

Sept. 20, 1960

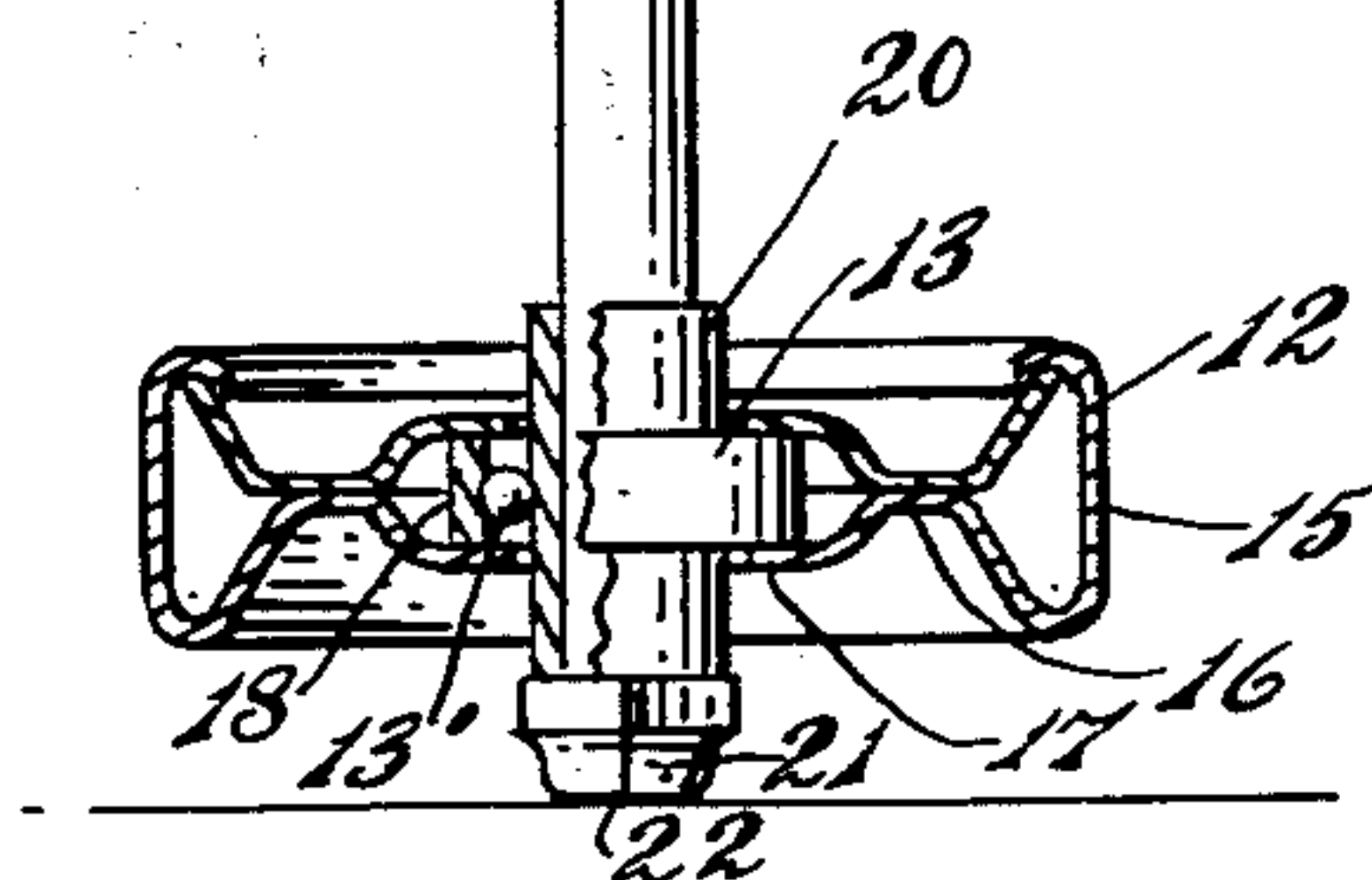
