No. 683,037. Patented Sept. 24, 1901.

V. GOURNY-WYSOCKI.

DRIVING MECHANISM FOR CYCLES.

(Application filed Dec. 8, 1899.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.

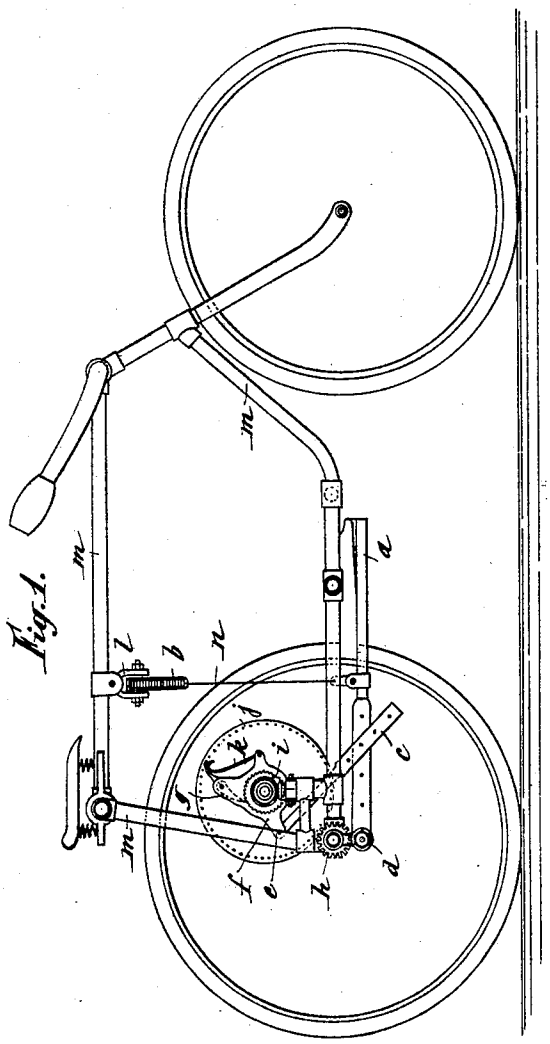
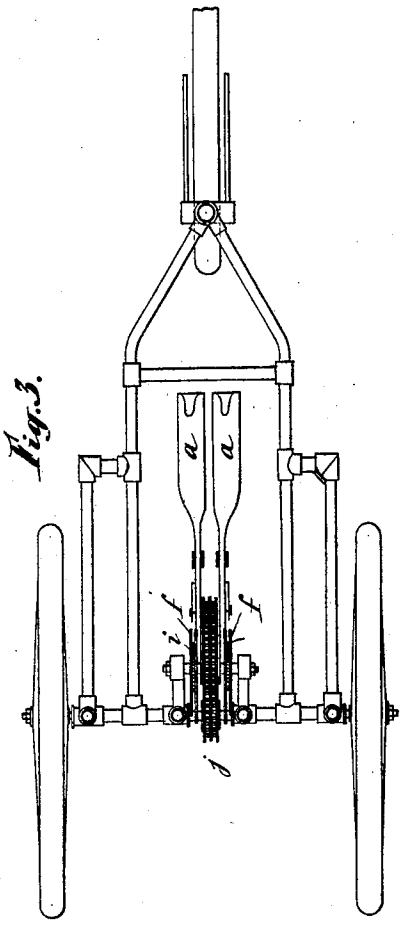


Fig. 3.



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Fig. 5.

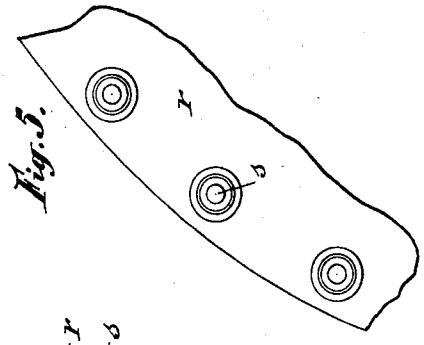


Fig. 4.

