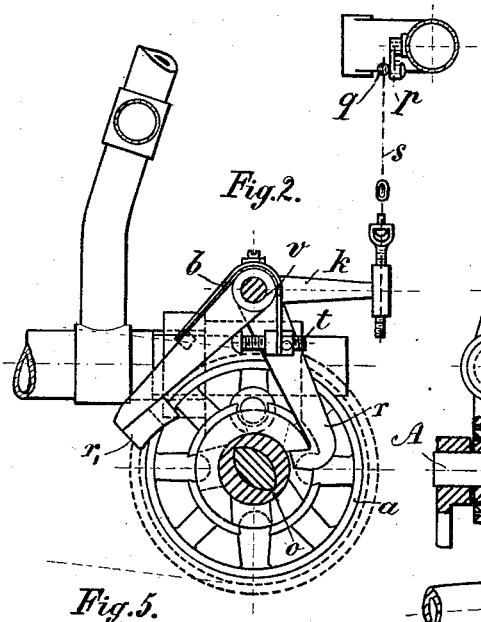
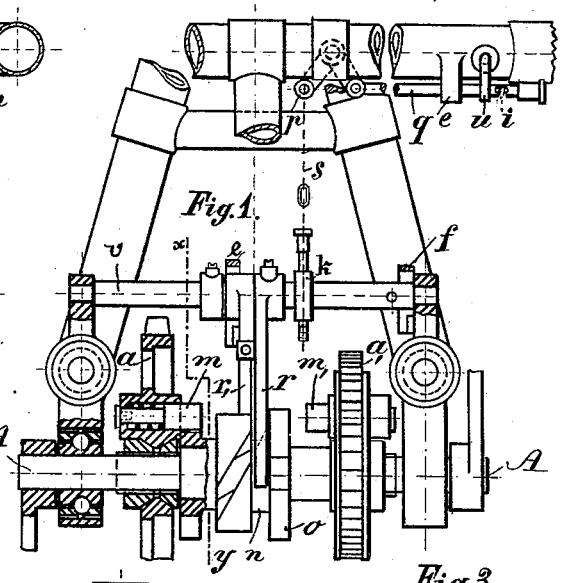
(No Model.)

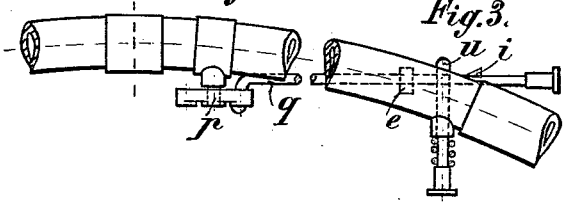
R. SCHWÉERS.

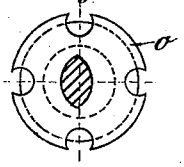
VELOCIPEDE.

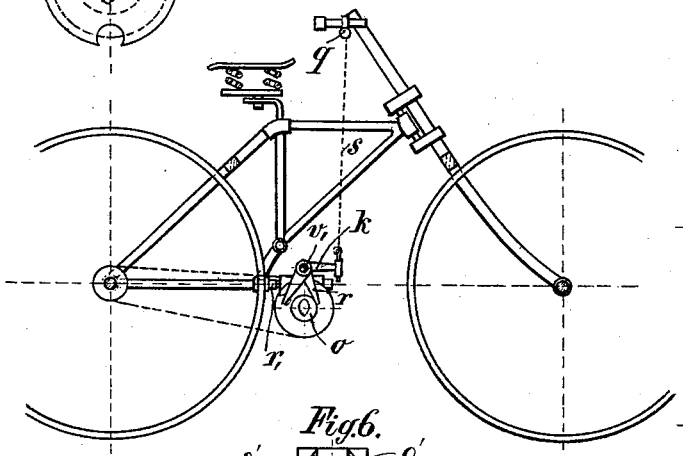
No. 454,070. Patented June 16, 1891.

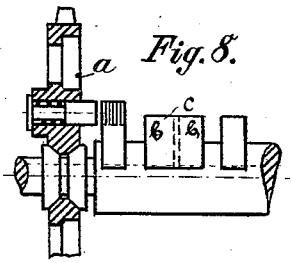


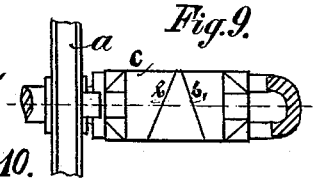


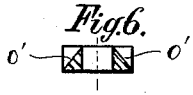


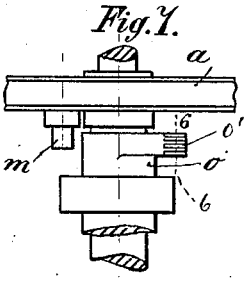


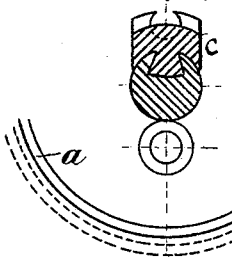












Witnesses:-
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L. M. Low

Inventor:-
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by Richards & Co.
Attorneys.

