

S. M. FULTON.

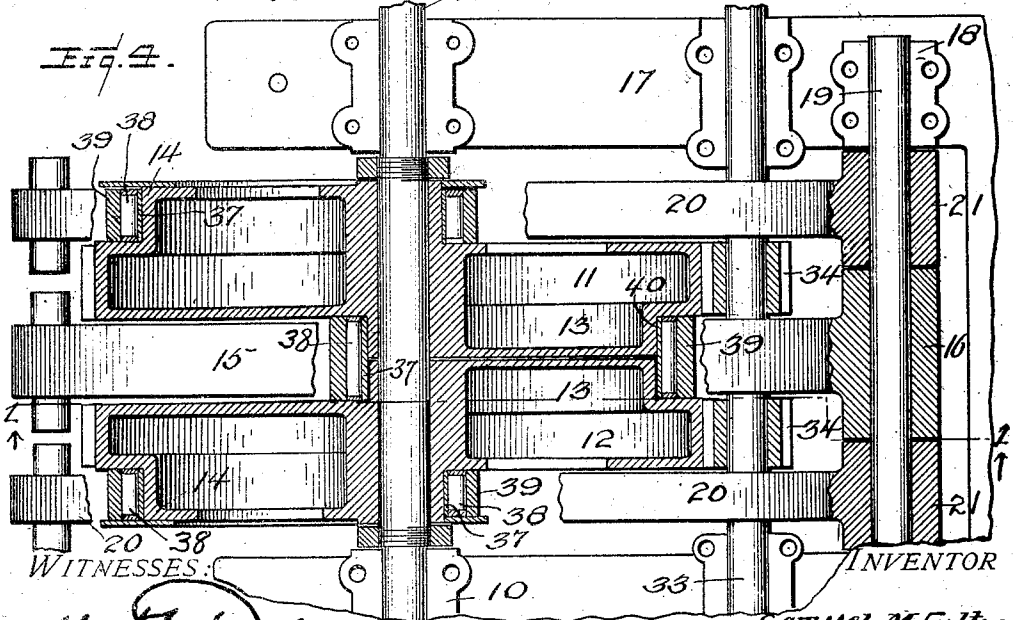
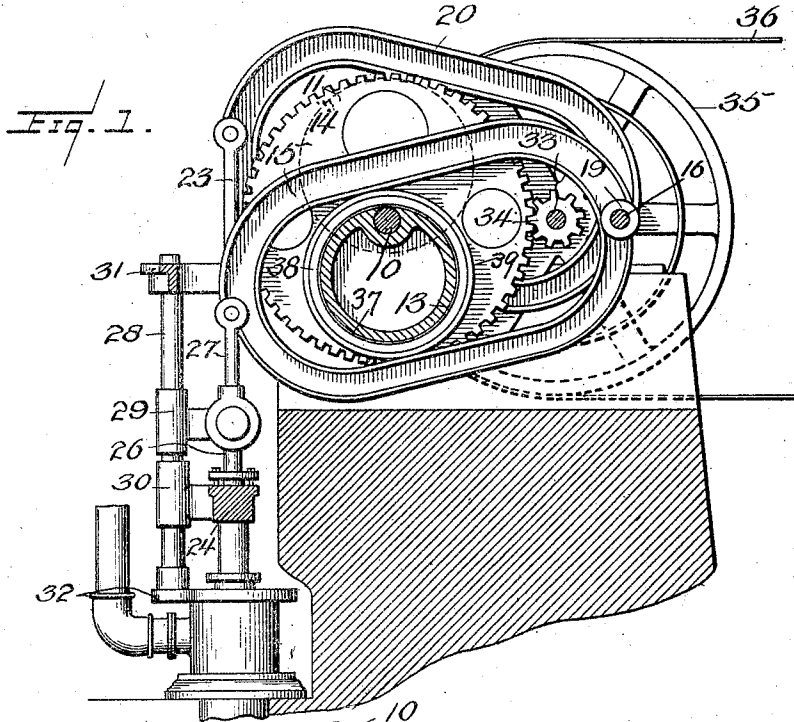
PUMPING HEAD.

APPLICATION FILED FEB. 21, 1910.

997,445.

Patented July 11, 1911.

2 SHEETS—SHEET 1.



WITNESSES:

Alfred T. Gage.

