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E. T. STEWART.

MECHANICAL MOVEMENT.

(Application filed Apr. 24, 1900.)

(No Model.)

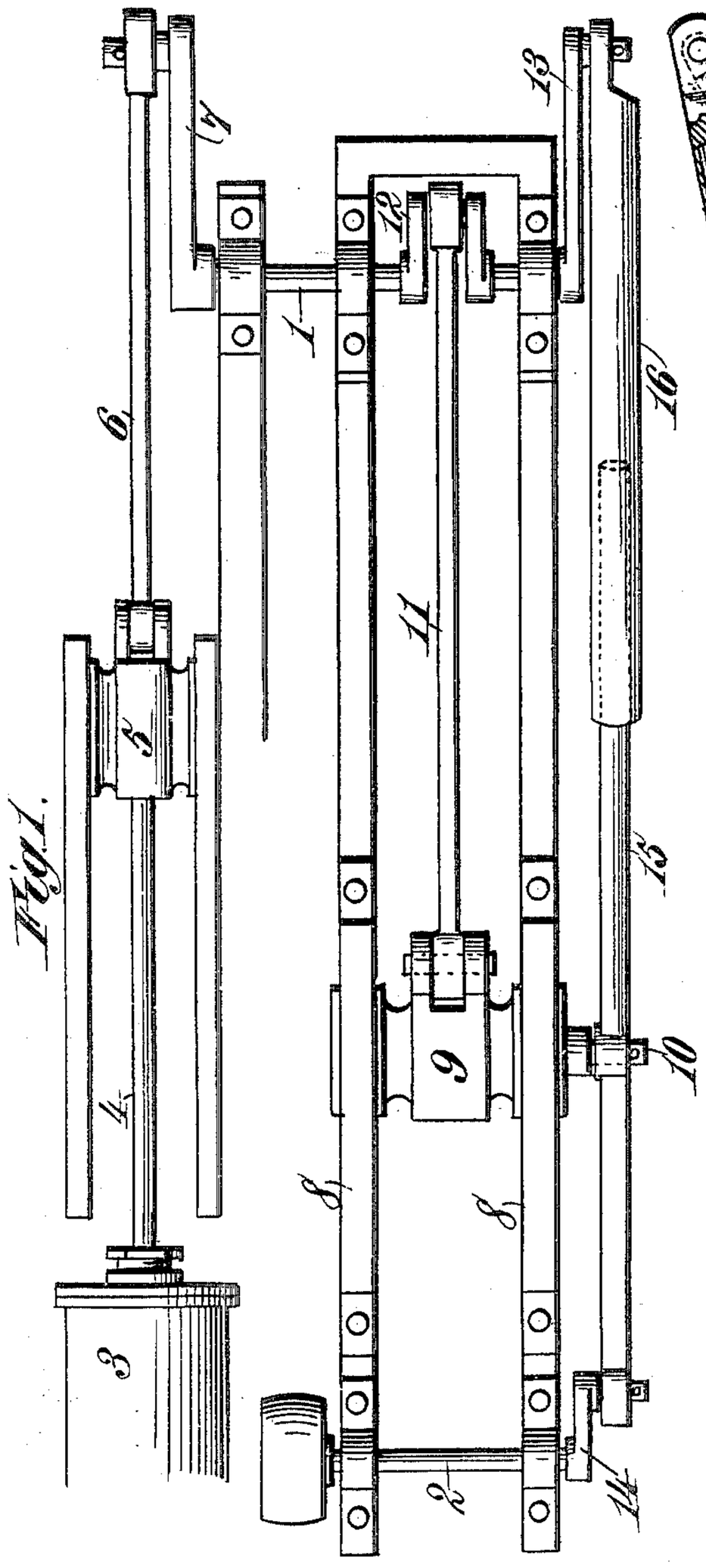

Fig. 1.

