

No. 636,012.

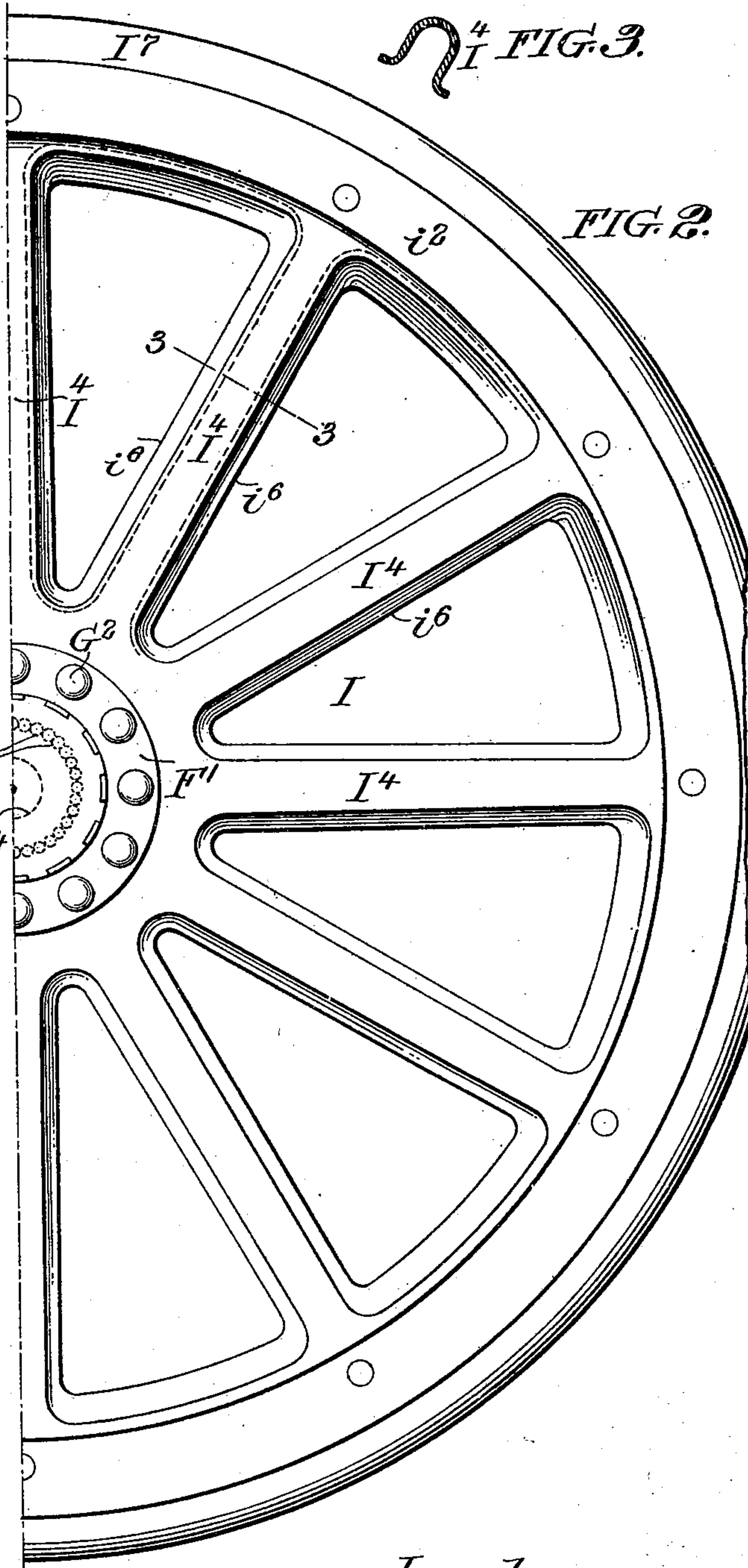
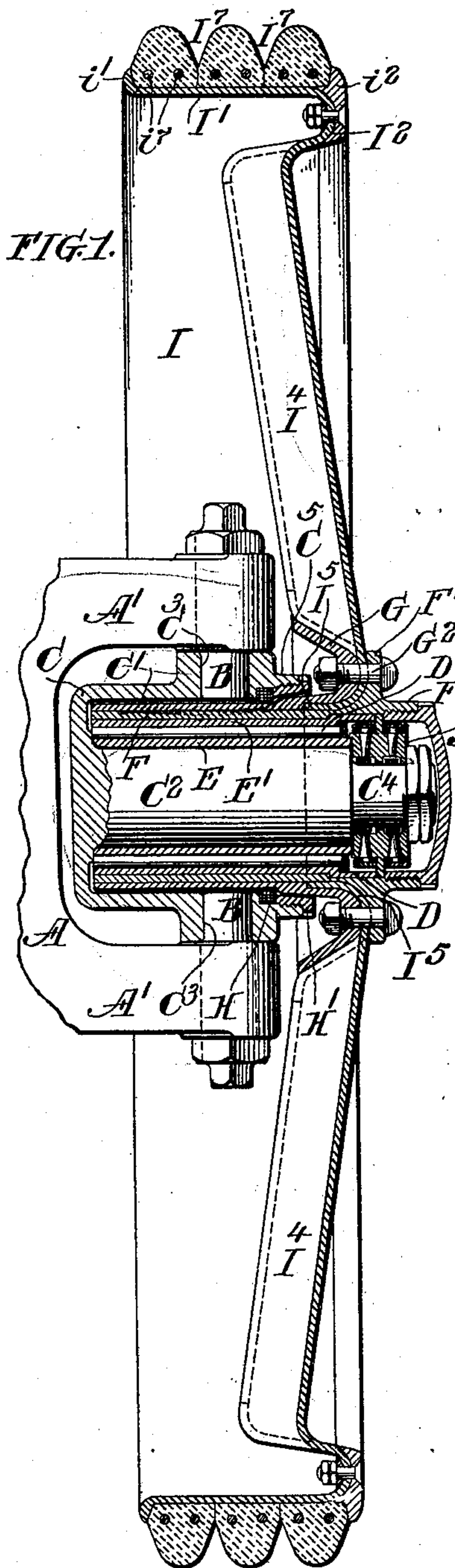
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WHEEL AND AXLE.

