No. 611,764. Patented Oct. 4, 1898.

F. ARNOLD.

HAND AND CHAIN OPERATED TRICYCLE.

(Application filed Feb. 8, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

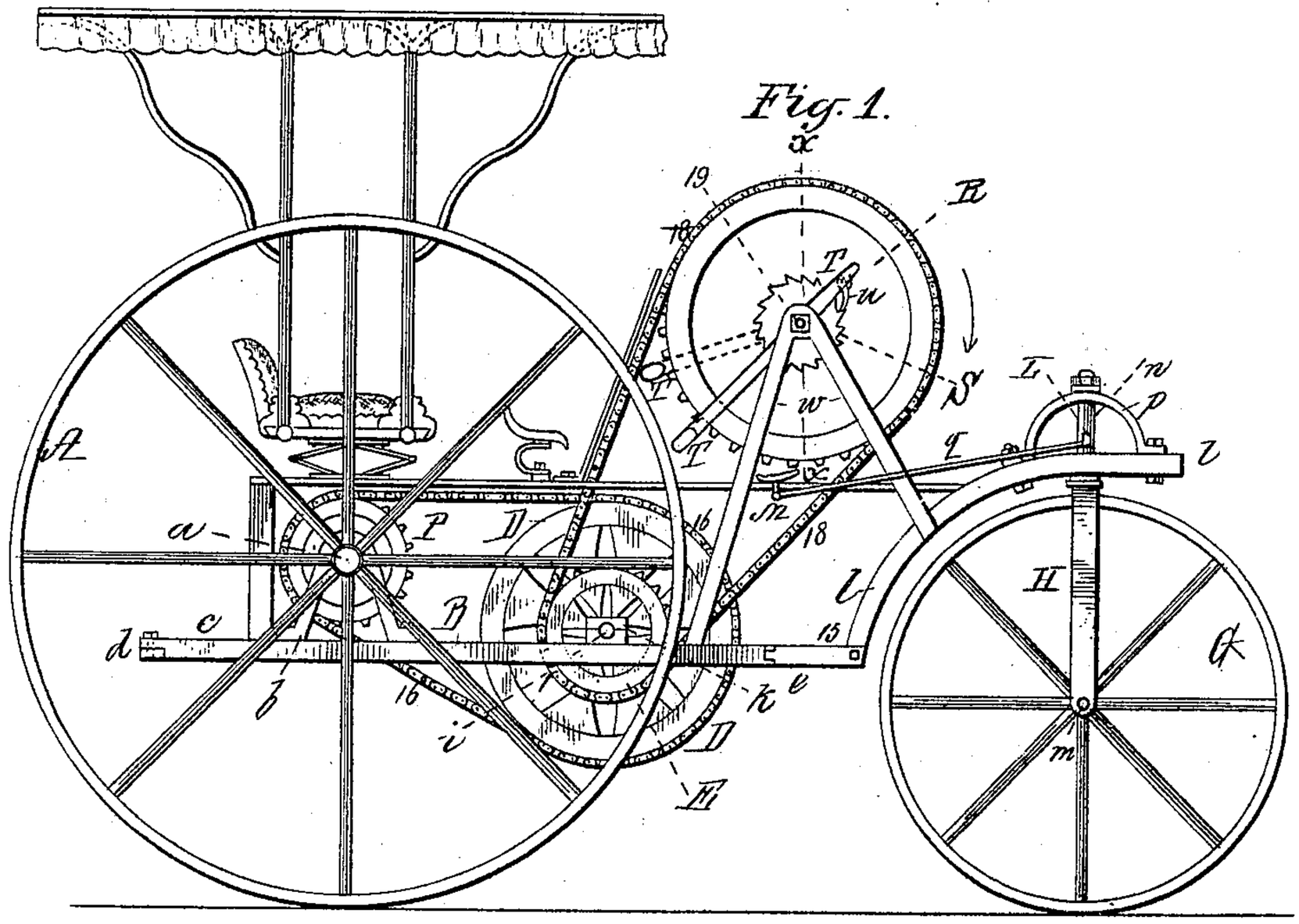
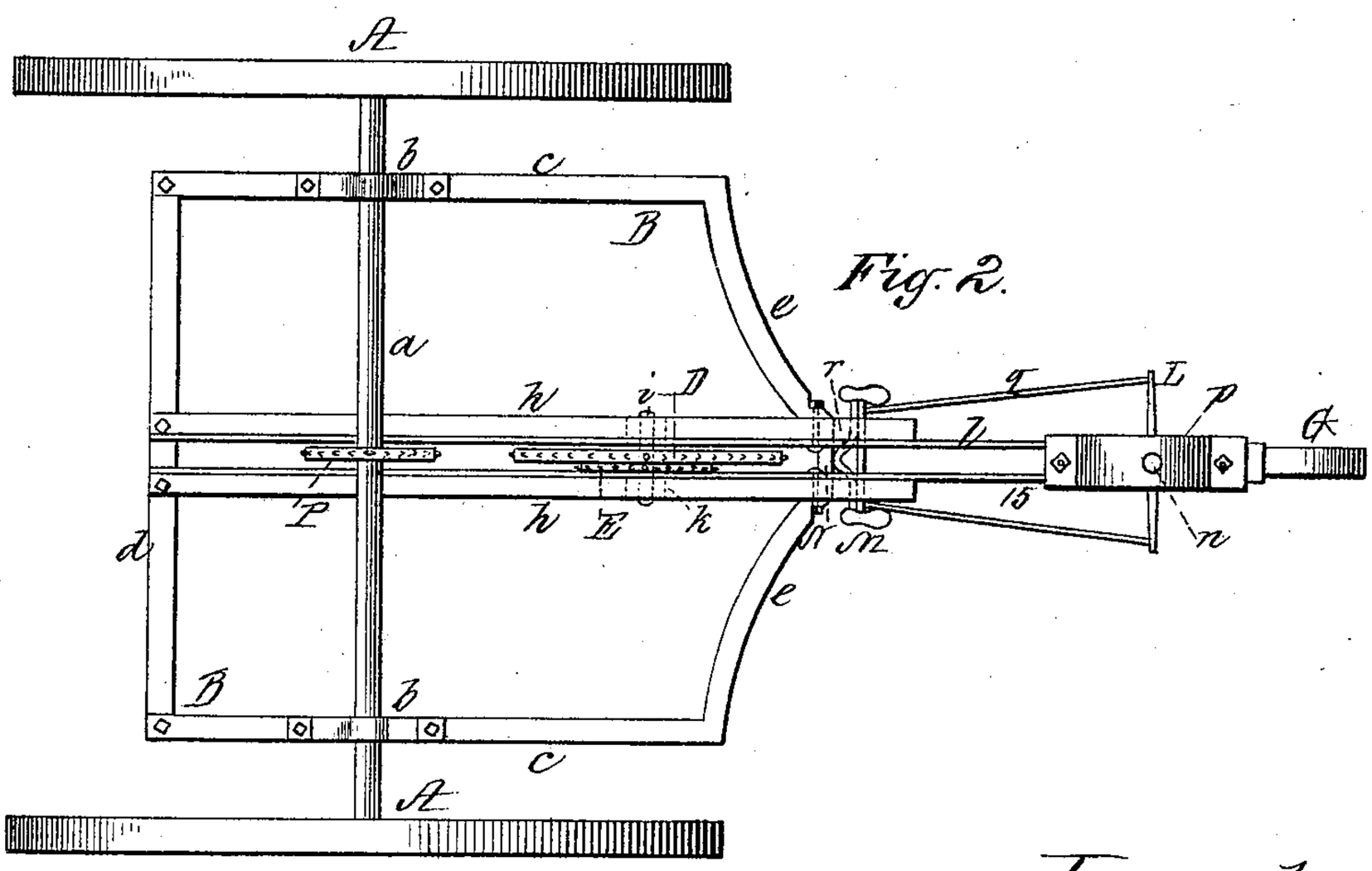


