

(No Model.)

T. CURLEY.
DRIVE GEAR.

No. 586,991.

Patented July 27, 1897.

Fig-1-

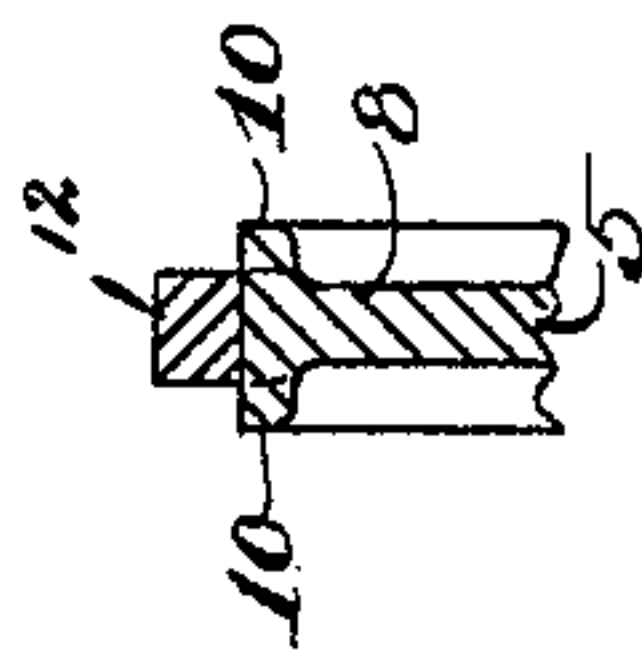
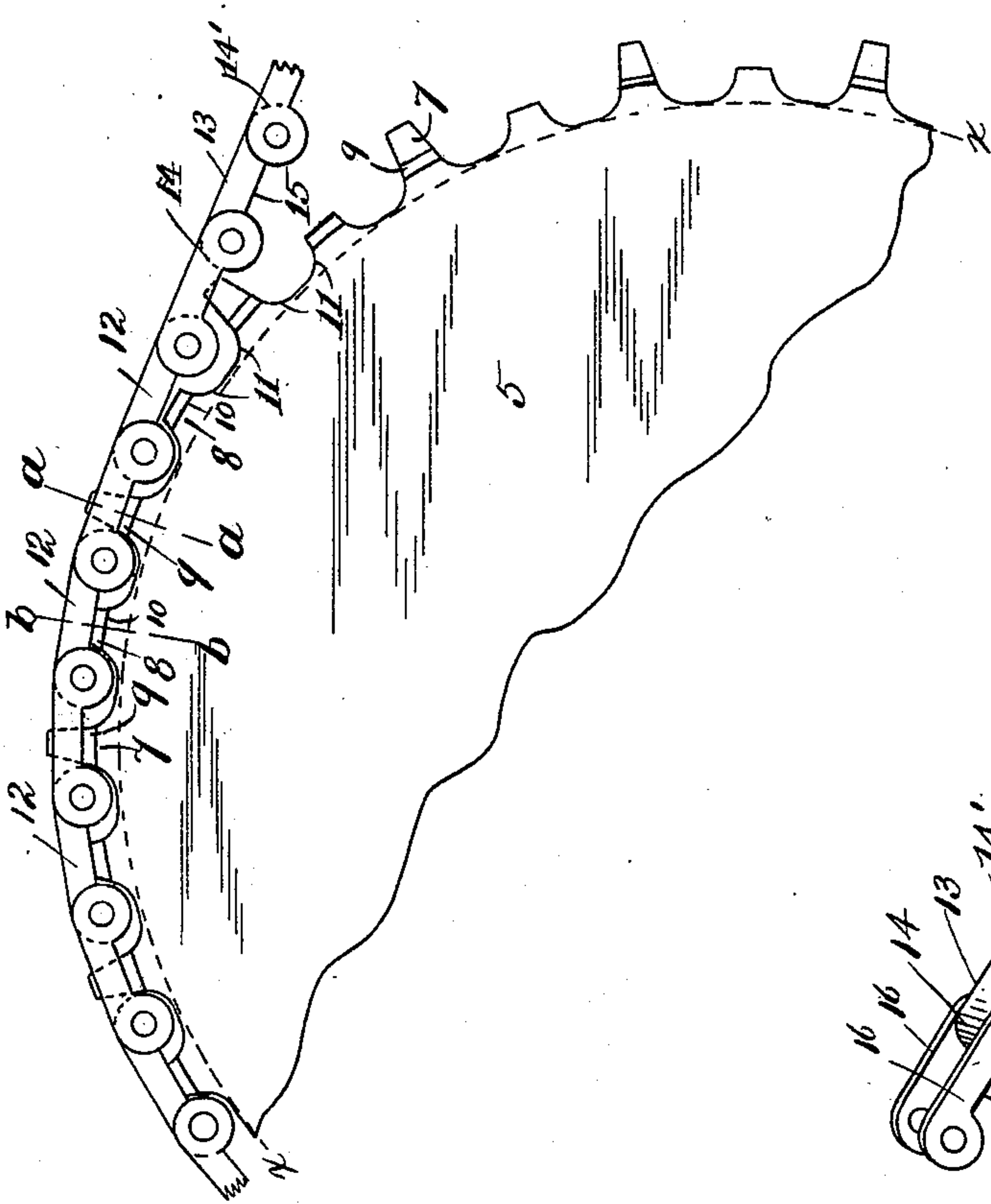
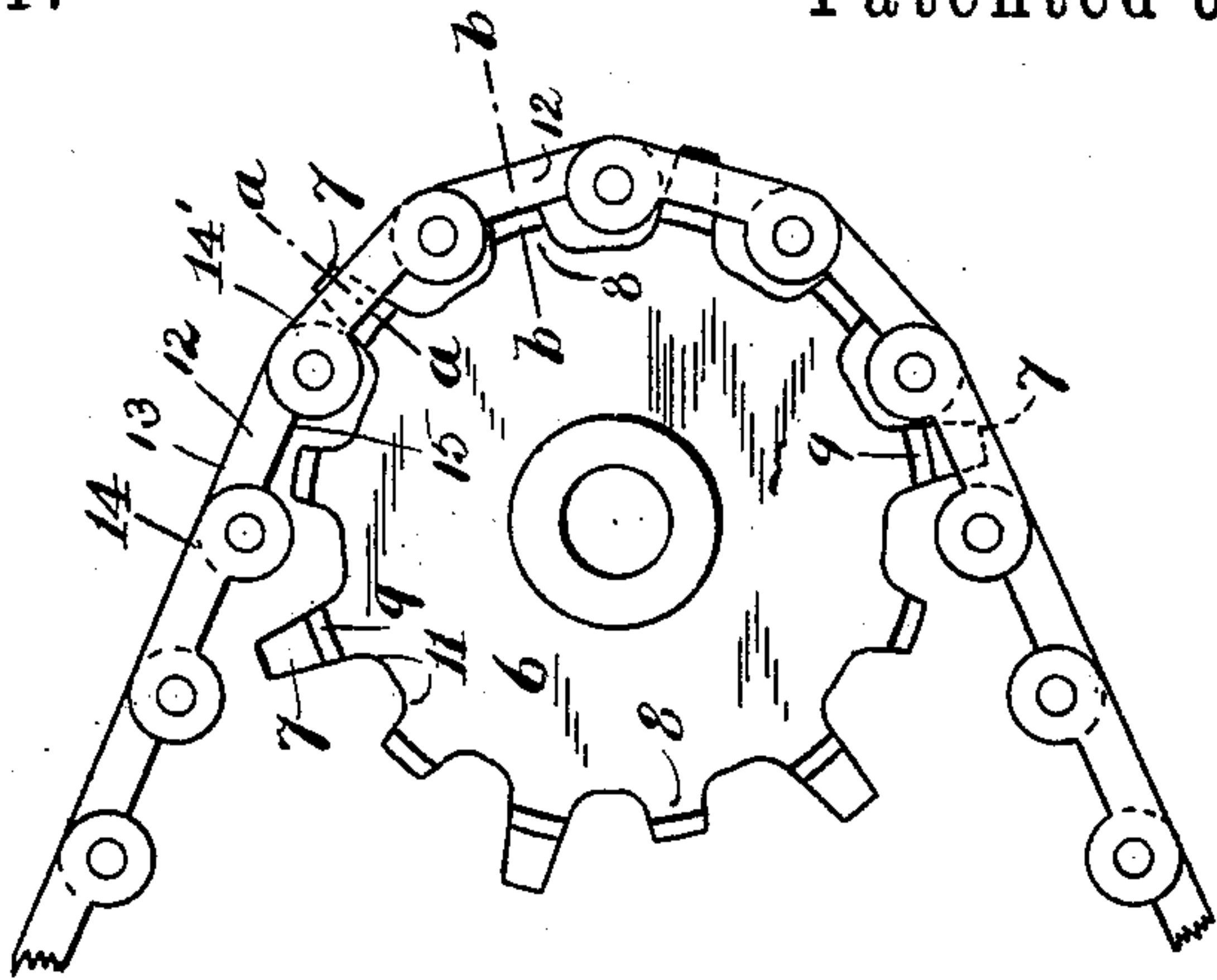


