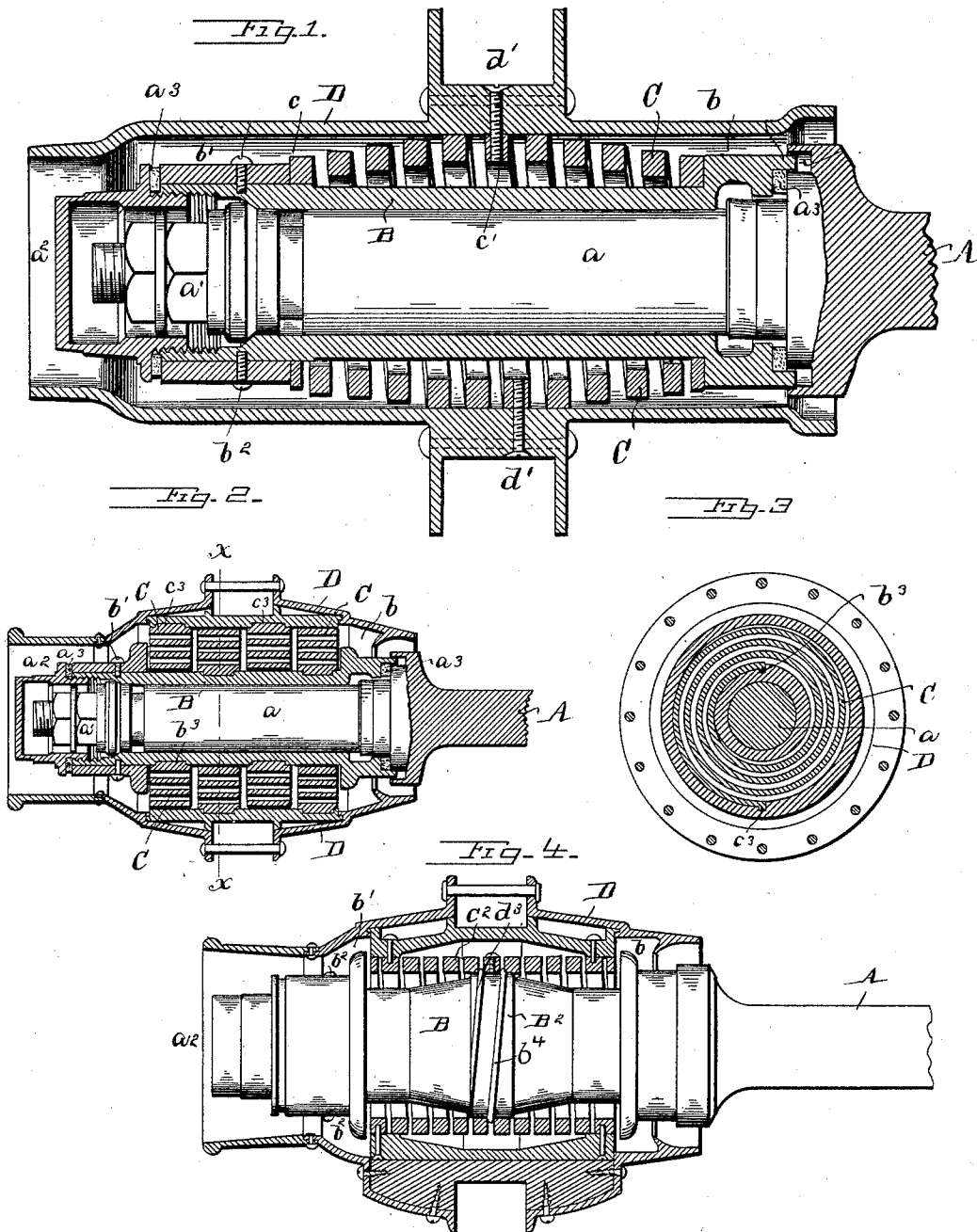


(No Model.)

J. W. CLOUD.
WHEEL HUB.

No. 519,808.

Patented May 15, 1894.



Witnesses:

Jesse B. Heller.
D. Stewart

Inventor.

John W. Cloud
by
Fleming J. Chambers
his Attorney.

UNITED STATES PATENT OFFICE.

JOHN WILLS CLOUD, OF CHICAGO, ILLINOIS.

WHEEL-HUB.

SPECIFICATION forming part of Letters Patent No. 519,808, dated May 15, 1894.

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To all whom it may concern:

Be it known that I, JOHN WILLS CLOUD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Wheel-Hubs, of which the following is an exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to wheel hubs and particularly to that class of hubs where there is an elastic support or filling in the hub adapted to take up shocks and jars.

Hubs have heretofore been made in two parts an inner box adapted to fit and revolve on an axle or spindle and an outer shell; and between these two parts a spring connection has been placed to take up the jars. There are however many objections to the constructions already devised among which objectionable features are the multiplicity of springs usually employed and the fact that the weight carried by the axle is borne entirely by the springs which are beneath the axle box. To obviate these and other objectionable features I have devised a wheel hub in which but few springs or a single spring are necessary thereby greatly simplifying the constructions, and in which practically the whole of the spring or springs is operative to carry the load on the axle instead of forcing a small portion of the supporting springs to carry all of it.

