July 21, 1915.

DRAWING

1,230

A careful search has been made this day for the original drawing or a photolithographic copy of the same, for the purpose of reproducing the said drawing to form a part of this book, but at this time nothing can be found from which a reproduction can be made.

Finis D. Morris,

Chief of Division E.

AWK

UNITED STATES PATENT OFFICE.

FRANKLIN HATCH AND J. W. TERRY, OF SOUTH CORTLAND, NEW YORK.

IMPROVEMENT IN ELLIPTICAL SPRINGS FOR CARRIAGES.

Specification forming part of Letters Patent No. **1,230**, dated July 10, 1839.

To all whom it may concern:

Be it known that we, FRANKLIN HATCH and JONATHAN W. TERRY, of South Cortland, in the county of Cortland and State of New York, have invented a new and Improved Mode of Manufacturing Elliptical Steel Carriage-Springs; and we do hereby declare that the following is a full and exact description.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

We shape the body or long leaves in the known form, or form of the drawing; then measure from the center of the ear or scroll at each end one-sixth the length of the springs. We then weld on ears to the body-leaf, two at each end, one opposite the other; then drill them for a small rivet; then cut and draw the middle leaves or those whose curves are reversed from the center to the end a true taper to about one-third their original thickness, leaving them the whole length their original width; then make a shoulder on both edges of the leaves the thickness of the ear. A small scroll is then turned toward the center of the spring, the length of the leaves being two-thirds that of the body or long leaves from the center of each scroll. They are then bent the exact shape of the body for long leaves. The convex sides are then put together and fastened at the center with a single bolt or rivet. They are then put together, the scrolls put into the ears and riveted or bolted, which constitutes the spring.

In making springs in the manner herein described there is a reduction of nearly or quite one-third the quantity of steel for carrying the same weight by each part of the spring coming onto the other in an elliptical form in the bearing, thereby making two complete ellipties, which causes a reacting or double repelling motion; but the greatest improvement in them, and that which renders them superior, is their increased elastic and resistant motion by having each part of the spring detached from the other, except at the bearing-points, and those being made to work on a roller or hinge, which prevents all friction and retardation of motion as is occasioned in the common, springs by having each part come in close and binding contact with the other. When the carriage meets an obstruction which causes the springs to be put in motion there is a continuation of contraction and expansion of the springs (which the other springs have not) until they come to an equilibrium, thereby no jolt or sudden motion being felt.

What we claim as our invention, and desire to secure by Letters Patent, is—

The addition of two leaves to the inside of an elliptic spring, (with the curves reversed,) in the manner herein described.

FRANKLIN HATCH.
JONATHAN W. TERRY.

Witnesses:
M. L. HOPKINS,
CHARLES DE GROUT.