Fig-2-

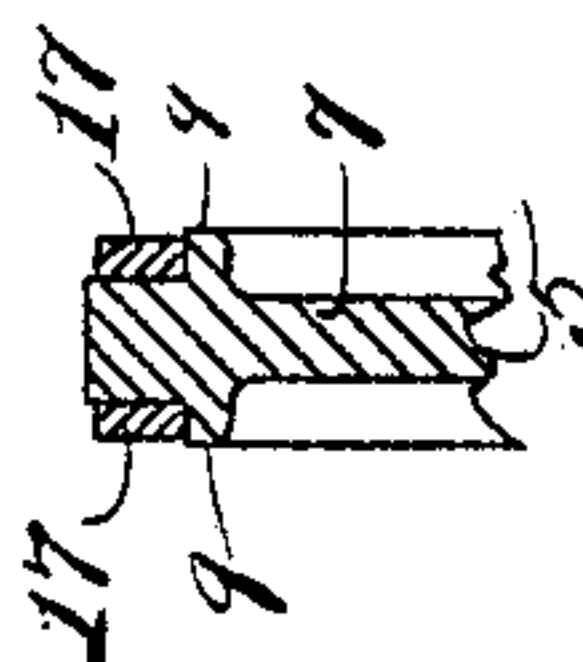


Fig-3-

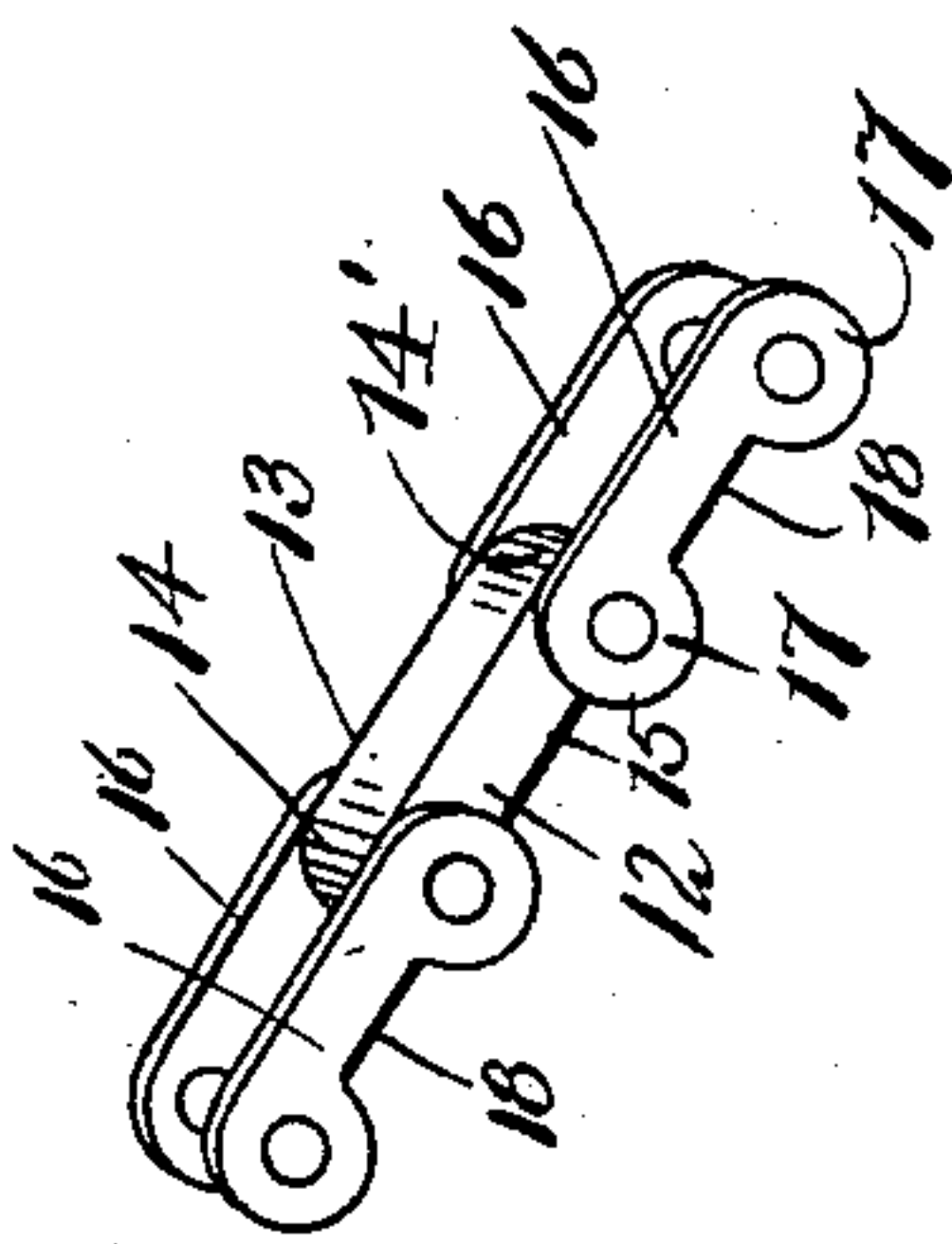


Fig-4-

WITNESSES.

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DRIVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 586,991, dated July 27, 1897.

Application filed June 29, 1896. Serial No. 597,314. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CURLEY, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain
5 new and useful Improvements in Drive-Gears; and I hereby declare that the following is a full, clear, and exact description of same, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to improvements in drive-gears, and particularly to that class of drive-gears in which power is transmitted from one sprocket-wheel to another by means of a chain.

15 The object of the invention is to increase the effectiveness of the action between the sprocket-teeth and the chain.

Another object is to reduce the wear on the sprocket-teeth and on the chain.

20 Another object is to reduce the friction between the chain and the sprockets.

The invention consists of a sprocket-wheel having means for supporting the chain on the pitch-line of the sprocket, and a chain formed
25 of members constructed to receive supports on the pitch-line of the members.

The invention also consists of a chain comprising link-plates and connecting-blocks pivotally connected and cut away at their lower
30 portions to straight surfaces on lines with the axes of the pivots.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more
35 fully described, and pointed out in the claims.

Figure 1 represents a side elevation of portions of the chain and the sprockets which are particularly adapted for use with this chain. Fig. 2 represents a cross-section of a part of
40 the sprockets and links on lines B B, Fig. 1. Fig. 3 represents a similar view taken on a line A A, Fig. 1, showing a section of one of the chain-blocks. Fig. 4 represents a perspective view of a portion of the chain.

