

(No Model.)

2 Sheets—Sheet 1.

J. O. THERIEN.

VEHICLE AXLE.

No. 308,531.

Patented Nov. 25, 1884.

Fig. 1.

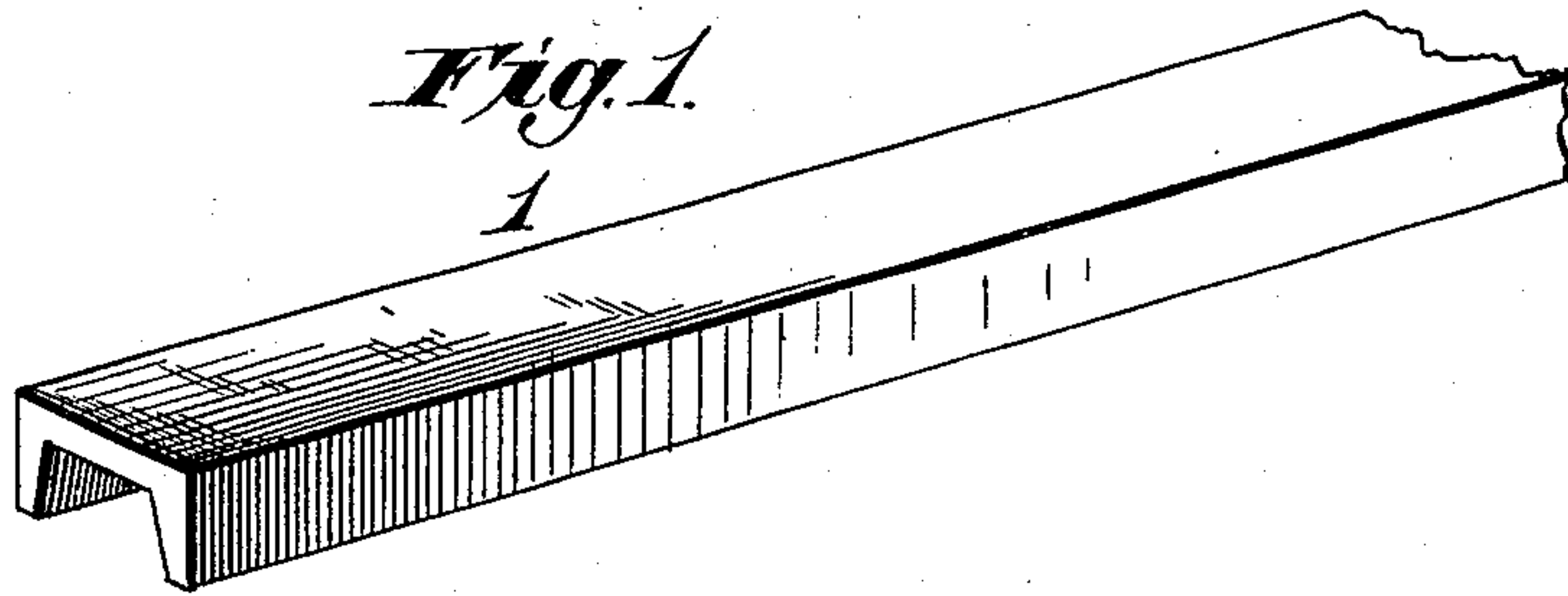


Fig. 2.

