No. 638,963. Patented Dec. 12, 1899.

H. GANSWINDT.

DRIVING MECHANISM FOR UNICYCLES.

(Application filed Jan. 28, 1897.)

(No Model.) 3 Sheets—Sheet 1.

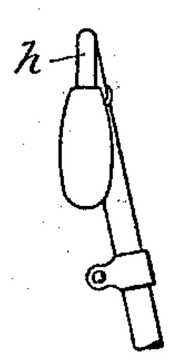
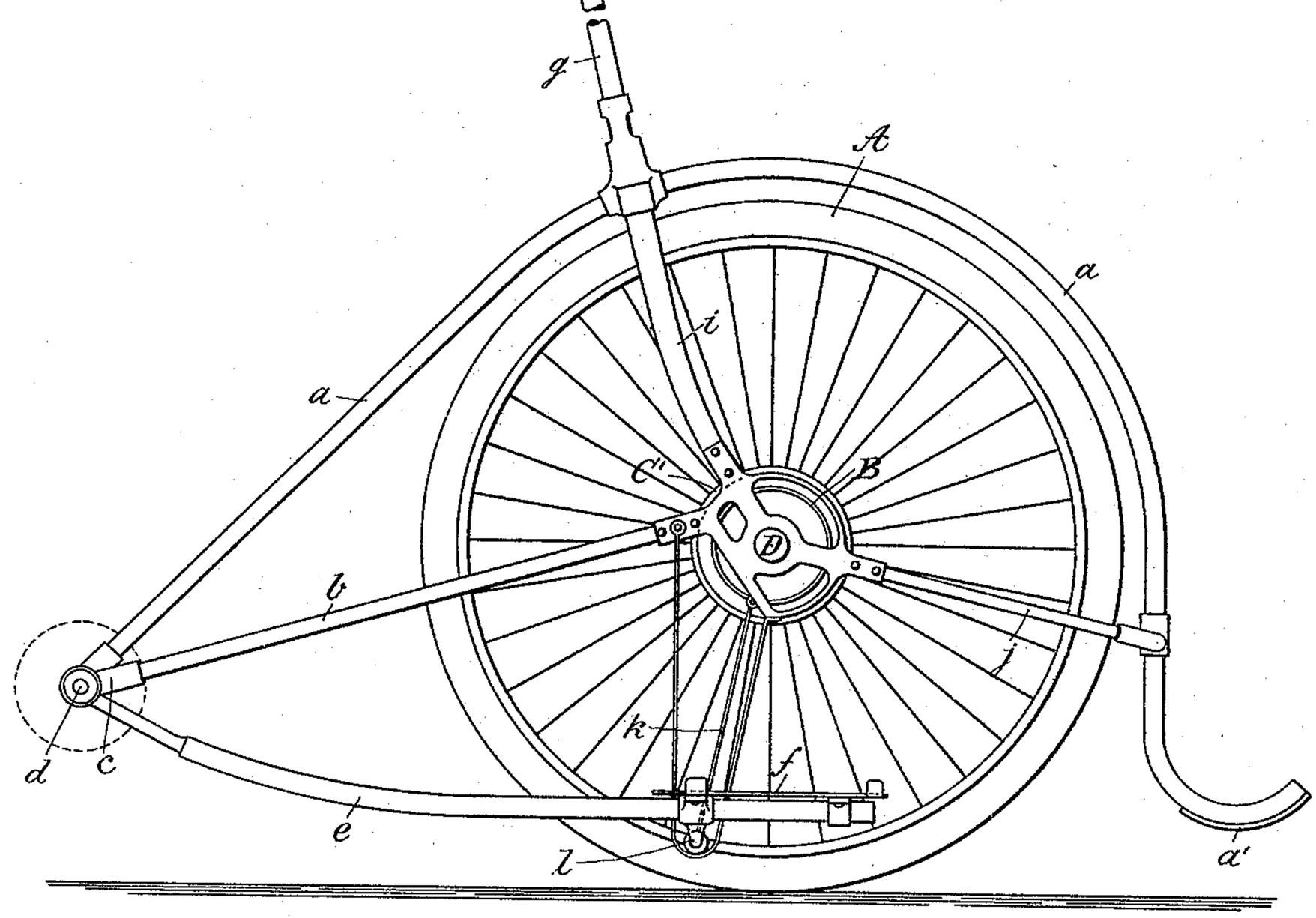


FIG. 1.