My invention is best described in connection with the accompanying drawings in which are illustrated several wheel hubs provided with spring connections in the hub arranged according to my invention and in which—

Figure 1 is a vertical section of a wheel hub showing the preferred mode of arranging the spring support in the hub. Fig. 2 is a section similar to that shown in Fig. 1 showing another mode of arranging the springs. Fig. 3 is a section on the line $x-x$ of Fig. 2 showing the spring support for the outer shell more clearly than shown in Fig. 2. Fig. 4 is a view similar to that shown in Fig. 1 illustrating another mode of arranging the spring support.

A is an axle having a spindle a on which an axle box B is adapted to fit and rotate,

nuts a' a^2 being arranged as usual to secure the box in the axle.

D is an outer shell and C a spring support for said shell, D. This spring support for the shell D is so arranged that it will normally hold the shell concentric with the box B but as it does not entirely fill the annular cavity between the shell and box, there will be ample space to allow of such springing as may be necessary to take up the shocks and jars which would otherwise be felt on the axle; and the arrangement is also such that the whole of the spring or springs are constantly in action when weight is carried by the axle. In Fig. 1 a single spring is shown coiled in a substantially helical manner around the box and in the space between the box and shell, and it is shown as held on the box by means of collars as $b b'$, the collar b' being shown removable and secured to the box by means of a screw b^2 ; it is obvious however that any other mode of holding the spring to the box B can be used if preferred; the center coils of the spring are adapted to support the shell D and can be positively secured thereto if found necessary by means of screws d' , the center coils c' of the spring being preferably made larger than the end coils for convenience of attachment. In Figs. 2 and 3 the springs which support the shell are shown coiled around the box spirally instead of helically as shown in Fig. 1, and these springs are shown as held to the box and shell by being stepped into grooves formed in them at b^3 c^3 respectively, the grooves being so arranged that alternate springs are stepped on different sides of the box and shell. In Fig. 4 a construction is illustrated where the spring is secured to the box at the center of the spring and to the shell at its ends, pins or screws being conveniently used to secure the spring; B² is an annular elevation on the center of the box which is provided with a raised thread b^4 which thread is adapted to fit between the coils c^2 of the spring and so secure it, doing away with the necessity of using screws as d^3 . In all of these arrangements of springs it will be noted that all parts of the spring assist in bearing the load carried on the axle, the weight causing a slight widening of the distance between the coils of the spring above the box and a corresponding

narrowing of the distance between the coils below the box; at the same time the springs are very easily applied as all of the springs shown are coiled around the box.

- 5 It will of course be obvious that various other arrangements of springs can be made which will act in substantially the same way as the arrangement shown, and I do not wish to be considered as limiting myself to the precise constructions shown; for instance several helical springs can be advantageously used instead of one spring as shown in Figs. 1 and 4 and an interior annular flange similar to the flange B² could be employed in the hub shown in Fig. 1 instead of making the middle coils of the spring there shown larger than the end coils; and various other modifications will suggest themselves to a skilled mechanic which would not be a departure from the spirit of my invention. The hubs shown may be of any approved type and be provided with suitable washers as a³ oil ducts and so on.

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

1. The combination in a wheel hub of a box adapted to fit on an axle, an outer shell and a spring or springs coiled around the inner box and between it and the outer shell, said spring being connected both to the inner box and the outer shell and adapted to support said outer shell, substantially as and for the purpose specified.
2. The combination in a wheel hub of a box adapted to fit on an axle, abutments or collars on said axle box, one of which is removable, an outer shell and a spring or springs coiled around the inner box between the collars thereon and within the outer shell substantially as shown and described.

3. A wheel hub consisting of two parts, an inner box and outer shell and having a spring coiled in a substantially helical manner around the inner box and between it and the outer shell, said spring being shaped as described so as to support the shell upon the box without filling the cavity between them and so as to leave room for the motion of the spring.

4. A wheel hub consisting of two parts, an inner box and outer shell and having a spring coiled in a substantially helical manner around the inner box and between it and the outer shell said spring being secured at the ends to one of the two parts of the hub and at the middle to the other part substantially as and for the purpose specified.

5. The combination in a wheel hub of a box adapted to fit on an axle, an outer shell and a spring coiled substantially in a helical manner around the axle box and having its central coils of larger diameter than the end coil, said spring being coiled around and held to the box at the ends and to the outer shell at the enlarged central portion, substantially as and for the purpose specified.

6. The combination in a wheel hub of a box adapted to fit on an axle, collars on said box, an outer shell and a spring coiled substantially in a helical manner around the box and between the collars and having its central coils of larger diameter than the end coil, said spring being coiled around and held to the box at the ends and to the outer shell at the enlarged central portion, substantially as and for the purpose specified.

JOHN WILLS CLOUD.

Witnesses:

JOSEPH W. TAYLOR,
C. D. EWER.