

(No Model.)

J. S. CROWELL.
VEHICLE WHEEL.

No. 244,742.

Patented July 26, 1881.

Fig. 1.

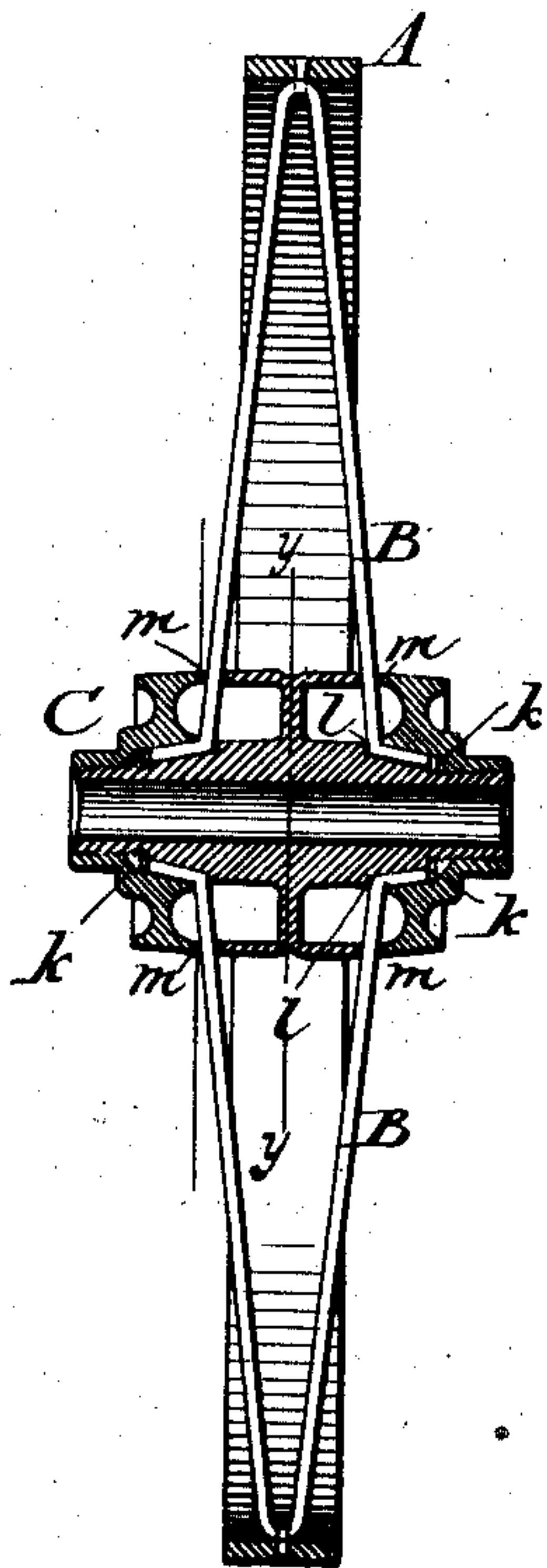


Fig. 2.