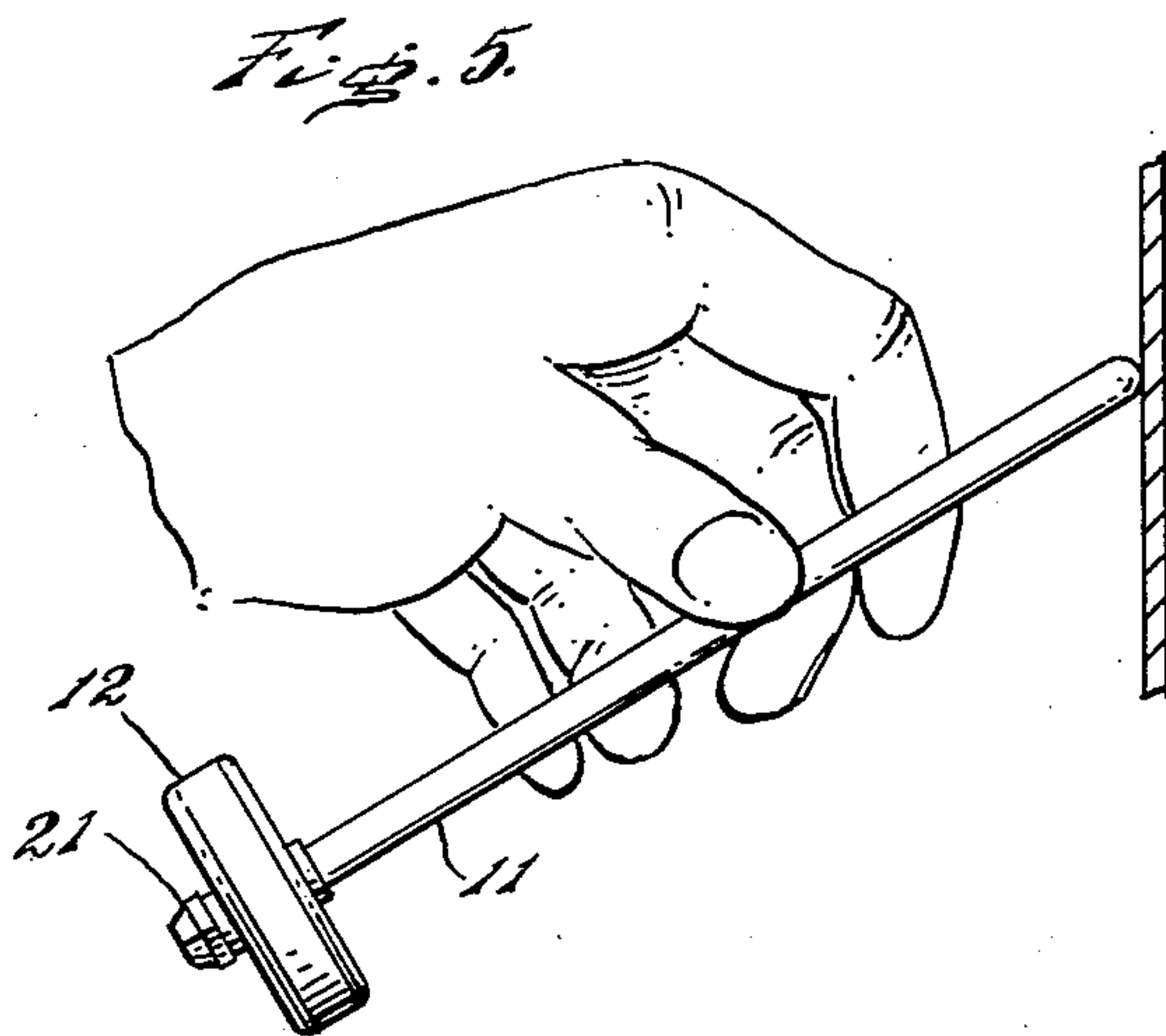