(Application filed Dec. 8, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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UNITED STATES PATENT OFFICE.

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WHEEL AND AXLE.

SPECIFICATION forming part of Letters Patent No. 636,012, dated October 31, 1899.

Application filed December 8, 1898. Serial No. 698,624. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. STRONG, a citizen of the United States of America, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Wheels and Wheel-Axles, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the construction of wheels and of wheel-axles, the primary object of my invention being to provide a strong and cheap wheel adapted for use with a stud-axle, the wheel and axle turning on a center lying within the tread of the wheel; and my invention consists in various features of construction and combination of the wheel and axle, the nature of which will be best understood as described in connection with the drawings in which my invention is illustrated, and in which—

Figure 1 is a vertical cross-section through the wheel and axle, constructed in what I believe to be their best form, said view also showing the end of the axle-support or, as it should, perhaps, be called, the "axle" proper of the vehicle. Fig. 2 is a face view of one-half of the wheel; Fig. 3, a cross-section on the line 3 3 of Fig. 2. Fig. 4 is a view of a steel plate adapted to be manufactured into my improved wheel. Fig. 5 is a central section through the plate after it has been subjected to the first stamping operation in the manufacture of the wheel. Fig. 6 is a similar view showing the form given to the plate by the second stamping operation. Fig. 7 is a similar sectional view showing the complete wheel, and Fig. 8 is a plan view indicating a convenient means for actuating a stud-axle.

A indicates the supporting-bar or axle proper of the vehicle, which at each end is forked into two branches A' and A', one situated above the other.

B B are journal-pins extending through the forks A' opposite to each other, as shown in Fig. 1.

C' is a cylindrical box formed with a closed end C, from the center of which extends a stud-axle C², the box forming an annular chamber around this stud-axle and being formed with journals C³ C³ at top and bottom,

adapted to receive the journal-pins B B, upon which the box is pivoted.

C⁴ indicates a cylindrical projection from the end of the stud-axle, upon which is secured a thrust-box, (indicated at J,) held in place by means of nuts, as shown.

C⁵ indicates an internally-threaded projection at the end of the box C'.