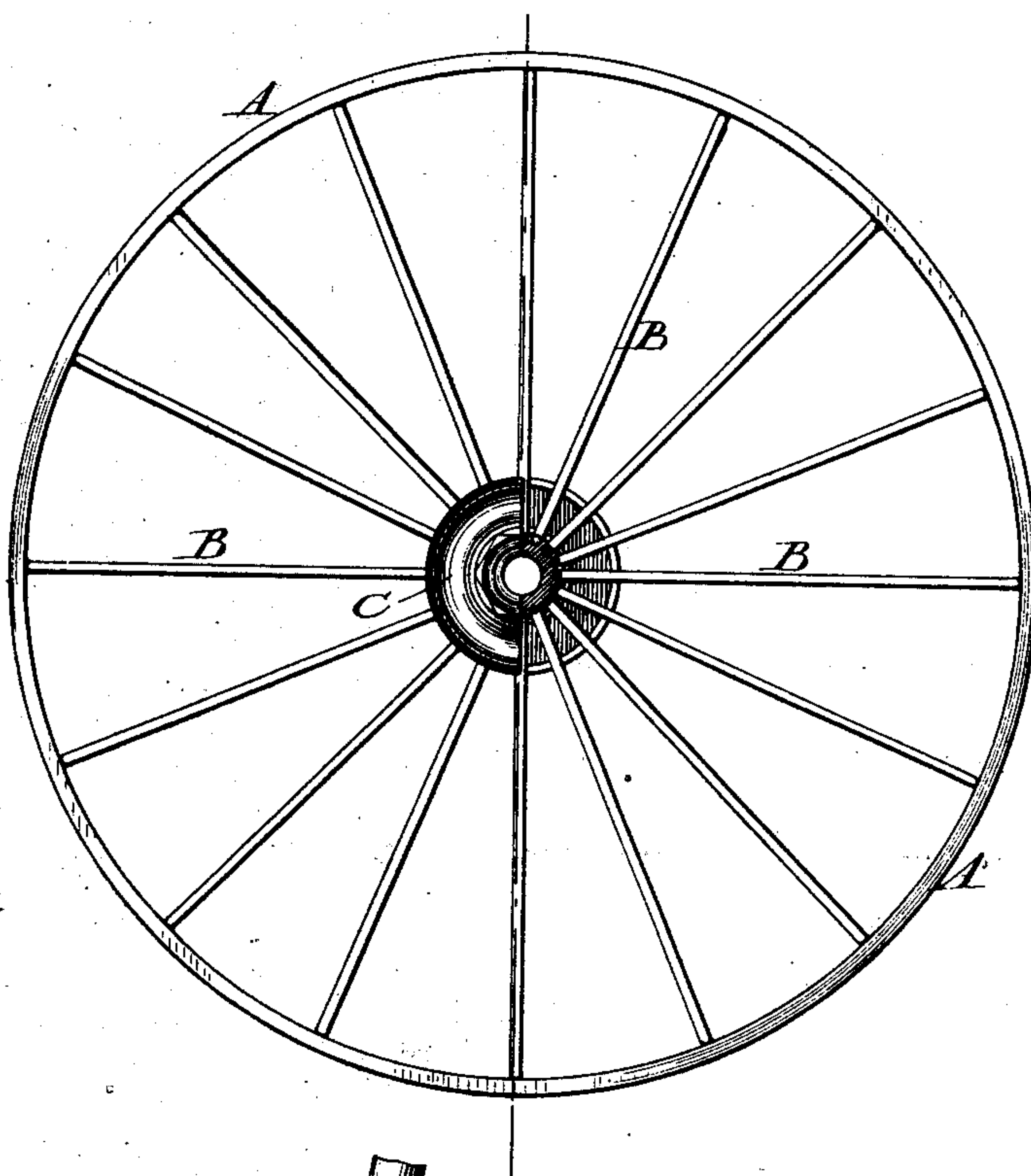


Fig. 3.