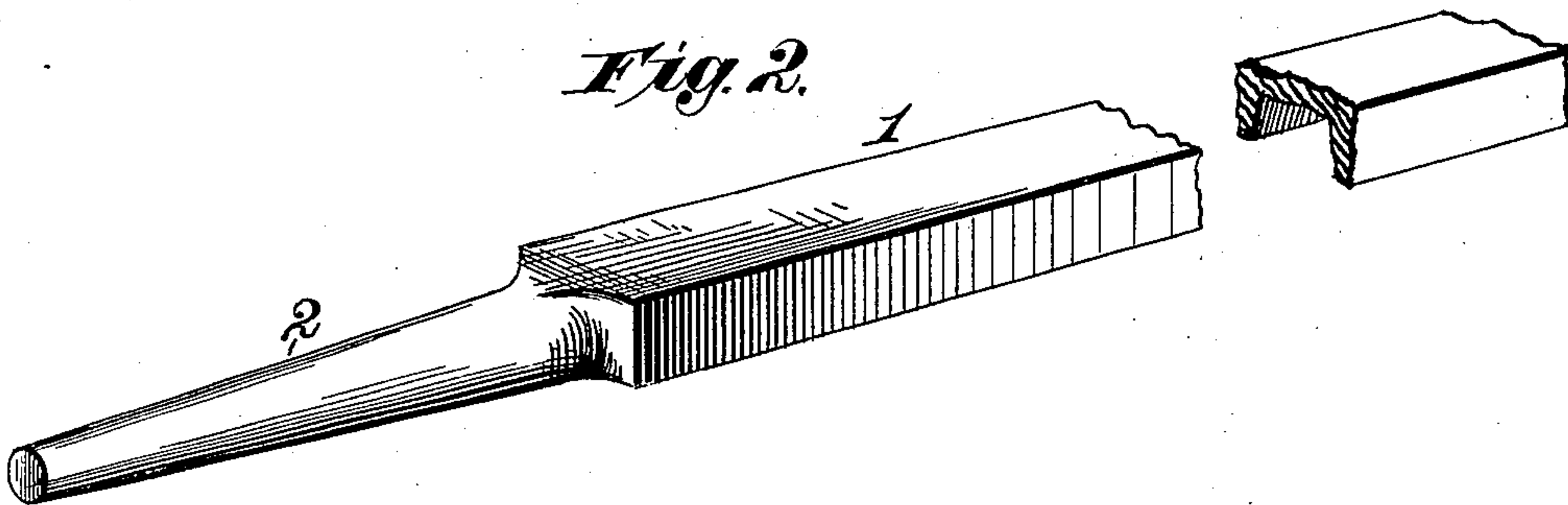
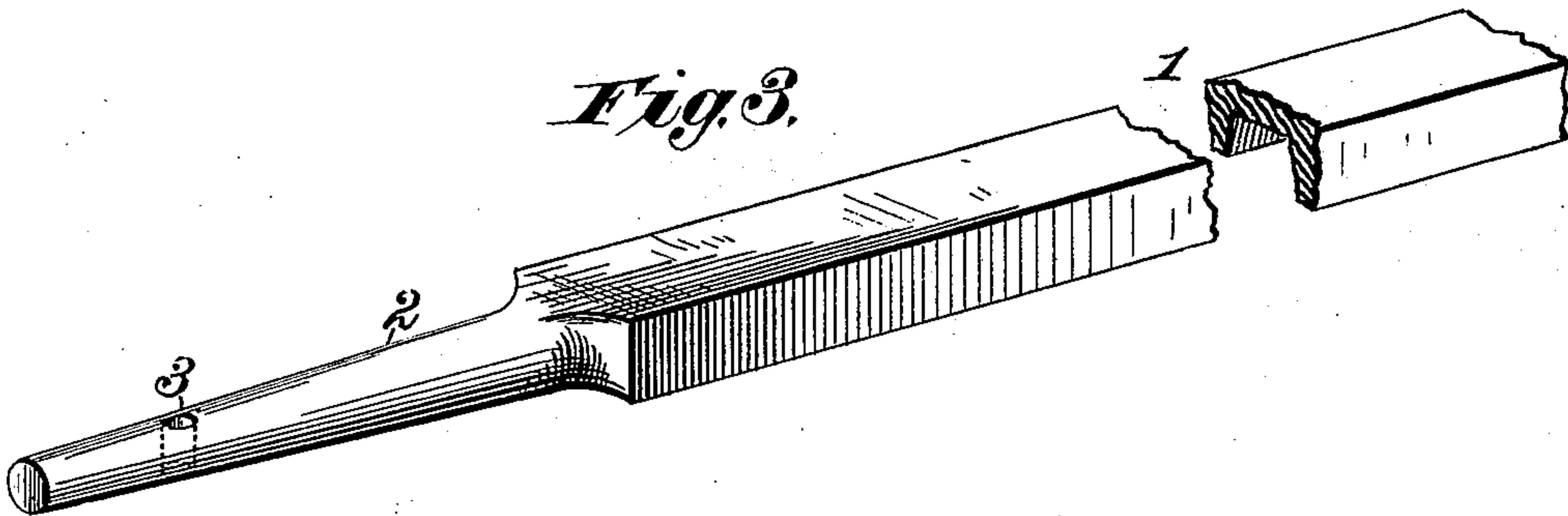


Fig. 3.



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By

James L. Norris.

Atty.

(No Model.)