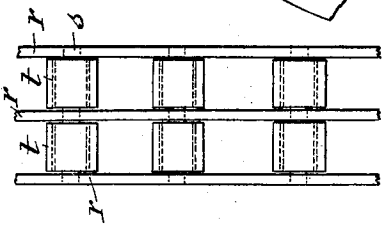


Fig. 6.

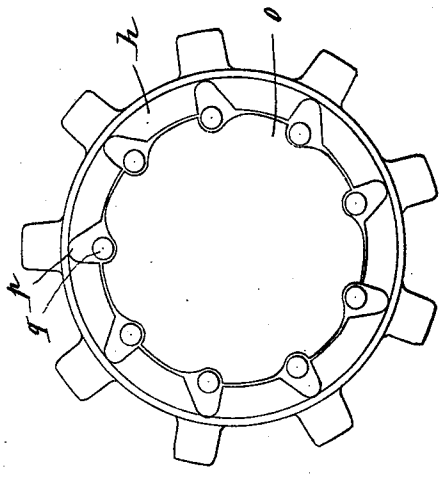
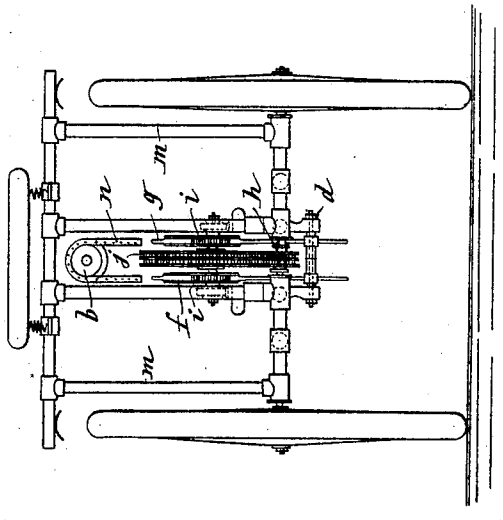


Fig. 2.



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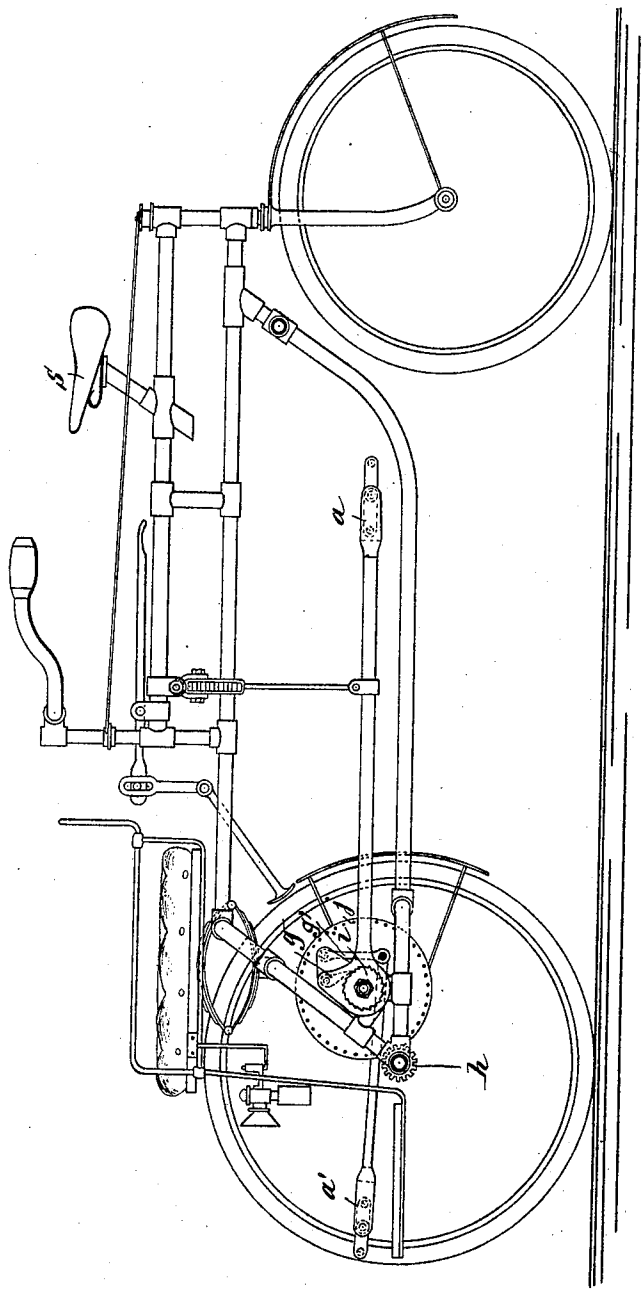