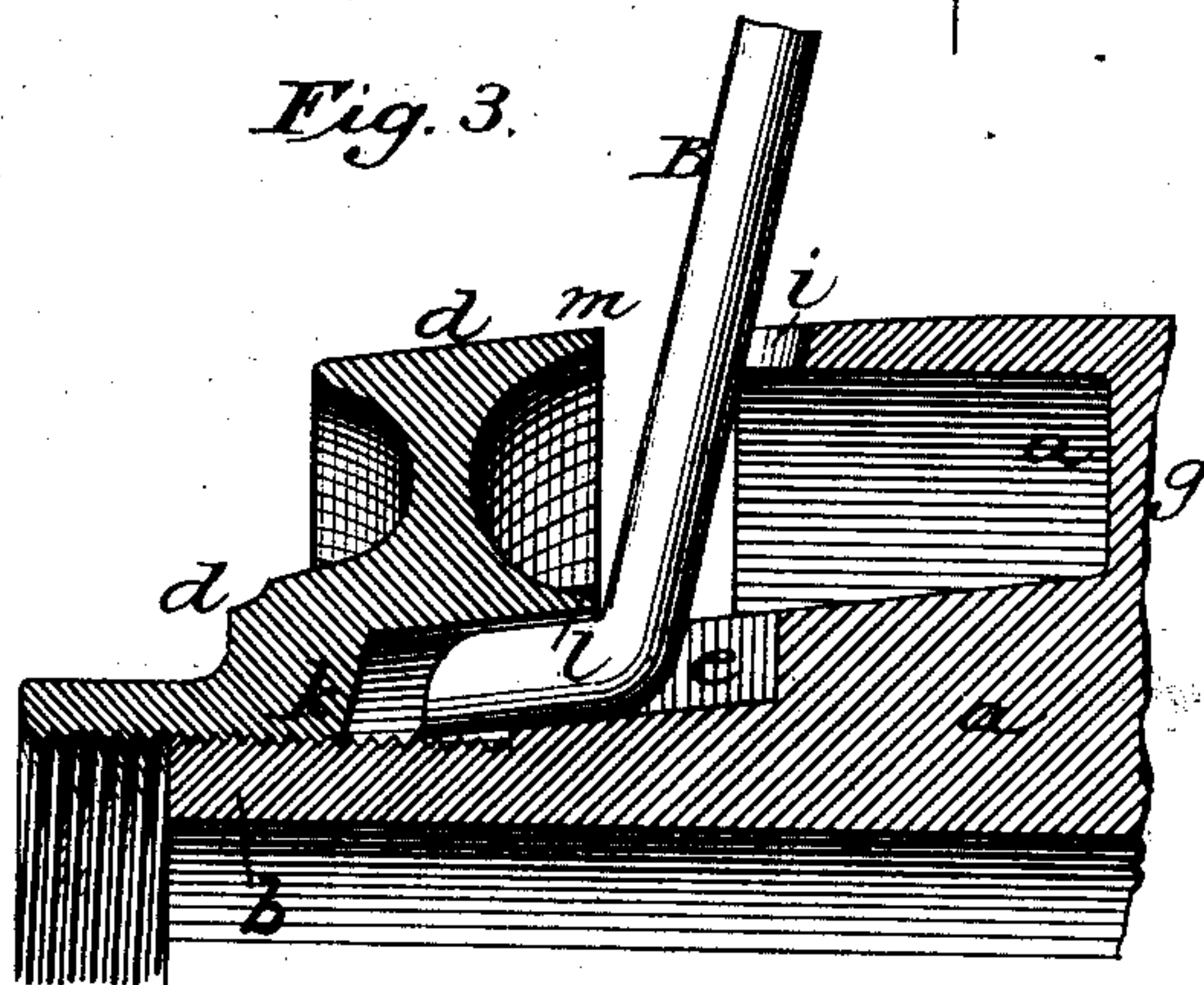


Fig. 4.