BY

Samuel M. Fulton
E. B. Stocking
Attorney

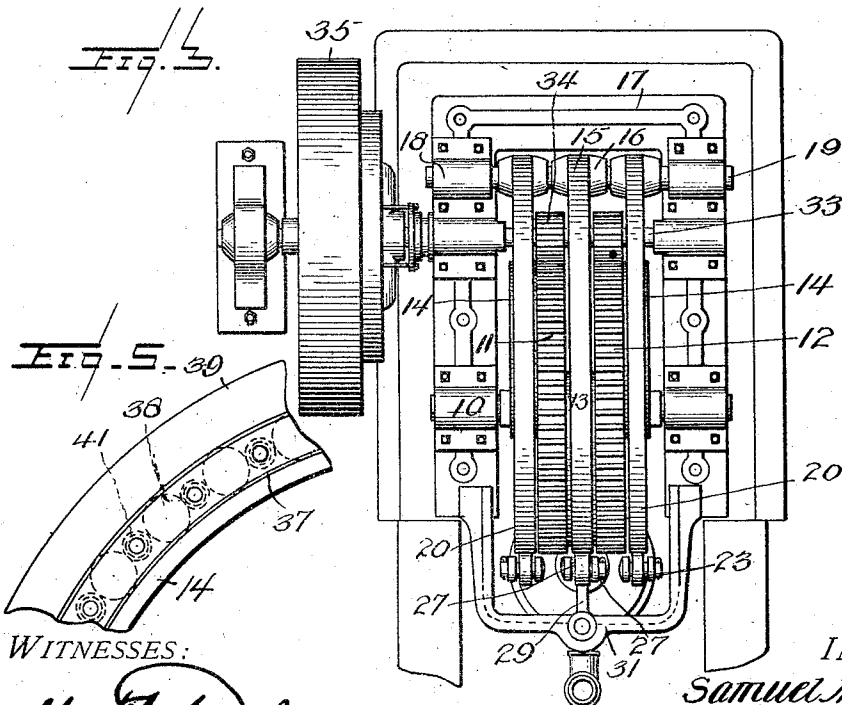
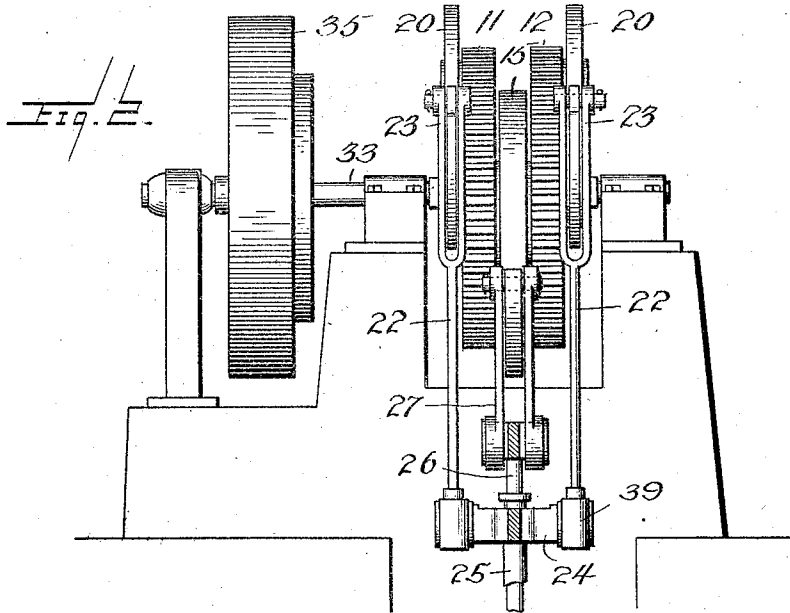
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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SAMUEL M. FULTON, OF POMONA, CALIFORNIA.

PUMPING-HEAD.

997,445.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed February 21, 1910. Serial No. 545,116.

To all whom it may concern:

Be it known that I, SAMUEL M. FULTON, a citizen of the United States, residing at Pomona, county of Los Angeles, State of California, have invented certain new and useful Improvements in Pumping-Heads, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to a pump head and particularly to a construction adapted to operate a plurality of pistons.

The invention has for an object to provide a novel and improved construction 15 having upon a single shaft a plurality of driving gears each provided upon their adjacent faces with a cam adapted to actuate a walking beam and upon their outer faces with a similar cam.

20 Another and further object of the invention is to provide upon the driving shaft cams disposed within oval yokes connected to the pump pistons, said cams being disposed to produce alternate movement thereof.

25 Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings—Figure 1 is a vertical 30 section through the invention as applied to a pump on line 1—1 of Fig. 4; Fig. 2 is an elevation at the left end of Fig. 1; Fig. 3 is an elevation of the pump head; Fig. 4 is an enlarged horizontal section through the 35 driving gears with the beams in partial elevation; and Fig. 5 is a detail section showing the roller bearing upon the eccentrics.

Like numerals of reference refer to like parts in the several figures of the drawings.