Fig. 7.

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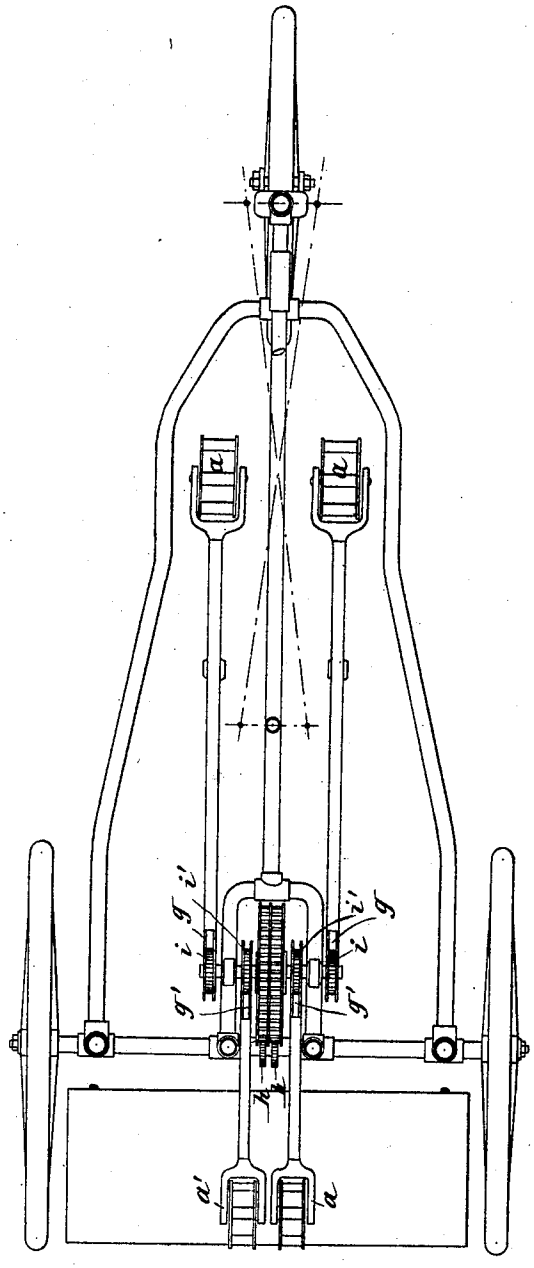
DRIVING MECHANISM FOR CYCLES.

(Application filed Dec. 8, 1899.)

(No Model.)

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Fig. 8.



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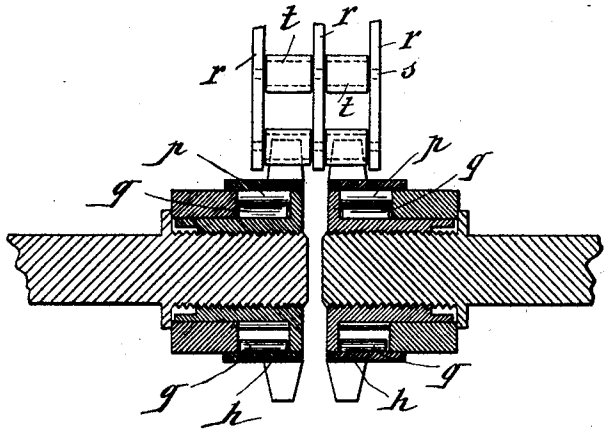
V. GOURNY-WYSOCKI.