Fig. 2.



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A. F. Stearns

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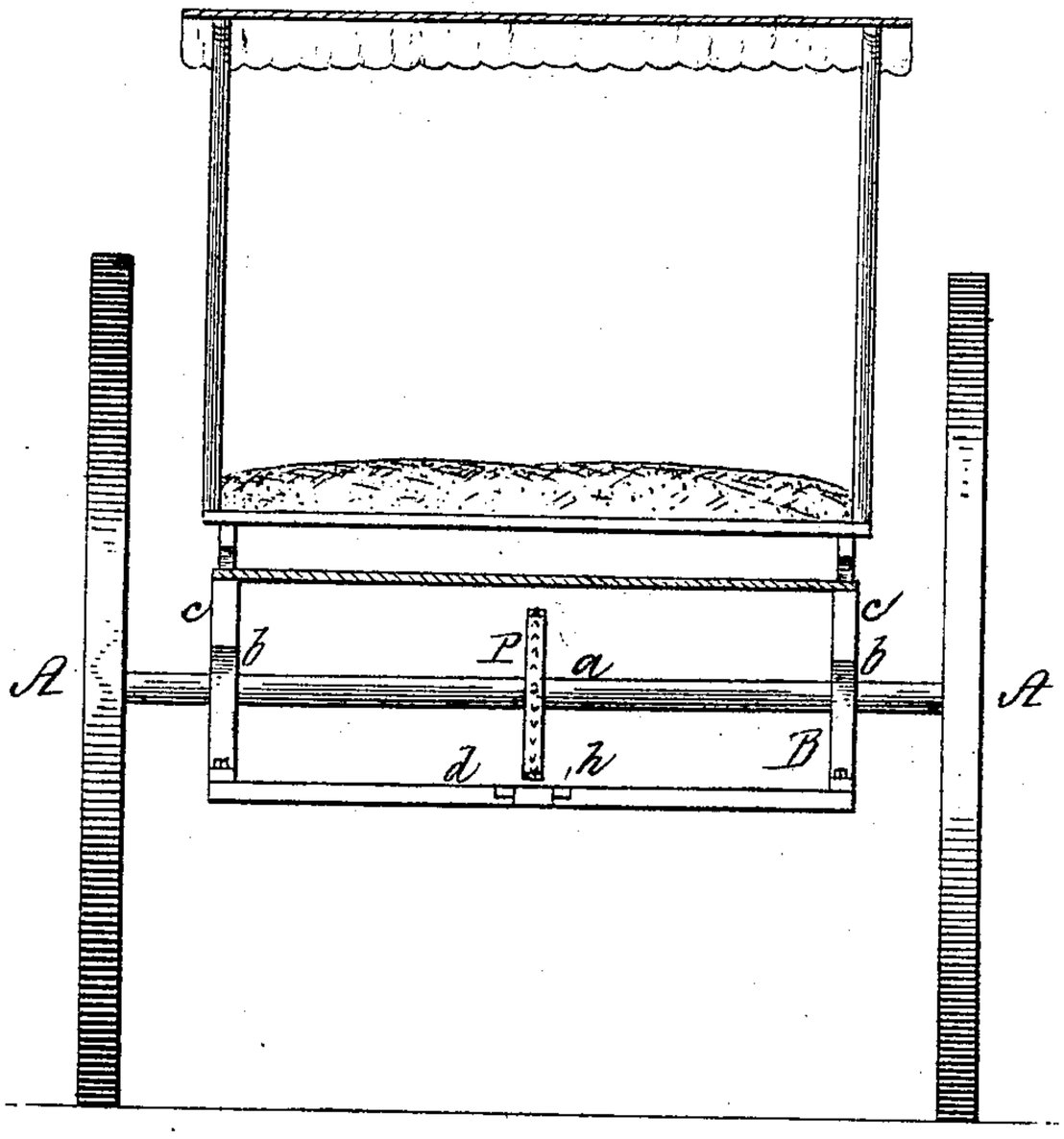
Fig. 3.



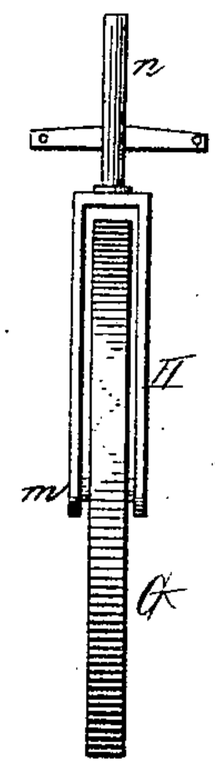


Fig. 4.