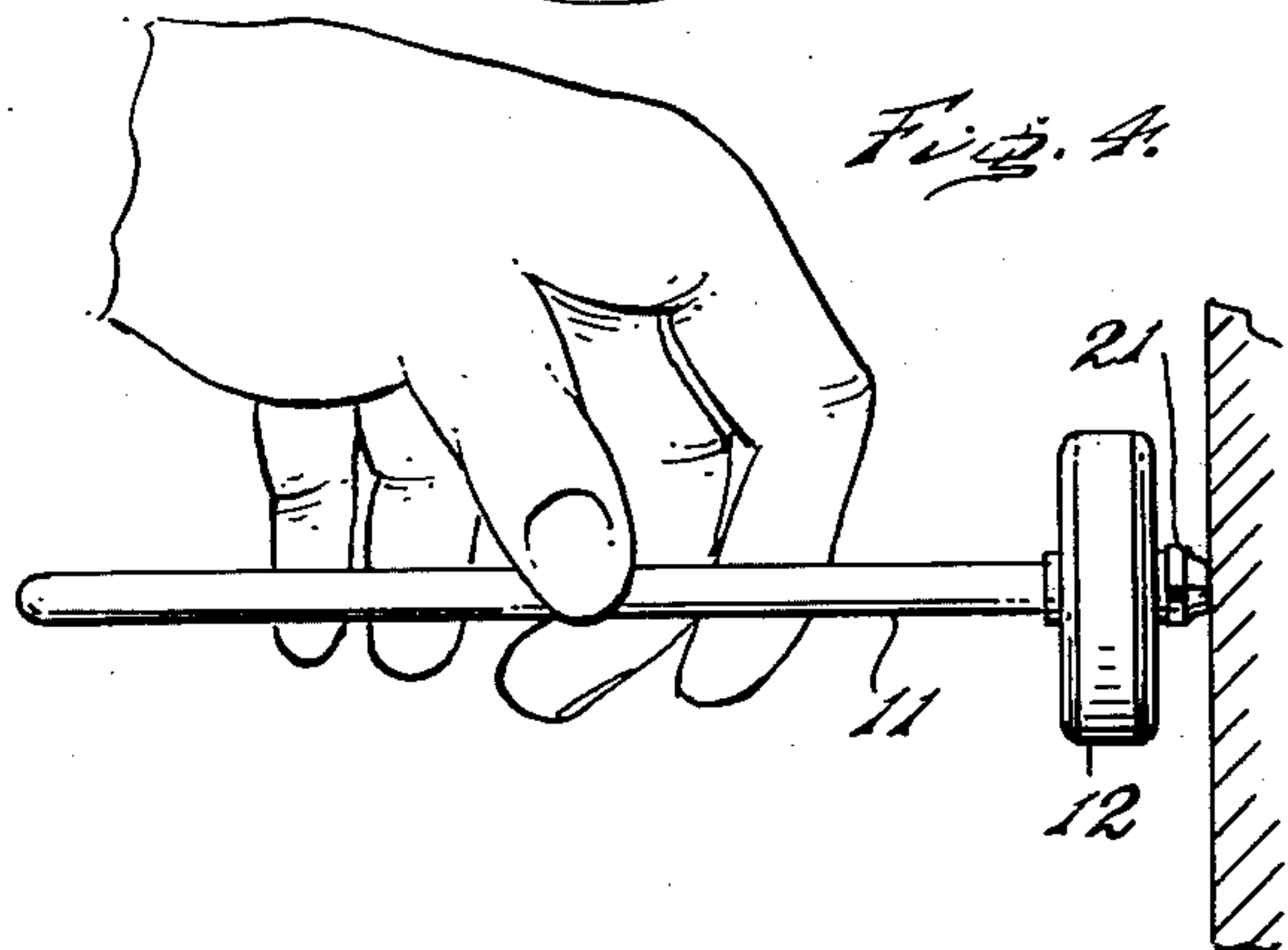
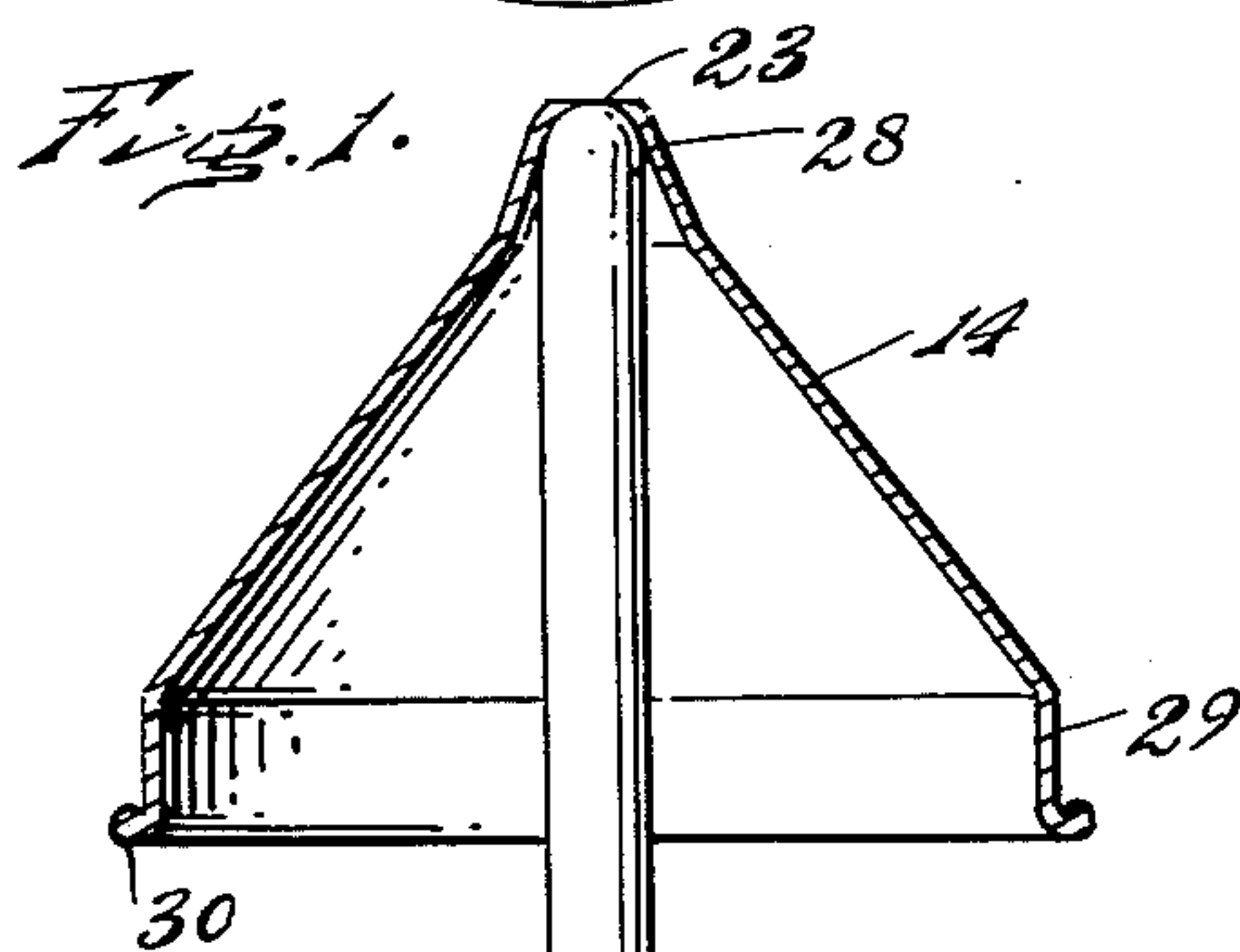