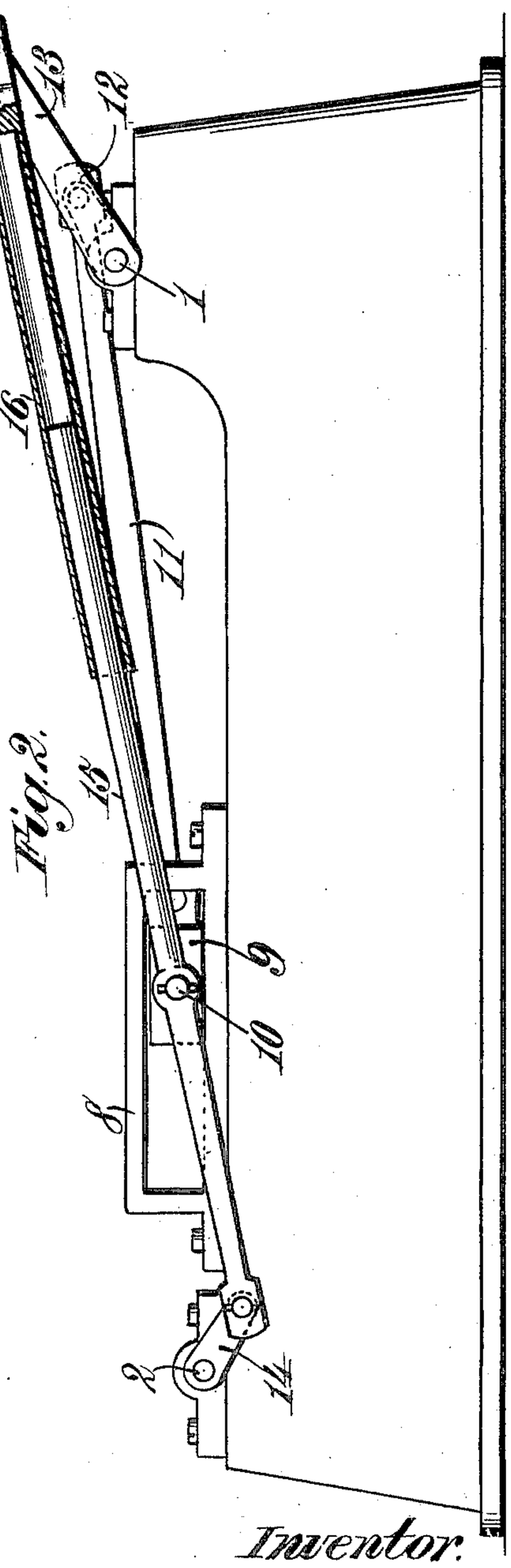

Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

ELISHA T. STEWART, OF POETRY, TEXAS.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 659,993, dated October 16, 1900.

Application filed April 24, 1900. Serial No. 14,118. (No model.)

To all whom it may concern:

Be it known that I, ELISHA T. STEWART, a citizen of the United States, residing at Poetry, in the county of Kaufman and State of Texas, have invented new and useful Improvements in Mechanical Movements, of which the following is a specification.

This invention relates to an improved mechanical movement, and has for its object to provide improved means for transmitting motion from one shaft to another in such manner that the maximum amount of power applied to the driving-shaft will be transmitted to the driven shaft in the most effective manner, thereby utilizing the highest possible percentage of the power developed by the prime motor to perform the work to be accomplished.

To this end my invention consists in the features and in the construction, combination, or arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a top plan view showing my invention embodied in an operative structure by way of illustration; and Fig. 2 is a view in elevation, partly in section, of the same.

