(No Model.)

H. C. SWAN.

VEHICLE.

No. 391,493. Patented Oct. 23, 1888.

Fig. 1.

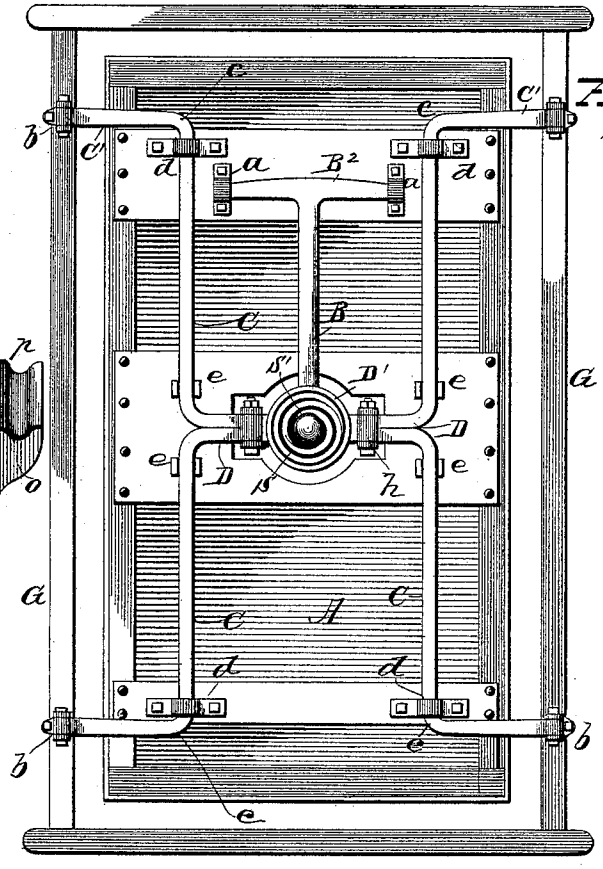


Fig. 3.

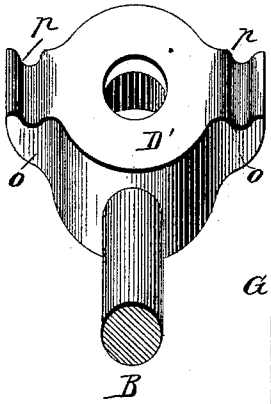


Fig. 5.

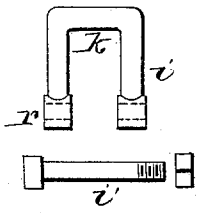


Fig. 4.

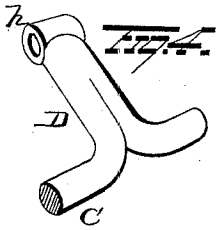
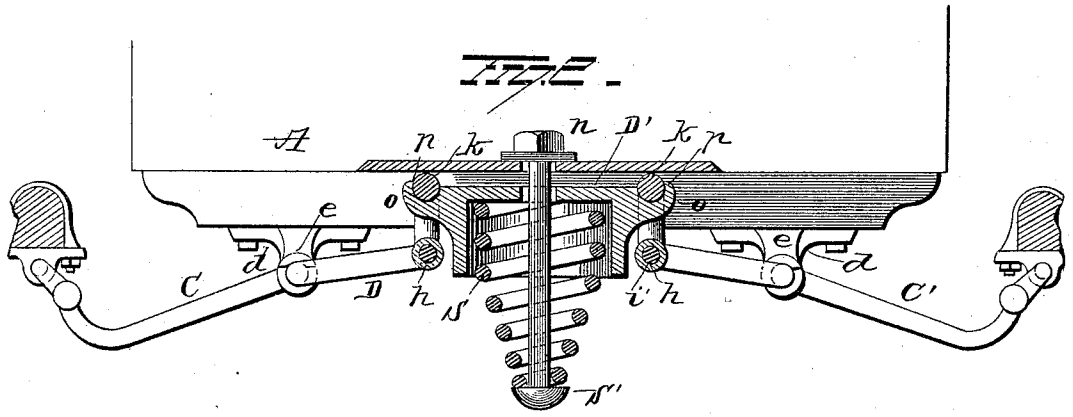


Fig. 2.



Witnesses,
E. J. Mottinghaus,
G. F. Downing.

