

(No Model.)

H. HUDDLESTON.
WHEEL HUB.

No. 426,816.

Patented Apr. 29, 1890.

Fig. 1.

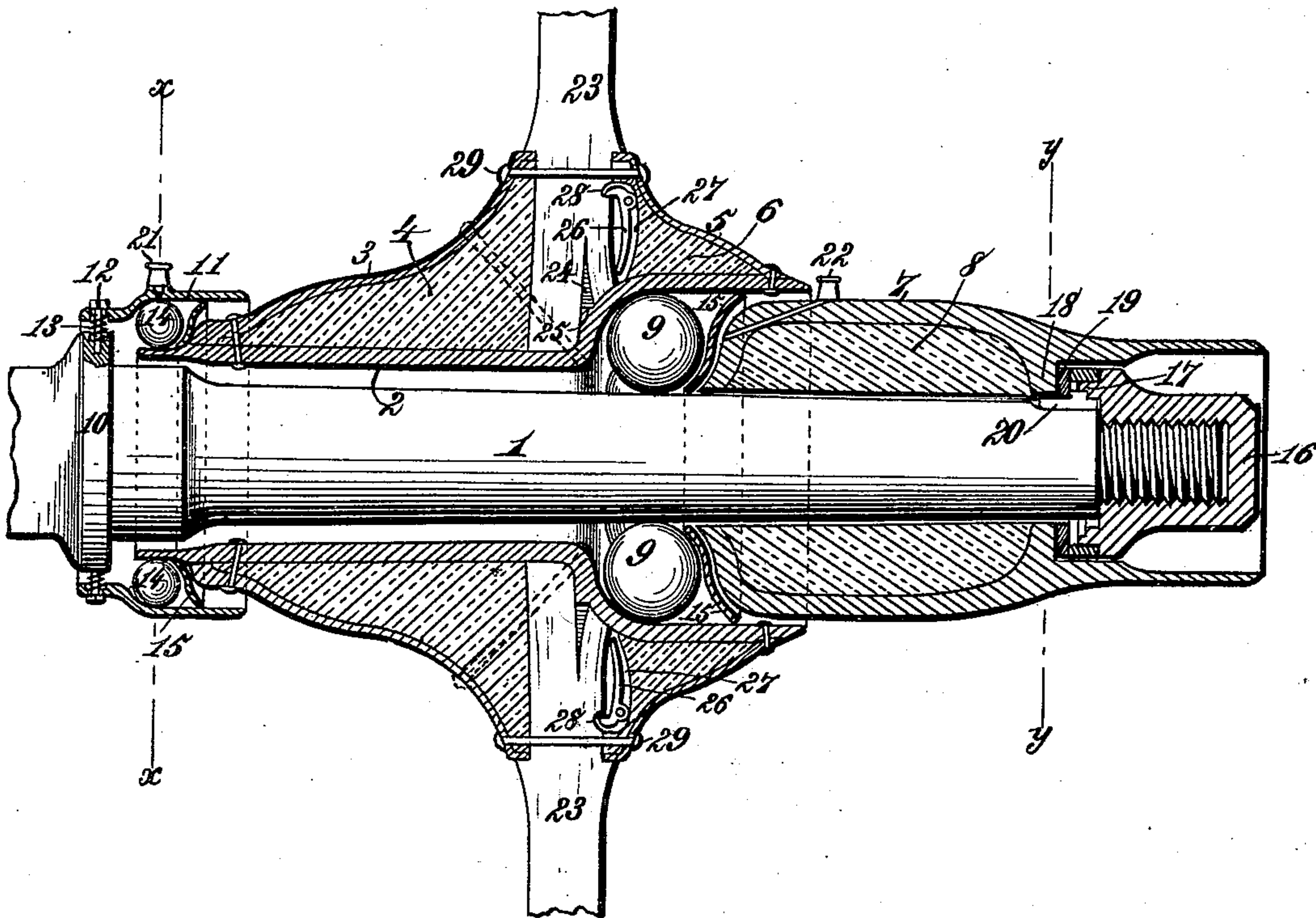


Fig. 2.

