

No. 704,234.

Patented July 8, 1902.

W. T. M. BRUNNEMER.
WHEEL.

(Application filed Jan. 14, 1901.)

(No Model.)

Fig. 2.

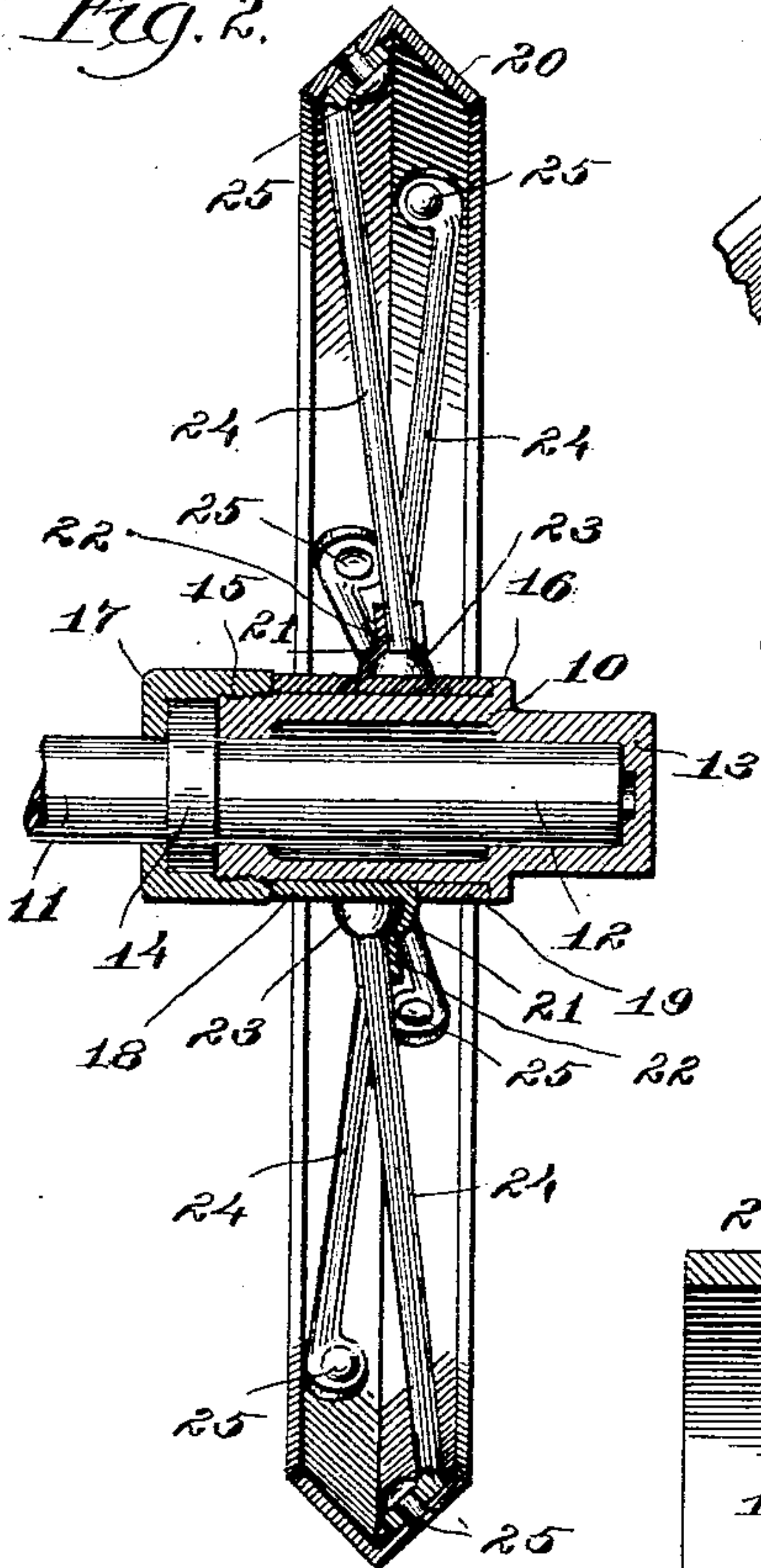


Fig. 6.

