

(No Model.)

S. C. MENDENHALL.
CASTER.

3 Sheets—Sheet 1.

No. 314,963.

Patented Mar. 31, 1885.

FIG. I.

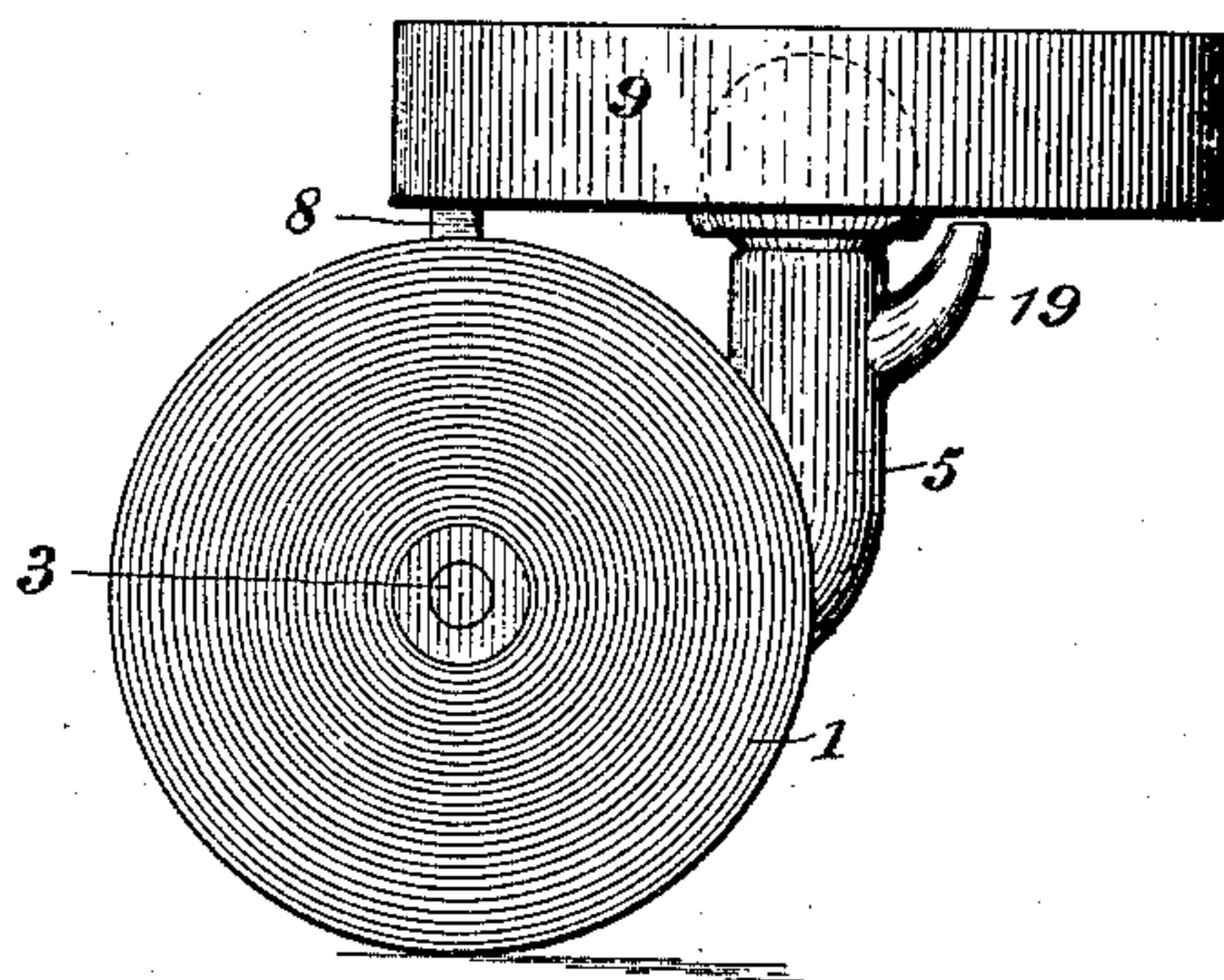


FIG. II.

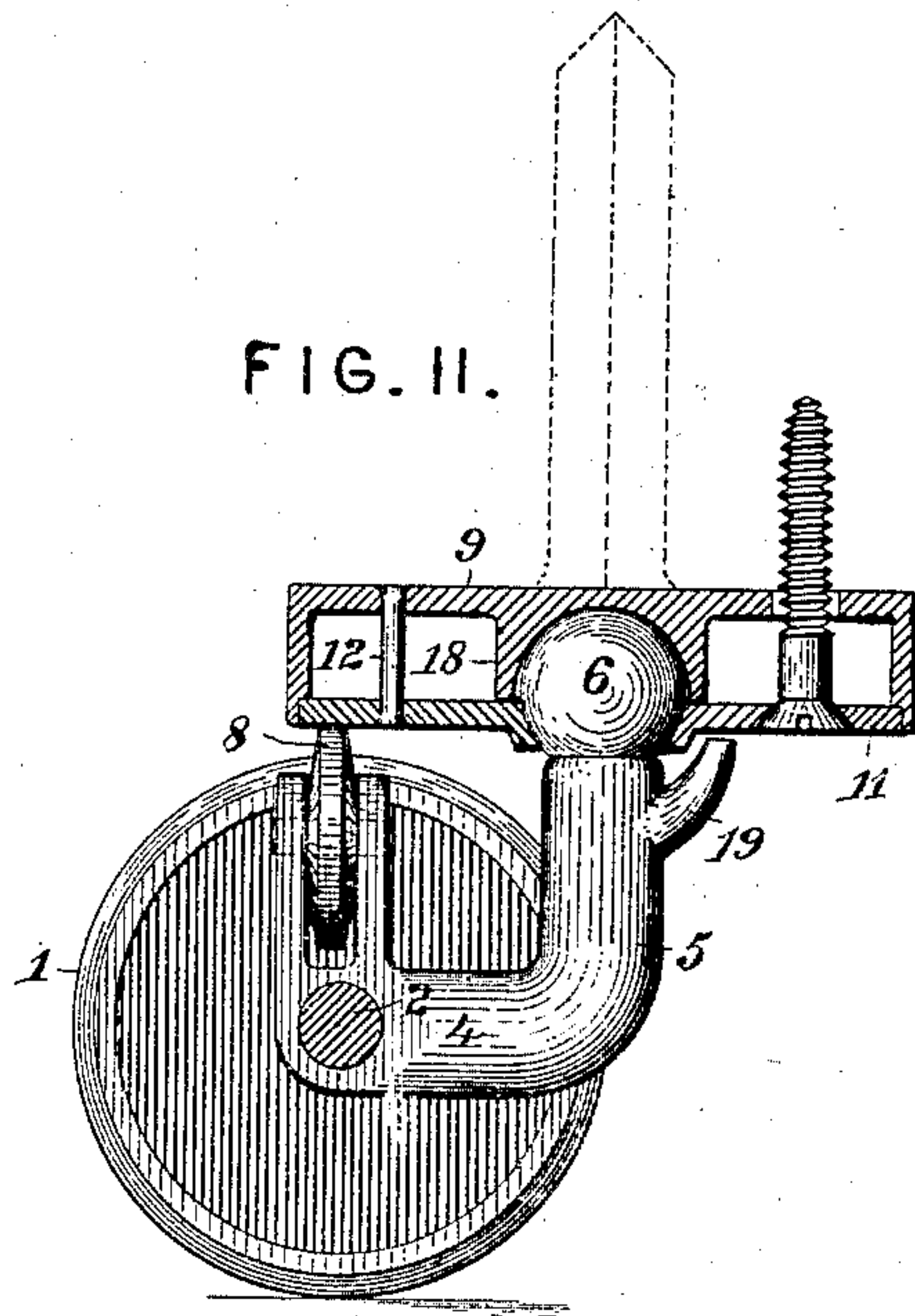


FIG. III.

