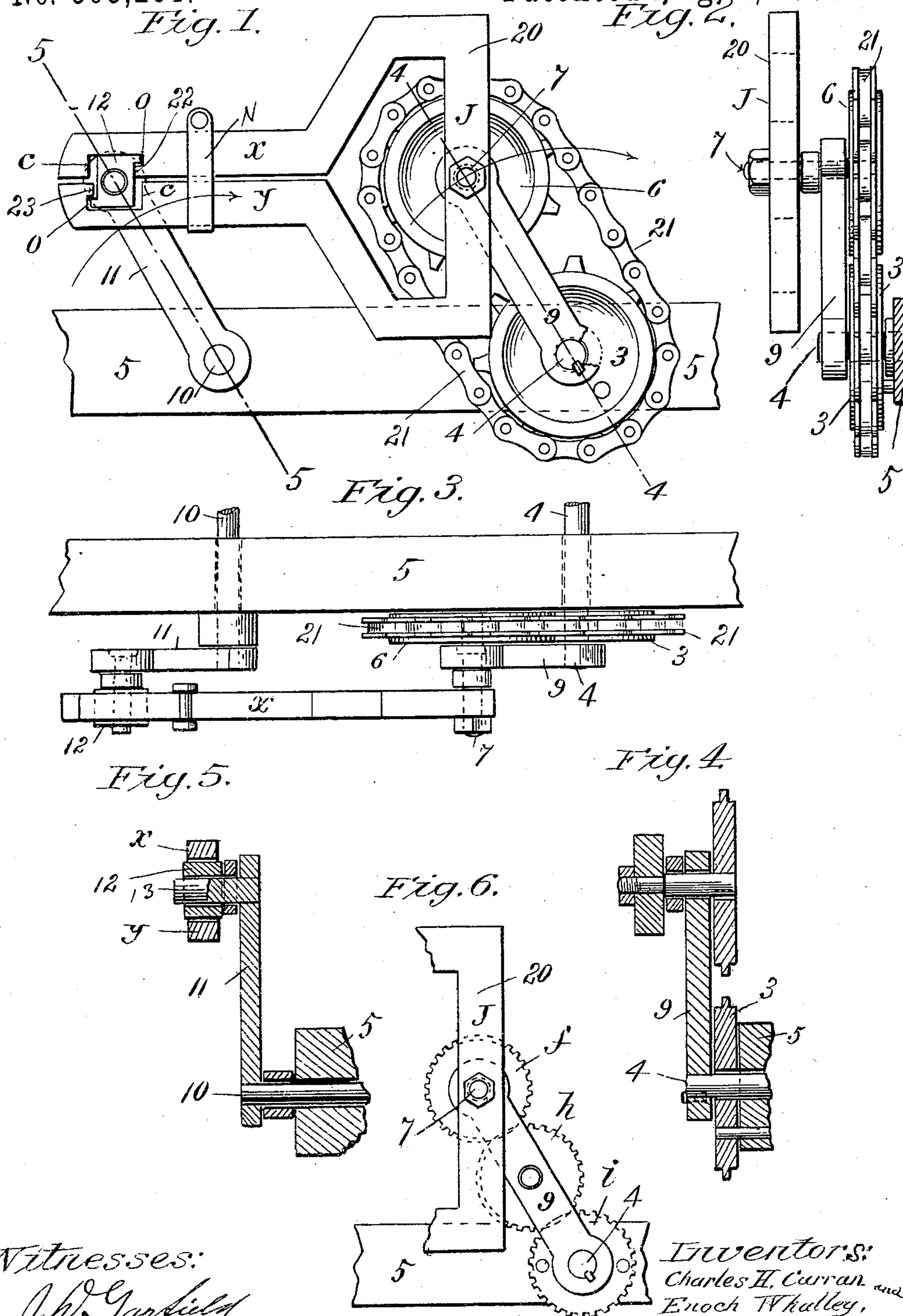


(No Model.)

C. H. CURRAN & E. WHALLEY.
CRANK AND PITMAN CONNECTION.

No. 565,261.

Patented Aug. 4, 1896.



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UNITED STATES PATENT OFFICE.

CHARLES H. CURRAN AND ENOCH WHALLEY, OF HOLYOKE, MASSACHUSETTS.

CRANK-AND-PITMAN CONNECTION.

SPECIFICATION forming part of Letters Patent No. 565,261, dated August 4, 1896.

Application filed January 29, 1896. Serial No. 577,280. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. CURRAN and ENOCH WHALLEY, citizens of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Crank-and-Pitman Connections, of which the following is a specification.