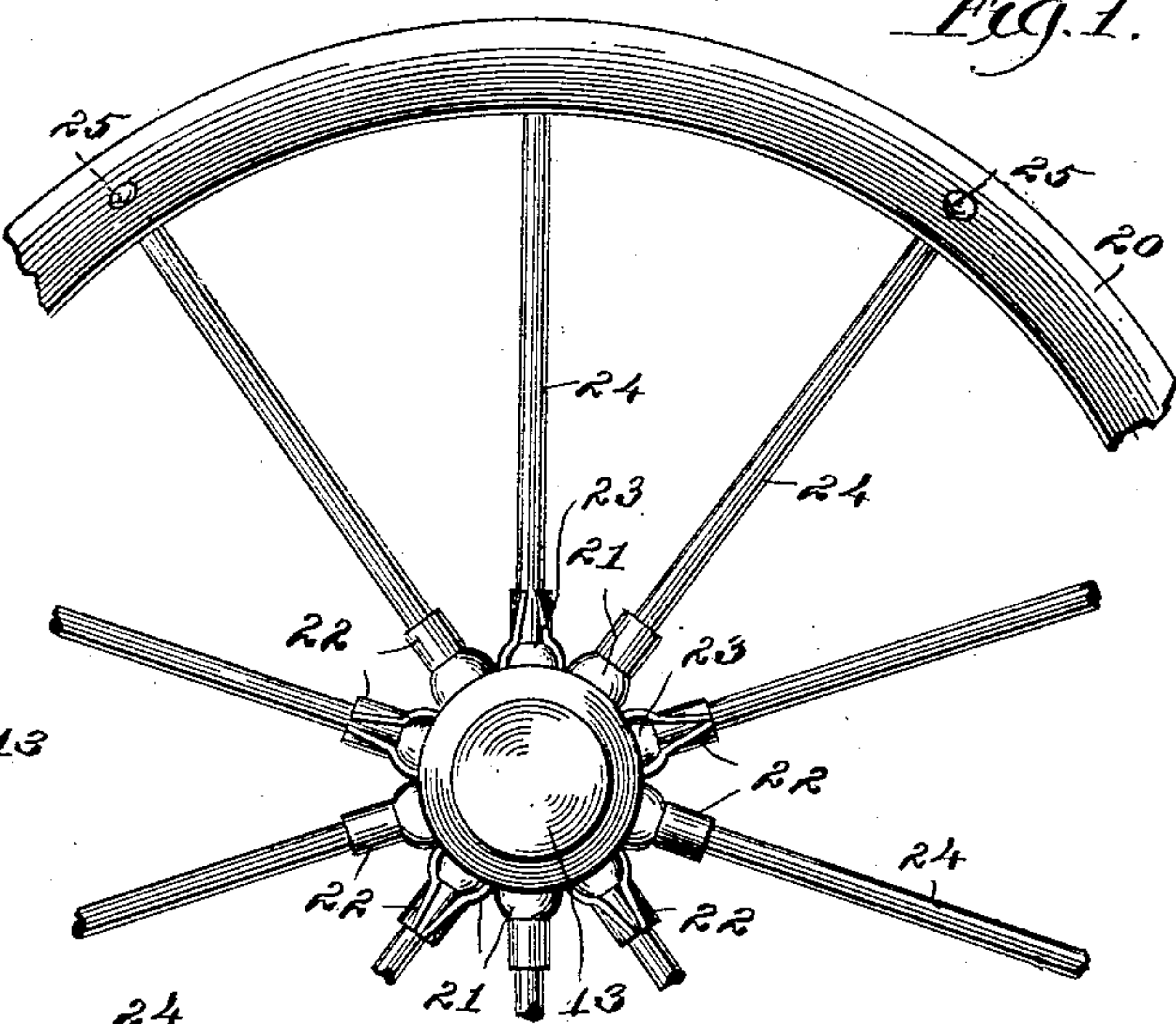
