(No Model.) 2 Sheets—Sheet 1.

O. DALISCH.

VELOCIPEDE.

No. 488,988. Patented Jan. 3, 1893.

Fig. 1.

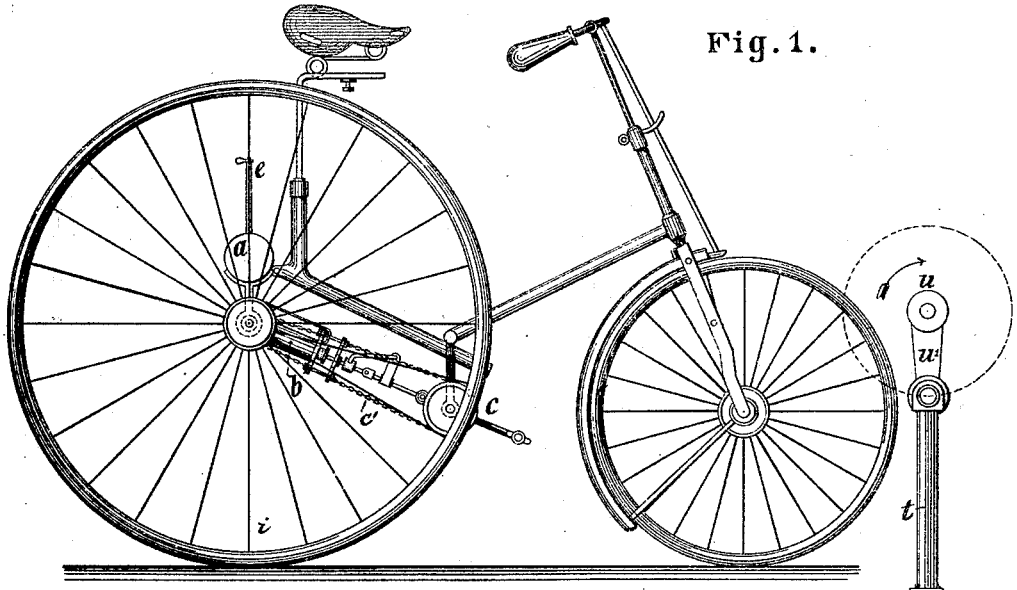


Fig. 2.

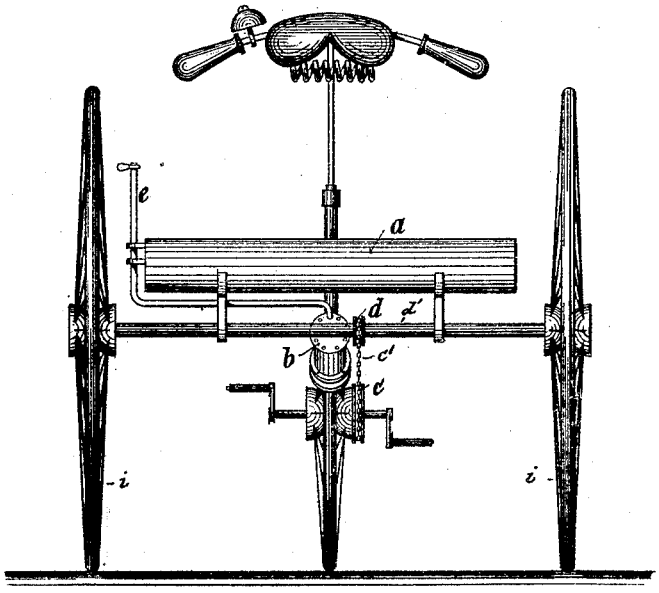
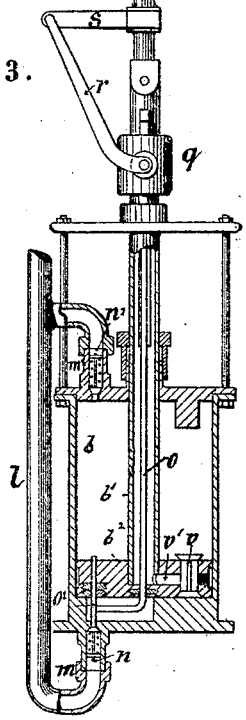


Fig. 3.



WITNESSES:

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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VELOCIPEDE.

No. 488,988. Patented Jan. 3, 1893.

