J. HEIDEN.

Running-Gear.

No. 19,088. Patented Jan. 12, 1858.

Fig. 4.

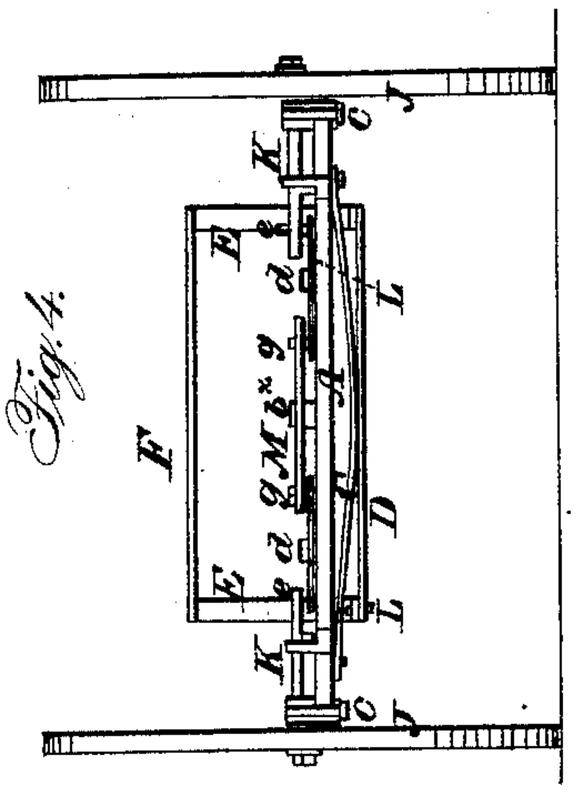


Fig. 3.

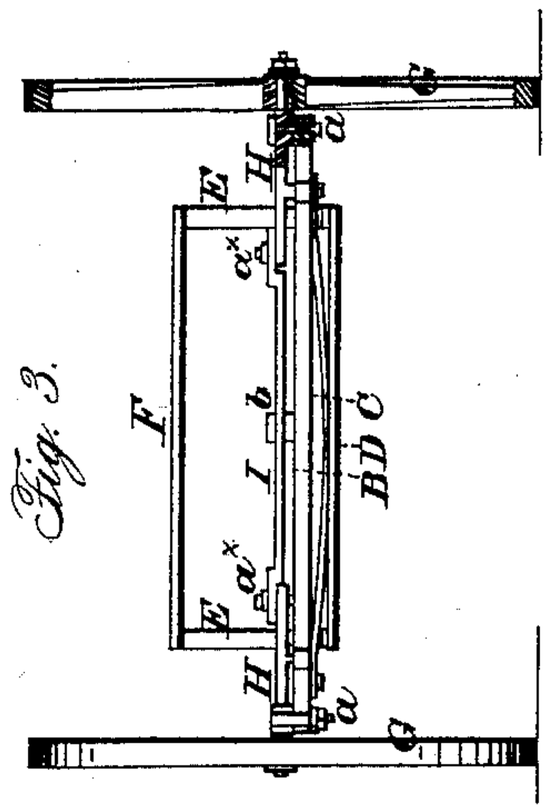


Fig. 1.