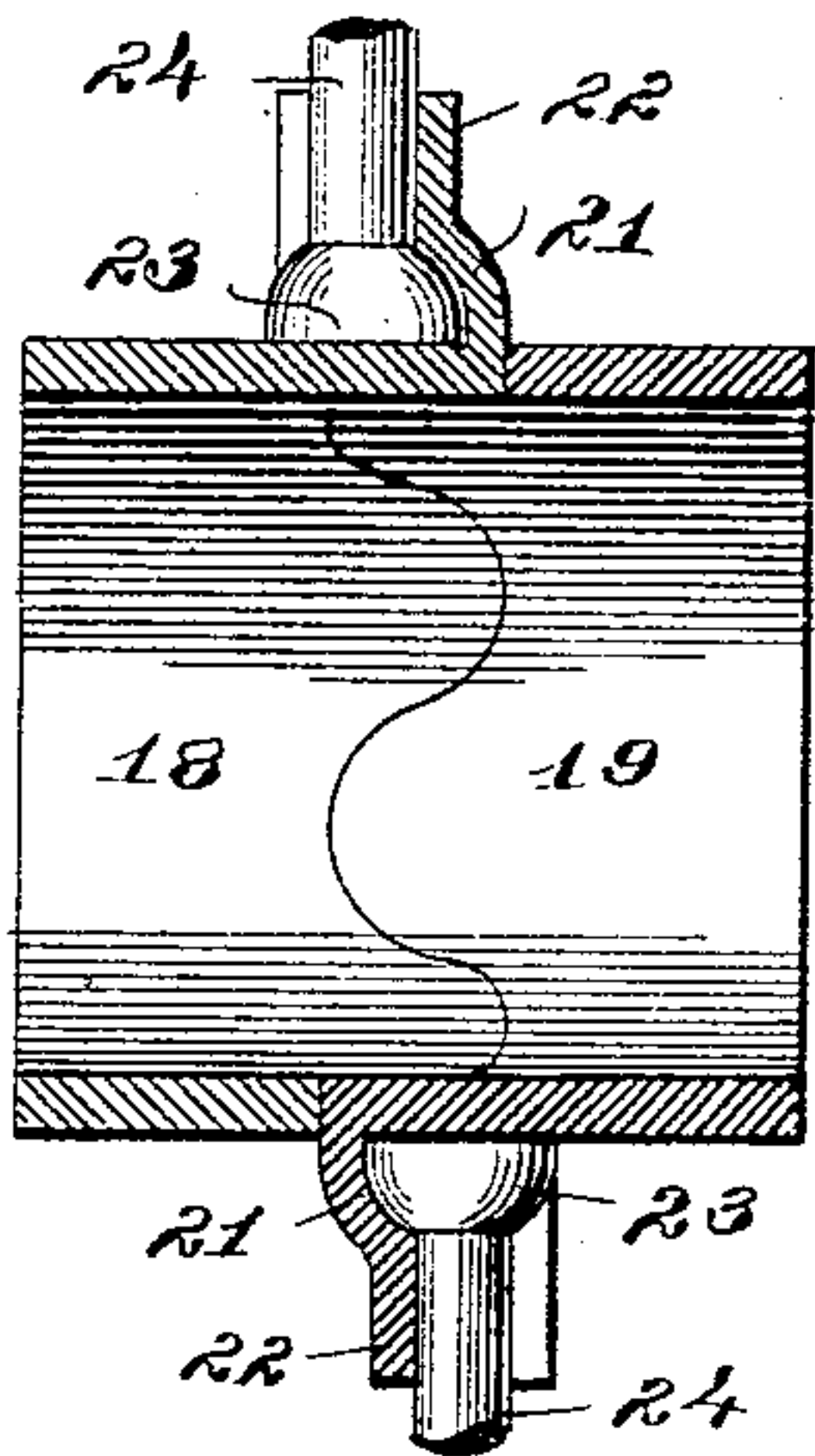