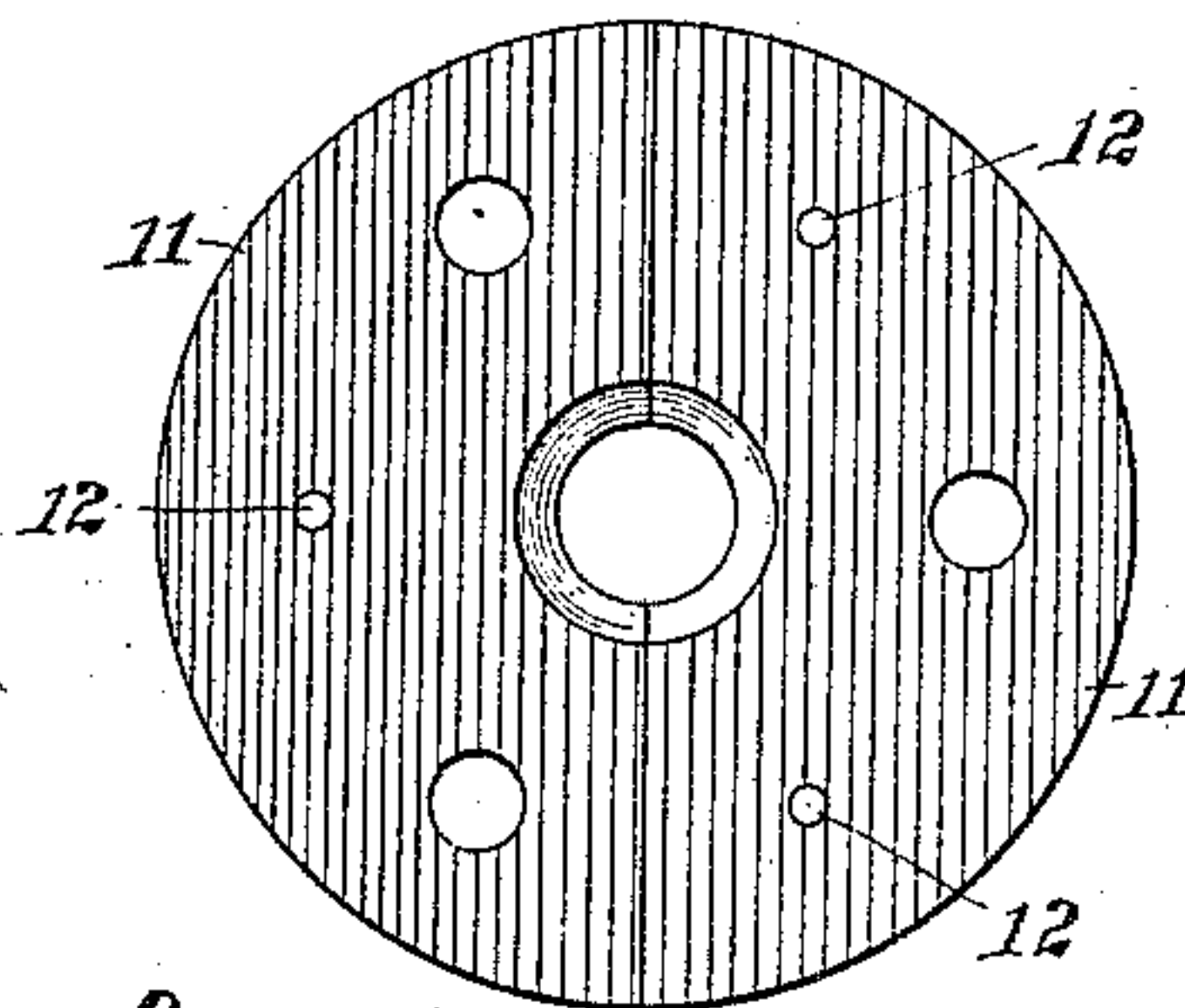


FIG. IV.

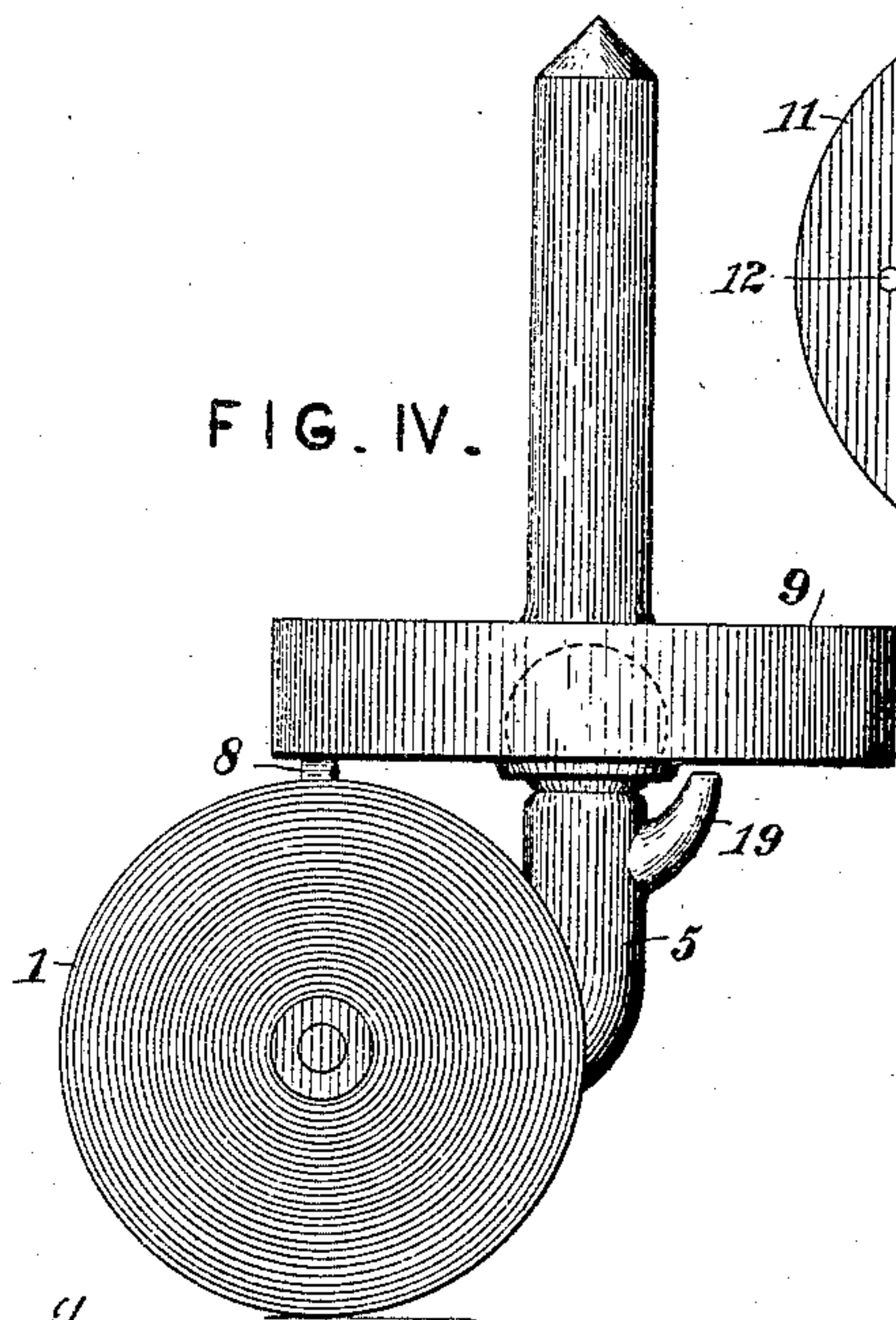
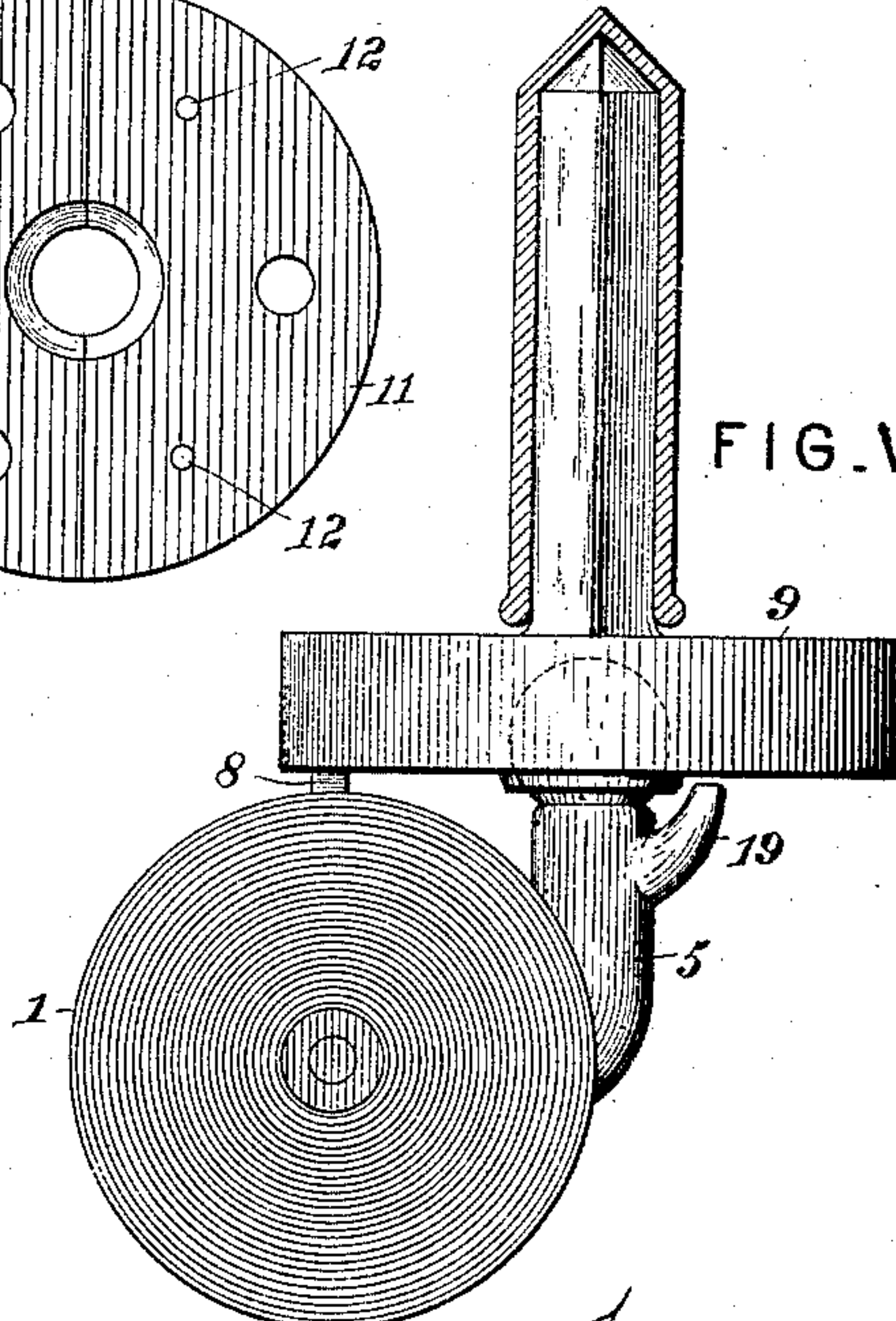


FIG. V.