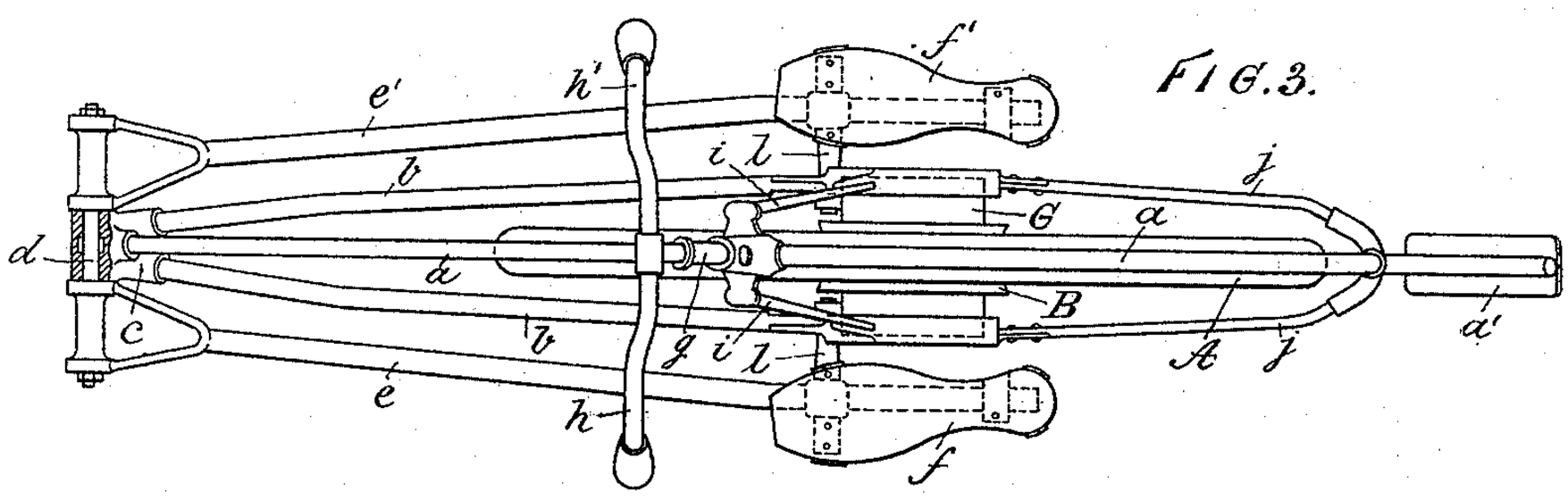


FIG. 3.

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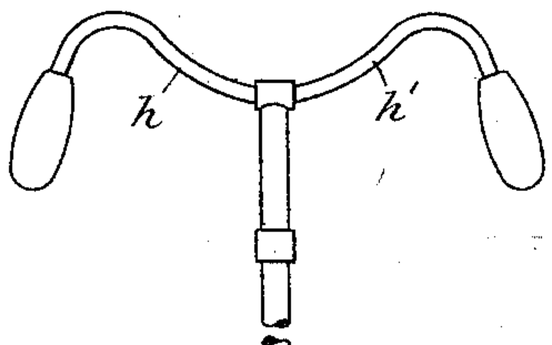


FIG. 2.