Fig. 1.

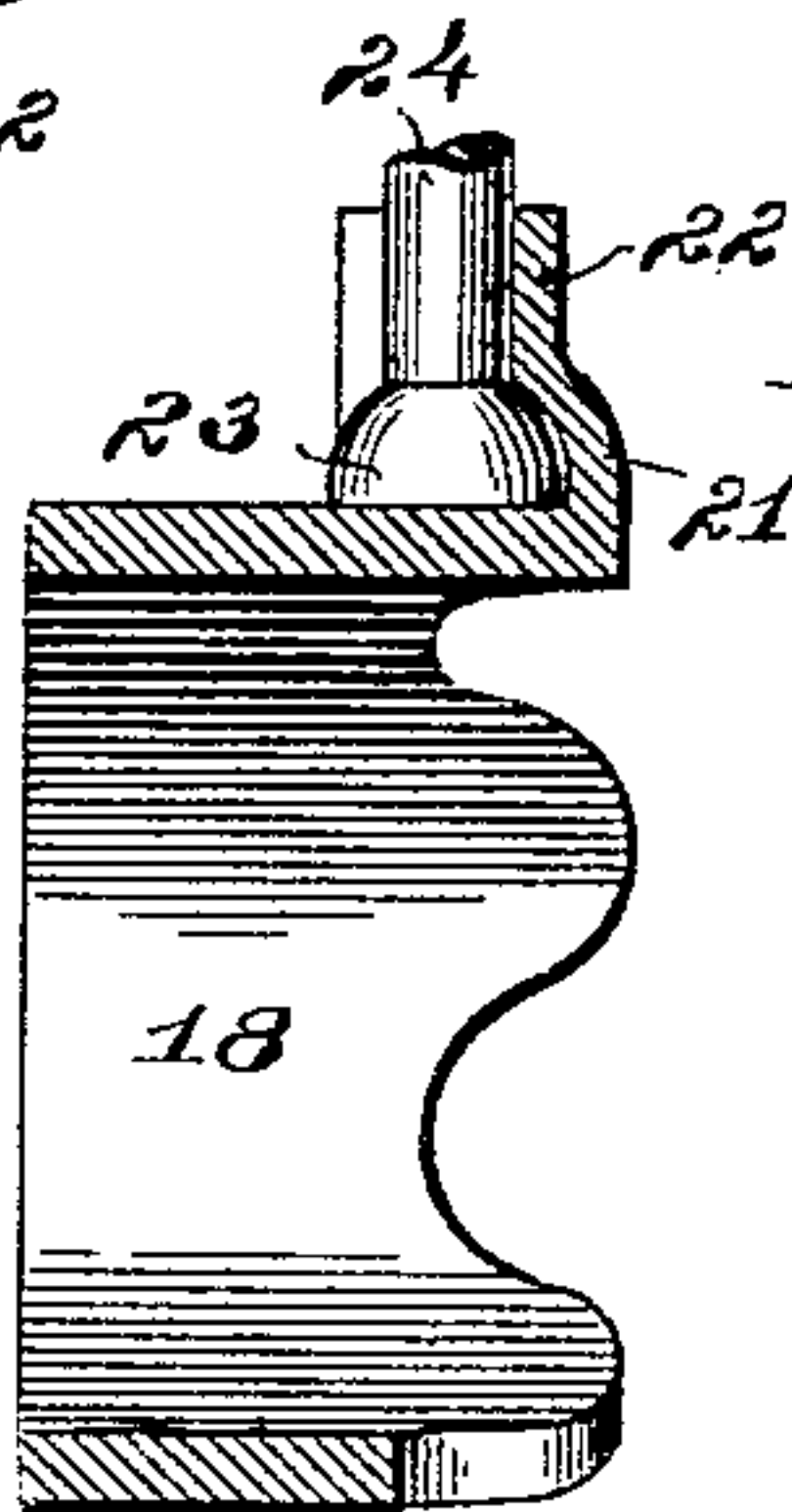


Fig. 4.

Fig. 3.