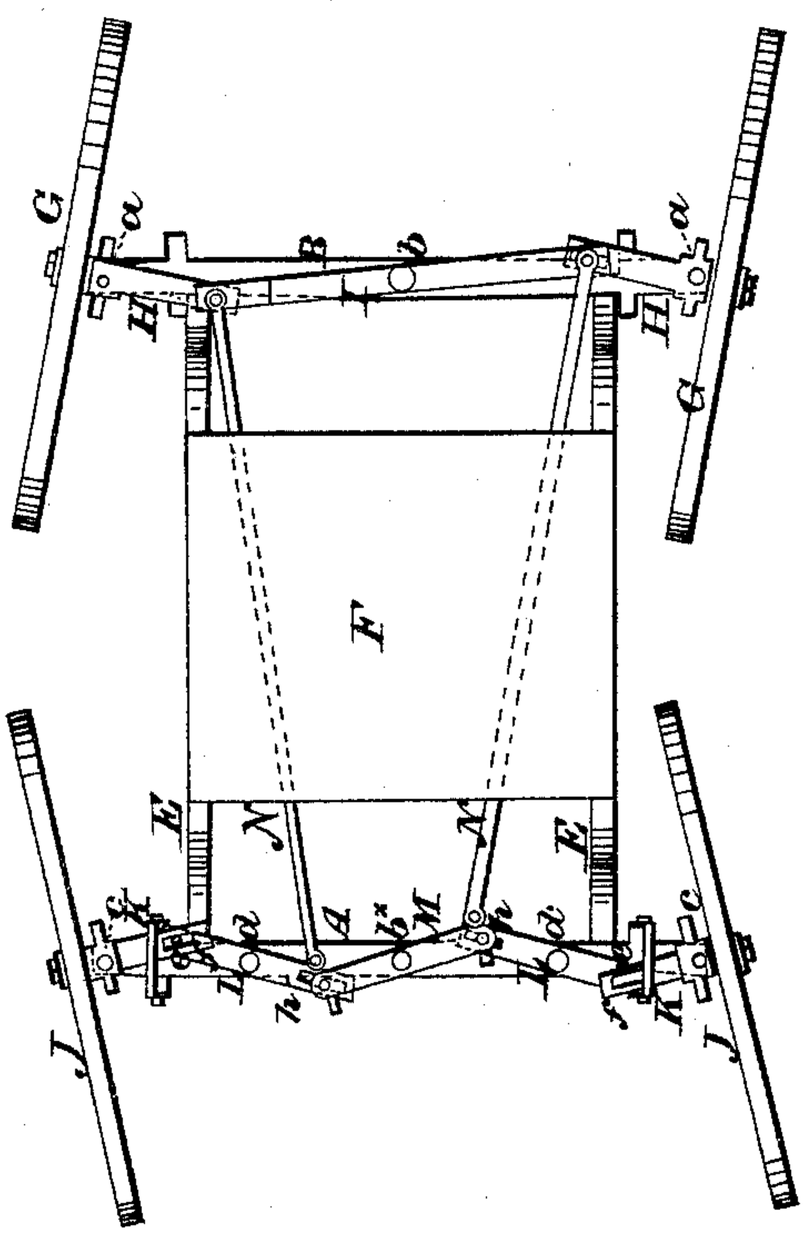
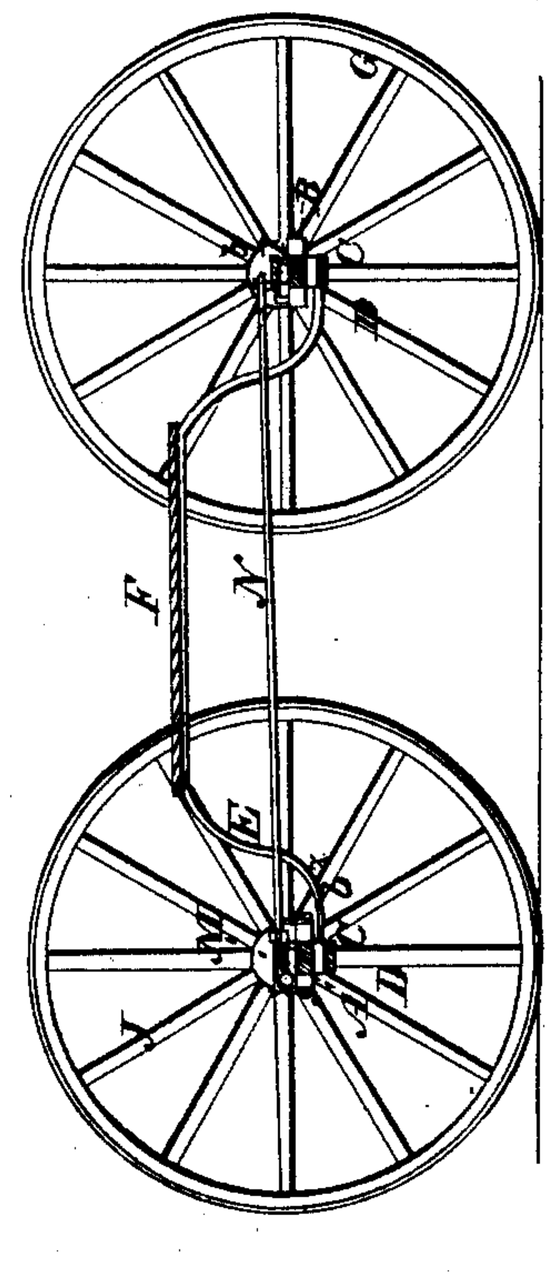


Fig. 2.