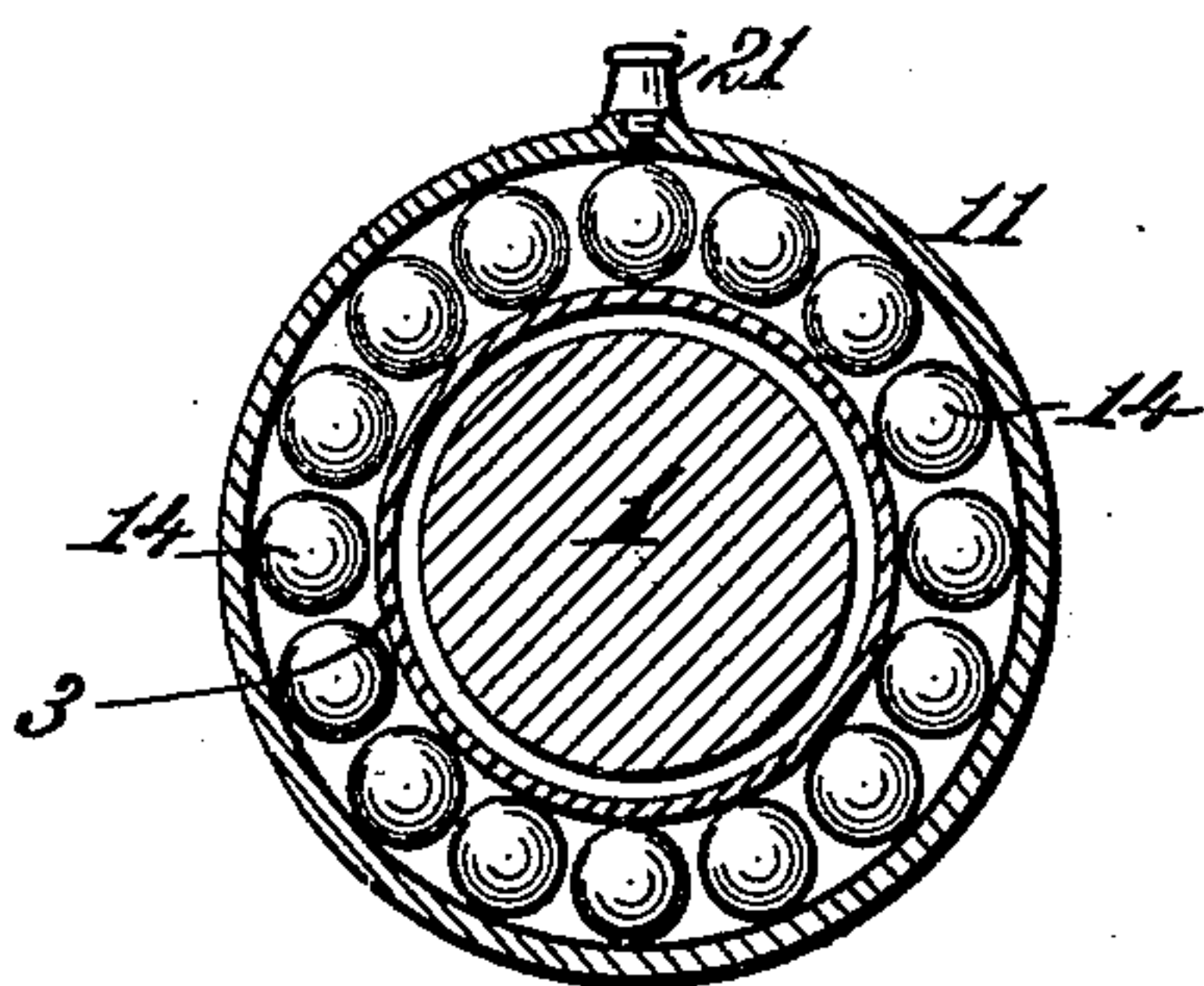