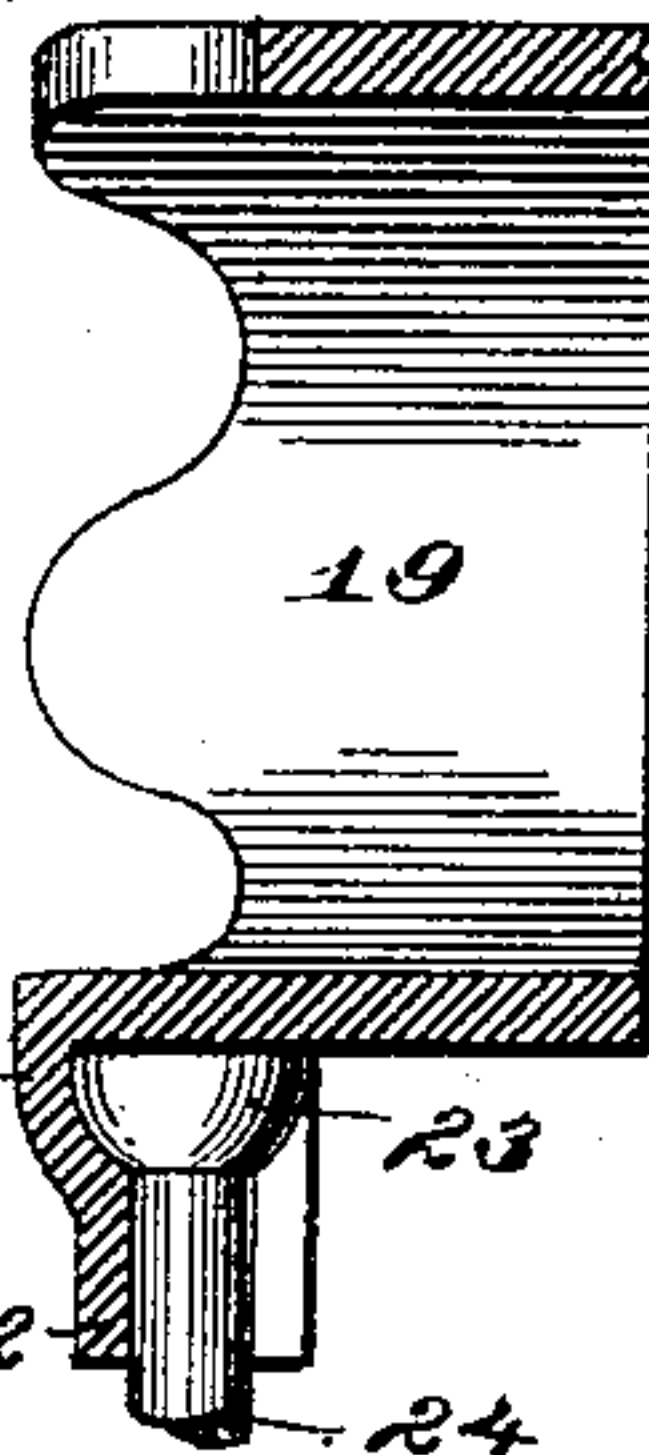


Fig. 5.

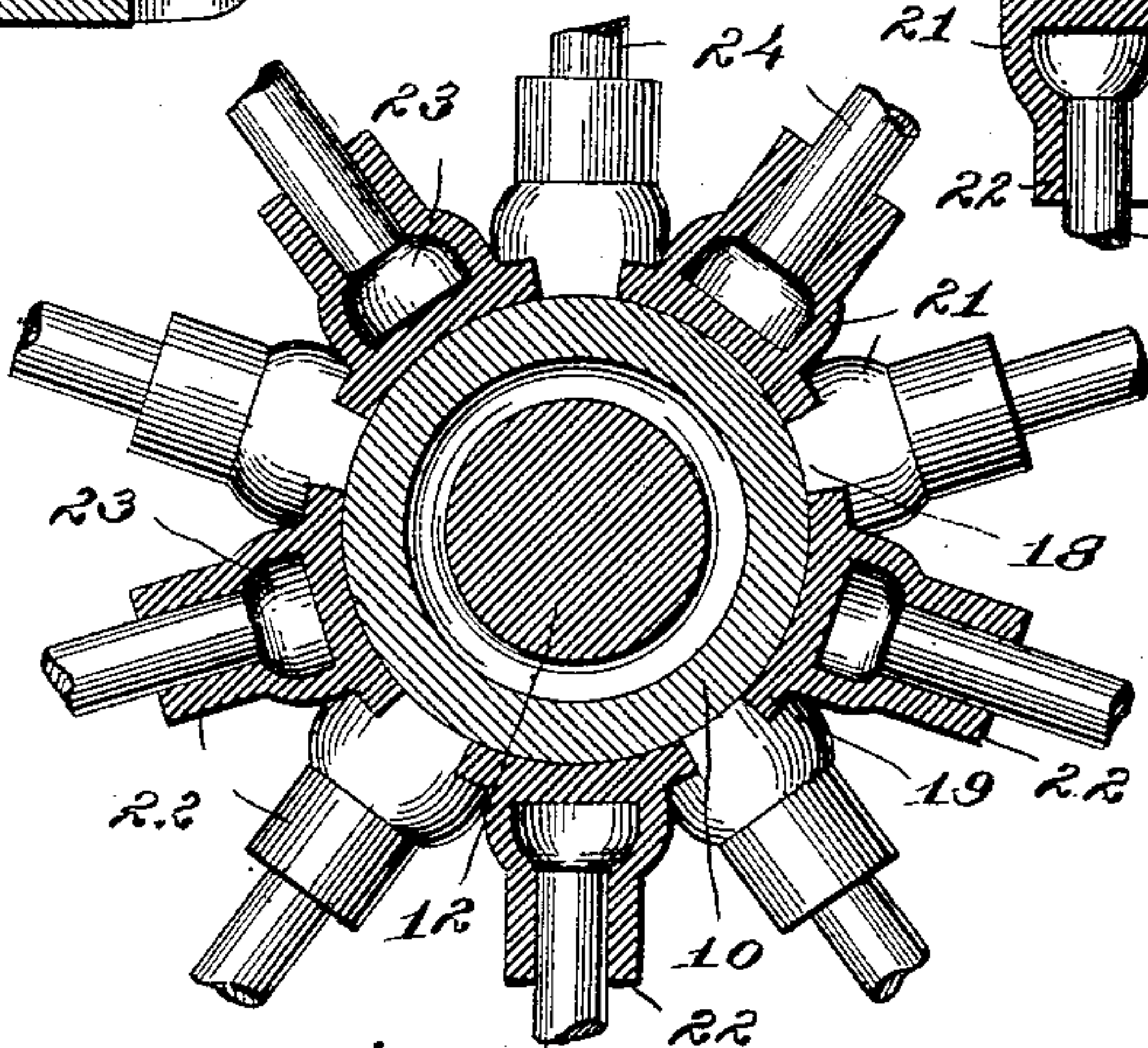