UNITED STATES PATENT OFFICE.

J. HEIDEN, OF NEW YORK, N. Y.

WHEEL-VEHICLE.

Specification of Letters Patent No. 19,088, dated January 12, 1858.

To all whom it may concern:

Be it known that I, JOHN HEIDEN, of the city, county, and State of New York, have invented a new and useful Improvement in Wheel-Vehicles; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a plan or top view of my improvement. Fig. 2 is a longitudinal central section of the same. Fig. 3 is a back view of the same. Fig. 4 is a front view of the same. Similar letters of reference indicate like parts in all the figures.

This invention relates to an improvement in wheel-vehicles, whereby the same may be turned (by a simple means) within a small space.

The invention consists in having both the front and back wheels attached to levers, and having the levers of both pairs of wheels connected by rods in such a way (hereinafter described) that both the front and back pairs of wheels may, as the shafts or draft-pole is turned, be "cramped" or turned simultaneously in opposite directions and thereby effect the desired purpose.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, B, represent two parallel bars to the underside of each of which a spring C is attached, and to the center of each spring a bar or bolster D is attached. To the ends of the bolsters D, curved bars E are secured, to which bars the bed F, and consequently the body of the vehicle, is attached. The springs C are flat strips of steel, having each end attached to its respective bar, or semi-elliptical-leaved springs may be used. The bars A, B, are placed at the same distance apart as the front and back axles of all vehicles; and said bars in fact form portions of the axles of the vehicle, for the levers to which the wheels are attached are pivoted to the bars A, B. The back wheels G, G, are attached to levers H, H, pivoted to the ends of the bar B, as shown at (*a*, *a*.) The inner ends of the two levers H, H, are connected to the ends of a lever I, by means of pins ($a^{\times}$,) passing through the ends of the lever I, and fitting in slots in the inner ends of levers H, H. The center of the lever I, is pivoted to the center of bar B, as shown at (*b*); see more particularly Figs. 1 and 3. The front wheels J, J, are each attached to a lever K, which levers are pivoted to the ends of the bar A, as shown at (*c*, *c*). The inner ends of the levers K, K, are connected to levers L, L, which are pivoted to bar A, at (*d*, *d*), the levers K, K, being connected to levers L, L, by means of pins (*e*, *e*), which are attached to the levers L, L, and fit in slots (*f*) in the inner ends of the levers K, K. The inner ends of the levers L, L, are connected to the ends of a lever M, by means of pins (*g*) which are attached to the ends of said lever M, and fit in slots (*h*) in the inner ends of the levers L, L. The lever M is pivoted at its center to the bar A, as shown at ($b^{\times}$). The draft-pole or shafts are attached to the lever M, and the ends of the levers M, I, are connected by rods N, N.

From the above description it will be seen that as the draft pole or shafts are turned, the front and back wheels will be "cramped" or turned simultaneously in opposite directions as shown clearly in Fig. 1, and both pairs of wheels will consequently be so placed as to run on or over short curves, thereby causing the vehicle to turn within a small space. The movement of the two pairs of wheels in reverse directions is due to the additional levers L, L, on the bar A.

I would remark that the bars A, B, and the levers that are attached to them, and also the connecting rods N, N, will be constructed of metal, at least this will probably be the material used. I would also remark that the levers K, K, to which the front wheels are attached, pass through loops O, O, which are attached to the bar A, and serve as checks or stops to control the length of the vibration or movement of said levers and their wheels J, J.

I am aware that vehicles have previously been constructed so that their front and back wheels could move or turn simultaneously as herein shown. But I am not aware that the particular means employed for effecting the purpose as herein shown has ever been employed. The devices hitherto employed for such purposes, so far as I am aware, have been complicated, their operation attended with considerable friction, and the movement of the wheels comparatively restricted, cross levers being employed to connect the two pairs of wheels.

I do not claim, broadly, connecting the front and back wheels of a vehicle so that

both pairs of wheels may be "cramped" or turned simultaneously for the purpose specified. But

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

Attaching the front and back wheels J, J, G, G, to their respective levers K, K, L, L, M, H, H, and I, which are pivoted respectively to the bars A, B, and connected by the rods N, N, substantially as and for the purpose set forth.

J. HEIDEN.

Witnesses:
W. TUSCH,
W. HAUFF.