DRIVING MECHANISM FOR CYCLES.

(Application filed Dec. 8, 1899.)

(No Model.) 5 Sheets—Sheet 5.

Fig. 9.



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Attys

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UNITED STATES PATENT OFFICE.

VENCESLAS GOURNY-WYSOCKI, OF BRUSSELS, BELGIUM.

DRIVING MECHANISM FOR CYCLES.

SPECIFICATION forming part of Letters Patent No. 683,037, dated September 24, 1901.

Application filed December 8, 1899. Serial No. 739,659. (No model.)

To all whom it may concern:

Be it known that I, VENCESLAS GOURNY-WYSOCKI, a subject of the King of Belgium, and a resident of 17 Rue Berckmans, Brussels, Belgium, have invented certain new Improvements in Driving Mechanism for Cycles, of which the following is a specification.

This invention relates to a novel vehicle for propulsion by one or more persons by means of pedals.

The mechanism is extremely simple and of great strength and renders the vehicle to which it is applied light and convenient and capable of mounting inclines with ease and with a minimum of effort on the part of the riders.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the general arrangement of a tricycle for a single person. Fig. 2 is a rear view of the same. Fig. 3 is a plan. Figs. 4 and 5 are detail views illustrating the pin-wheel, and Fig. 6 is a detail view of a clutch hereinafter described. Fig. 7 is a side elevation of a vehicle adapted for three persons, and Fig. 8 is a plan of the same. Fig. 9 is a sectional view showing the independent arrangement of the axles and pinions.

The vehicle is essentially characterized by pedals *a*, suitably pivoted to the frame at the point *d* and connected one with the other by means of the cable or chain *n*, which is passed around a wheel *b*, attached to a stirrup *l*, which is itself fixed to the upper horizontal branch *m* of the frame in such a manner that when one of the pedals *a* is depressed the other rises, one pedal always again bringing the other into position.

Upon the lever of each pedal *a* is fixed a second lever *c*, which may be either lengthened or shortened for the purpose of altering the length of the stroke of the pedal *a*. Such lever is connected at *e* with a ratchet device *f*, consisting of two plates of special form, between which is arranged the toothed wheel *i*, provided with a movable pawl *g* and with a spring *k*. When one of the levers *c* on being acted upon by the pedal *a* presses the ratchet device *f* upward, the pawl *g* will slide upon the teeth, while during the simultaneous but inverse movement of the other pedal the corresponding pawl *g* will engage with the toothed wheel *i*, which will impart the movement to a pin-wheel *j*, since it is rigidly connected with this latter. This pin-wheel *j* will in its turn gear with the pinion-wheel *h*, rigidly fixed upon the axle of the driving-wheels, and will thus cause the vehicle to advance.

As shown in Figs. 4 and 5, the pin-wheel consists of three disks *r r r*, fixed upon the same axis as the ratchet device. These disks are connected one with the other by means of suitable bolts and nuts. Around the entire circumference of these three disks are provided small cylindrical pins *s*, upon which rotate freely on either side of the central disk small hollow cylinders *t*, which gear with the teeth of the pinions *h*.

