

No. 861,663.

PATENTED JULY 30, 1907.

W. H. LATSHAW.
METHOD OF FORMING SECTIONAL PULLEYS.
APPLICATION FILED APR. 10, 1906.

2 SHEETS—SHEET 1.

FIG. 1

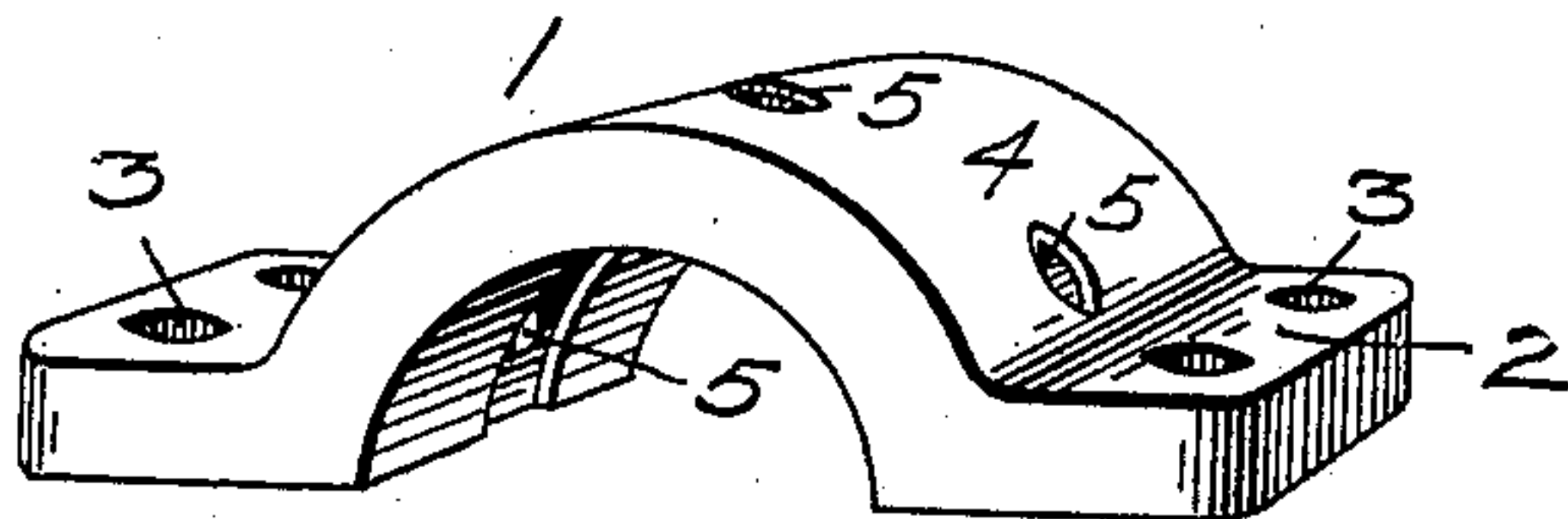


FIG. 3

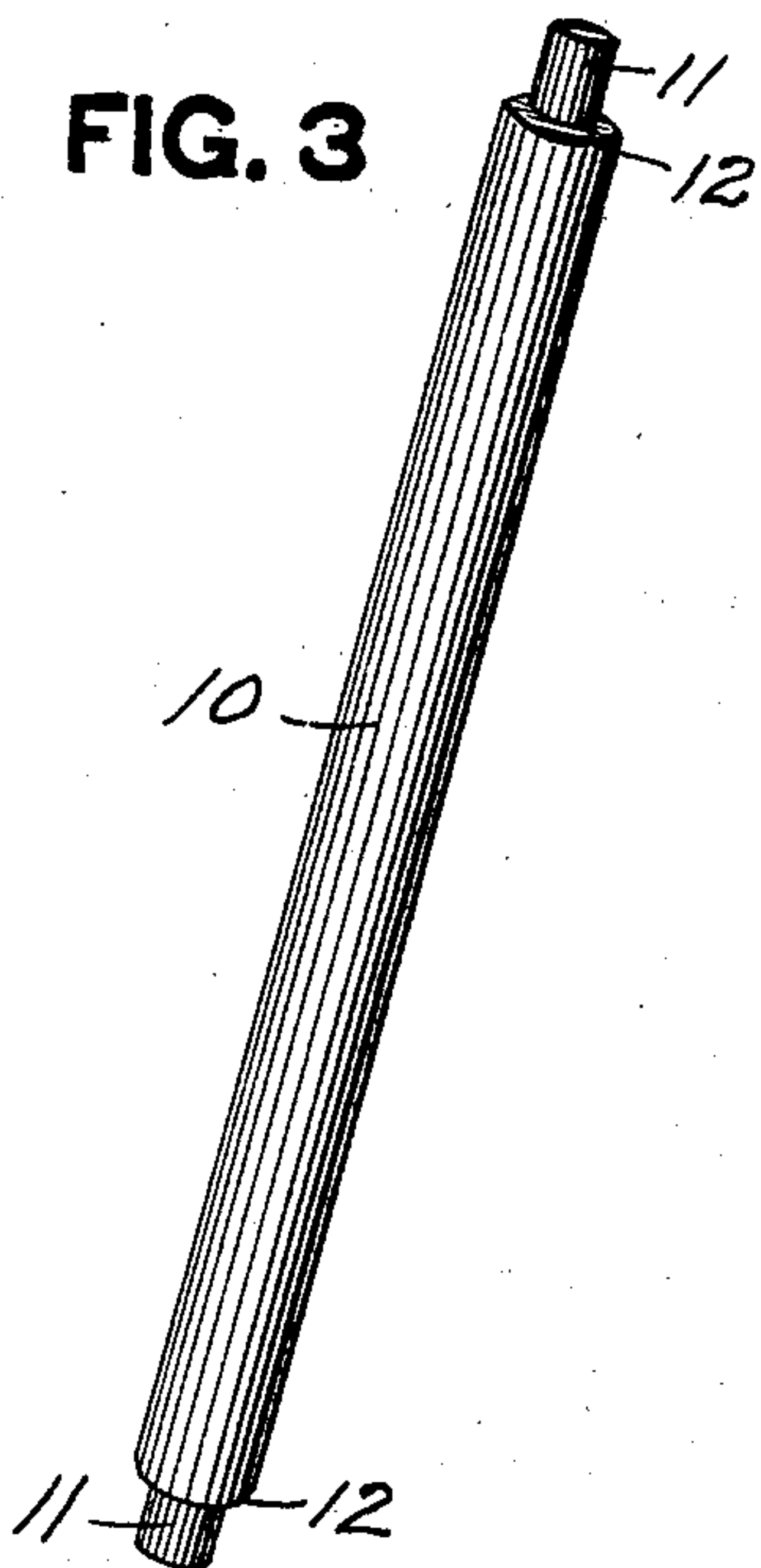
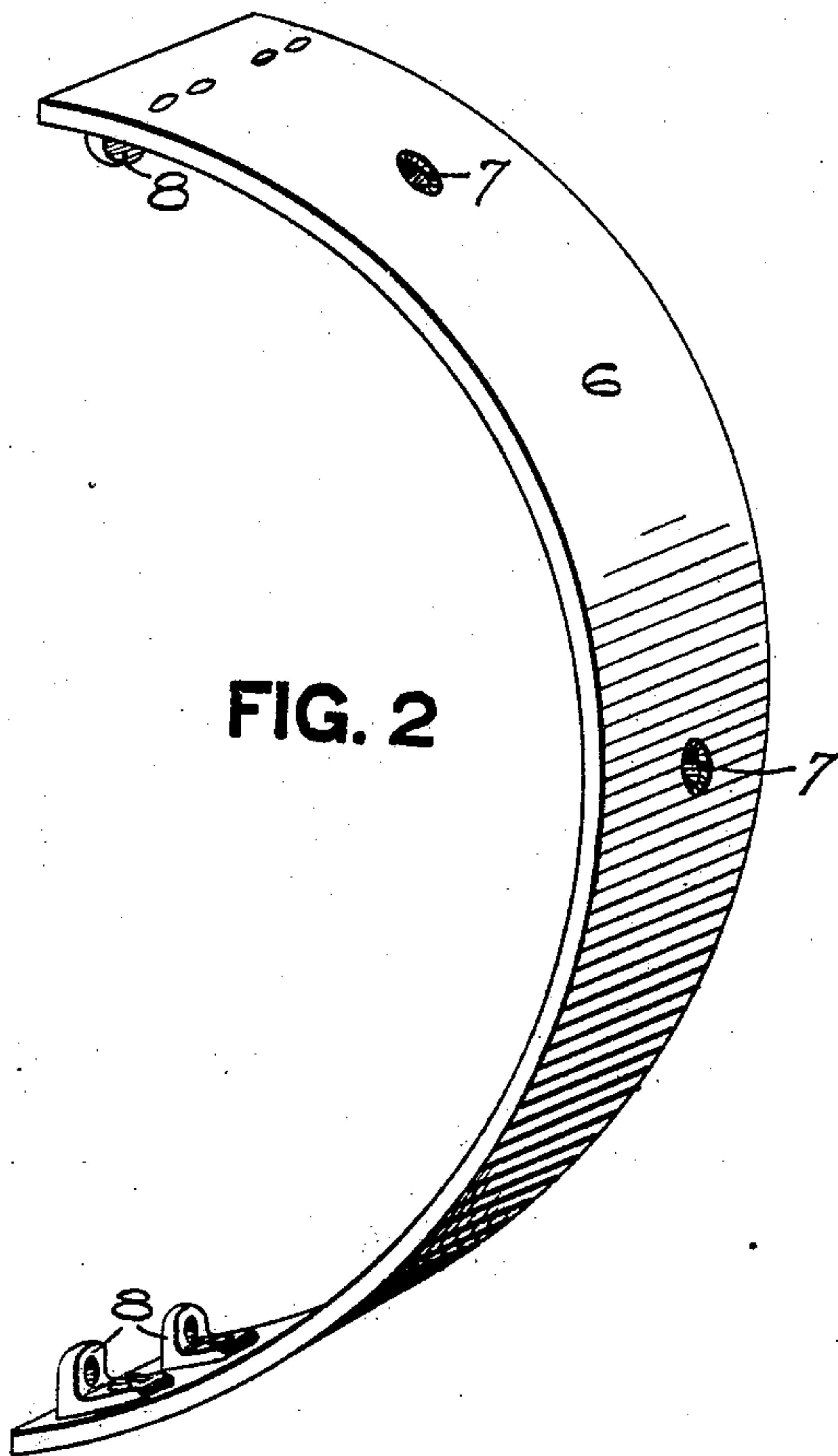