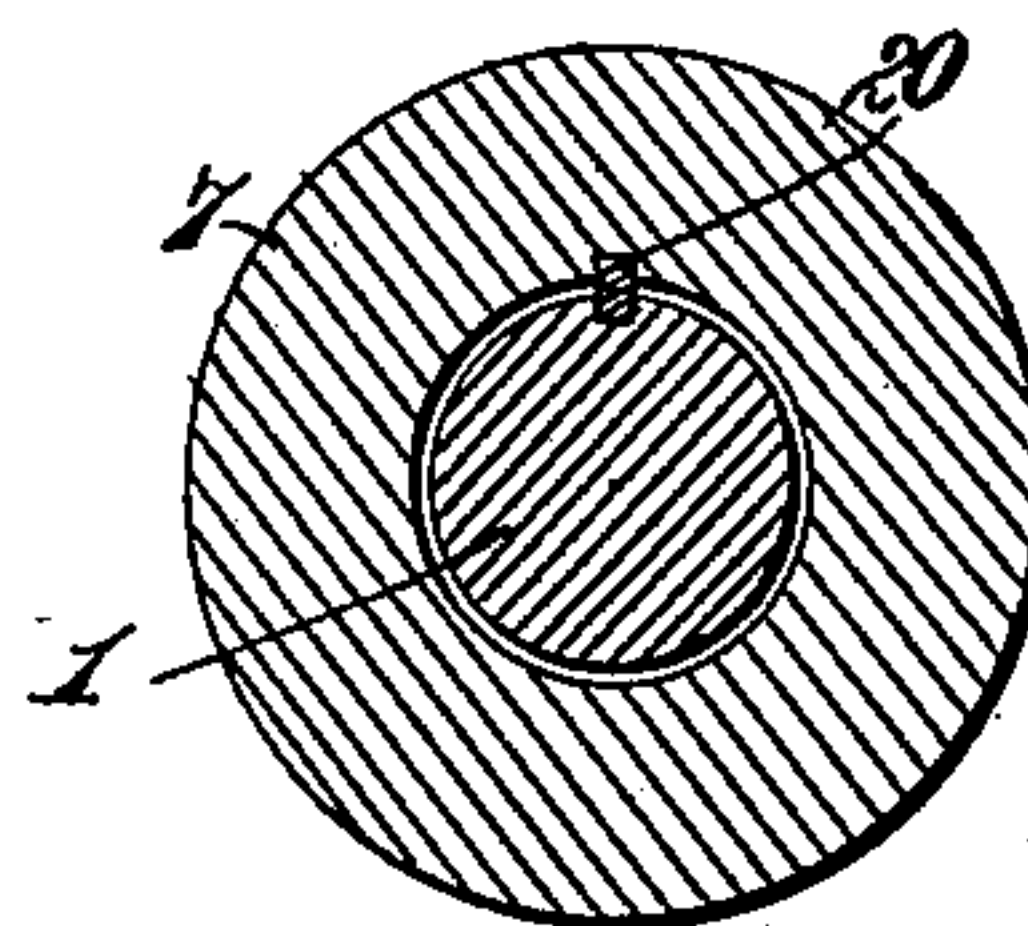