This invention relates to pitman-and-crank connections, the object being to provide improved crank-and-pitman mechanism for connections between main driving-shafts and counter or secondary shafts, whereby increased lever force is made available upon the driven crank in approaching and passing points vertical to the axis of the driven shaft; and the invention consists in the peculiar construction and arrangement of the pitman mechanism and contiguous parts, all as hereinafter fully described, and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of a crank-and-pitman connection between a driving and a driven shaft. Fig. 2 is a right-hand end view of Fig. 1. Fig. 3 is a top plan view of Fig. 1. Fig. 4 is a section taken on line 4 4, Fig. 1. Fig. 5 is a section taken on line 5 5, Fig. 1. Fig. 6 is a modification of the construction shown in Fig. 1, showing the same relation of crank-and-pitman connection as in Fig. 1.

In the drawings, 5 indicates a part of any suitable frame supporting the driving-shaft 10 and the driven shaft 4. Both of said shafts are supported for rotation within suitable bearings in said frame 5.

3 is a sprocket-wheel fixed to the frame 5 by a pin, as shown, or in any suitable manner. Shaft 4 extends through said sprocket and turns freely therein. A crank 9 is secured by a key to the end of the shaft 4, which projects through the sprocket 3. A crank 11 is fixed on the end of said shaft 10, the opposite end of said crank engaging with a wrist-pin 13 in the bearing-box 12 of the pitman J. A stud 7, fixed in the pitman J, has a sprocket-wheel 6 non-rotatably secured on the end thereof by a key or other suitable means, the said free end of the crank 9 fitting loosely on that portion of the said stud 7 between the sprocket-wheel 6 and the pitman J.

A sprocket-chain 21 is applied to the two fixed sprockets 3 and 6, and serves only to maintain in the same relative position the one to the other the two cranks 9 and 11. Said pitman J forms a practically rigid connection between the cranks 9 and 11, fixed on shafts 4 and 10, and consists of a perpendicular portion 20, whose upper and lower extremities are bent over in the same direction and then toward each other, and then extended as two parallel arms x and y at right angles to the part 20 and opposite the center thereof. Said arms x and y are not in contact with each other at any point. Near the extremities of said two parallel arms a bearing-box socket is provided, one-half thereof in each of said arms x and y . Said socket is so constructed as to take the thrust of the bearing-box 12 against the point 22 on the arm x , when the cranks 9 and 11 move in the direction indicated by the arrows in Fig. 1, and during this movement the box 12 has no bearing against the arm y of the pitman, as the socket in said arm y is cut away at c ; and when said box 12 is acting on the arm y said box has no bearing on the arm x , as the socket in that part is also cut away at c , as in the arm x . As soon as the said cranks pass below the horizontal center line of the shafts 4 and 10 the thrust of said bearing-box is shifted to the arm y of the pitman on the point 23 thereof. A metal strap N is applied to the said two arms x and y to prevent any separation thereof, as each in its turn receives the thrust of the said box 12.

Diagonally opposite each other, in the bearing-box socket in the two arms x and y of the pitman J, recesses $o o$ are formed, and said box 12 has projections thereon, as shown, for engagement with the said recesses, whereby said box is temporarily engaged with each of said arms x and y as the said cranks pass over the vertically central lines of the shafts 4 and 10.

By the construction of a pitman connection as above described each end of the vertical part of the said pitman above and below the stud 7 becomes practically an elongation of the crank 9 during each half of one revolution of said crank, the maximum elongation being reached when the crank is in a vertical line above or below its shaft, and said elonga-

tion decreasing in proportion to the approach of either of the extremities of said vertical portion 20 of the pitman to the shaft 4. The said modified construction illustrated in Fig.

5 6 consists in substituting the gears *f*, *h*, and *i* for the said sprocket-wheels 3 and 6 and their chain 21, said gears being adapted to effect the retention of the cranks 9 and 11 in their relative positions in the same manner
10 as do the said sprocket wheels and chain, the said gears *f* and *i* being rigidly secured to their shafts and the gear *h* revoluble on its stud.

Having thus described our invention, what
15 we claim, and desire to secure by Letters Patent, is—

1. The within-described pitman connections consisting of the two parallel arms *x*, *y*, and their vertically-disposed connecting part
20 20, integral therewith, combined with a crank-connecting stud fixed in said vertical part 20, centrally between the ends thereof, a sprocket-wheel fixed on said stud, a second non-rotatable sprocket-wheel supported near said
25 first-named sprocket-wheel, and a chain engaging said two sprocket-wheels, a driving and a driven shaft, a crank connecting said

driving-shaft with the extremities of said two parallel arms, and a crank connecting said driven shaft with said stud, substantially as 30 described.

2. The within-described crank-and-pitman connections consisting of a driving-shaft and a driven shaft, each having a crank fixed thereon, a pitman consisting of the two arms 35 *x* and *y*, united by the vertical part 20, integral therewith, suitable connections between the ends of said arms *x* and *y*, and the free ends of one of said cranks, and between the stud 7, and the free end of the other of said 40 cranks, and means for maintaining the arms of said pitman in a horizontal position consisting of a toothed wheel fixed on said stud 7, and a second toothed wheel non-rotatably secured in a position concentric with said 45 driven shaft, and suitable means of connection between said two toothed wheels, substantially as shown and described.

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