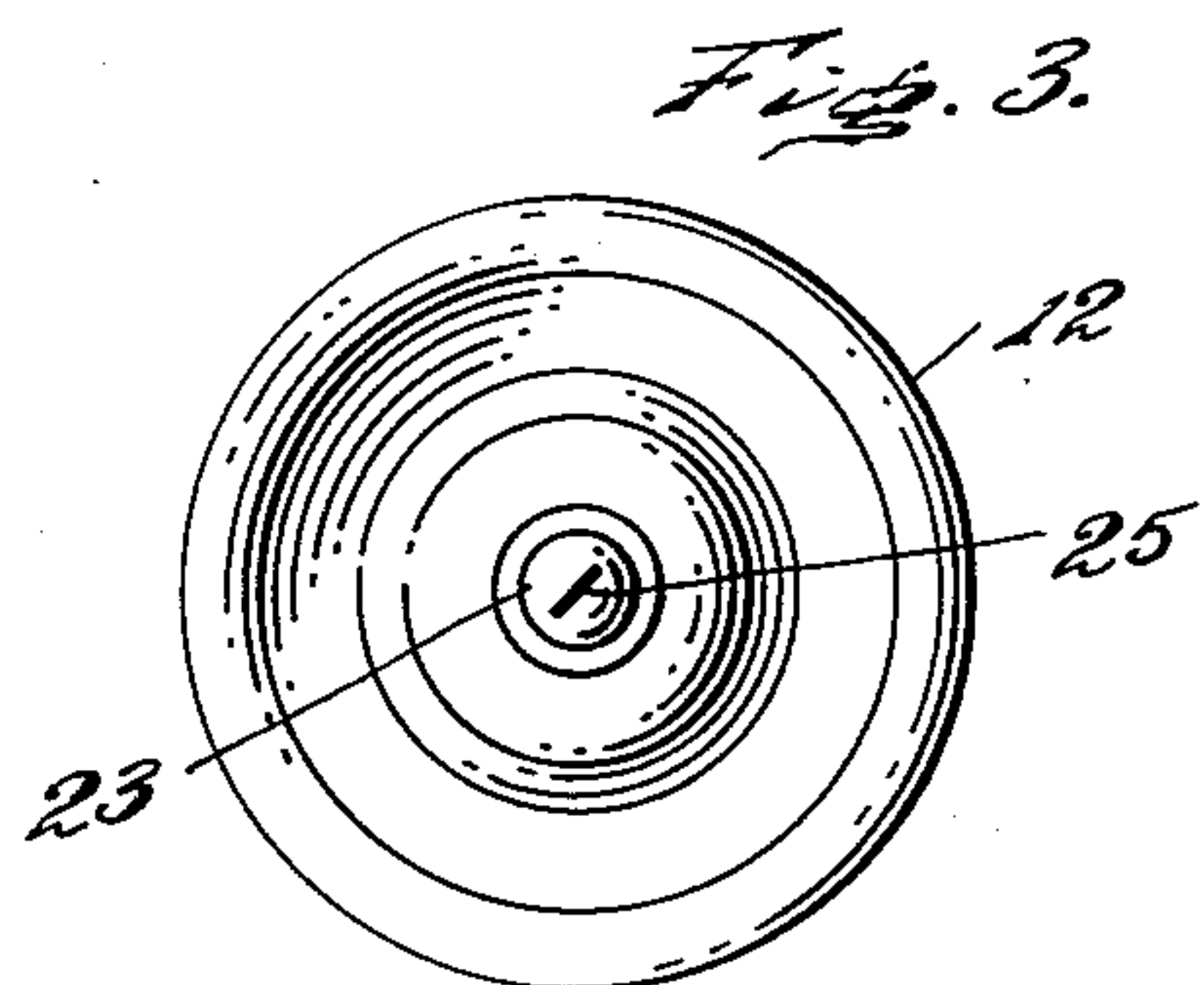