Referring to the drawings, the numeral 1 indicates a driving-shaft, and 2 a driven shaft, the power from the prime motor being applied directly to the driving-shaft 1 and the power of the driven shaft being utilized for performing the work to be accomplished. The driving-shaft may be actuated in any suitable manner and by any preferred or approved means; but for the sake of illustration I have herein shown the same as being driven by an ordinary reciprocating engine 3, the piston 4 of which is attached to a cross-head 5, and to the cross-head is attached one end of a pitman 6, the other end of said pitman being connected to a crank 7 on the driving-shaft 1. Arranged to travel in suitable ways 8 is a reciprocating carriage or slide-block 9, carrying a trunnion 10, said carriage being reciprocated back and forth in its ways by a connecting-rod 11, one end of which is pivoted to said carriage and the other end journaled on a crank 12 on the driving-shaft 1. A crank 13 is fixed on the driving-shaft 1, and preferably has a greater throw than the pitman-crank 12, and on said crank 13 is journaled one end of a lever, the other end of which is journaled on a crank 14, fixed on the driven shaft 2, said lever being fulcrumed intermediate its ends on the trunnion 10, carried by the carriage 9. As shown, the lever is a telescopic lever—that is to say, it comprises two parts or sections 15 and 16, the part 15 being attached at one end to the crank 14 and fulcrumed intermediate its ends on the shifting fulcrum 10, and on the other end of the section 15 is sleeved the tubular section 16, the outer end of which is journaled on the crank 13. The tubular section 16 is arranged to freely slide on the section 15, and the two form a telescopic lever adapted to be freely contracted and extended to compensate for the difference in throw of the cranks 13 and 14.

The power of the engine or other prime motor is transmitted by the cross-head 5 and pitman 6 to the driving-shaft and rotates the latter. The crank 13 rotates with the driving-shaft and causes the end of the telescopic lever 15 16 to travel in a circular path, and thus oscillates said lever about its fulcrum 10. The fulcrum 10, however, reciprocates back and forth in unison with the cross-head 5, through the medium of its described connection with the drive-shaft, and hence the combined oscillating movement of the telescopic lever and the reciprocating or shifting movement of its fulcrum communicates rotary movement to the driven shaft 2. As shown, the cranks 12 and 14 are set opposite to each other. Hence the shafts 1 and 2 will be rotated in opposite directions, and it will also be noted that the driven shaft can never be on a dead-center, for when the cranks 12 and 14 are in alinement the carriage and the fulcrum of the telescopic lever will be momentarily stationary between their reverse movements, and at such time the telescopic lever will be exerting its most effective leverage to rotate the driven shaft. It also results from such an arrangement that the rotary movement of the driven shaft is more uniform than where the shaft is driven directly by a crank and pitman, for as the cranks are approaching a position in which they will be in alinement or when they will exert the least power and produce the slowest

movement of the shaft 2 the telescopic lever will be exerting its greatest force on the crank of the driven shaft and will be communicating the greatest movement thereto. For the several reasons stated the movement of the driving-shaft will be communicated to the driven shaft in the most effective manner and in a manner to utilize the highest possible percentage of the power developed by the prime motor.

I have shown the device arranged to be used in connection with an ordinary type of reciprocating engine; but it will be readily understood that it may be used in connection with any type of engine, motor, or means for producing and utilizing power, or in any case where it is desired to transmit power from its source of generation to the work to be done. Furthermore, the cranks and telescopic lever may be made of any length or size, and the fulcrum of the telescopic lever may be arranged at any distance from the driven shaft.

It will be obvious to those skilled in the art that the engine-cylinder, cross-head, and pitman may be duplicated—that is to say, a similar cylinder, cross-head, and pitman may be arranged on the opposite side of the frame and connected with the driving-shaft, thereby driving the latter from a double-cylinder engine.

Having described my invention, what I claim is—

1. The combination with a cranked drive-shaft and a cranked driven shaft, and means for rotating the drive-shaft, of a telescopic lever journaled at its opposite ends on the cranks of the drive and driven shafts, and pivoted intermediate its ends on a shifting fulcrum, substantially as described.

2. The combination with a cranked drive-shaft and a cranked driven shaft, of a telescopic lever journaled at its opposite ends on the cranks of the drive and driven shafts and pivoted intermediate its ends on a shifting fulcrum, and means for shifting the fulcrum synchronously with the movement of the crank on the drive-shaft, substantially as described.

3. The combination with a cranked drive-shaft, a reciprocating carriage and a connecting-rod connecting said crank and carriage, of an auxiliary crank on the drive-shaft, a cranked driven shaft, and a telescopic lever pivoted intermediate its ends on a fulcrum on the carriage and journaled at its opposite ends respectively on the crank of the driven shaft and the said auxiliary crank, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELISHA T. STEWART.

Witnesses:
T. L. FRANK,
H. L. STEWART.