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

HARRY HUDDLESTON, OF LIBERTY, INDIANA.

WHEEL-HUB.

SPECIFICATION forming part of Letters Patent No. 426,816, dated April 29, 1890.

Application filed October 10, 1889. Serial No. 326,548. (No model.)

To all whom it may concern:

Be it known that I, HARRY HUDDLESTON, a citizen of the United States, residing at Liberty, in the county of Union and State of Indiana, have invented new and useful Improvements in Wheel-Hubs, of which the following is a specification.

My invention relates to improvements in wheel-hubs, the principal object being to provide a novel and practical arrangement of anti-friction bearings for a vehicle-wheel, whereby a light and durable construction can be obtained and the draft of the vehicle reduced to a minimum.

To this end the invention consists in the combination, with the wheel-hub and axle-spindle, of a series of ball-bearings encircling the spindle at or near the point of attachment for the spokes, in combination with the hub-shells and a collar surrounding the inner part of the spindle of another series of ball-bearings placed between said collar and the inner hub-shell at the inner end of the outer shell; in the combination, with the spindle and a nut on its outer end, of a thimble surrounding the outer portion of the spindle and forming a box for holding the first-named series of ball-bearings in place; in the combination, with the spindle and thimble, of a key fitted in a key-seat formed partly in the shoulder of the thimble and partly in the spindle to prevent the thimble from turning with the wheel; in the combination, with the hub and spokes, of wedges to expand the inner ends of the spokes, and hooks to interlock with notches in the sides of the spokes; and, further, in details of construction and combinations of parts hereinafter more fully described and claimed.

In the drawings illustrating the invention, Figure 1 is a longitudinal sectional elevation of a wheel-hub embodying my improvements. Figs. 2 and 3 are cross-sections on the lines *x x* and *y y*, respectively.

Referring to the drawings, the numeral 1 designates the axle-spindle, which may be of any ordinary or well-known construction. On the inner portion of the spindle is a hub composed of the inner metal shell 2, the outer metal shell 3 on the inner side of the spokes, a core or filling 4, of suitable material, placed between said shells, a metal collar or shell 5 on the outer side of the spokes, and a suitable core or filling 6 between said collar and the

outer portion of the inner shell. The shells 2 and 3 and collar 5 are securely riveted together and to the cores 4 and 6, as shown. The outer portion of the spindle is surrounded by a metallic thimble 7 and an interposed core or filling 8 of any suitable material. The inner end of this thimble forms with the outer end of the inner shell 2 a box or casing for an annular series of steel anti-friction ball-bearings 9, which immediately surround the spindle 1 about midway its length and at or near the point where the spokes are inserted into the hub.

Around the inner end of the axle on the shoulder 10 of the spindle 1 is fitted a metal collar 11, that is secured to said shoulder by means of screws 12, beneath which may be inserted elastic springs or cushions 13 to relieve the spindle of strain from sudden shock or jolting. Between this collar 11 and the outer portion of the inner shell 2 is placed another annular series of metal balls 14, the object of which is to hold the wheel in its proper position, there being no bearing directly on the spindle, except by the balls 9, that are located at about the center of said spindle. In front of the balls 14, and also between the balls 9 and thimble 7, are placed washers 15, of any suitable material.

On the outer screw-threaded end of the spindle 1 is placed a nut 16, as in ordinary vehicle-wheel hubs. The inner end of the nut 16 is provided with an annular shoulder 17, that abuts against an annular shoulder 18, projecting inwardly from the inner surface of the thimble 7, the engagement of said shoulders serving to hold the wheel-hub in its proper position on the axle-spindle. A washer 19 is placed between the nut 16 and shoulder 18, and is of sufficient thickness to push the thimble 7 back in such a way as to keep the bearing of the balls 9 always tight and enable any wear of said balls or their casing to be readily taken up.

If desired, a key 20 may be fitted in a key-seat formed partly in the shoulder 18 of the thimble 7 and partly in the spindle 1 to prevent the thimble from turning with the wheel.

Oil-cups 21 and 22 may be provided at suitable points to permit the introduction of oil for lubricating the wearing parts.

Between the hub cores or fillings 4 and 6 are recesses or sockets to receive the spokes

23, the inner ends of which are formed to correspond with and fit closely against the inner shell 2 of the hub. These spoke sockets or recesses are made wider toward the bottom than at the top, and the spoke before being driven in is split at its lower end and an expanding-wedge 24 started in the split portion, so that on driving the spoke the broad end of the wedge will come in contact with an annular shoulder 25 on the shell 2 and be gradually forced into the spoke, thereby spreading the lower end of the spoke until it completely fills its socket and is held firmly in place.