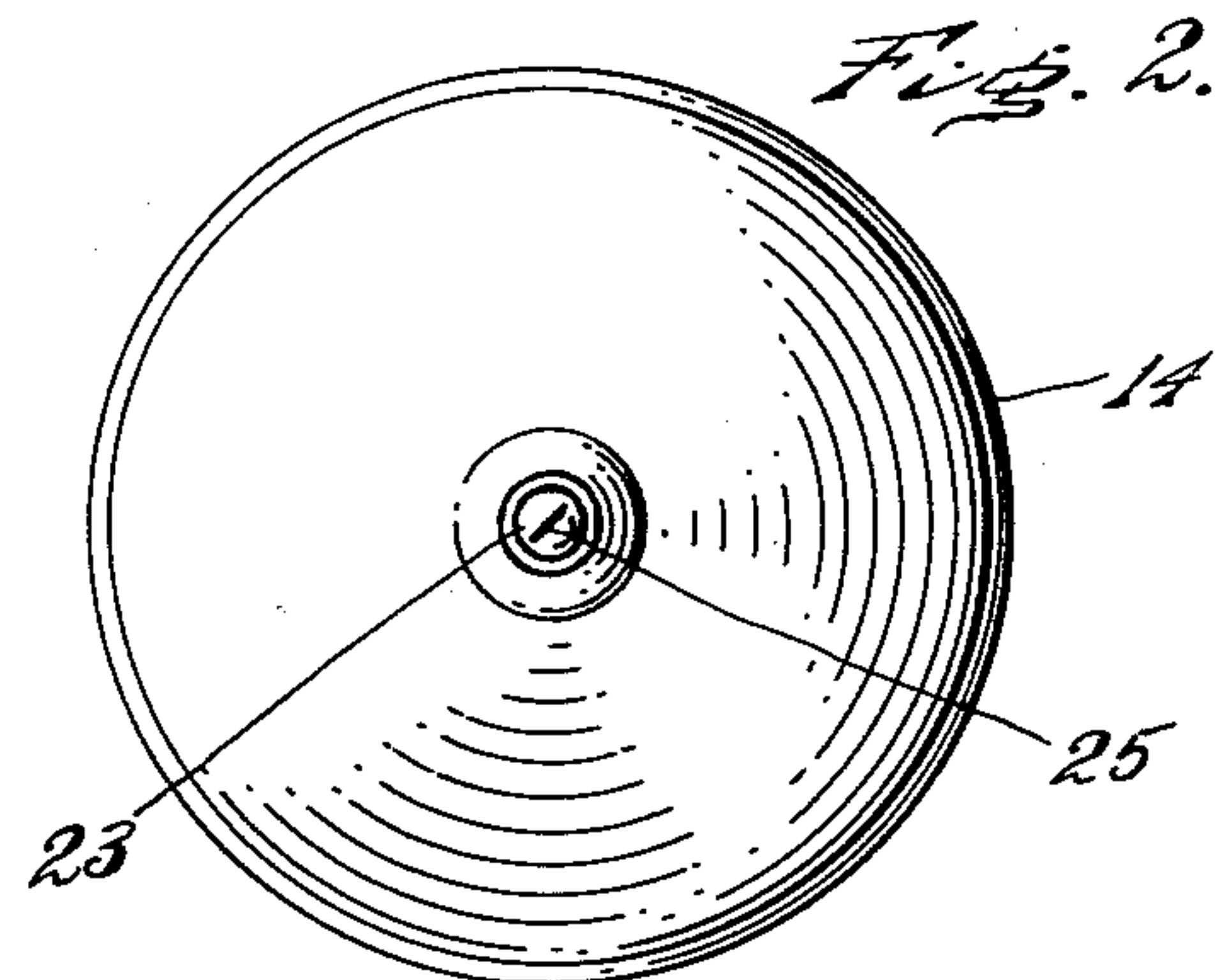
F. J. LIMACHER