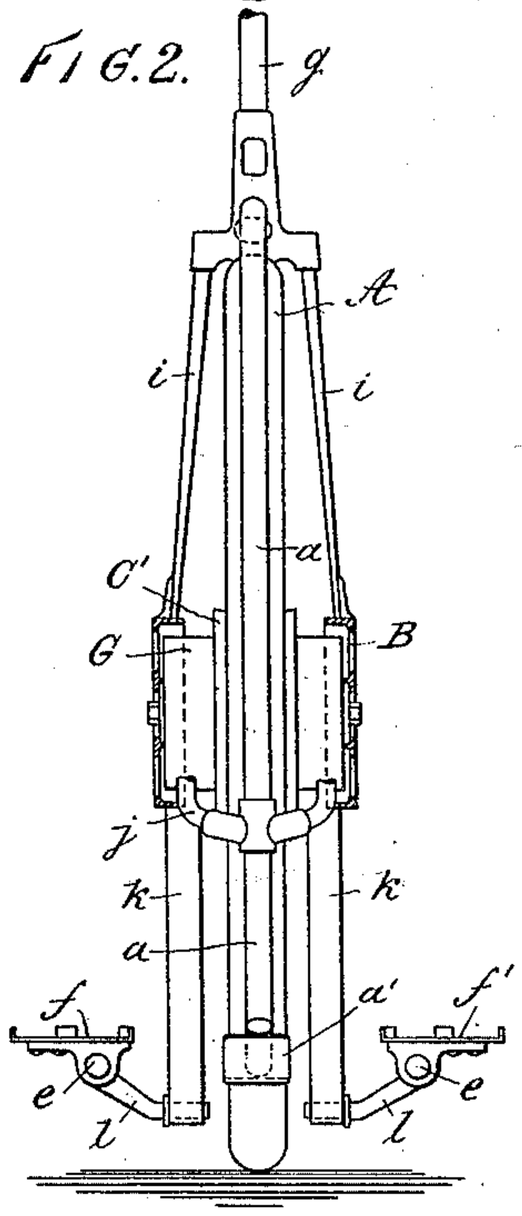
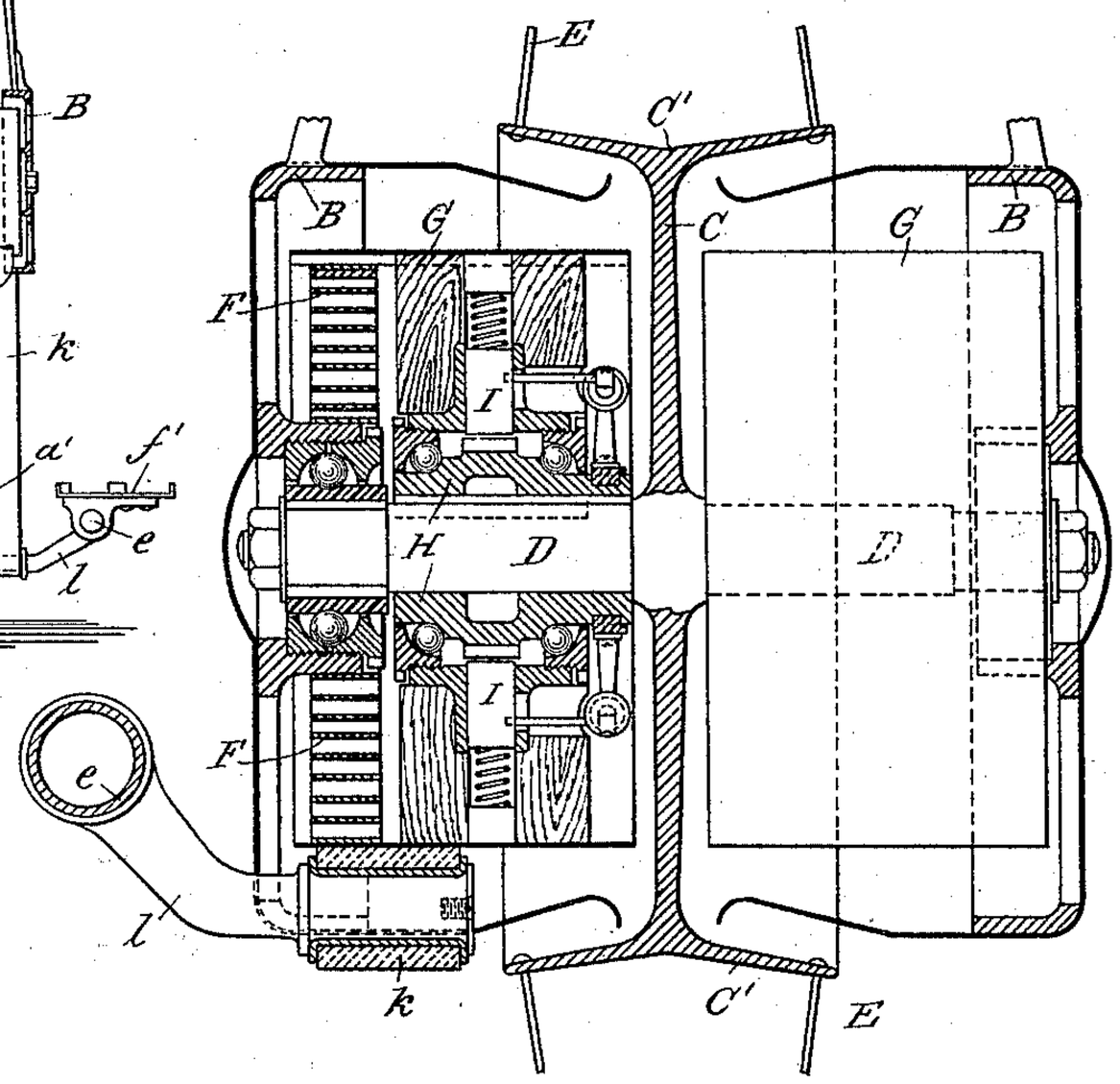