2 Sheets—Sheet 2.

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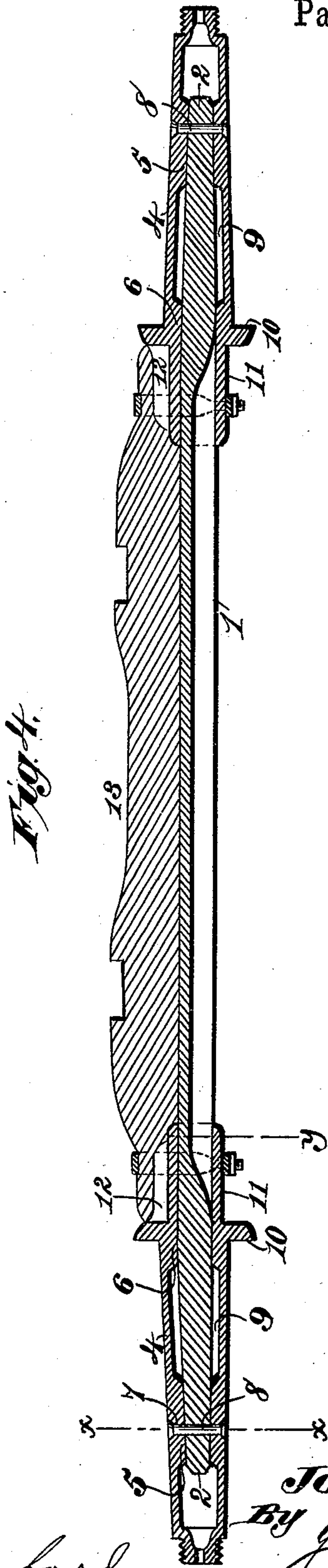


Fig. 6.

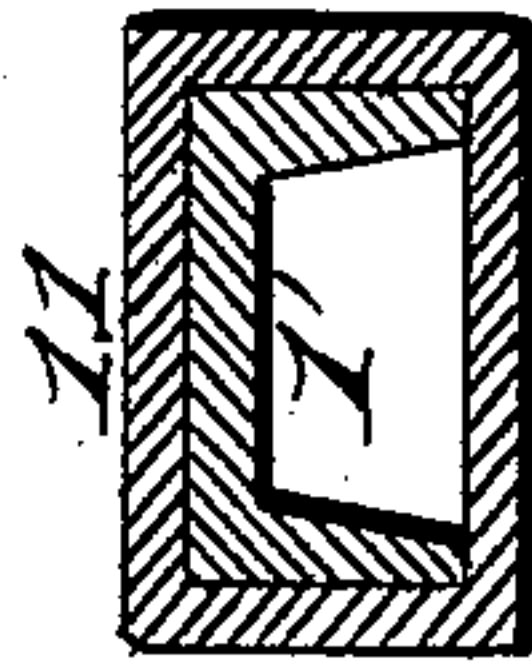
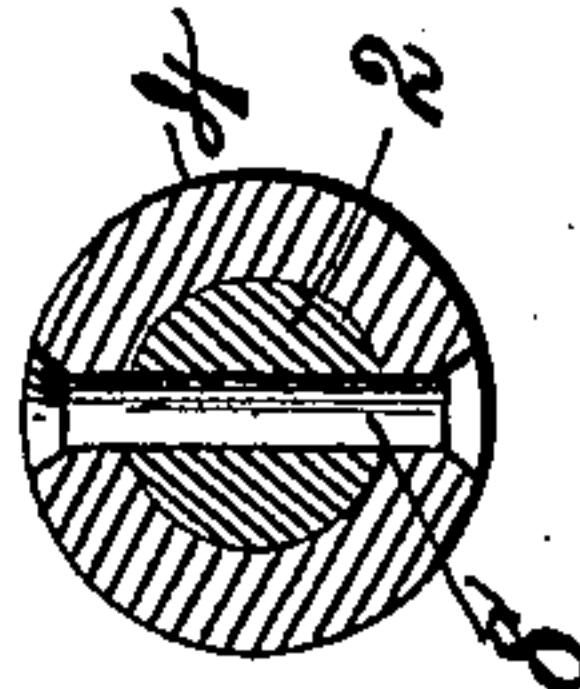


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH O. THERIEN, OF MINNEAPOLIS, MINNESOTA.

VEHICLE-AXLE.

SPECIFICATION forming part of Letters Patent No. 308,531, dated November 25, 1884.