2,952,939

TOY

Filed Aug. 30, 1956

2 Sheets-Sheet 1



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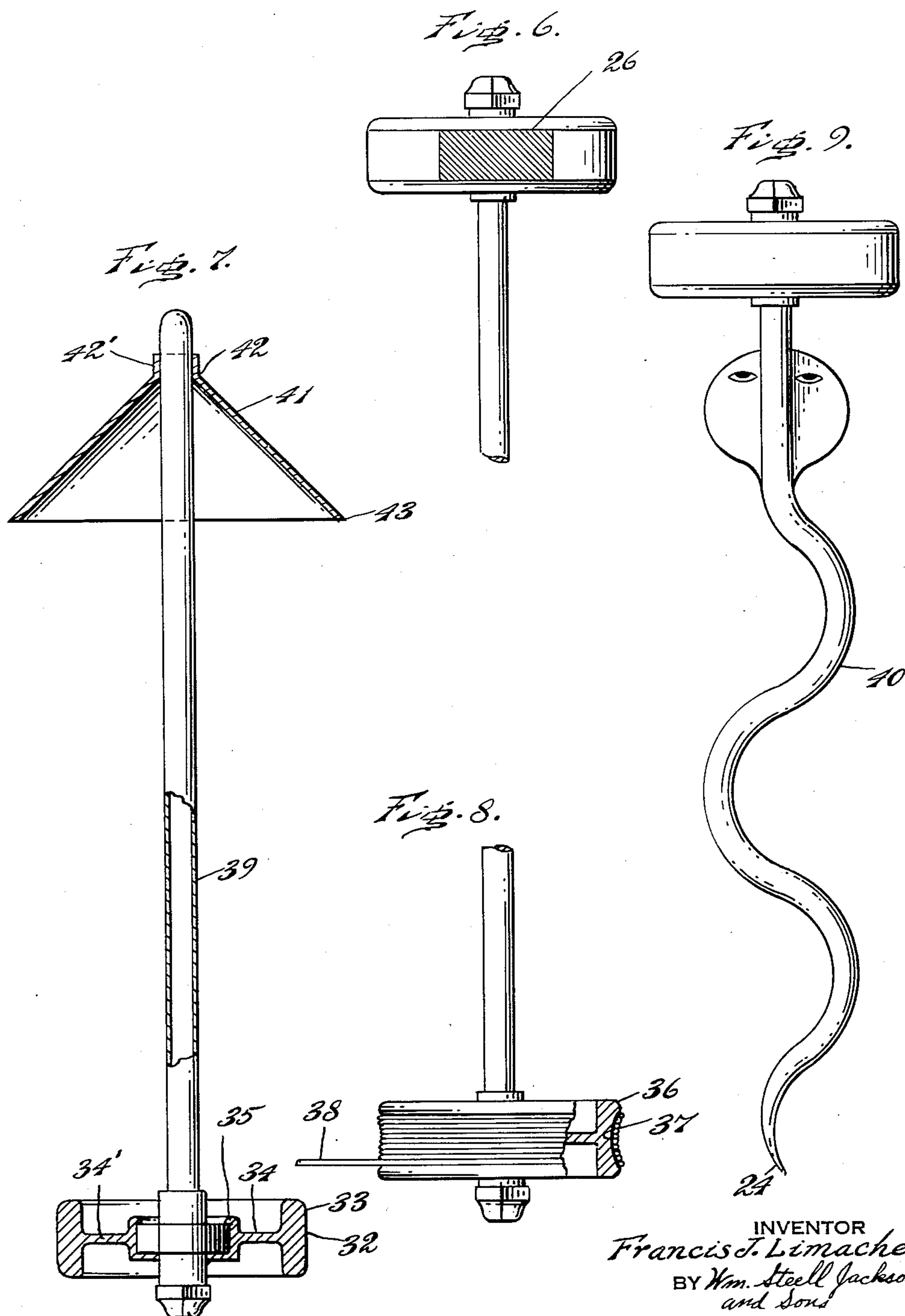
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2 Sheets-Sheet 2



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2,952,939

TOY

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3 Claims. (Cl. 46—66)

This invention relates to a toy.

A purpose of this invention is to produce a toy of novel attraction yet of comparative simplicity.

A further purpose of this invention is to provide a sounding toy of especial interest to children.

A further purpose is to provide a toy which will produce sounds which will markedly differ in an interesting way depending upon where it happens to be put, yet is comparatively simple and inexpensive to manufacture.

A further purpose is to provide a toy which will not only produce an interesting sound but will rotate in a strange and interesting way when properly dealt with.

A further purpose of this invention is to provide a way by which people, especially children, can amuse themselves by going from one place to another creating different sounds.

A further purpose is to provide a way by which children utilizing comparatively simple and inexpensive means, can create a variety of interesting sounds, coupled with possibly strange effects.

Further purposes will appear in the specification and in the claims.

A principle involved in my invention is to generate sound by the contact of ball bearings against each other and against the race, amplifying and transmitting the sound by means of a stick on which the ball bearings are placed, and still further amplifying the sound and determining its final character by contact with a structure or surface at the further end of the stick. It further involves the principle of keeping the ball bearings moving and the sound going a considerable period of time by mounting upon them a wheel having a high moment of inertia by virtue of concentration of most of the weight of the wheel near its rim.

My invention is illustrated in the description and drawings by particular embodiments chosen from the standpoints of convenience in illustration, satisfactory operation and clear demonstration of the principles involved.

Figure 1 shows one embodiment of the toy of my invention, partly in elevation, partly broken away, and partly in section, and also illustrates the practice of part of the method of my invention.