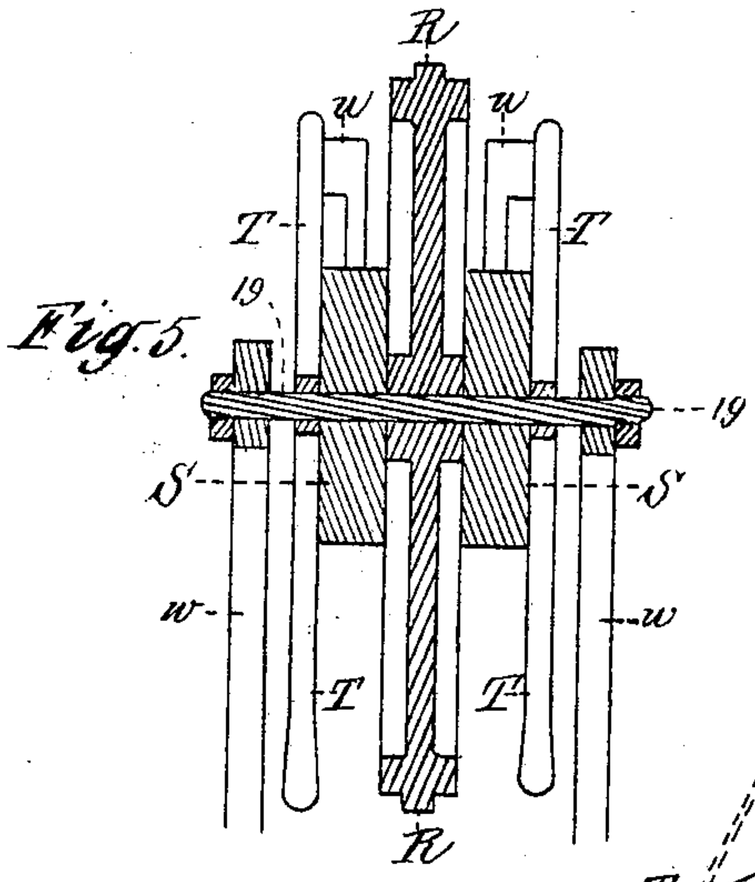
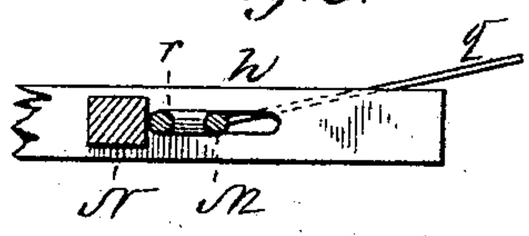


Fig. 5.

Fig. 6.



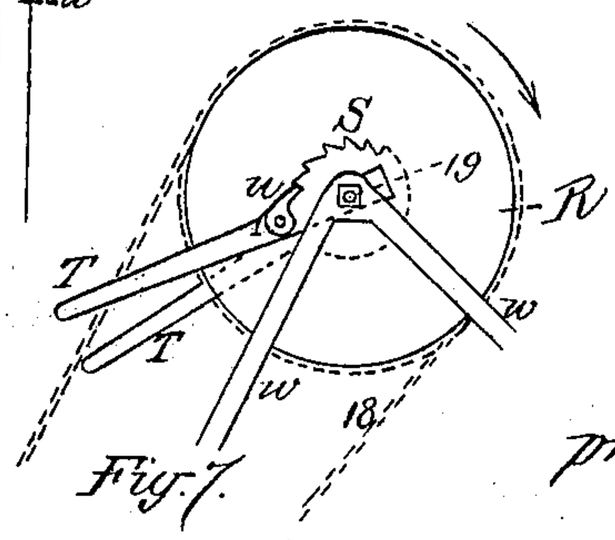


Fig. 7.

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UNITED STATES PATENT OFFICE.

FRANK ARNOLD, OF TAMPA, FLORIDA.

HAND AND CHAIN OPERATED TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 611,764, dated October 4, 1898.

Application filed February 8, 1898. Serial No. 669,547. (No model.)

To all whom it may concern:

Be it known that I, FRANK ARNOLD, of Tampa, Hillsborough county, Florida, have invented certain Improvements in Hand and Chain Tricycles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of the said tricycle constructed in accordance with my invention. Fig. 2 is a plan of the frame and a portion of the mechanism supported thereby; Fig. 3, a rear elevation; Fig. 4, an elevation of the front of the caster or pilot wheel; Fig. 5, a vertical section on line *x x* of Fig. 1; Fig. 6, a horizontal section of the foot-guiding device; Fig. 7, a detail representing a modification to be referred to.

My invention relates particularly to that class of velocipedes designated in the art as "hand and chain operated tricycles;" and this invention consists in the novel combination, construction, and arrangement of the supporting-frame, the sprocket, ratchet, and driving wheels, the hand-operated levers and their pawls, the position of the coacting parts being so located relatively with each other as to insure ease of manipulation and a high degree of speed, the details of the said invention being hereinafter described and specifically claimed.