Application filed September 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH O. THERIEN, a citizen of the United States, residing at Minneapolis, Hennepin county, Minnesota, have invented new and useful Improvements in Vehicle-Axles, of which the following is a specification.

This invention has for its object to provide a novel vehicle-axle composed of a channeled metallic bar; to provide novel means for applying a skein to the spindle of a channeled axle, whereby the skein is held against rotation and endwise movement, while it can expand and contract longitudinally without liability of breaking any part of the structure; to provide novel means for holding a skein on the spindle of a channel-bar axle, whereby I can avoid the use of the nut usually applied to the end of the spindle for holding the skein thereon and preventing its endwise movement; to provide a skein which can be secured to the spindle of an axle without the use of an end nut, while the strength of the skein is materially increased; and to provide a channel-bar axle with a skein secured to a short spindle, which can be terminated in the interior of the skein and the use of a nut on the end of the spindle avoided. These objects I accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, illustrating my invention, in which—

Figure 1 is a perspective view of the channel-bar prior to the formation of the solid spindle thereon; Fig. 2, a similar view showing the spindles formed thereon; Fig. 3, a view similar to Fig. 2, showing the perforation for the rivet which attaches the skein; Fig. 4, a longitudinal sectional view of an axle constructed in accordance with my invention; Fig. 5, a transverse sectional view on the line *xx* of Fig. 4, and Fig. 6 a section on the line *yy* of Fig. 4.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail by reference to the drawings, where the numeral 1 indicates the channel-bar, which is first produced in substantially the form shown in Fig. 1, with a horizontal top wall flat on its upper surface, and two pendent vertical walls joined to the

top wall and constituting a bottomless body, which secures lightness with the requisite strength to withstand the strains and usage to which vehicle-axles are ordinarily subjected. The end portions of this channel-bar are drawn out into homogeneous cylindrical spindles 2, tapering from butt to point and solid in transverse section, and when spindles have thus been drawn out in solid form as an integral part of the channel-bar it may be provided with a transverse perforation, 3, adjacent to its outer end. The axle-skein 4 is furnished with a tapering bore to fit the spindle, and at or adjacent to the center of its length it is formed with an inwardly-projecting interior annulus or bridge, 5, which closely fits the spindle around the perforation in the outer extremity thereof, and the butt-end of the skein is formed with another inwardly-projecting annulus or bearing, 6, closely fitting the butt-end of the spindle. The skein is provided at or near the center of its length with a transverse perforation, 7, extending through the inwardly-projecting annulus or bridge 5, and coincident with the perforation in the spindle, through which perforations is passed a rivet or pin, 8, having its extremities upset in countersunk portions of the skein, whereby the skein is permanently and rigidly fastened to the solid spindle of the channel-bar without the use of an end nut on the spindle, while at the same time the skein is free to expand and contract lengthwise from the riveted part without danger of rupturing or breaking any part of the structure, which objection is serious, and I have found to exist in those axles where the skein is clamped on the spindle by a nut at the outer end or point thereof, which obviously clamps the skein as in a vise, and prevents its free longitudinal expansion unless the nut and threads be ruptured or injured. By riveting the skein to the spindle of the channel-bar, as set forth, I am enabled to terminate the spindle within the skein at a considerable distance from the point or outer end of the latter, whereby I can more advantageously draw out the solid spindle from the channel-bar, for the reason that I do not require a spindle of such length as to extend the full length of the skein. The central annulus and the butt annulus in the skein afford a uni-

form bearing for the latter on the spindle and prevent the skein from tipping or wobbling, while the central annulus permits the skein to be perforated and the countersunk portions to be formed for the riveting-pin without weakening the skein. In fact, the arched annular spaces 9 in front and rear of the central annulus materially strengthen the skein and render it possible to perforate and rivet the parts together to produce a strong and substantial axle. The axle at the butt-end of the spindle is angular or square, and the butt-end of the skein is interiorly formed to fit such angular or square portion of the axle, to prevent the skein from turning or rotating; thus avoiding any torsional strain being brought to bear on the riveting-pin. The angular socketing together of the butt-end of the skein on the extremity of the axle may be effected in any suitable manner; but I prefer to accomplish this object by providing the rear collar, 10, of the skein with a projecting box, 11, angular or square on the interior, to fit over the angular or square end of the axle, and this box may have a vertically-disposed rib or pin, 12, on its upper side, to engage the extremity of the wooden body 13 of the axle, which is suitably clipped or bolted to the channel-bar and to the boxing at the butt-end of the skein. The channeled or grooved construction of the metallic axle secures lightness with the requisite strength, while by drawing out the ends of the channel-bar into solid spindles I produce an axle of the character mentioned very economically, while it is strong, substantial, and durable. The drawing out of the solid spindles from the channel-bar has been very satisfactorily accomplished by me through the medium of a trip-hammer; but this drawing out may be effected in any other suitable manner, such as by the action of dies or rolls. In practice, the perforations in the skeins and spindles will be drilled after the skeins are fitted on the spindles.