E is a bearing-cylinder fitted on the stud-axle C² and formed, preferably, of hard steel. E' is a similar bearing-cylinder, and D D, &c., indicate rollers situated between the two bearing-cylinders and forming roller-bearings between the wheel and stud-axle. The bearing-cylinder E' is fitted within the cylindrical-hub-section F, formed with an outwardly-projecting and internally-curved flange F', as shown in Fig. 1. This hub-section, continuing beyond the flange, forms the internally-threaded cylinder F², into which the cap-plate of the hub screws, as shown in Fig. 1. G is a second cylindrical hub-section adapted to fit in the box C' and fitting nicely over the cylindrical part of the hub-section F. The outer end of the hub-section G, however, forms an outwardly-extending curved flange adapted to fit against the hub-section of the wheel, to be hereinafter described, and to clamp it against the flange F' of the inner hub-section, bolts G² serving to bind the parts together.

H is a packing-ring placed in a shouldered portion of the outer end of the box C' and held in place by a clamping-ring H', screwing into the threaded portion C⁵ of the box.

I indicates the wheel, which I design to form from a single circular sheet of steel, such as is indicated in Fig. 4, cutting it by a single stamping operation in dies, first in the form indicated in Fig. 5—that is to say, forming the tread portion I' of the wheel with preferably an outwardly-extending flange i' at one end and with an outwardly and inwardly curved portion I² at the other end connecting the tread with an outwardly-angled web portion I³, the center of which is perforated at i³. Then by a second stamping operation in dies of proper form I form in the web portion I³ of Fig. 5 a series of radial corrugations I⁴, between which are relatively flat triangular portions, (indicated at I⁶,) and I also by the

same operation force the center of the web I^3 inward, as indicated at I^5 in Fig. 6, forming it into the hub-section of the wheel proper. By still another stamping operation I , in order to lighten the weight of the wheel, cut away the flattened portions I^6 , leaving openings, as indicated at i^6 in Fig. 7.

I^7 I^7 indicate tire-bands secured around the tread portion I' of the wheel, which may properly be made of rubber and fastened tightly to the tread of the wheel, as by means of wires i^7 . These tire-bands are, as shown, (see Fig. 1,) secured in place between the outwardly-extending flange i' , formed integrally with the tread of the wheel, and a removable flange i^2 , secured to the curved portion I^2 , joining the tread and the web of the wheel by means of bolts.

J , Fig. 8, indicates a lever fastened to the stud-axle box C' and actuated by a link K , and it will be understood that my wheel is especially designed for use on automobile-vehicles, in which it is found desirable that the wheel should turn on a center within its own tread.

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

1. An integral sheet-metal wheel-body having a tread portion I' from which the metal I^2 of the wheel curves inwardly and under the tread and is connected by U-shaped integral spokes I^4 with an integral hub-flange I^5 .

2. An integral sheet-metal wheel-body having a tread portion I' from the outer edge of which the metal I^2 of the wheel curves inwardly and under the tread and is connected by U-shaped integral spokes angling toward the outside face of the wheel with an integral hub-flange I^5 .

3. An integral sheet-metal wheel-body having a tread portion I' with an outwardly-extending flange i' on its inner edge and a downward and inward fold I^2 of the metal at its inner edge, and U-shaped spokes extending

from the inward fold I^2 to a hub-flange I^5 in combination with a detachable tire-retaining flange i^2 and means for securing it to the outer edge of the tread portion of the wheel.

4. A wheel having an inwardly-extending hub connected with its rim in combination with a box C' extending over the hub and beneath the rim of the wheel said box having means for pivotally connecting it with a vehicle-frame on a line passing through the rim and hub of the wheel, and a stud-axle having its inner end situated in and secured to the box C' , all substantially as described and so that the stud-axle and wheel will turn on a line passing through the tread of the wheel.

5. A wheel having an inwardly-extending hub connected with its rim by outwardly-angling spokes in combination with a box C' extending over the hub and beneath the rim of the wheel said box having means for pivotally connecting it with a vehicle-frame on a line passing through the rim and hub of the wheel, and a stud-axle having its inner end situated in and secured to the box C' , all substantially as described and so that the stud-axle and wheel will turn on a line passing through the tread of the wheel.

6. A stud-axle C^2 having its inner end secured to and surrounded by a box C' said box having means for pivotally connecting it with a vehicle-frame as described and so that the stud-axle will turn on a center passing through its journal portion in combination with a hub F adapted to lie within box C' and having a flange F' and an integral sheet-metal wheel-body having a tread I' , a downward and inwardly turned fold I^2 connected with a hub-flange I^5 by U-shaped spokes angling outwardly to said hub-flange, and means for connecting the hub-flange I^5 with the flange F' of the hub F .

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Witnesses:

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