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FIG. VI.

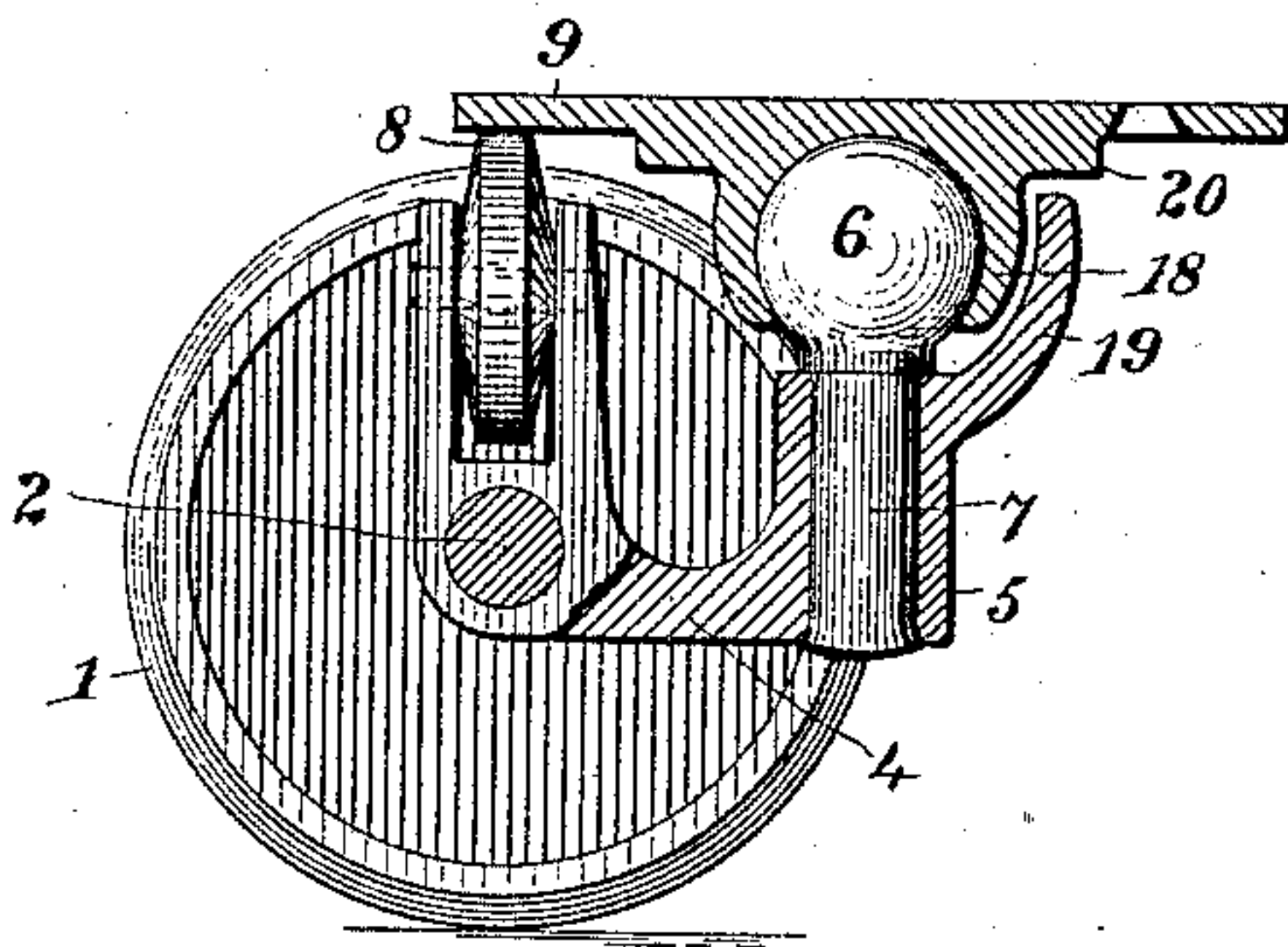


FIG. VII.

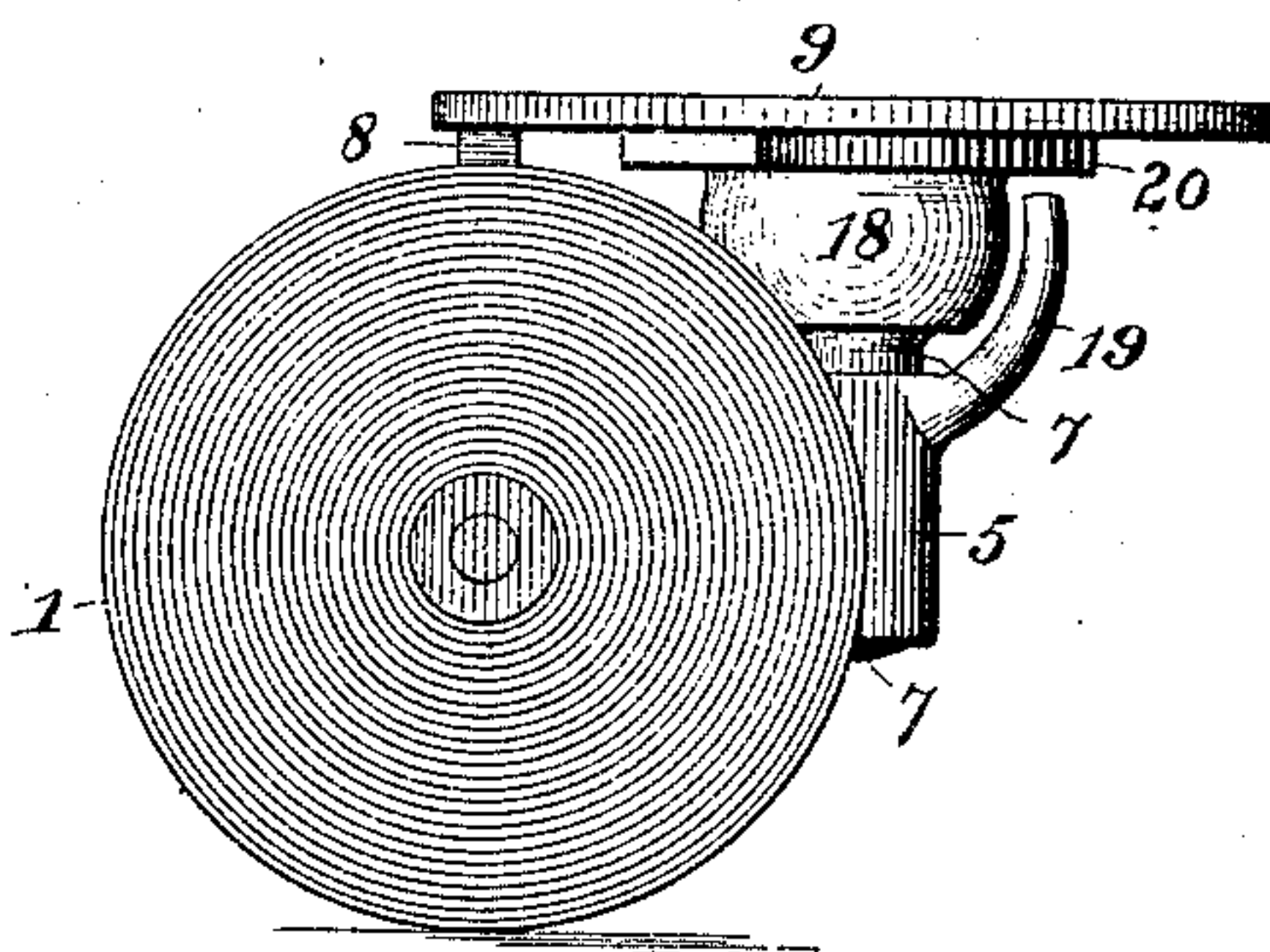


FIG. VIII.