I am aware that a channeled axle is not of itself new; but so far as I am aware a channeled axle has never prior to my invention been made in which the ends of the channel-bar are drawn out into the form of cylindrical spindles, which are homogeneous or solid throughout their extent, and this I consider of importance in the art, in that I can economically produce an axle of this character which is very strong and durable.

I am also aware that an axle-skein has been provided with a central bridge and end bearings to fit the axle-spindle; but, as heretofore constructed, the skein has been held in place by a nut at its outer end, screwed upon the extremity of the spindle, thus not only rendering it essential to make the spindle the full length of the skein, but rendering the skein incapable of longitudinal expansion without danger of rupturing or breaking the parts.

I am also aware that a reversible axle-skein prolonged in form has been fitted to and held

upon a correspondingly-shaped spindle by a transverse removable pin, whereby the pin could be removed and the skein moved to change its bearing-surface, and such, therefore, I do not claim. In my invention the skein is formed with an inwardly-projecting annulus at or near the center of its length, and the riveting-pin passes through such thickened annulus, which avoids weakening the skein, while permitting it to be countersunk for the rivet ends, while the spindle terminates within the skein at a considerable distance from the point or outer end thereof. Besides, I believe that I am the first to construct an axle of a channel-bar having its ends drawn out into solid cylindrical spindles to which are fitted separate skeins held in place by riveting-pins.

I also believe that I am the first to construct an axle of an angular channel-bar having its ends drawn out into solid cylindrical spindles to which are fitted separate skeins held in place by riveting-pins.

I also believe that I am the first to construct an axle of an angular channel-bar having its ends drawn out into solid cylindrical spindles, to which are fitted skeins angularly socketed at their butt-ends to the channeled axle and having cylindrical bores, and secured to the outer extremities of the spindles by riveting-pins.

Having thus described my invention, what I claim is—

1. A longitudinal channeled axle composed of the top and side walls, having its extremities drawn out into homogeneous solid spindles, substantially as described.

2. A longitudinally-channeled axle having its ends drawn out into solid cylindrical spindles, to which are fitted separate skeins having cylindrical bores, and held on the spindles by transverse riveting-pins near the center of their length, to permit the skeins to freely expand and contract lengthwise, substantially as described.

3. A longitudinally-channeled axle formed with end spindles, having separate skeins applied thereto, and angularly socketed to the axle at their butt-ends, and held on the spindles at or near their center by transverse riveting-pins, to prevent turning endwise movement of the skeins, but permit them to freely expand and contract, substantially as described.

4. The combination, with an axle having a perforated spindle, of a separate skein having a central annular inwardly-projecting bridge transversely perforated, and bearing on the spindle to create the front and rear interior spaces, and the riveting-pin passing through said annular bridge and the spindle, substantially as described.

5. The axle for vehicles, comprising in its structure a longitudinally-channeled bar having its extremities drawn out into solid spindles, separate skeins angularly socketed at their butt-ends to the axle and fitted to the

spindles, and the riveting-pins passing transversely through the skeins and spindles at or near the center of their length, substantially as described.

5 6. An axle for vehicles, comprising in its structure a longitudinally-channeled bar having its extremities drawn out into the solid cylindrical spindles, the separate skeins angularly socketed at their butt-ends to the axle, and having cylindrical bores formed interiorly at or near their center with inwardly-projecting bridge-pieces, and the riveting-pins passing through the bridge-pieces and spindles and countersunk into the skeins, substantially as described.

15 7. An axle for vehicles, comprising in its

structure a longitudinally-channeled bar having its extremities drawn out into solid spindles, separate skeins angularly socketed at their butt-ends to the axle, and riveting-pins 20 attaching the skeins and spindles at or near the center of their length, said spindles having their outer ends terminated within the skein adjacent to the riveting-pins, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses. 25

JOSEPH O. THERIEN.

Witnesses:

ALBERT H. NORRIS,
JOS. L. COOMBS.