Within each pinion *h* is arranged a notched disk *o*. The pinion *h* is also provided upon its internal wall with notches or grooves *p*, (shown in the drawings in the number of nine,) in which are placed small cylinders *q*. The notches or grooves of the disk *o* are formed as shown in Fig. 6, so that upon rotating in one direction they force the aforesaid cylinders *q* into the above-mentioned notches *p*, and consequently enable the disk *c* to rotate freely, while upon rotating in the opposite direction the small cylinders fall into the notches of the disk *o*, lock it, and thus cause the pinion *h*, which is rigidly fixed upon the axle of the driving-wheels, to rotate also. This part is of the greatest utility in mounting hills, as it prevents the vehicle from running back, while in rounding curves it enables one of the wheels to travel more slowly than the other, or even to stop entirely.

The axle of the driving-wheel is made in two parts, as shown in Fig. 2, and to each internal extremity is fixed a pinion *h;* but the large pin-wheel *j*, although divided into two parts, as represented in Figs. 2 and 3, forms only a single wheel, each half of which gears with one of the two pinions *h*.

The manner in which the mechanism operates will readily be understood from this description. As soon as the pedal *a* is drawn downward it presses, by means of its lever *c*, the point *e* downward, and consequently the ratchet device *f* and the pawl *g*. Immediately the pedal is forced downward the pawl

g gears with the toothed wheel i, which is rigidly connected with the pin-wheel j, which in its turn gears with the pinions h, rigidly connected with the axle and with the driving-wheels, and thus causes the vehicle to advance. While one of the two pedals a is depressed the other rises and effects the same movements as those already described with reference to the first pedal, with the same results—that is to say, the two pedals correspond to two identical but distinct mechanisms which have in common only the pin-wheel j. The advantage of this arrangement is to entirely obviate the occurrence of dead-centers.

It will of course be understood that the vehicle for one person which has been described might equally well be constructed for two or a larger number of persons. It is only necessary to repeat the same mechanism as many times as there are riders. There is no reason why a vehicle having three, four, five, six, or an even greater number of wheels should not be constructed. The vehicle thus consists, as regards each pedal, of the mechanism which has been described, excepting the pin-wheel j, of which there is one only and which serves to engage the two pinions h whether the left or right hand pedal is operative. It will further be understood that the system is capable of all modifications which do not alter the nature of the invention. Thus, for example, the steering-gear or the steering wheel or wheels may equally well be placed behind as in front. This would be the case in a tricycle for three persons, two of whom were not intended to take part in the driving of the vehicle, one person only acting upon the pedals. Figs. 7 and 8 represent, by way of example, a tricycle for three persons. From an examination of the drawings it will easily be noticed that all the parts hereinbefore described are also present in this arrangement under nearly the same conditions, with the exception of the levers c, which are omitted. In this tricycle, as has already been stated, one person only, the one at the rear pedal, works, while the two persons at the front remain inactive during normal traveling. The cyclist intrusted with the steering of the machine and sitting on the seat S works the pedals a a, which by the intervention of the pawls g g cause the rotation of the ratchet-wheels i i, and thereby also the pin-wheel j, which latter operates the pinions h h. The two persons seated at the front remain inactive at ordinary times. When, however, climbing a hill, they may take part in the working of the vehicle. With this object two auxiliary pedals a' a' are provided, adapted to act upon pawls g' g', conveniently disposed so as to operate ratchet-wheels i' i', fixed upon the same spindles with the wheels i i and pin-wheel j, thus contributing to the motion of the machine in a similar manner to that hereinbefore described.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In combination in a vehicle having three or more wheels, driving-pedals, a pin-wheel, a pair of axles for the driving-wheels having their axes coincident and arranged independent of each other and the two pinions h arranged upon the said axles to receive movement from the pin-wheel, substantially as described.

2. In combination, a vehicle, the independent axles, pinions h, h, thereon, and a pin-wheel for driving the pinions consisting of three disks r, bolts and nuts connecting the disks, a series of pins s arranged around the disks, and hollow sleeves or cylinders t carried by the pins and arranged to gear with the teeth of the pinions h, substantially as described.

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

VENCESLAS GOURNY-WYSOCKI.

Witnesses:

ED. ELURIONS,

GREGORY PHELAN.