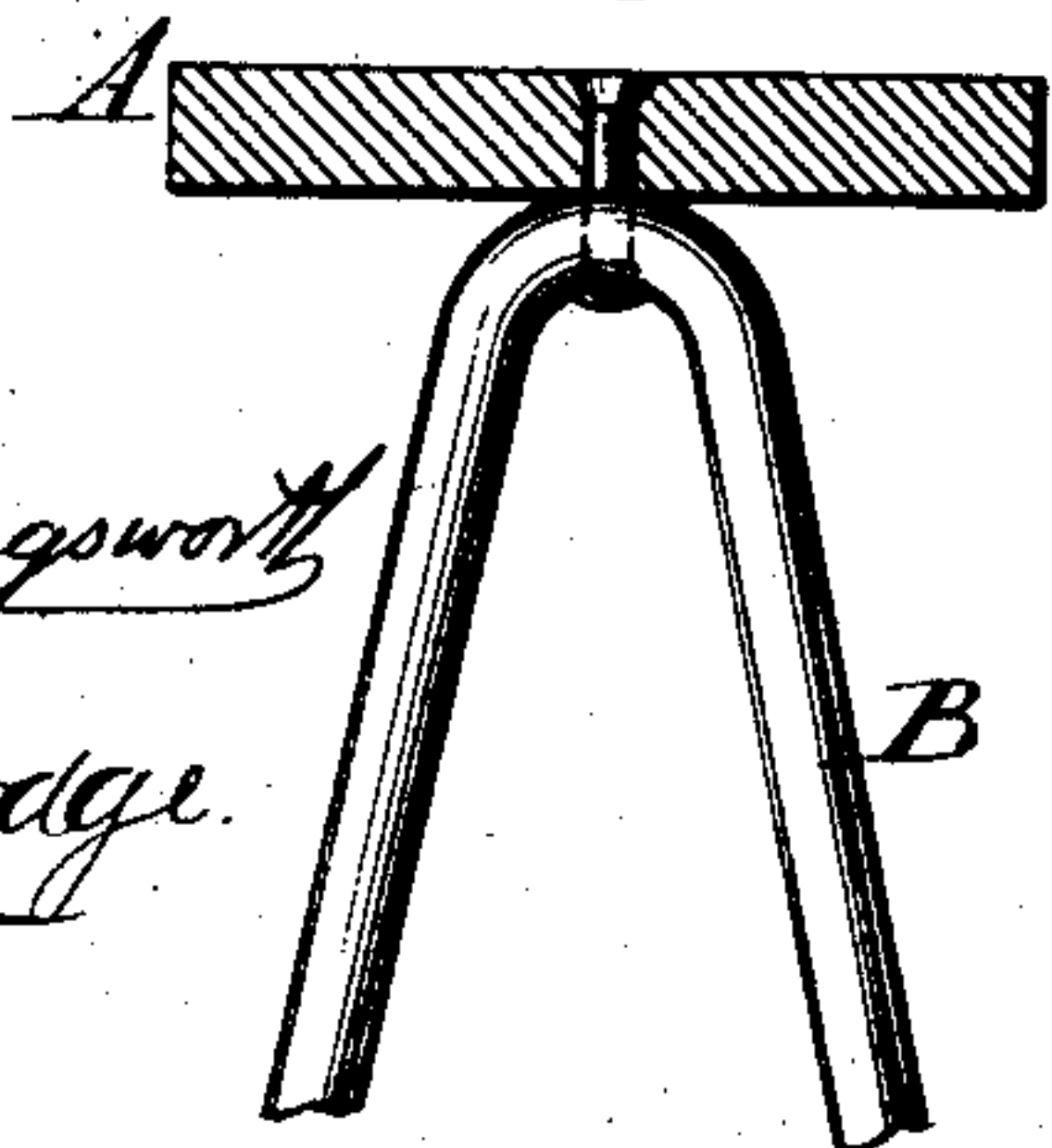
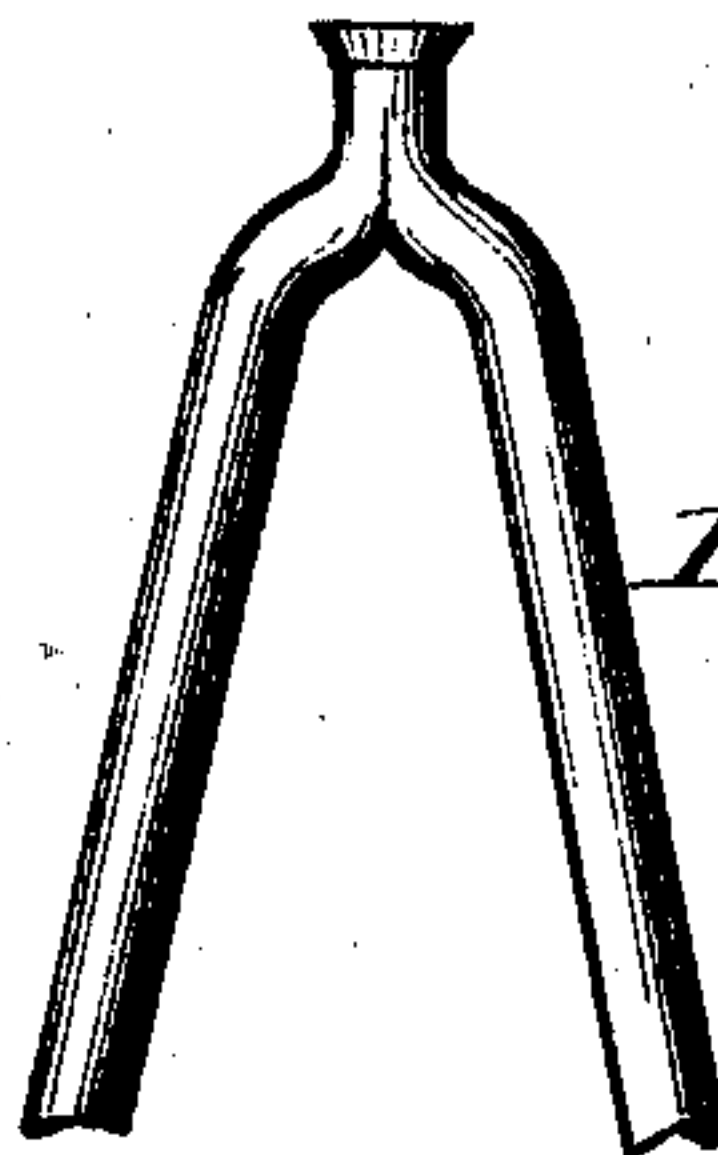