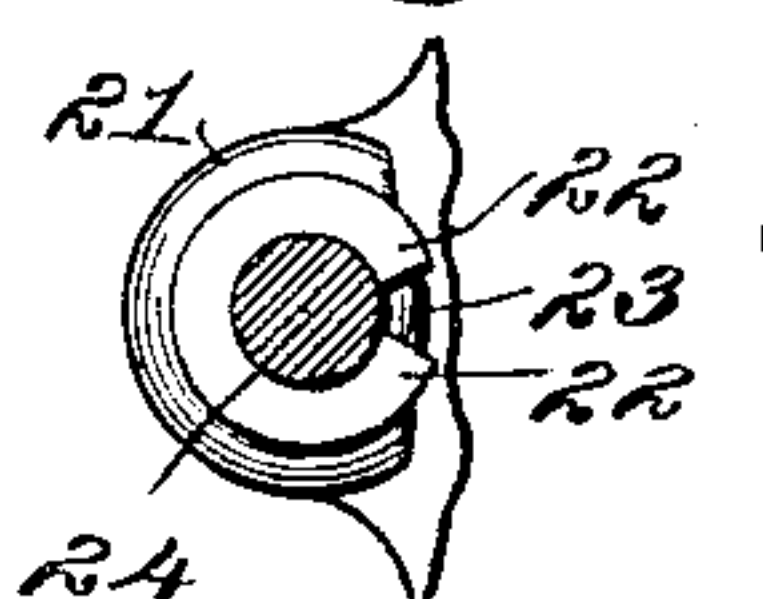
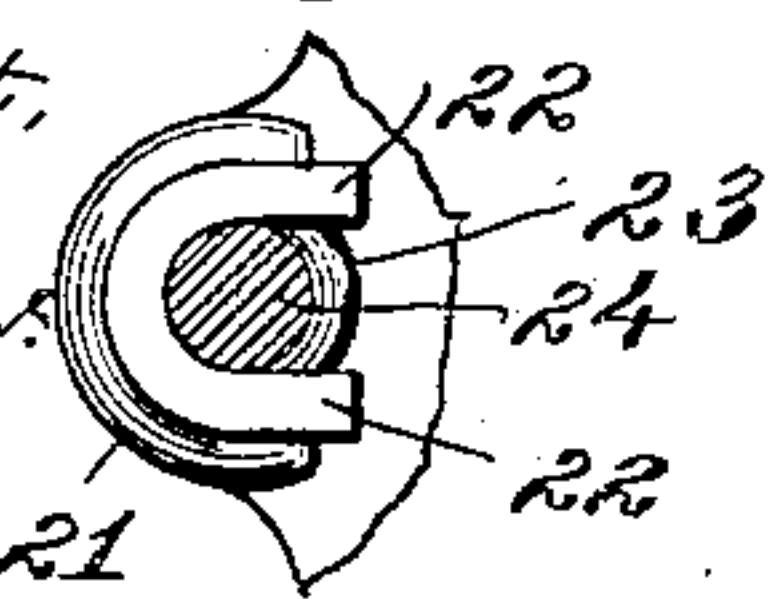