45 Similar letters and numerals of reference designate corresponding parts throughout.

Gears of the nature herein described generally comprise two sprockets, usually of different diameters, and are composed of alternate blocks and side links or plates pivoted to
50 the ends of the blocks, the ends of the blocks being somewhat rounded to reduce the friction

between them and the sprocket-teeth, the blocks being proportioned to the pitch of the teeth that when in position on the sprockets
55 they would rest on the periphery of the wheel between the teeth, the side plates of the chain lying at the sides of the sprocket-teeth. When such a sprocket is rotated to take up or drive the chain, the action of the teeth is
60 against the rear end of the blocks. Now as one of the teeth carries its block along the side plates draw the next block into position to be engaged at its rear end by the succeeding tooth. Before this engagement, however,
65 the periphery of the wheel, passing beneath the forward end of the block, receives this portion, which as the rear end of the block is brought from the straight line in which it approaches the sprocket to the curved path in
70 which it passes around the sprocket grinds on the periphery of the sprocket, this being repeated as the block assumes its straight path on leaving the sprocket.

The result of the grinding action of the
75 ends of the blocks against the periphery of the sprocket is to wear both. The sprocket being worn into concavities on its periphery its diameter is continually and irregularly decreased, while the wear on the blocks in-
80 creases the looseness of the chain on the sprockets. Adding to these the ordinary wear on the rivets of the chain, by which the pitch of the same is increased, and after slight wear, the operation of the gear is irreg-
85 ular, unpleasant to the operator, and highly destructive to the chain and sprocket.