In the said drawings, A A represent the two rear driving-wheels, mounted on an axle *a*, which is supported in bearings *b b*, rising from the two opposite side pieces *c c* of the frame B, which is located under the axle, the rear ends of the side pieces extending some distance back of the vertical plane, passing through the centers of the driving-wheels, and being united by a transverse tie-piece *d*, the front of each side of the frame being connected by curved pieces *e e*, which approach each other at their forward ends and are bolted to the outsides of the front ends of two parallel stringers *h h*, which are located centrally through the frame and extend longitudinally from the rear tie-piece *d*, said stringers being separated from each other to afford ample space in which to locate a major chain or sprocket wheel D and a minor sprocket-wheel E, both rigidly secured on the same shaft *i*, which turns in bearings K, rising from the tops of the central stringers *h h*, all of the parts of the frame thus far described being situated in the same horizontal plane. Beyond the point where the curved pieces *e e* join the central stringers *h h* the frame assumes an upwardly-extended curvature, being formed by a curved brace *l*, equal in width to the space between said stringers and having its rear or lower end bolted securely thereto at 15 15, the forward end of this curved brace reaching over and beyond where it is desired to locate shaft of the pilot-wheel G. This pilot-wheel is hung within a bifurcated holder H and turns on a short shaft *m*, extending between its bifurcations, the upper portion or stem *n* of the holder being of the usual cylindrical shape and passing up through and above the curved brace *l* of the frame and also through a curved saddle-shaped bracket *p*, having its feet bolted to the top of the said curved brace, this cylindrical stem *n* turning freely in both the brace and bracket and having pivoted thereto a tiller or steering bar L, to each end of which is attached a wire rod or rope *q*, secured at its rear to the end of a pivoted foot-bar M, having rests for the feet by which the pilot-wheel is given its direction, a spring *r* being located at the back of the bar M and between it and a stationary cross-piece N for keeping the foot-bar in its normal position when not swung by the feet into a different position.

Centrally located on the axle *a* of the driving-wheels A A is a chain-wheel P, over which and the major sprocket-wheel D passes an endless chain 16, and over the minor sprocket-wheel E and a main sprocket-wheel R, supported in bearings *w*, rising from the front of the frame, passes another endless chain 18.

I will now proceed to describe the hand propelling mechanism, reference being had particularly to Figs. 1 and 5.

Upon the shaft 19 of the main sprocket-wheel R and on each side thereof is rigidly secured a ratchet-wheel S, and pivoted to the common shaft 19 is a hand-lever T, to the upper outer end of which is pivoted a spring-actuated pawl *u*. These hand-levers when alternately manipulated by the driver cause

the revolution of the sprocket-wheel R through the connections described, the driving-wheels A A thus advancing the vehicle as desired.

In Fig. 7 each hand-lever T is provided with a spring-pawl located between the shaft 19 and the lower end of the lever, and, if desired, the pawl shown in Fig. 1 and that shown in Fig. 7 may both be employed with one or both levers.

I claim—

In a hand and chain operated tricycle, the combination, construction and arrangement of the following instrumentalities: a supporting-frame R consisting of a main or rear portion formed of a pair of opposite, parallel sides *c c*, a transverse tie-piece *d* which unites their rear ends, a pair of curved pieces *e e* which are secured to the front of said sides, and approach at their forward ends, a pair of centrally-arranged, parallel, longitudinal stringers *h h* separated from each other, and to which the forward ends of the sides *c c* are secured, a front portion of the frame consisting of a curved brace *l* secured to the front of the stringers *h h*, a pilot-wheel G whose shaft turns in the forward end of said brace, a pair of driving-wheels A A, a centrally-located sprocket-wheel P, and their common axle *a* which is located above the rear portion of the frame, a major sprocket-wheel D, a minor sprocket-wheel E and their common shaft *i*, the wheels P, D, E rotating in the space between the stringers *h h*, a main sprocket-wheel R located above, in front of, and substantially in the same vertical plane as the minor sprocket-wheel E, a pair of ratchet-wheels *s s*, between which the wheel R is interposed, the shaft to which they are secured, a pair of hand-levers T T with their pawls *u u*, and endless chains for turning the sprocket-wheels, all operating substantially as described.

Witness my hand this 31st day of January, 1898.

FRANK ARNOLD.

In presence of—
A. J. KNIGHT,
E. M. HENDRY.