Figure 2 shows a top plan view of the above toy.

Figure 3 shows a top plan view of the above toy with its removable conical portion removed.

Figures 4 and 5 illustrate the practice of another part of the method of my invention, in connection with an elevational showing of the toy in the condition of Figure 3.

Figure 6 is a showing of a part, broken off, of the embodiment of Figure 1 in elevation.

Figure 7 is a showing, partly in elevation, partly broken away, and partly in section, of another embodiment of the toy of my invention.

Figure 8 is a showing in elevation, partly broken away, and partly in section, of the distinctive part of still another embodiment of the toy of my invention, at the same time illustrating still another possible feature of my method.

Figure 9 is an elevational view of still another embodiment of the toy of my invention.

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The toy of my invention as illustrated in the embodiment of Figure 1, is made up of a stick 11, a wheel 12, mounted on the stick 11 by means of an antifriction bearing, preferably ball bearings 13, and a removable flaring element 14.

In the form of Figure 1, the stick 11 is straight, solid, round, of uniform width except at the end, and preferably is of wood, although it may be of some other material such as plastic or metal. It is desirably about eight to twelve inches long. Around stick 11 toward one end thereof is metal collar 20, upon which to mount the ball bearings and wheel, and, located at the very tip of that end, the stick has a metal cap 21 which is flat on its end 22, or at least forms a flat annular surface thereon, the flat end, or flat annular surface as the case may be, being smooth, and in a plane perpendicular to the axis of the stick, and the cap being desirably of metal. The other end of the stick at 23 is preferably round, or may be pointed as at 24 in the form of Figure 9. As shown in Figures 2 and 3, there is a mark, as for example a line 25, straight across on the round end 23 of the stick.

The metal collar 20 should make tight contact with stick 11 as by a press fit, or by making the stick narrower inside the collar than elsewhere with a shoulder at the end of the collar, and forcing the collar up tight against this shoulder by means of cap 21, or by a wide head screw inserted in the near end of the stick.

Wheel 12 is made of sheet metal, say of 14 gauge, bent around so as to provide a broad, flat outer rim 15, a comparatively narrow flange 16, and a somewhat wider inner portion 17 secured within which is the ball bearing race 18. As shown in Figure 6, the wheel on its outside edge preferably has a segment 26 which is colored in some way so as to contrast in appearance with the rest of the circumference of the wheel. The wheel is desirably about two or three inches in diameter, and, including the bearing, desirably weighs about three or four ounces.

For the ball bearings 13 I much prefer to use what is called in the trade, "unground bearings," by which is meant a bearing and race set-up in which the balls and race are in reality highly ground, but to a looser tolerance than the highest grade bearings, the so-called unground bearings being the sort that are used in castors for furniture, for example. The individual balls 13' can be, say, without any lubricant, or they may have a thin lubricant such as might help to prevent rust, but there should be no grease on the bearings.

The position of wheel and bearings on the stick can desirably be such that the flat end of the cap is about one-eighth to three-eighths of an inch beyond the plane of the wheel rim on the side toward the end.

Flaring member 14 is removably mounted upon end 23, and may, for example, as in Figure 1, take the form of a cone with somewhat sharpened narrow end 28 and with a cylindrical extension 29 at the other the wide end 30, which is open and faces toward the wheel.

The flaring member's narrow end 28 is of a size and shape on the inside to fit on the stick at the end 23 just tightly enough so that it will normally stay firmly on the stick without any danger of accidentally falling off, but can be removed without any great effort if desired. It can desirably be made of metal or plastic.

Another form of wheel, and one which I consider preferable, is that shown in Figure 7, and designated 32, in which the wheel is decidedly thicker in its rim 33 than in its other parts 34, thus concentrating its weight near its rim, and desirably has at least two-thirds of its weight in the rim portion and preferably at least three quarters of its weight in the rim portion. If need be, for convenience in getting this proportion, the intermediate portion or web 34' can be cut away in parts, but it is preferably continuous. The bearing race in such case

can be pressed into a steel cylinder 35 if desired. Another means of concentrating the weight on the rim would be to weight it with lead.

In another form of wheel as shown in Figure 8, the rim 36 is concave on its outer face as shown at 37, thus facilitating the winding of string 38 around the rim, as a means of starting up the wheel at a high rate of speed. The string might for example be two feet long.

As shown in Figure 7, with stick 39, the stick may be a thin-walled hollow member rather than solid as in the case of stick 11.

The stick may also be shaped to represent or resemble something as in the case of stick 40 in Figure 9, which is curved or serpentine in shape and has flat projecting pieces representing a head, to represent a form of dragon or snake.

As shown in Figure 7, the flaring member may take the form of flaring member 41, whose narrow end 42 and collar 42' at the narrow end are just wide enough to fit the stick and thus to be capable of being pushed some little distance in from the end of the stick and to hold at that place on the stick, with the wide end 43 directed toward the wheel as before. In this case the flaring member is purely conical in shape (aside from the collar on the small end), without any cylindrical extension or the like at the wide end.