In carrying my invention into practice it has been my desire to so construct a gear of this nature that this wear on the periphery
90 of the sprockets and on the ends of the chain is prevented, and at the same time to increase the effectiveness of the chains. For this purpose I construct a sprocket having alternate teeth and supporting members, the teeth having lateral supports for the chain-plates and the supporting members having their peripheral supporting-surfaces in the pitch-line of the sprocket. With this sprocket I use a chain the links and blocks of which are cut
95 away between their ends to a surface lying in the pitch-line of the chain.

In the drawings, 5 and 6 indicate sprocket-wheels particularly adapted for use in this

gear, the sprocket-teeth and general construction of both being similar. These sprockets have the engaging teeth 7 7 and the supporting members 8 8 erected above or outside the normal periphery of the sprockets *x x*. The teeth 7 7 are generally slightly tapering from their bases to their ends and have lateral projections 9 9, the upper surfaces of which lie in the peripheral pitch-line of the sprocket.

The supporting members 8 8 extend from the periphery of the wheel only to the peripheral pitch-line of the sprocket and may or may not have the lateral projections 10 10. The province of the members 8 8 is wholly to support the chain-blocks so that the axial line of their pivots will lie in the peripheral pitch-line of the sprocket, and to accomplish this with the least possible frictional wear between the blocks and these supports. For this purpose the supports are proportioned to meet the blocks centrally between the ends of the blocks and must not act as propelling means for any portion of the chain. Therefore the drawings show clearance between the front edges of the supports and the depending ends of the blocks. Notice should also be taken that these supports are not separated from the teeth by concavities cut into the periphery of the sprocket. The teeth 7 7 and the supports 8 8 are independent erections or extensions from the periphery of the sprocket, and the clearance of the ends of the chain members is one of the results of supporting these members above the periphery.

The chain comprises a series of blocks 12 12, having the backs 13, the circular ends 14 14, and the straight-surface portion 15, which lies in a line with the axes of the circular ends 14 14, this line being the pitch and the draft line of the chain. The blocks 12 12 are connected by the side plates 16 16, pivoted to the blocks and corresponding to them in shape, except in thickness. These plates have the circular ends 17 17 and the lower edges 18 lying in line with the axes of the ends 17 17. When the chain passes onto the sprocket, the bodies of the blocks are brought to bear on the supporting members, and the rear ends 14 14 of the blocks bear on the front edges of the teeth 7 7, while the lower edges 18 of the side plates 16 16 rest on the supporting portions 9 9 of the teeth 7 7. The blocks 12 being thus supported on the members 8 slightly prior to the engagement of the end 14 by the tooth and in the pitch and draft line both of the sprocket and chain no wearing action is set up between the ends of the block and either the periphery of the sprocket or the edge of the teeth 7 7.

It is thought that the action of undue wear between the sprocket and chain arises in great measure from the tendency of each to assume with relation to the other the position best adapted to secure the most effective results from both. The theory here presented being that the best position of the chain and the sprocket is such that no obstruction should be presented to any portion of the chain below its pitch or draft line and that such line be brought into and positioned in the peripheral pitch-line of the teeth, it is evident that the shape of the ends 14 14 of the blocks may be varied at will.

I do not claim the use of a sprocket having alternate long and short teeth, the supporting members herein described not being teeth in the sense that the term "sprocket-teeth" is used, as they merely support the chain-blocks and do not engage the ends of the blocks, as do the teeth 7.

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

1. In a drive-gear, a sprocket-chain comprising blocks, having bodies lying above the draft-line of the chain, and engageable ends depending below such line, and side plates pivoted to said blocks, and having bodies lying wholly above the draft-line of the chain.

2. In a drive-gear, the combination with a wheel having sprocket-teeth and supports, the supporting-surfaces of the supports lying in the peripheral pitch-line of the sprocket, of a pivoted-link chain, having engageable portions connected by the bodies lying outside the axial line of the pivots.

3. The combination with the sprocket having the teeth 7 7 and members 8 8, the teeth 7 7 having lateral projections, of a chain comprising a series of blocks 12 having the ends 14 14 and the surfaces 15 extending in the axial plane of said ends, and the plates 16 16 pivoted to the blocks and having the end portions 17 17 and the lower edges 18 as described.

4. A drive-gear sprocket having a series of drive-teeth arranged around its periphery and furnished with lateral extensions, the supporting-surfaces of which are in the peripheral pitch-line of the sprocket, and a series of independent supports arranged alternately with the teeth, extending from the periphery of the sprocket, and adapted to act wholly in said peripheral pitch-line.

THOMAS CURLEY.

Witnesses:

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CHARLES H. METZ.