Fig. 5.



Witnesses.

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JOHN S. CROWELL, OF SPRINGFIELD, OHIO.

VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 244,742, dated July 26, 1881.

Application filed March 26, 1881. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. CROWELL, of Springfield, in the county of Clarke and State of Ohio; have invented certain Improvements in Carriage-Wheels, of which the following is a specification.

The object of my invention is to produce a spoked metallic wheel for wagons, carriages, &c., which shall be at once light, cheap, and strong, and which may be quickly and easily repaired.

The invention consists in a metallic hub provided with seats to receive the inner ends of the spokes, and with collars screwed thereon to secure the spokes in place, said parts being constructed in the peculiar manner hereinafter described, and also in spokes formed in pairs from a single rod of iron bent or doubled in the peculiar manner hereinafter described, with its middle portion connected to the felly and its ends attached to opposite ends of the hub.

Figure 1 is a vertical central section of my wheel. Fig. 2 is a side elevation of the same, one-half being represented in section. Fig. 3 is a sectional view, on an enlarged scale, showing the manner in which the parts are assembled. Figs. 4 and 5 are views illustrating the construction of the double spokes.

In the drawings, A represents the rim or felly of the wheel; B, the spokes, and C the hub.

The rim may be constructed of metal or wood in any suitable manner, although it is preferred to use a singlering of metal, as shown.

The spokes B are constructed of iron rods or heavy wire, and have their inner ends bent outward or inward at substantially a right angle, for the purpose of allowing them to be secured to the hub, as hereinafter described.

The hub C consists of a main portion or body, *a*, provided with threaded necks *b* at its two ends, and of two collars, *d*, screwed upon said necks, as shown. The body portion of the hub is provided at each end with a series of longitudinal grooves, *e*, to receive the inner bent ends of the spokes. These seats are distributed around the outer portion of the hub at equal distances apart, and their faces are inclined outward from the center of the hub, in the manner represented. This inclination of these seats is for the purpose of forcing the spokes

outward endwise, and thereby causing a firm union as the spokes are brought to their places. The body of the hub is provided at the center with a radially-extending flange, *g*, the outer edge of which is provided on its two sides with recesses *i*, to receive and sustain the spokes which are staggered or arranged in two series, extending to opposite ends of the hubs, as usual. The collars *d* are provided with faces *k*, to bear against the outwardly-bent ends of the spokes, and also with annular faces *l* and *m*, to bear against the outer ends of the spokes, in the manner represented in the drawings, for the purpose of holding the spokes firmly and rigidly to their seats in the body portion of the hub.