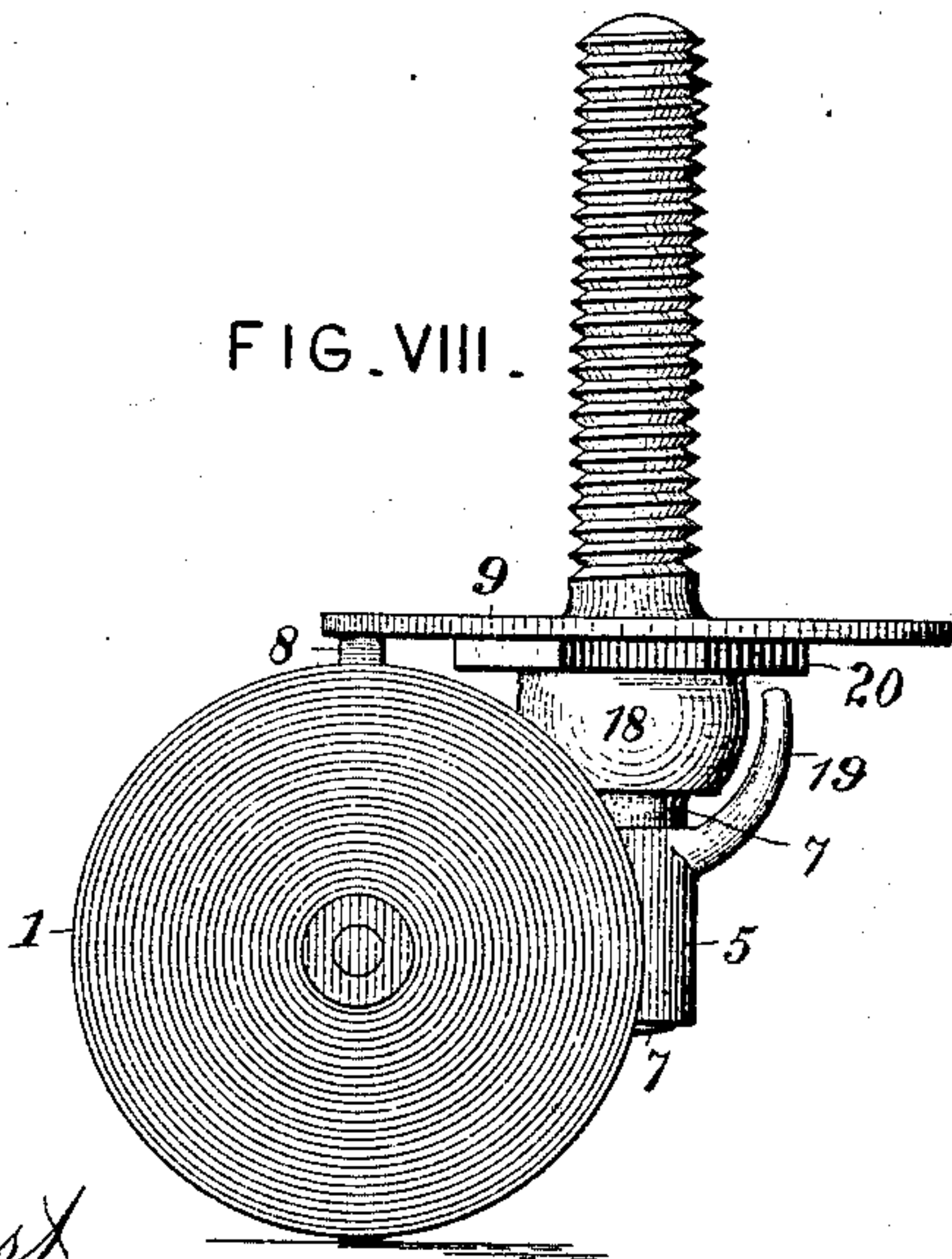
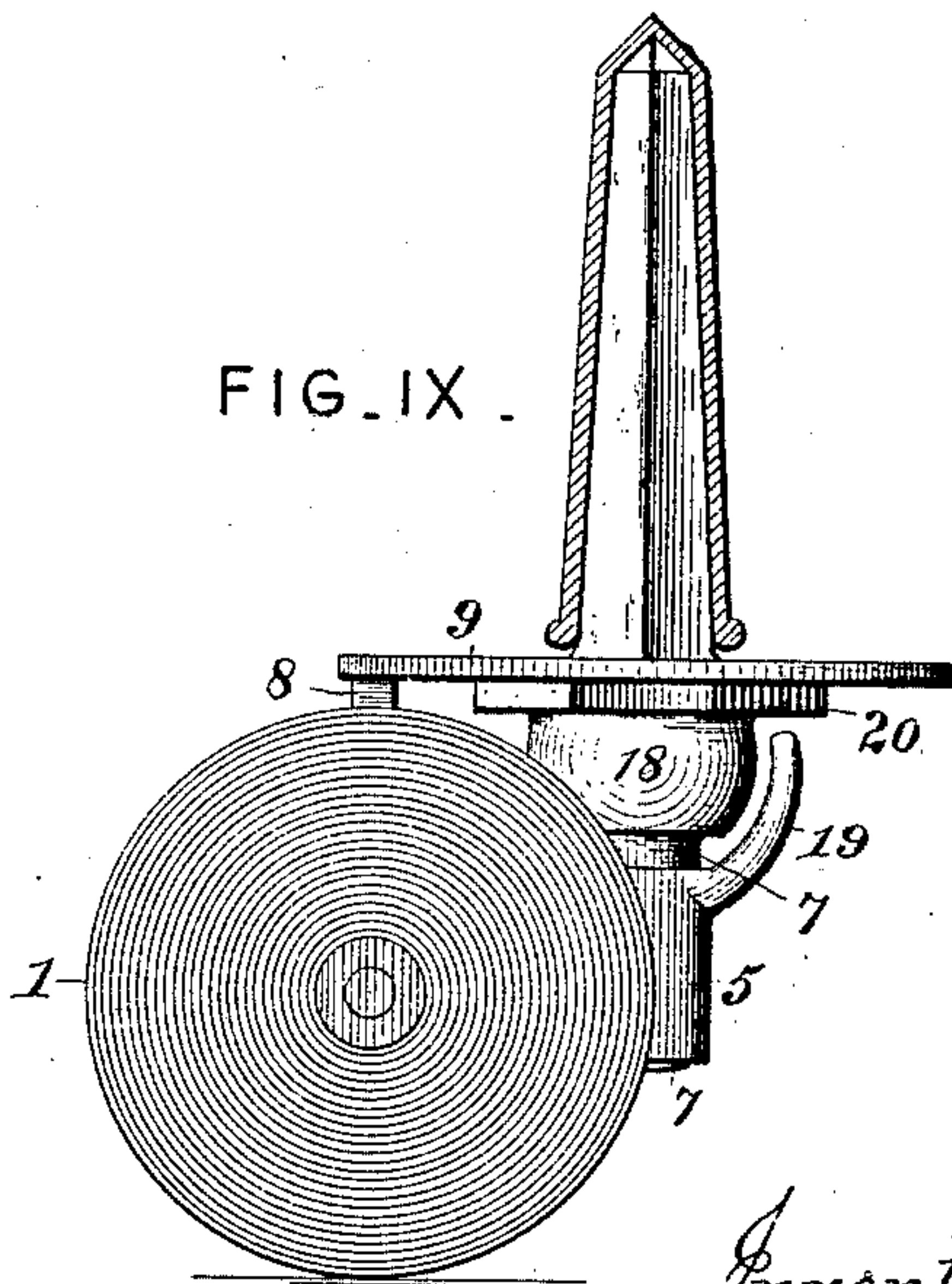


FIG. IX.



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FIG. X.