Fig. 8.

Fig. 7.



Witnesses

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WHEEL.

SPECIFICATION forming part of Letters Patent No. 704,234, dated July 8, 1902.

Application filed January 14, 1901. Serial No. 43,175. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. M. BRUNNEMER, a citizen of the United States, residing at Bradley, in the county of Kankakee and State of Illinois, have invented certain new and useful Improvements in Wheels, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to metal wheels such as are commonly used on agricultural implements, and has for its object to provide a wheel which will be of improved construction in that it will be less liable to break and may be readily repaired if broken, particularly as regards the removal and replacing of spokes, and also in that there will be less loss through breakage in the process of manufacture.

A further object is to provide a wheel which may be more cheaply constructed without reducing its quality.

Still further objects are to provide an improved dust-proof hub-box and to provide an improved arrangement of wheel-cap by which the liability of collecting trash around the axle will be reduced, if not entirely avoided.

I accomplish these objects as illustrated in the drawings and as hereinafter described.

That which I regard as new will be set forth in the claims.

Figure 1 is a partial side view of a wheel, illustrating my improvement. Fig. 2 is a vertical section. Fig. 3 is an enlarged view of the hub and axle-spindle, illustrating the manner of securing the spokes. Figs. 4 and 5 are sectional views of the halves of the hubs, showing the spokes in position. Fig. 6 is a similar view showing the halves of the hubs brought together. Fig. 7 is a sectional view of the spoke, showing the spoke-socket before clamping; and Fig. 8 is a similar view showing the spoke clamped in position.

One part of my invention relates to the hub, or that part to which the inner ends of the spokes are secured, and the devices for securing the spokes thereto. Heretofore it has been customary to secure the spokes to a hub by securing the ends of the spokes non-removably thereto either by casting them in or by rivets or by fitting their ends into cylindrical pockets. In neither of such constructions has it been possible to remove the spokes after they were once secured in place

and insert others, so that after a certain number of the spokes were damaged the wheel was of no further use and had to be thrown away. The casting of hubs with cylindrical pockets such as those above alluded to is expensive and greatly increases the cost of wheels where such pockets are employed. In order to avoid the objections above noted, I provide a wheel in which the hub is provided with retaining devices for the spokes which are so constructed that the spokes may be clamped in them and will be firmly held, said retaining devices, however, being of such construction that the spokes may be released and removed when necessary and replaced by others. To this end I provide the hub with a sufficient number of spoke-sockets open at the side and provided with clamping ends, which may be pressed laterally around the spokes after they are inserted in the sockets to bind them firmly in place. In the best embodiment of my invention the sockets are radially arranged, as shown. In order to facilitate the manufacture of the hub, it is made in two sections adapted to fit together end to end to form the hub. Such sections are secured upon a suitable box, upon which they are held rigidly and firmly, so that in effect they become a single piece. Each of said sections carries a number of spoke-sockets, usually one-half the sockets being carried by each hub-section, said sockets being placed equally distant apart around the peripheries of the sections, so that when the sections are united to form the hub the sockets carried by one alternate with those carried by the other. In order to more securely unite the sections, their opposing ends are made sinuous in outline or otherwise arranged to intermesh.

As regards the outer ends of the spokes it has heretofore been customary to fit the ends of the spokes into suitable rivet-holes in the rim and then rivet them. This frequently results in the breakage of the ends of the spokes, thereby destroying the spokes and increasing the expense of manufacturing the wheel. To avoid this objection I secure the outer ends of the spokes to the rim by separate rivets, which pass through the ends of the spokes and are secured in the rim, so that if a rivet breaks it may be replaced by another, the spoke being unaffected. A further feature

of my invention relates to the construction of the hub-box and the mounting of the axle-spindle therein, so as to secure a dust-proof hub. As already described, the sections of the hub are secured upon a hub-box. Said hub-box is provided with a cylindrical bearing in which the axle-spindle fits. Instead of making the hub-box open at both ends, as is customary, one end is closed, making it cup-shaped, the closed end forming a bearing for the inner end of the spindle. The opposite end of the hub-box is screw-threaded and provided with a cap which fits upon the axle adjacent to the spindle and screws upon the screw-threaded portion of the hub-box, inclosing a collar secured upon the spindle. By this construction when the cap is screwed upon the hub-box it bears against the axle-collar, holding the axle-spindle in place and also tightly closing the hub-box, so that dust cannot enter it. The cap also bears against the adjacent section of the hub, binding such sections together, and against a peripheral flange carried by the hub-box. The closed end of the hub-box is cylindrical in form and carries no projections, so that it is not apt to accumulate rubbish in traveling through a field.

Referring to the drawings for a more detailed description of my improvements, 10 indicates the axle or hub box, 11 the axle, and 12 the axle-spindle. The latter is shown in Fig. 2 as being fitted in the axle-box, its inner end resting in the closed end 13 of the axle-box. The axle 11 is provided with a collar 14, fixedly secured thereto and adapted to bear against the open end of the axle-box 10, which is shown at 15 as externally screw-threaded.

16 indicates a peripheral flange carried by the axle-box 10 near the closed end 13.

17 indicates a cap which is adapted to screw upon the screw-threads 15 and is fitted upon the axle 11, inclosing the collar 14. When the cap 17 is screwed upon the axle, obviously it holds the axle in place and completely incloses the bearing, so that dust cannot enter.

18 19 indicate the sections of the hub, which are best shown in Figs. 4, 5, and 6. As shown in Figs. 2 and 6, said sections are adapted to fit together and fit also upon the axle-box 1 between the flange 16 and cap 17, which hold said sections tightly together. The matching ends of the hub-sections are best shown in Figs. 4 and 5.

20 indicates the rim of the wheel, which in the construction shown is V-shaped in cross-section.