FIG. 4.



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(No Model.) 3 Sheets—Sheet 3.

FIG. 5.

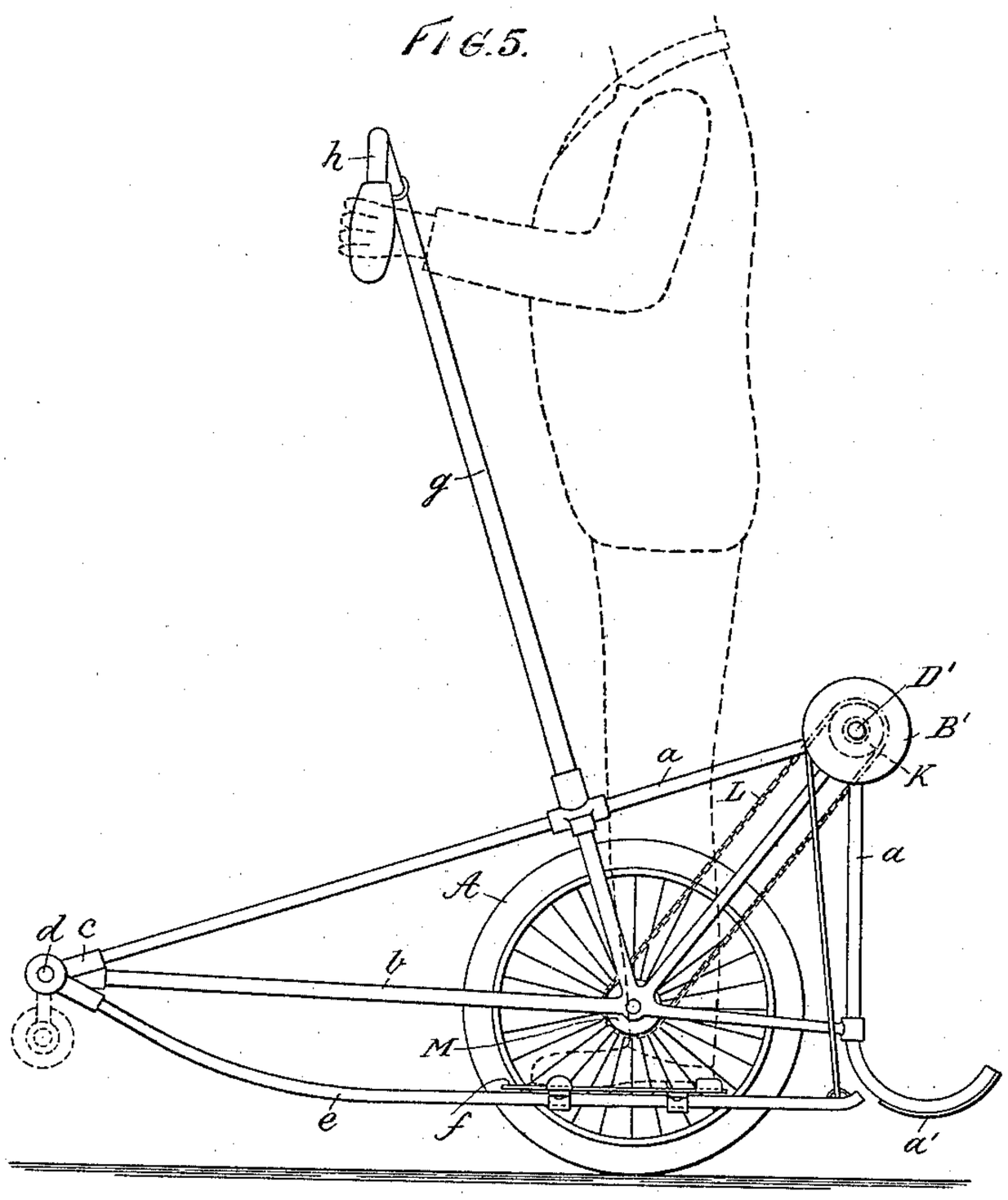


FIG. 6.

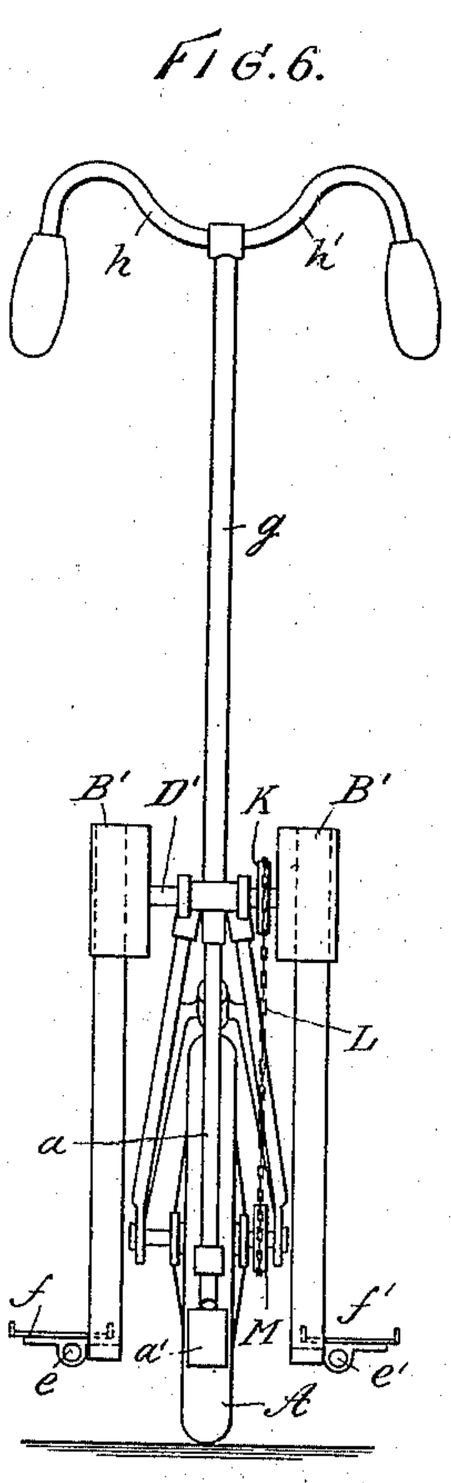
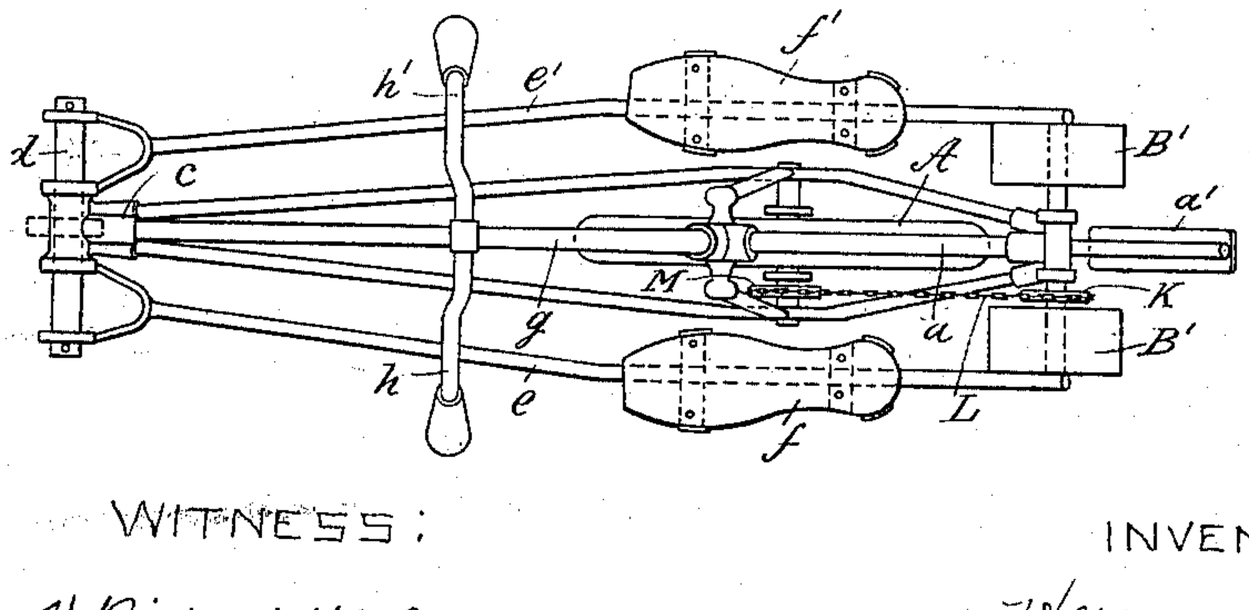