40 The numeral 10 designates the shaft of the pump head upon which the gears 11 and 12 are secured, each being provided upon their adjacent faces with a cam 13 and upon their outer faces with a cam 14. The cams 45 13 are adapted to contact with an oval oscillating yoke 15 which is pivotally mounted at 16 upon a shaft 19 mounted in bearings 18 at one end of the frame 17.

The cams or eccentrics 14 are adapted to 50 actuate yokes or beams 20 which are pivotally mounted at 21 upon the shaft 19. These beams are each provided with rods 22 having a bifurcated connection 23 therewith and are connected by a cross head 24 55 adapted to actuate a pump piston through the sleeve 25. The beam 15 is connected

with a pump rod 26 by means of the links 27 and the eccentrics carried by the gears are so disposed as to produce an alternation in the direction of movement of the mem- 60 bers carried by the sleeve 25 and piston rod 26. The movement of these parts is maintained in a vertical plane by means of a guide rod 28 upon which a sleeve 29 from the rod 26 is mounted and also a sleeve 30 65 from the cross head 24. This guide rod is mounted in suitable bearings 31 and 32 at its opposite ends. The gears 11 and 12 are driven from a shaft 33 by means of pinions 34 thereon, this shaft being provided with a 70 driving pulley 35 of any ordinary construction to which power may be applied through the belt 36 shown in Fig. 1.

Surrounding each of the eccentrics is a 75 collar 37 which provides a bearing surface for the roller bearings 38 and these bearings are inclosed within a loosely mounted ring 39 which is in frictional contact with the yokes or beams 15 and 20 so as to produce an oscillation thereof in the travel of the 80 cams or eccentrics. The collar 37 is secured to the eccentrics 14 while the collar upon the opposite eccentrics 13 is secured to one thereof at 40 and loosely mounted upon the opposite one so that they can be taken 85 apart easily or to compensate for any difference in travel or action between the beams 20 and the beam 15 and thus prevent distortion or friction in case the movement of the piston rods is not in a true or straight line. 90 As shown in Fig. 5, the roller bearings 38 comprise a series of rollers separated by tubes 41 which space the rollers and provide for their movement in the same direction. The eccentrics disposed upon the op- 95 posite sides of the gears 11 and 12 are shown as disposed at an angle of one hundred and eighty degrees from each other but they may be disposed in any desired relation to each other to effect the preferred operation of the 100 pump piston or other parts driven thereby.

In the operation of the invention, it will be seen that the gears carrying the driving eccentrics are actuated from a single shaft 105 so as to secure a motion in unison and the beams or yokes surrounding these eccentrics are also mounted upon a common pivot, thus securing a parallel travel thereof and a direct application of power to the parts to be 110 driven thereby. While an eccentric has been shown as the driving means for the beams, any mechanical equivalent thereof may be

substituted and the construction provides means for imparting simultaneous movement in opposite directions to any mechanism to be driven, for instance a pump as shown.

- 5 The roller bearing interposed between the eccentric and beam overcomes the friction due to a sliding bearing and provides a more efficient means for actuating the beams. It will, therefore, be seen that the invention
10 presents a simple, efficient and economically constructed form of pump head by which a plurality of beams are driven from parallel gears by providing the opposite faces of these gears with driving connections for the
15 beams.

Having described my invention and set forth its merits, what I claim and desire to secure by Letters Patent is—

1. In a pumping head, parallel gears each
20 having driving eccentric means upon the inner and outer side faces thereof, an oscillating member disposed to engage the inner eccentric of each gear, a plurality of oscillating members engaging the outer eccentric
25 of each gear, and driving connections from each of said members.

2. In a pumping head, parallel gears each having driving eccentric means upon the inner and outer side faces thereof, a beam dis-
30 posed to engage the inner eccentric of each gear, a plurality of independently pivoted

beams engaging the outer eccentric of each gear, and driving connections from said beams.

3. In a pumping head, parallel gears each
35 having driving eccentrics upon the inner and outer faces thereof, a ring surrounding each of said eccentrics, roller bearings disposed between said rings and eccentrics, a pivoted yoke disposed to engage the ring
40 embracing the inner eccentric of each gear, a plurality of independently pivoted yokes engaging the ring surrounding the outer eccentric of each gear, and driving connections from said yokes.
45

4. In a pumping head, a frame, a shaft mounted thereon, parallel gears secured to said shaft, eccentrics disposed upon the opposite side faces of each of said gears, a driving shaft provided with pinions to rotate
50 said gears in unison, a yoke beam embracing the adjacent eccentrics upon the inner faces of said gears, and independent yoke beams engaging the eccentrics upon the outer faces of said gears.
55

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

SAMUEL M. FULTON.

Witnesses:

EARL STANDARD,
W. A. McCORMICK.