21 indicates the spoke-sockets, which, as shown in Figs. 6 and 7, open at the side and are provided with clamps 22, adapted to be pressed down upon the spoke, as illustrated in Fig. 8. The lower portions of the sockets 21 are of somewhat greater diameter than the upper portions thereof to receive the enlarged heads 23 of the spokes 24. The clamps 22

embrace the spokes 24 above the heads 23, so that when such clamps are pressed down upon the spokes the spokes cannot be pulled out of place by endwise movement. The heads 23 rest upon the hubs, and by enlarging them broad supports are formed for the spokes, thereby strengthening the wheel. As shown in Figs. 4, 5, and 6, the open side of each spoke-socket lies on the side away from the hub-section which abuts against the other hub-section, by which arrangement the clamps are more accessible and the removal and replacing of spokes may be more conveniently accomplished. The spoke-sockets may be placed at any desired point on their respective hub-sections to increase or reduce the extent to which the spokes are staggered. It will be noted also, as shown in Fig. 3, each hub-section is provided with an equal number of spoke-sockets arranged equally distant apart and that the sockets of one hub-section alternate with those of the other when the hub-sections are brought together. While this arrangement is desirable and beneficial, I do not restrict myself to it, as my invention includes other arrangements of the spoke-sockets.

As shown in Fig. 2, the outer ends of the spokes are secured by rivets 25 to the wheel-rim 20. To this end the outer ends of the spokes are bent so as to fit squarely against that part of the rim to which they are to be secured and are pierced to receive the rivets, which are then passed through them and riveted to the rim, as shown, the heads of the rivets being on the inside. It will also be noted from an inspection of Fig. 2 that the outer ends of the spokes are secured alternately to opposite faces of the rim, giving the outer ends of the spokes a staggered effect. I have found this arrangement of the spokes to be much superior to prior constructions, in which the spokes have been secured in the angle of the rim.

When the parts of the wheel are being assembled, the inner ends of the spokes are fitted in their sockets by a sidewise movement, after which the clamps 22 are pressed down around the spokes above their heads. To remove the spokes from the hub, it is only necessary to press back the clamps, which are made of malleable iron or other suitable material. It will thus be seen that the parts of the wheel may be readily assembled and separated and that the liability of loss in manufacture is slight. The cost of manufacture of the hub is also greatly reduced, since the work of casting the hub-sections and the liability of loss in manufacture of the hub-sections are much less than in prior constructions.

I wish it to be understood that my invention is not restricted to the specific details of the wheel described and illustrated except in so far as such details are particularly claimed.

That which I claim as new, and desire to secure by Letters Patent, is—

1. A wheel composed of a rim, a hub consisting of separable sections fitted together, means for holding said sections together, a series of independent, spoke-sockets carried by each of said sections, said sockets having laterally-bendable clamping devices and spokes secured in said spoke-sockets and to the rim.

2. A wheel, consisting of a rim, a hub composed of separable sections, a series of independent radial spoke-sockets carried by each of said sections, each of said sockets having a clamp, means for holding said sections together, and spokes secured in said sockets and to the rim.

3. A wheel, consisting of a rim, a hub composed of separable interlocking sections, a hub-box upon which said sections are fitted, said box having a stop near one end against which one of said sections bears, means binding said sections together and against said stop, a series of spoke-sockets carried by each of said sections, and spokes secured in said sockets and to the rim, substantially as described.

4. A wheel, consisting of a rim, a hub-box having a peripheral flange, hub-sections fitted on said box, one of said sections bearing against said flange, a cap secured on the end of the box and arranged to bear against the other hub-section, a series of independent spoke-sockets carried by each of said sec-

tions, and spokes secured in said sockets and to the rim.

5. The combination of a hub-box, closed at one end and screw-threaded at the other end, an axle having a spindle projecting into said hub-box and carrying a collar, a cap fitted upon said axle and screwed upon the open end of said hub-box, said cap inclosing said collar, a peripheral flange carried by the hub-box and a hub on the hub-box between said flange and collar, the inner edge of said collar being arranged to bear against said hub and bind it against said collar.

6. A wheel, comprising a rim, a hub having on its periphery spoke-sockets, said sockets being enlarged near the hub and being open at the sides to the full depth of the sockets to permit the introduction and removal of the spokes by a lateral movement, spokes having their outer ends secured to the rim, their inner ends having enlarged heads which fit in said sockets and abut against the bottoms thereof, whereby the end thrust of said spokes is directed against the periphery of the hub, and clamps carried by the hub and bendable laterally around the stems of said spokes for securing them in the hub; substantially as described.

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Witnesses:

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