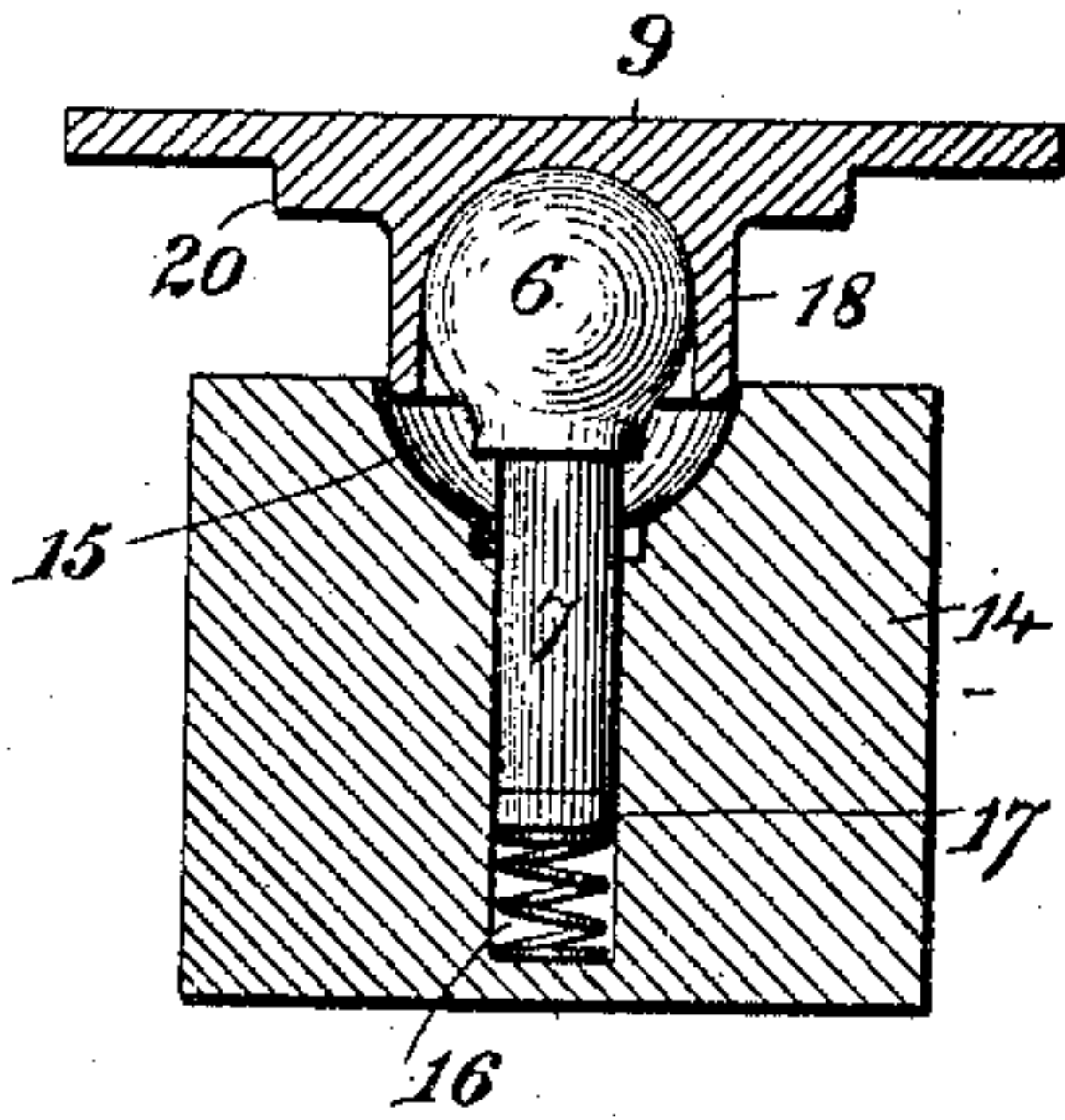


FIG. XI.

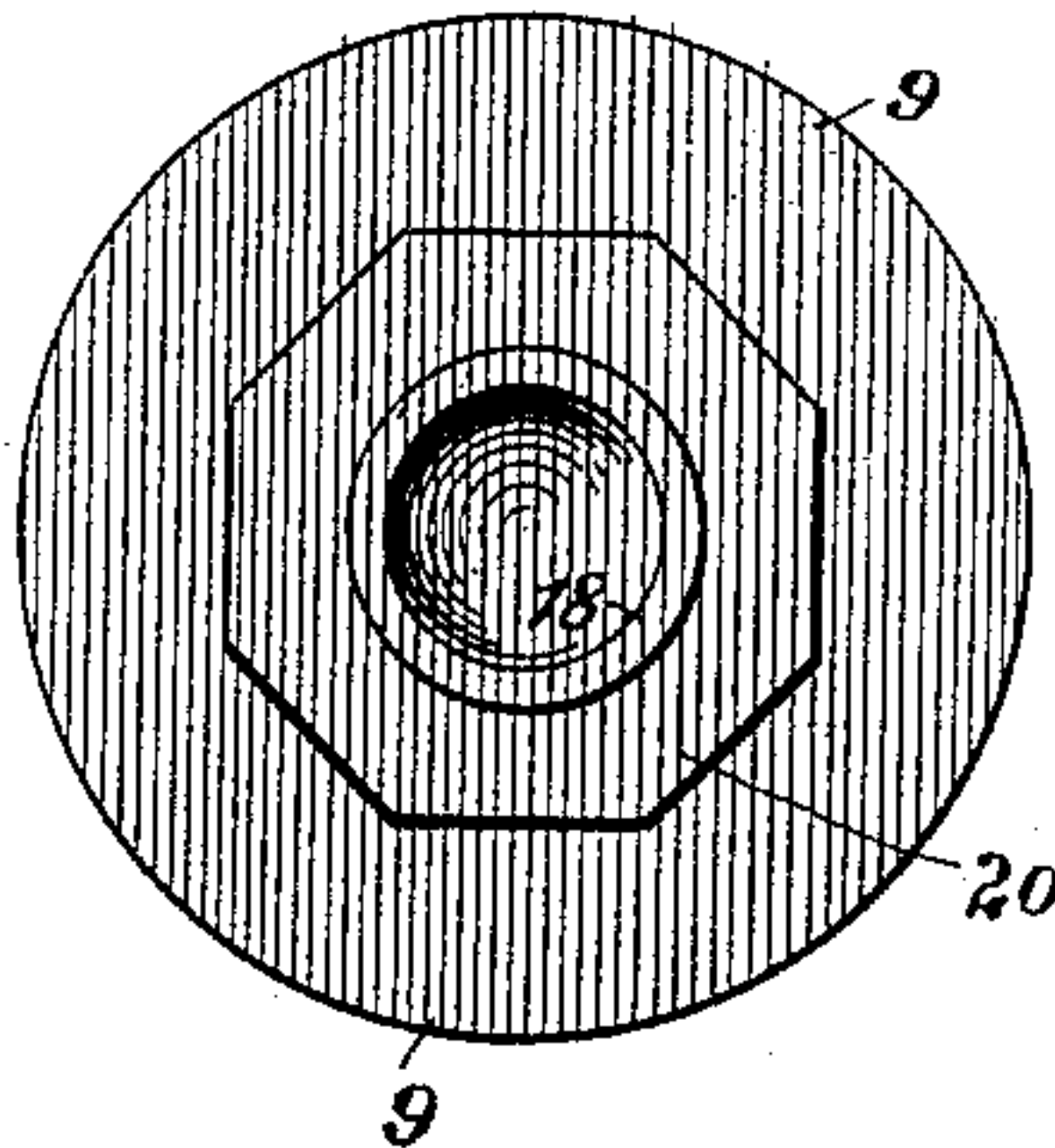


FIG. XII.

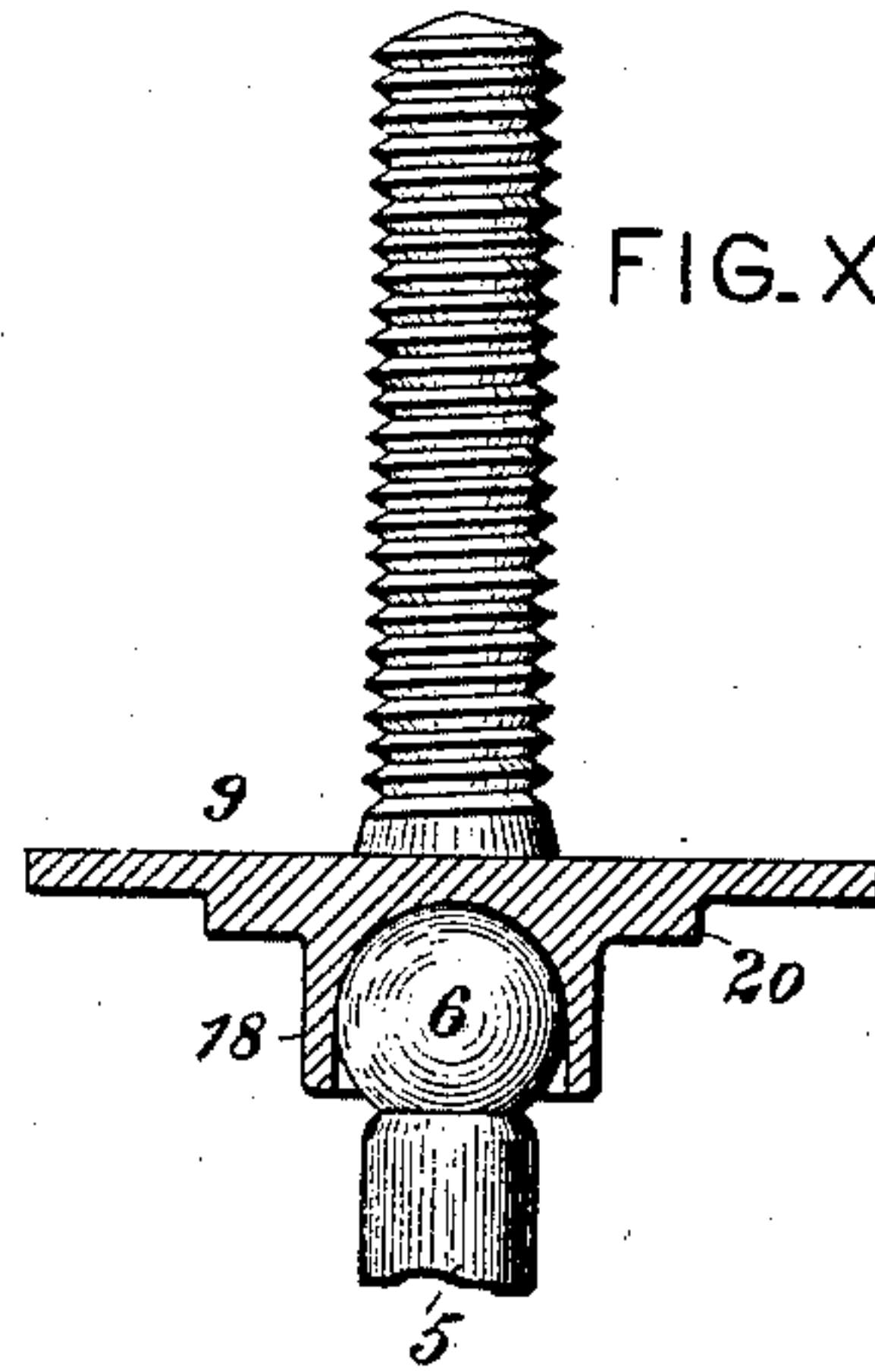


FIG. XIII.