In assembling the parts the outer ends of the spokes are first applied to the felly and their inner ends placed in the outer ends of the seat *e*, as represented in Fig. 3. The collars being then applied and screwed inward upon the ends of the hub, they act against the spokes and force the same inward over the inclined faces of the seats firmly to their places in the hub. The collars, engaging over the laterally-bent ends of the spokes, serve to hold them firmly and securely in the hub, and to prevent them from playing endwise, thus giving the wheel much greater strength than it would otherwise possess. The spokes may be made each in one piece, with their outer ends secured to the felly in any suitable manner; but it is preferred to construct them in pairs, in the manner represented in Figs. 1, 4, and 5, by bending or doubling a rod of iron at its middle, as shown, so as to produce two diverging arms, which serve as spokes. The middle or bent portion of the rod will be attached to the felly in any suitable manner and the two ends applied to the opposite ends of the hub, as represented in Fig. 1.

It will be noted that under this construction the spokes are arranged in pairs and directly opposite to each other, each spoke being braced directly against the end of its companion.

The outer ends of the double spokes may be seated in notches in the felly, or secured thereto by a rivet, as shown in Fig. 4; or the outer end of the double spoke may be reduced, as shown in Fig. 5, so as to form a shouldered neck or tenon, which may be inserted through

the rib or felly and riveted down upon the outer end.

It will be seen that the interior faces of the hub and the collars are cored out or left hollow, in order to render the hub as light as possible.

I am aware that sectional metallic ribs have been made in many forms, and that spokes have been secured to hubs by means of collars applied thereto; but I am not aware that any one has hitherto constructed a hub in the peculiar manner represented in the accompanying drawings.

Instead of constructing the central portion of the hub in a single piece, it may be divided transversely on the line *y y*, Fig. 1, into two parts, which may be keyed at any suitable distance apart to a central shaft or spindle.

It is to be noted that in my wheel the spokes are intended and are arranged to receive a thrusting instead of a tensile strain, and that the construction of the entire wheel is shaped to this end.

I am aware that trussed wheels, or wheels in which small spokes of wire having the tensile strain applied in pairs, have been constructed with the spokes in pairs, and this I do not broadly claim. I am not aware, however, that any one has hitherto constructed a wheel using stiff or rigid spokes in which the spokes were constructed in pairs in the manner represented in my drawings.

What I claim as my invention is—

1. The combination of the hub-body having longitudinal grooves formed in its outer surface, the rigid spokes having the inner bent ends seated in said grooves, and the collars

applied to the hub and engaging circumferentially over the ends of the spokes, as described and shown.

2. The hub-body provided with the threaded necks and the outwardly-inclined spoke-seats *e*, in combination with the collars *d* and the spokes *B*, having bent inner ends.

3. The metallic hub provided with the threaded necks at the ends, the spoke-seats *e*, the radial web *g*, provided with spoke-seats *i* in its two sides, and the collars *d*, provided with the faces *k*, *l*, and *m*.

4. In combination with the felly and a hub provided with recesses in its periphery, the rigid thrust-spokes constructed in pairs from a single bent rod of metal, the two spokes of each pair being secured at their inner ends in the recesses of the hub by means of collars encircling the same, substantially as shown.

5. In a metallic wheel, the combination of a felly, a hub provided with spoke-receiving grooves in its periphery, and a series of spokes constructed in pairs, each pair consisting of a single bent rod of metal seated at the middle against the felly and secured at its ends to opposite ends of the hub by means of collars, applied substantially as described, to maintain a strong endwise pressure upon the spokes.

6. In a carriage-wheel, two rigid spokes having their inner ends attached to opposite ends of the hub by means of encircling-collars and their outer ends arranged to bear against each other with a thrusting or pushing action.

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Witnesses:

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