Inventor,
Henry C. Swan,
By his Attorney
H. A. Seymour.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

HENRY C. SWAN, OF OSHKOSH, WISCONSIN.

VEHICLE.

SPECIFICATION forming part of Letters Patent No. 391,493, dated October 23, 1888.

Application filed July 16, 1888. Serial No. 280,083. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SWAN, a resident of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Vehicles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in vehicle-springs, the object of the same being to furnish a compact, simple, and efficient means for the connection of a central spring with the side bars of a vehicle-body, and more particularly to improve the construction of the spring attachment for vehicle-bodies shown in Patent No. 377,818, dated February 14, 1888.

With these objects in view my invention consists in certain features of construction and combinations of parts, which will be hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a bottom plan view of a vehicle-body with the improved spring-connection shown in position thereon. Fig. 2 is a side elevation in section taken on the line *x x*, Fig. 1. Fig. 3 is a detached and enlarged view of the spring-box that is attached to the free end of the spring equalizing-bar. Fig. 4 is a view of the center limb of one of the rock-shafts which connect the spring with the side bars of the vehicle. Fig. 5 is a view of a shackle-loop and its cross-bolt.

A represents the body of a vehicle, which may be of any preferred form; but it is particularly well adapted for use with a piano-body having side bars for support upon the spring.

On the side bars, G, Fig. 1, the rock-arms C are shackled at *d*. Said rock-arms are bent at *c* to afford arms C′, and near these right-angle bends the rock-shafts are loosely attached to the body A by the boxes *d*, and also at *e*.

Between the boxes *e*, near the center of length of the rock-shafts C, said arms are extended to produce integral limbs D, which project toward the center of the vehicle-body, or oppositely to the direction of the arms C′, the ends of the limbs being perforated, as will be further explained.

The equalizing-bar B is constructed substantially as shown. The lateral arms B^2, extending a proper distance transversely of the bed A, are journaled in the boxes *a*, to vibrate therein.

On the free end of the equalizing-bar B a spring-box, D′, is formed, which is cylindrical and adapted to receive and retain in proper position the coniform spiral spring S, which is loosely secured therein to permit spring action by the bolt S′.

The spring-box S (see Fig. 3) is provided with two oppositely-formed ears, *o*, which have the grooves *p* formed in their upper faces, said grooves lying in parallel planes to the limbs D of the rock-shafts C. In the grooves *p* are placed the integral cross-bars *k* of the shackle-loops *i*, which are shown in detail in Fig. 5. These shackles hang on the ears *o* and have their perforated bosses *r* loosely fastened by the bolts *i′* to the perforated ends *h* of the limbs D.

By the construction of parts just described the rock-shafts C will be securely connected to the equalizing-bar B at its free end in a manner to permit the resilience of the spring S to absorb all lateral or vertical jars and cause the body A to play with a remarkably smooth equable movement upon said spring S, the tension of which can be changed to suit the load by adjustment of the nut *n*.

It is also evident that from the construction of the rock-shafts C and the provision of the integral limbs D, formed on these rock-shafts, all longitudinal rocking motion of the vehicle-body is prevented, as well as undue lateral motion of the same, so that an agreeable riding-vehicle is thus provided at a low cost for construction of its spring-support and connections of the same to a vehicle-body.

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

1. The combination, with the body and side bars of a vehicle, of two rock-shafts journaled to the under side of the body and attached to the side bars, each shaft having a centrally-located inwardly-projecting arm, a spring-box having laterally-projecting grooved ears, and the loops journaled to the inwardly-projecting arms of the rock-shafts and overhanging or resting in the grooved ears of the spring-box, substantially as set forth.

2. The combination, with a vehicle-body having side bars, and two rock-shafts shackled to

these bars by their right-angled bent ends and each provided with an integral limb which projects from the side opposite the bent arms of the rock-shafts at about the center of length of the rock-shafts, said limbs being perforated sidewise near their inner ends, of an equalizing-bar adapted to vibrate vertically, a spring-box integral with the equalizing-bar, ears formed on the spring-box, a spiral spring, a spring-retaining bolt, and shackles that engage grooves in the ears of the spring-box and loosely secured by bolts to the perforated ends of the rock-shaft limbs, substantially as set forth.

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

HENRY C. SWAN.

Witnesses:
A. L. OSBORN,
C. R. NEVITT, Jr.