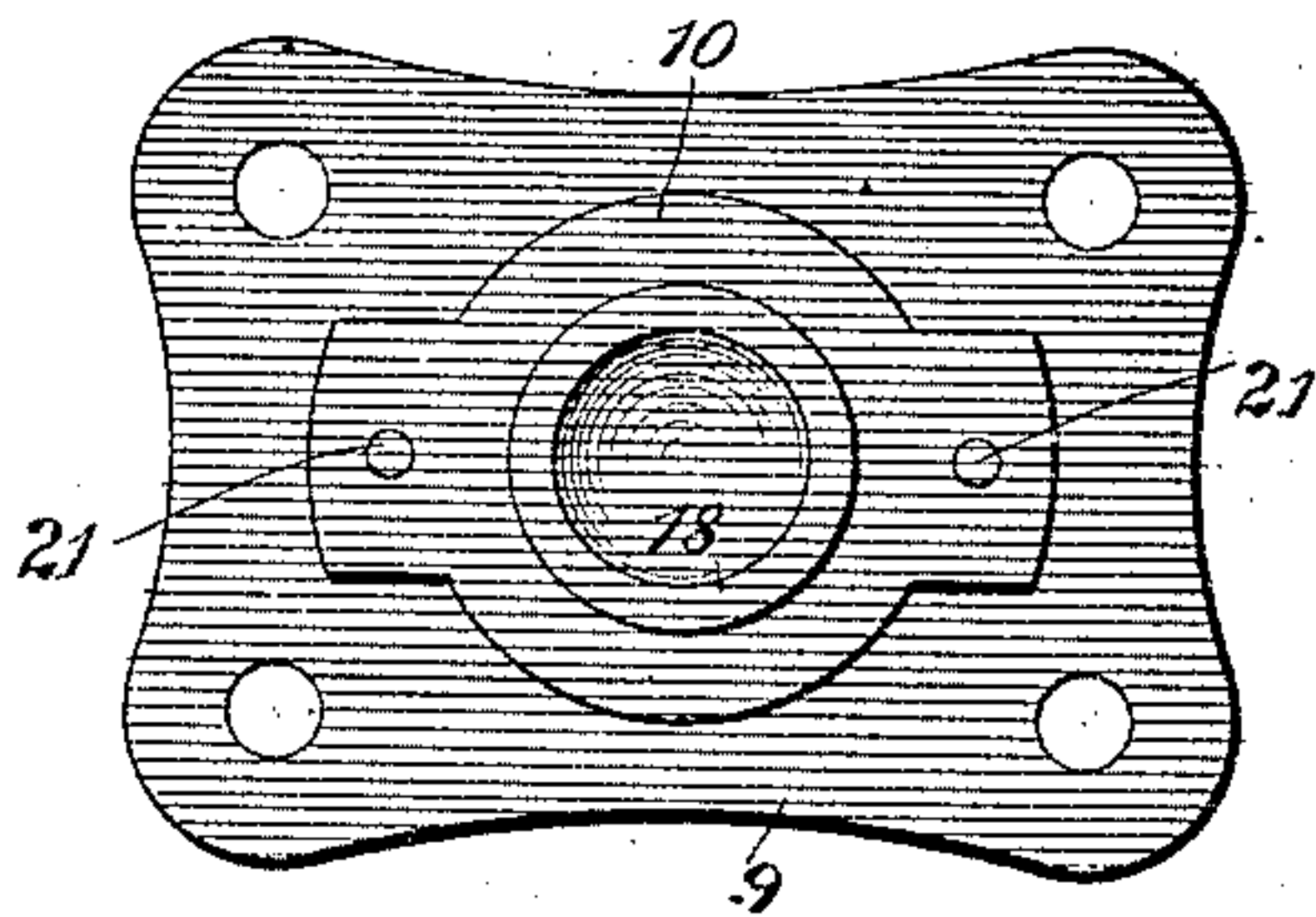


FIG. XIV.

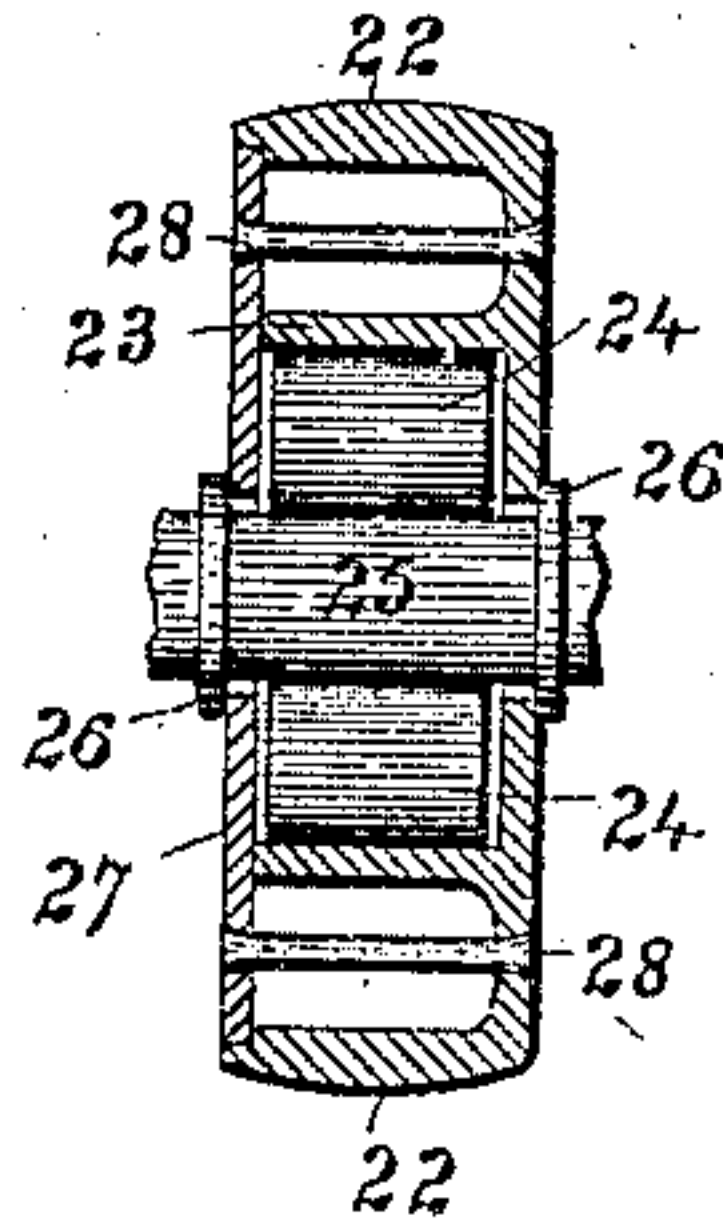


FIG. XV.

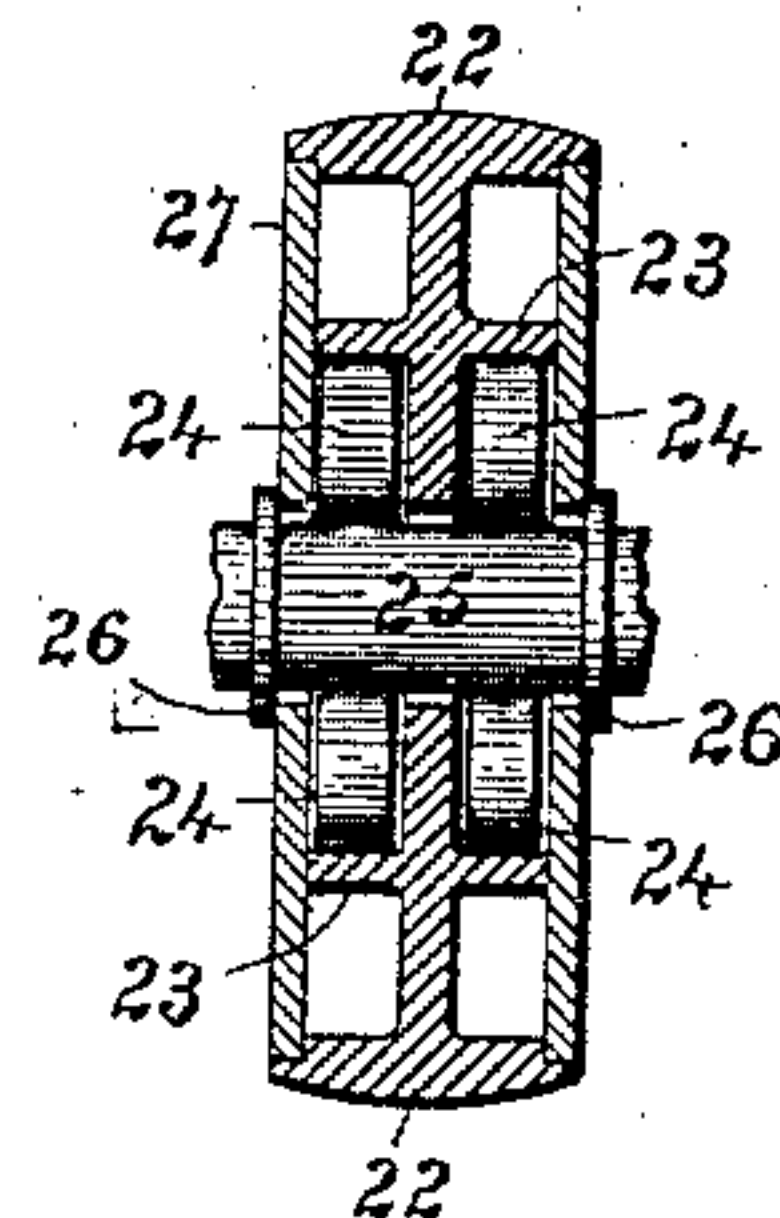


FIG. XVI.