FIG. 7.



WITNESS:

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UNITED STATES PATENT OFFICE.

HERMANN GANSWINDT, OF SCHÖNEBERG, GERMANY.

DRIVING MECHANISM FOR UNICYCLES.

SPECIFICATION forming part of Letters Patent No. 638,963, dated December 12, 1899.

Application filed January 28, 1897. Serial No. 621,100. (No model.)

To all whom it may concern:

Be it known that I, HERMANN GANSWINDT, a subject of the Emperor of Germany, residing at Schöneberg, near Berlin, Germany, have invented Improvements in Driving Mechanism for Monocycles, of which the following is a specification.

My invention relates to improvements in cycling-machines. Its object is to produce a monocycle which as compared to the other forms of cycling-machines, such as bicycles and tricycles, has the obvious advantage that it sustains much less friction on the ground, and therefore allows of much easier riding.

All the attempts made heretofore for the purpose of constructing a practical monocycle have been more or less objectionable, because it was not possible in using the known treadle system to overcome the difficulty of giving to the rider a sure hold and sufficient support in the direction of the forward movement to enable him to keep his equilibrium and avoid the danger of his tumbling.

Monocycles as ordinarily constructed heretofore were not adapted for general use, but only for use by expert riders for exhibition purposes.

In this invention the difficulties heretofore existing have been overcome by using an impelling device consisting of a belt and disk pulley actuated by treadles placed underneath the axle of the wheel. This impelling device enables the rider to keep his equilibrium without difficulty.

The accompanying drawings illustrate two developments of the invention.

The first development is shown in Figures 1 to 3, which represent a side elevation, (Fig. 1,) a front view, (Fig. 2,) and a top view, (Fig. 3.) In this development the impelling device is placed on the axle of the wheel.

In Figs. 5 to 7 the second development is illustrated by like views as Figs. 1 to 3. In this development the impelling device is at a point distant from the axle of the wheel, and its movement is transmitted to the axle by means of a chain gearing.

Fig. 4 is a vertical section, on a larger scale, through the impelling device, of the development shown in Figs. 1 to 3.