In the practice of my method with the aid of my toy, as illustrated for example with the form of Figure 1, I hold stick 11 and set wheel 12 to rotating at a high rate of speed, as by running it quickly along a flat surface, or giving a piece of string wrapped around it a sharp pull to pull it quickly off the wheel.

With the high moment of inertia which the wheel has by virtue of the heavy concentration of its weight on the rim, especially in the case of the forms of Figures 7 and 8, it will continue turning at gradually decreasing speed for 20 to 30 seconds before it runs down.

When the wheel of my toy is thus set in motion, it emits an interesting sound. This sound may possibly be due to the knocking of the balls or other bearing members one upon another or upon the race. When the flaring member is on the end of the stick, the sound is tremendously intensified. When a hollow stick is used, the sound is higher in pitch than with the solid stick.

With the wheel turning at a high rate of speed, it is possible to take my toy and place either end against a surface, as shown for example in Figure 4 with the end near the wheel and with Figure 5 with the end of the stick away from the wheel, and when this is done, a large variety of different sounds can be obtained depending upon the thing against which it is placed. Thus, the sound will be different either in intensity, pitch or quality, depending upon whether the end is placed against the glass face of a bookcase, the top of a table, a door panel, the face of a drawer, an empty tumbler, a large vase, etc. For example, pressing it onto a coffee can appears to change its pitch, at the very least; pressing it into a table cloth on a table appears to change its intensity.

Furthermore, by putting the rotating wheel against the edge of a paper or metallic lamp shade or a glass or ceramic vase, an intermittent sort of a sound, not unlike that a boy secures by running a stick over a picket fence, can be gotten.

In addition, the toy can be stood upon its end in the position shown in Figure 1, with the flat end 22 of the cap 21, forming the end of the stick near the wheel, being rested upon a flat, level, relatively low friction surface such as a glass table top, and not merely will the wheel continue turning at high speed, as will be evident from fast movement of the colored segment, but if let free, standing there, the stick itself will slowly begin turning around, without anyone to turn it, as the turning of the line on its top will confirm.

Thus, with the aid of this toy, a child can amuse himself enormously by producing a wide variety of sounds

by putting the stick against an equally wide variety of objects, exploring to see what objects make it give what sounds, and what kind of sounds some new object he notices will make it give; and in addition the child has what for him will be a true mystery to amuse himself with: the strange way in which the stem will start up slowly, slowly rotating without anyone pushing it to cause the rotation. The comparative simplicity of the toy with the aid of which he gets all this fun, will heighten the effect, as well as making the toy comparatively inexpensive, within the reach of all.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the apparatus and method shown, and I, therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claims.

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

1. A sound-producing toy comprising in combination a straight cylindrical, relatively long and thin, stick having a flat surface on one end in a plane perpendicular to the longitudinal axis of the stick, a metal collar mounted fixedly upon and surrounding the stick near that end, so-called unground ball bearings mounted rotatably upon and surrounding the collar, a wheel mounted rotatably upon and surrounding the bearings and having an outside ring in which at least three quarters of the weight of the wheel is concentrated, the collar, bearings and wheel all being located at the same longitudinal position of the stick near the aforesaid end, and a member mounted fixedly upon the outside of the stick at a point near the other end of the stick, and flaring out from said point in a hollow unbroken cone surrounding the stick, having the same longitudinal axis as the stick, and having its own open end facing in the direction of the first-mentioned end of the stick.

2. A sounding toy comprising an easily grasped stick shaped to represent an amusing object and having a flat surface on one end in a plane perpendicular to the longitudinal axis of the stick, a metal collar mounted fixedly upon and surrounding the stick near that end, so-called unground ball bearings mounted rotatably upon and surrounding the collar, a wheel mounted rotatably upon and surrounding the bearings and having an outside ring in which at least two-thirds of the weight of the wheel is concentrated, the collar, bearings and wheel all being located at the same longitudinal position of the stick near the aforesaid end, and a member mounted upon the outside of the stick at a point near the other end of the stick, and flaring out from said point in a hollow, unbroken, substantially conical shape surrounding the stick, having the same longitudinal axis as the stick, and having its own open end facing in the direction of the first-mentioned end of the stick.

3. A sounding toy comprising an easily grasped stick shaped to represent an amusing object and having a flat surface on one end in a plane perpendicular to the longitudinal axis of the stick, a metal collar mounted fixedly upon and surrounding the stick near that end, so-called unground ball bearings mounted rotatably upon and surrounding the collar, a wheel mounted rotatably upon and surrounding the bearings and having an outside ring in which at least two-thirds of the weight of the wheel is concentrated, the collar, bearings and wheel all being located at the same longitudinal position of the stick near the aforesaid end.

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