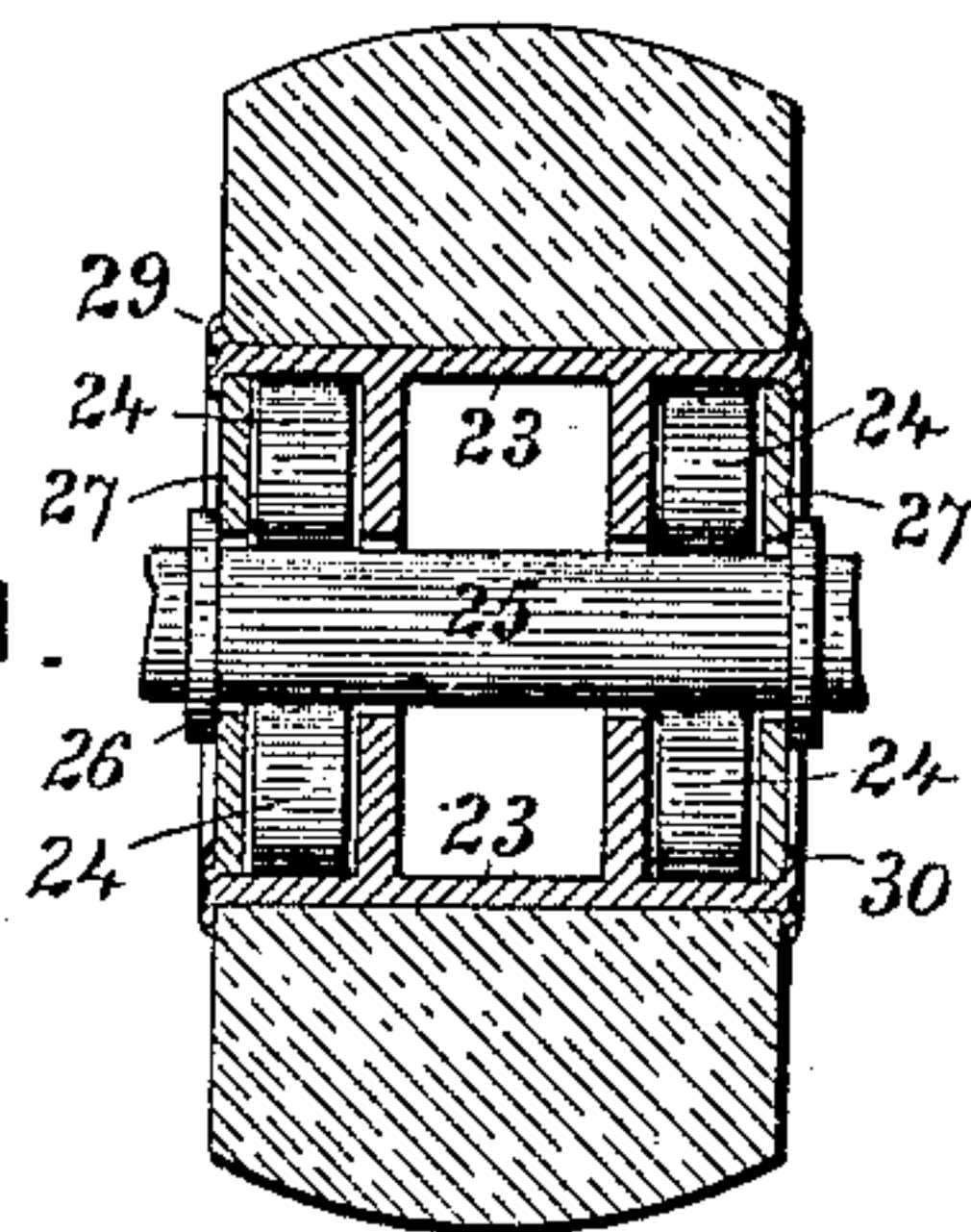
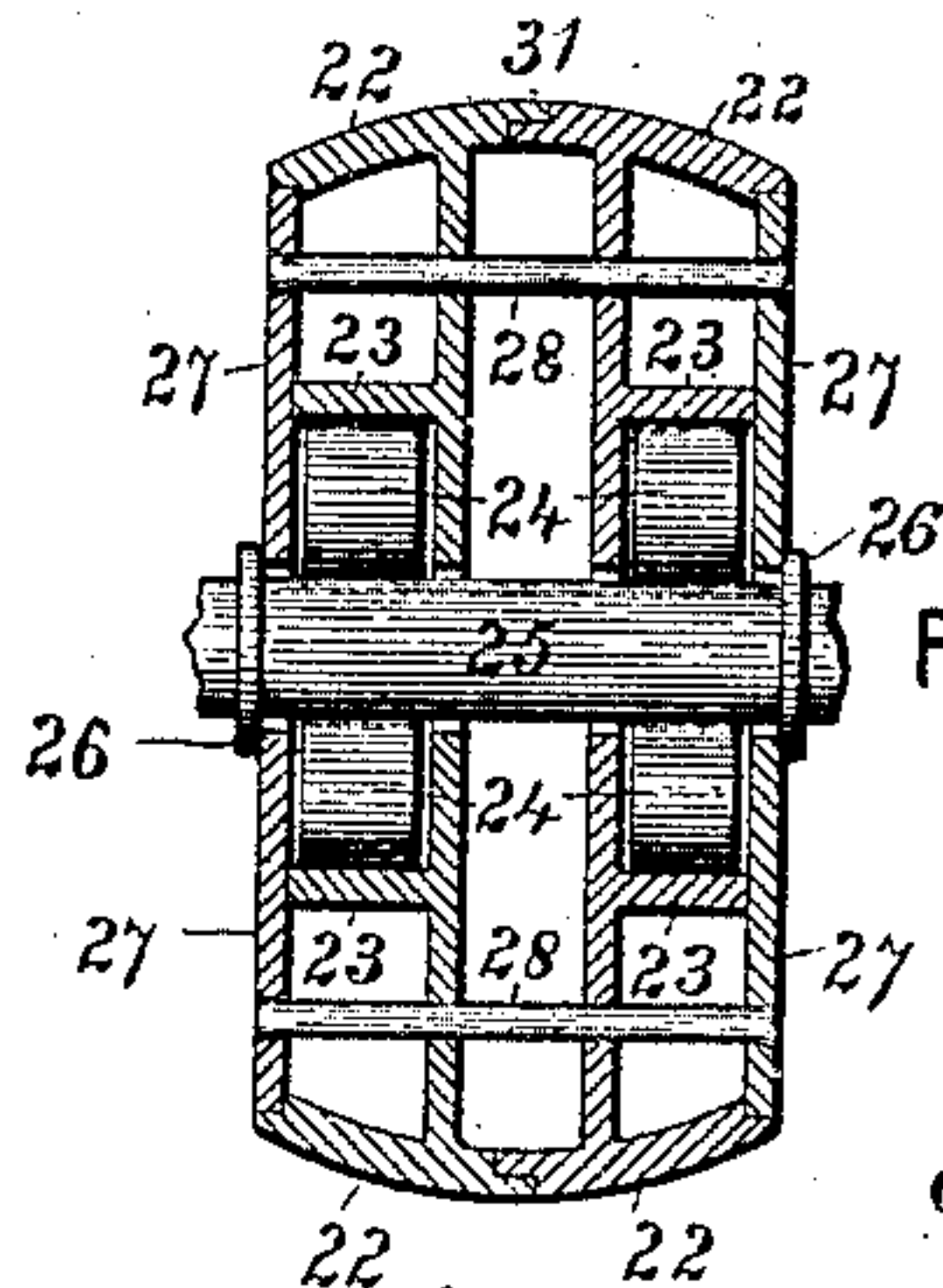


FIG. XVII.



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UNITED STATES PATENT OFFICE.

STEPHEN C. MENDENHALL, OF RICHMOND, INDIANA.

CASTER.

SPECIFICATION forming part of Letters Patent No. 314,963, dated March 31, 1885.

Application filed October 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN C. MENDENHALL, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, (present business address Cincinnati, Ohio,) have invented certain new and useful Improvements in Casters for Furniture and other Purposes, of which the following is a specification.

My invention relates, primarily, to those casters which are provided with two floor-wheels in which the spindle is mounted upon the axle between said floor-wheels; but it is in part applicable to single floor-wheel casters.

The improvement consists, first, in the provision of a universal bearing for the top of the spindle within the furniture plate or attachment. Said bearing is provided by forming upon said plate or attachment a hemispherical socket which is occupied by the spherical head of the spindle. The said head is held within its socket by a separate detachable plate or by pressing the edges of the socket around the same, as will be hereinafter more fully described. When in use, the weight of the furniture resting upon the caster will be distributed between the spherical head of the spindle and a vertical anti-friction wheel mounted over or slightly beyond the floor-wheel axle. The spherical head occupying the socket in the furniture attachment may be formed in one with the spindle or projection from the floor-wheel axle, or be formed on the end of a malleable or wrought pin, which may be riveted in said projection.