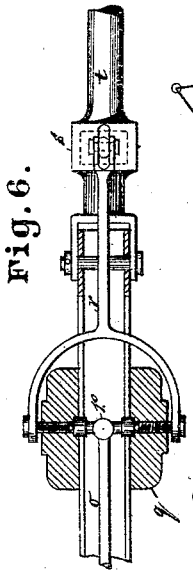

Fig. 6.

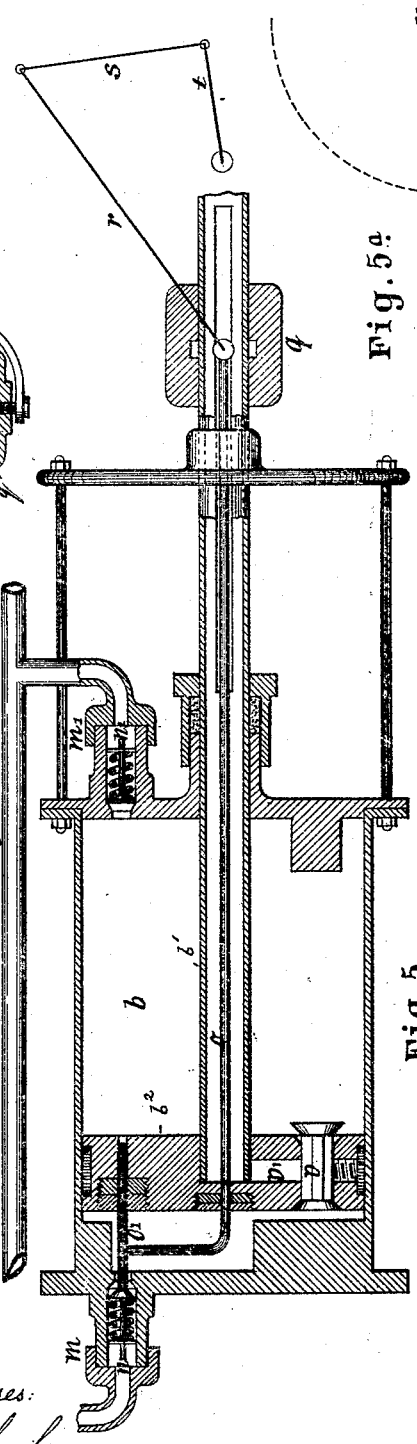

Fig. 4.

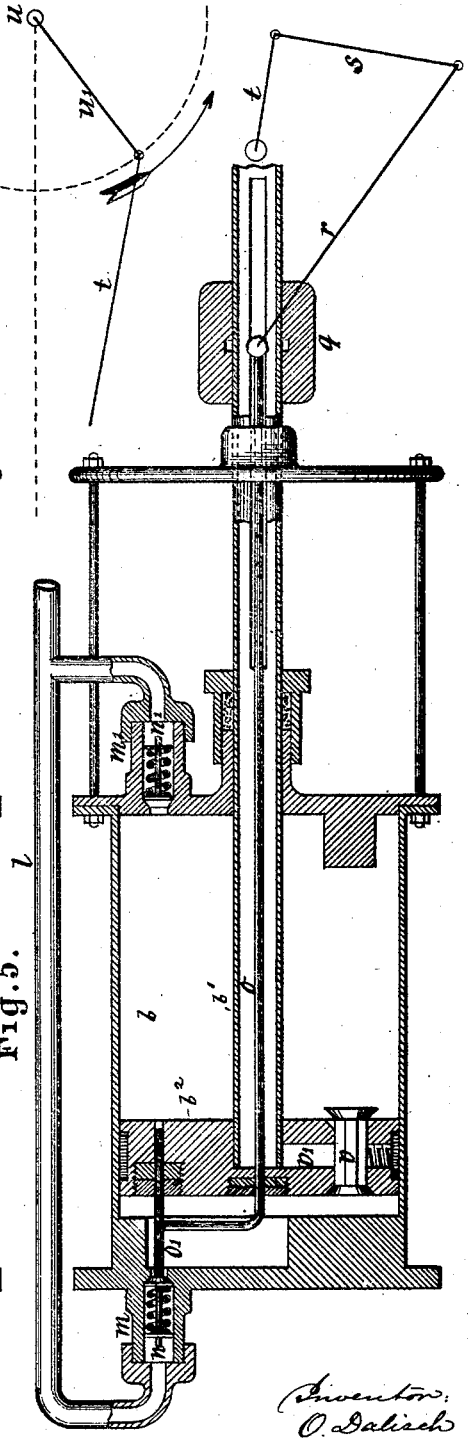

Fig. 5.