UNITED STATES PATENT OFFICE.

RAPHAEL SCHWÉERS, OF DANTZIC, GERMANY.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 454,070, dated June 16, 1891.

Application filed January 12, 1891. Serial No. 377,510. (No model.)

To all whom it may concern:

Be it known that I, RAPHAEL SCHWÉERS, a subject of the King of Prussia, residing in the city of Dantzic, in the Kingdom of Prussia, Empire of Germany, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification, reference being had to the accompanying drawings.

In said drawings, Figure 1 shows in elevation and partly in section a crank-shaft and contiguous gearing embodying my invention. Fig. 2 is a cross-section on line $x\ y$ of Fig. 1. The handle-bar is also shown in Figs. 1 and 2, though not at its proper height, in order to illustrate the means for operating the gearing from said bar. Fig. 3 is a top view of a portion of said bar and operating means. Fig. 4 gives a side view of the whole velocipede on a smaller scale with the gear-changing apparatus. Fig. 5 is an end view of the stop-sleeve. Fig. 6 is a section on line 6 6, Fig. 7. Fig. 7 is a plan view illustrating a modified form of the stop-sleeve. Figs. 8, 9, and 10 illustrate another modification, in which the sleeve is replaced by a slide fitting in the shaft.

a and a' are front chain-wheels on the crank-shaft A, of which one always runs empty. Mounted in and projecting from the sides of these wheels are spring-pressed pegs m and m'. The stop-sleeve o contains a right and left screw-thread or groove and at both ends flanges provided with holes, Figs. 1 and 5, into which the pegs m and m' fit. When the sleeve o is shoved back and forward on the pedal-crank, which is oval in the middle, one of the wheels a or a' can be disengaged and the other engaged.

r and r' represent two levers with screw-like or beveled ends, of which r' fits into the right and r into the left thread of the stop-sleeve o. r is tight and r' is loosely fixed on a rock-shaft v. A third lever k is in connection with the pressure-rod q, with which the change in the chain-gear is effected by the chains a and the small two-armed levers p. The movable lever r' is fastened to the lever r by the spring-screw b and can be put up out of use by means of the thumb-screw t.

The whole apparatus is drawn as though the right part were in action. The lever r runs freely in groove n and holds the stop-sleeve o in the position indicated. When the other gear is to be put in motion, the lever r is disengaged, and thereupon the lever r' is engaged in its screw-thread or inclined slot in the center part of the sleeve o. Both are accomplished by one pressure on the rod g, held in bearing e, causing also the projection i to pass the spring-catch u and to be held with the rod g in the second position. The lever r first touches the circumference of the stop-sleeve o, and is then pressed into the inclined groove therein by the spring b, which is compressed by the further movement of the pressure-rod. It is especially to be mentioned that when changing gear it is not necessary to let loose the handle-bar. As soon as lever r' has been pressed into the screw-thread the latter will, by the movement of the main crank, cause the sleeve o to screw itself past the lever r' and put the sleeve into the second position, whereby the one chain-gear is first disengaged from and then the other is engaged with the main crank-shaft. The whole operation takes place absolutely without a shock and is done quickly and is hardly noticeable. If the first condition of the mechanism is to be brought about again, the pressure-catch u is operated to release the rod q and the latter is moved to the right. The shaft v is turned, and the lever r is thereupon pressed into its screw-groove by a spring f of any convenient construction, and the stop-sleeve o is brought to its first position by the screw action of the sleeve upon the end of lever r.

In Fig. 8 the stop-sleeve o has been replaced by a gliding stop-piece C, placed swallow-tail-like into the pedal-crank, and whose moving is caused by the working together of the two glide-surfaces b and b' with the already-mentioned levers r and r'. Figs. 9 and 10 show this arrangement in top view and cross-section.

In Fig. 7 the perforated flange, Fig. 5, does not cover the whole circumference, but only a part of it, constituting in effect an arm upon the sleeve, and it has only one opening, with neighboring beveled or slanting surfaces o', on which the spring-pegs m and m' can glide

up. The stop arrangement can be brought to a final position with this construction without any essential resistance.

What I claim is—

1. The stop-sleeve *o*, adapted to engage the gears and having inclined faces, as shown, combined with the rock-shaft *v* and the oppositely-acting levers *r* and *r'*, situated on opposite sides of the sleeve.

2. The combination of the levers *r* and *r'* with the stop-sleeve *o*, having right and left inclined faces, and with the chain-wheels *a* and *a'*.

3. The crank-shaft A, the chain-wheels, and the sliding stop-sleeve thereon, projections on the chain-wheels for engaging the sleeve, levers *r* and *r'*, situated on opposite sides of the sleeve and having an interposing spring *b*, and means for engaging these levers with the sleeve to shift it longitudinally upon the shaft, all combined substantially as shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RAPHAEL SCHWÉERS.

Witnesses:

RAPHAEL SKORKA,

JOH. FAHR.