The invention further consists in forming the floor-wheel with an anti-friction bushing containing one or more series of loose rolls, upon which the spindle of the floor-wheel axle rests.

In order that my invention may be more fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation of a plate-caster embodying the invention. Fig. II is a vertical sectional view of the plate top and showing the lower part of the caster in side elevation, with one floor-wheel removed. Fig. III is an under side view of the cap which serves to retain the head of the spindle in its socket.

Fig. IV is a side elevation showing the adaptation of the invention to a stem-caster having a smooth round stem for entering the hole prepared in the furniture-leg or other part.

Fig. V is a side elevation of the caster having a square stem for occupying a similarly-shaped socket in the furniture. Fig. VI is a vertical sectional view of another form of the caster.

Fig. VII is a side elevation of the same. Fig. VIII is a side elevation showing the same principle applied to a non-separating stem-caster.

Fig. IX is a similar view showing its application to a separating stem-caster. Fig. X is a detail sectional view showing the preferred method of fastening the spindle and furniture attachment together.

Fig. XI is an under side view of the furniture-plate shown in Figs. VI, *et seq.* Fig. XII is a view showing the application of the form of spindle shown in Figs. I to V to the form of furniture-plate shown in Figs. VI to XI.

Fig. XIII is an under side view of a furniture-plate and of a spindle-retaining socket formed separate from said plate and riveted thereto.

Fig. XIV is a vertical sectional view of a narrow roller for two floor-wheel casters having a single series of anti-friction rolls.

Fig. XV is a similar view of a floor wheel or roller having a double series of such rollers.

Fig. XVI is a similar view showing the anti-friction bushing applied to glass floor-wheel rollers.

Fig. XVII is a similar view of a floor wheel or roller formed in two parts and having two series of anti-friction rolls.

The floor wheels or rollers 1 are mounted upon the spindles of the axle 2, and retained thereon by means of rivet and washer 3.

The said axle has cast about its central portion a frame or housing, 4, having an upright portion, 5, supporting a spherical head, 6, which may be formed in one with said portion 5, (herein called the "spindle") as shown in Fig. II, or may be formed upon a separate malleable or wrought pin, 7, which is riveted in said upright portion 5.

Mounted upon the frame 4, either directly above or slightly without the floor-wheel axis, is a vertical anti-friction roller, 8, which may be arranged either to receive the full weight of the furniture or to bear said weight in conjunction with the ball 6.

The furniture attachment may be constructed

ed either as shown in Fig. II or in Fig. VI, the latter being, however, the preferred form. In Fig. II the plate 9, resting against the bottom of the furniture, is provided at the center with a hemispherical socket, 18, to receive the ball 6, which ball is retained in place by a two-part plate, 11, fixed to said plate 9 by rivets 12 or simply by wood-screws 13, passing completely through both of said plates and into the furniture-leg or other part. In this form the cap-plate 11 serves as a track for the vertical anti-friction roller 8. In Fig. VI, however, the ball is retained in its socket by compressing the edges of the said socket around the same. A tool which may be employed for this purpose is shown in Fig. X, in which 14 is a block of hard steel having at top a hemispherical recess, 15, of suitable size to receive the socket when compressed around the head of the spindle. At the center of said depression is formed a cylindrical socket, 16, for the pin 7, which rests at bottom upon a spring cushion, 17. When using the tool, the pin 7, having the spherical head 6, is placed within its socket, and the plate 9, having a circular cylindrical rim, 18, at center, is placed over the head of said pin and driven down by a mallet until the edges of said rim are compressed around the said head to form the socket 18. (Shown in Fig. VI.) The spring-cushion 17 serves to keep the head of the pin up into the socket while the rim is being compressed about it and to assist in ejecting the pin when completed.

A lug, 19, formed in the upper end of the upright portion 5 of the frame, bears against the cap-plate 11, Fig. II, or against a shoulder, 20, surrounding the socket on the plate 9, Fig. VI, to prevent the frame and caster-wheels from dropping away from the furniture-plate too far in case of the lifting of the furniture. The shoulder is preferably made of octagonal or other polygonal form, to adapt it to receive a wrench for screwing the attachment to the furniture when intended for use with a non-separating caster, as shown in Figs. VIII, XI, and XII.

In Figs. VI to X, inclusive, I have shown the employment of a malleable or wrought iron pin in connection with the furniture-plate having a malleable or wrought socket.

In Fig. XII, however, is shown a detail view of a cast spindle of the form shown in Fig. II applied to such a malleable or wrought plate.

In Fig. XIII is shown a form in which the socket-piece 10 is wrought or cast separately and attached to the furniture-plate by means of rivets 21 or otherwise.

In Figs. XIV to XVII, inclusive, are shown several forms of anti-friction floor wheel or roller, Figs. XIV and XV representing narrow tread-rollers of size suitable for casters having two floor wheels or rollers, and Figs. XVI and XVII representing, respectively, a solid glass and a hollow metallic wheel or roller for single floor-wheel casters, skates, or other purposes, the last being the preferred form of my

invention, however, as applied to any form of caster or skate, embodying, as it does, a perfect anti-friction movement resulting from the use of two series of anti-friction rollers, while it is rendered light by possessing annular chambers surrounding the chambers in which said anti-friction rollers are placed. The main body of the roller is cast in two parts, 22, dovetailed together, as shown at 31, and fixed by rivets 28, which also serve to retain in place cap-plates 27, which hide from view the interior of the roller and prevent the falling out of the anti-friction rollers.

In Fig. XIV is shown a method of forming a caster-wheel in which the cast hollow portion 22 is formed with an annular rim, 23, to serve as bearing for the anti-friction rolls 24, a single series of which is placed in the chamber thus formed surrounding the spindle 25 of the floor-wheel axle. Loose washers 26 cover the openings in the sides of the roller and prevent the ingress of dust, while keeping the sides of the roller from contact with the floor-wheel housing or frame. The anti-friction rollers 24 are retained in place by the cap-plate 27, fixed to the cast portion 22 by means of rivets 28.

Fig. XV shows a wheel in which two series of anti-friction rollers, 24, are employed, mounted upon two rims, 23, cast on the hollow frame 22, and held in place by cap-plates 27 on each side of the roller.

Fig. XVI also shows the use of two series of anti-friction rollers, 24, mounted in a cast bushing, 23, for use in heavy glass or wooden rollers. This bushing may be put together as here shown, before being placed in the roller, and the end lips at 29 of the barrel of the bushing being then turned over the sides of the roller hold the bushing firmly in place. Oppositely-turned lips 30 on said barrel serve to hold the end cap-plates, 27, in place, and thus retain the anti-friction rolls.

The application of Frederick W. Jackson, No. 137,295, filed July 10th, 1884, shows and claims among other matter, first, an anti-friction two floor-wheel caster the housing of which is provided with a pin rounded on its upper surface for bearing against the furniture-plate; second, an anti-friction two floor-wheel caster housing having a pin with rounded upper surface formed integrally with said housing; third, an anti-friction two floor-wheel caster the housing of which is provided with a pin having a neck, by means of which a two-part clamp retains the pin against the furniture-plate; fourth, a furniture or track plate for casters having a socket, a recess communicating therewith, and a key-plate to fill said recess. The said matter is therefore herein specifically disclaimed.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a caster, a wheel-frame consisting of a horizontal arm supported at one end on the floor-wheel axle between the floor-wheels,

having vertical ears above said axle for the anti-friction wheel or roller, and having at its other end a vertical projection supporting a ball for bearing on the furniture-plate, substantially as set forth.

2. In combination with floor-wheels and a spherical-headed spindle mounted thereon, a furniture plate or attachment having a downwardly-projecting socket of malleable or wrought iron pressed around the spherical head of said spindle, substantially as set forth.

3. In combination with floor-wheels, an axle or frame mounted thereon having a vertical socket, a wrought or malleable iron spindle riveted in said socket, and having a spherical head, a furniture attachment having a downward spherical socket for receiving said head and spun over or pressed around the same, substantially as set forth.

4. A hollow caster-roller formed with two coaxial annular chambers separated by a circular ledge or partition, and having a series of anti-friction rollers bearing on said ledge, substantially as set forth.

5. A hollow caster-roller having two coaxial annular chambers, circular ledges sepa-

rating said chambers, transverse partitions and cap-plates, and two series of anti-friction rollers, at opposite sides of the roller, retained to position by said transverse partitions and cap-plates, substantially as set forth.

6. In combination with a caster-axle, a floor-wheel having a series of anti-friction rollers, on which said axle has bearing, and loose rings or washers covering the opening around the axle for excluding dust from the movement, substantially as set forth.

7. In combination with a furniture-plate, 9, having a rigid nut-shaped projection, 20, on its under side, a floor-wheel axle, a vertical anti-friction wheel mounted thereon and bearing on said furniture-plate, and a lug, 19, projecting from the floor-wheel housing and adapted to rest on the said projection 20 on the furniture-plate, whereby said projection serves the double purpose of supporting the housing and aiding in the fixing of the caster to the furniture, substantially as set forth.

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Witnesses:

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HARRY E. KNIGHT.