Additional fastenings for the spokes are provided by inserting pivoted swinging hooks 26 in recesses 27, formed in the hub-filling at the side of each spoke-socket and beneath the outer hub-shell. These hooks 26 are arranged radially in their respective recesses in such a manner as to be clear of the spoke-socket when the spoke is started therein; but as the spoke is driven inward its lower portion on one side comes in contact with and pushes back the lower end of the hook 26, thereby throwing the upper end of said hook out of its recess and causing it to engage or interlock with a notch 28 in the side of the spoke. Each spoke may also be further secured by a bolt 29, passed transversely through the hub-shell and core.

It will be observed that the arrangement and construction of the several parts of the wheel-hub and its attachments are such as to insure lightness, durability, and ease of draft. The hub will but seldom require repair and its parts can be readily replaced when necessary. The cap or collar 11 on the inner portion of the axle-spindle will have free vertical motion, and a sufficient lateral play may also be afforded by providing oblong holes to receive the screws by which said collar is attached. These screws may be threaded only at their inner ends, so as to permit free movement of the cap or collar and springs or cushions. By arranging the main anti-friction bearings near the center of the axle there will be no strain on its outer end, and by having the balls near the center in front of the spokes the outer portion of the dished wheel will be balanced directly over the center of the main bearings and give direct pressure on them, besides affording space for the larger balls and consequently obtaining lighter draft and greater durability. As the wheel is thus balanced on the main anti-friction bearings, the inner bearings need not be of the best material or as large as in ordinary hubs, and consequently the cost of the wheel can be lessened. By placing the inner bearings on the outside of the hub they will have more surface to roll on, and thus contribute to lessen the draft. This arrangement of main or outer bearings and inner bearings will also give the wheel-hub a neat appearance.

What I claim is—

1. In a wheel-hub, the combination, with the axle-spindle, of a series of ball-bearings

located in a box or casing formed in the hub and encircling the spindle about midway its length at or near the point of attachment for the spokes, substantially as described.

2. In a wheel-hub, the combination, with the hub-shells and a collar surrounding the inner portion of the spindle, of a series of ball-bearings placed between said collar and the inner hub-shell, substantially as described.

3. In a wheel-hub, the combination, with the spindle and a series of ball-bearings surrounding the spindle about midway its length, of a thimble placed on the outer portion of the spindle and forming a box or casing for said ball-bearings, and a nut and washer on the outer end of said spindle to hold said thimble in place, substantially as described.

4. In a wheel-hub, the combination, with the axle-spindle and a series of ball-bearings encircling said spindle about midway its length, of the inner hub-shell and the thimble forming a box or casing for said ball-bearings, substantially as described.

5. In a wheel-hub, the combination, with the axle-spindle, of a thimble placed on the outer portion of the spindle and provided with an internal annular shoulder, a nut on the outer end of the spindle, and an adjusting-washer located between said nut and the shoulder of the thimble, substantially as described.

6. In a wheel-hub, the combination, with the axle-spindle and a series of ball-bearings encircling said spindle about midway its length, of the inner hub-shell, a thimble on the outer portion of the spindle, the outer hub-shells or collars riveted to the inner shell, and a filling between said inner and outer shells, substantially as described.

7. In a wheel-hub, the combination, with the axle-spindle, the inner hub-shell, and a thimble on the outer portion of the spindle, of a series of ball-bearings located in a box or casing formed by said shell and thimble, and a washer placed between said ball-bearings and thimble, substantially as described.

8. In a wheel-hub, the combination, with the axle-spindle and inner hub-shell, of a collar secured to a shoulder at the inner end of the spindle, and a series of ball-bearings located between said collar and hub-shell, substantially as described.

9. In a wheel-hub, the combination, with spoke-sockets having recesses on one side, of a series of pivoted swinging hooks arranged radially in said recesses and automatically swinging into engagement with notches in the sides of the spokes as they are driven into their sockets, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

HARRY HUDDLESTON.

Witnesses:

E. C. THOMPSON,
L. W. FREEMAN.