The frame of the monocycle has no saddle nor any other support for the rider, who stands on the treadles. It consists of the upper part *a*, made, as usual, of a steel tube which swings in a curve around the upper part of the wheel A and ends in the rear in the form of a shoe. The front end is connected through the link *c* with the fork *b*. The link *c* serves at the same time as a bearing for the pin or shaft *d*, on which swing the levers *e e'*, actuated by the feet of the rider by means of the treadles *f f*. A tube *g* is fastened to the upper part *a* of the frame. This tube *g* bears on its upper end the handles *h h'*, while its lower end is connected with the fork *i*. The fork *j* is connected with its rear end to the part *a*. Its front end forms, together with the lower end of the fork *i* and the rear end of the fork *b*, a frame around the wheel. The pivot or axle *d* is placed at a point which lies about in the middle of the stroke of the swinging levers *e e'*.

The nave of the wheel A consists of a drum B, which is divided by the partition C. This partition is fastened on the axle D and provided with a flange *c'*, bearing the spokes. In the casing the impelling device is located. This device consists of a belt or rope pulley G, connected with a spiral spring F, a rack-wheel H, fastened on the axle D, and of clicks which stand under the action of springs and work noiselessly. The axle and the rack-wheels in each compartment of the case rest and work on ball-bearings.

Each disk G has a belt *k* fastened to a bolt *l* of the levers *e e'* underneath the treadles, which are preferably flexible. By the alternating downward movement of the levers *e e'* the axle D is caused to revolve in the same direction.

In the development shown in Figs. 5 to 7 the described device is modified only in that while the axle D has the usual bearing in the frame of the wheel the case B' of the impelling device is placed at a different point on the frame. On the axle D' of the impelling device is fastened a chain-wheel K, whose movement is transmitted to the axle of the wheel by means of the chain L and the chain-wheel M. In this form the two cases B' are placed so near to one another that they require very little space, and they are not in the way of the user of the machine.

It is essential with monocycles that the

treadles be disposed below the axle of the wheel, because as the rider is standing upright on the treadles and supporting his body at the same time on the handles $h\,h'$ a tipping over of the frame around the axle, or even a mere change of its position to the horizontal, would not be possible except that a force strong enough to lift the body might act on a point below the point of support. As, furthermore, the feet of the rider rest on the treadles with the whole length of the sole, it is not more difficult for him than for a skater to keep his body in a vertical position. In fact, it will even be easier for him, as the handles give him a hold. As the treadle-levers are swinging around a pivot which is on the same level with a line passing horizontally through the middle of the stroke of the levers, the treadles do not deviate from the vertical line underneath the axle, and it is therefore easy for the rider to keep his equilibrium, the more so as the arrangement of the impelling device is such that he is not bound to treadle with isochronism. He may even stop treadling altogether in order to regain his equilibrium if accidental oscillations of his body should occur.

If the rider wants to slow down the speed of the wheel or stop it, he has to lean back and draw on the frame with his hands by means of the handles. The shoe a' of the rear part of the tube a will then touch the ground and break the speed.

The steering is obtained by sideward inclinations of the body and the wheel. It is obvious that with the monocycle it is easier to maintain the equilibrium in respect to lateral movements than with the bicycle, because if an unintended lateral inclination of the body occurs the wheel will describe a curve toward that side, and the centrifugal force resulting from this movement of the wheel will help the rider to recover his vertical position.

In consequence of the described conditions of the monocycle it is also easier to learn to ride on a monocycle than on a bicycle. Moreover, wheels for beginners may be provided with a roller, as shown by the dotted line on Figs. 1 and 5, so that a tipping over in a forward direction is prevented.

The present monocycle admits of dispensing with the chain gearing of the bicycle for the sake of multiplication, because if the stroke of the treadle-levers is sufficient any desired multiplication may be obtained by making the rope-pulleys larger or smaller.

I claim—

In combination the single wheel, the frame inclosing the same and having a front and rear extension, the rear extension ending in a shoe near the ground and the treadle-levers connected to the front of the frame and extending to a point below the wheel-axle, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HERMANN GANSWINDT.

Witnesses:
FRANZ KOLHN,
GUSTAV TAUER.