Fig. 5a.

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UNITED STATES PATENT OFFICE.

OSCAR DALISCH, OF NEISSE, GERMANY.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 488,988, dated January 3, 1893.

Application filed November 10, 1891. Serial No. 411,430. (No model.)

To all whom it may concern:

Be it known that I, OSCAR DALISCH, a citizen of the Kingdom of Prussia, residing at Neisse, in the Province of Silesia and Empire of Germany, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification.

This invention relates to an improved velocipede provided with means for aiding the rider in climbing hills, covering bad roads, traveling against head winds &c. These means consist of a reservoir containing compressed air, liquid carbonic acid or a similar material which is allowed to act upon the driving shaft and which is controlled by the peculiar mechanism hereinafter specified.

In the accompanying drawings Figure 1 is an elevation of a velocipede provided with my improvement. Fig. 2 a rear view thereof. Fig. 3 a longitudinal section through the cylinder. Figs. 4 and 5 are similar sections with the cut off in different positions. Fig. 5ª a diagram showing the reversal of motion and Fig. 6 a section through the piston showing the cut off mechanism. Figs. 4—6, are drawn on a larger scale than the remaining figures.

The letter *a*, represents a suitable reservoir or tank secured to the frame of a velocipede preferably between its driving wheels. This reservoir is adapted for the reception of compressed air, steam or liquid carbonic acid and is connected to a cylinder *b*, by means of the inlet pipe *l*. The piston rod *b'*, revolves pulley *c*, which by means of chain *c'*, revolves pulley *d*, fast on driving axle *d'*. Within the pipe *l*, there is a throttle valve which can be operated by means of rod *e*. This pipe may also be provided with a pressure reduction valve or with an expansion chamber, to convey the compressed air &c. under the proper tension and condition into the cylinder.

m, *m'*, are the valve boxes, containing the inlet spring valves *n*, *n'*. The piston rod *b'*, is tubular and is set into a socket of the piston b^2. Through the bore of the piston and the hollow piston rod there extends a valve rod *o*, which is pivoted to a cross piece *p*, sliding in slots of the piston rod. The cross piece *p*, is held by a turnable sleeve *q*, to which is pivoted a forked lever *r*, connected to a lever *s*, that may be revolved on the connecting rod or pitman *t*. This rod is coupled to the crank *u'*, of axle *u*, (Fig. 3).

The piston b^2, is provided with the double valve *v*, which is adapted to be opened or closed by coming into contact with the cylinder heads and which allows the air in front of the piston to be exhausted through the bore *v'*, and the hollow piston rod *b'*. In the position shown in Fig. 3, the pin *o'*, of valve rod *o*, (which is placed in alignment with the valves *n*, *n'*) opens the valve *n*, to admit the compressed air behind the piston. The piston will now move forward and the pin *o'* will keep the valve *n*, open for a short time by a differential movement of the rod *o*, in the piston rod. At the end of the stroke the valve *v*, will be reversed and the valve *n'* will be opened so that the return stroke is made. By revolving the levers *r*, and *s*, one hundred and eighty degress (Fig. 5) it is possible to give to the machine a reverse motion. If these levers are revolved while the velocipede is driven, one of the valves *n*, *n'*, is opened prematurely and a contrary pressure will arise before the crank arrives at its dead point. This causes the piston to stop and go back so as to give to the machine the desired reverse movement.

What I claim is:

1. The combination of reservoir *a* with cylinder *b*, inlet valves *n*, *n'*, piston having valve *v*, hollow piston rod and with valve rod *o* having pin *o'*, substantially as specified.

2. The combination of reservoir *a* with cylinder *b*, inlet valves *n*, *n'*, piston, hollow piston rod *o*, having pin *o'*, and with the cross piece *p*, levers *r*, *s*, and sleeve *q*, substantially as specified.

Signed at Breslau, in the Province of Silesia and Kingdom of Prussia, Empire of Germany, this 22d day of October, 1891.

OSCAR DALISCH.

Witnesses:
JOSOP DOTETT,
ROB SCHOLZ.