FIG. 2



WITNESSES.

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2 SHEETS—SHEET 2.

FIG. 4

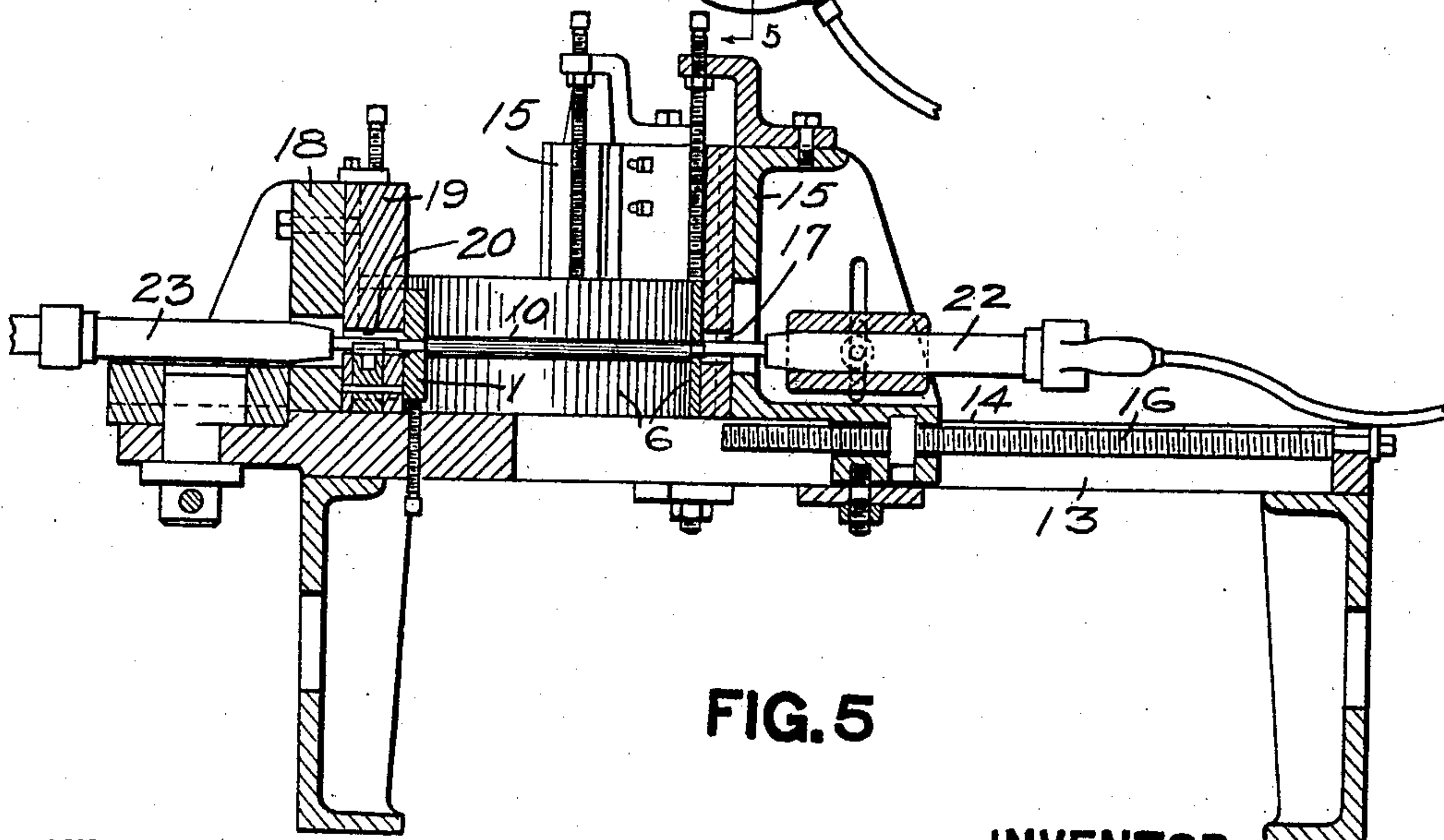
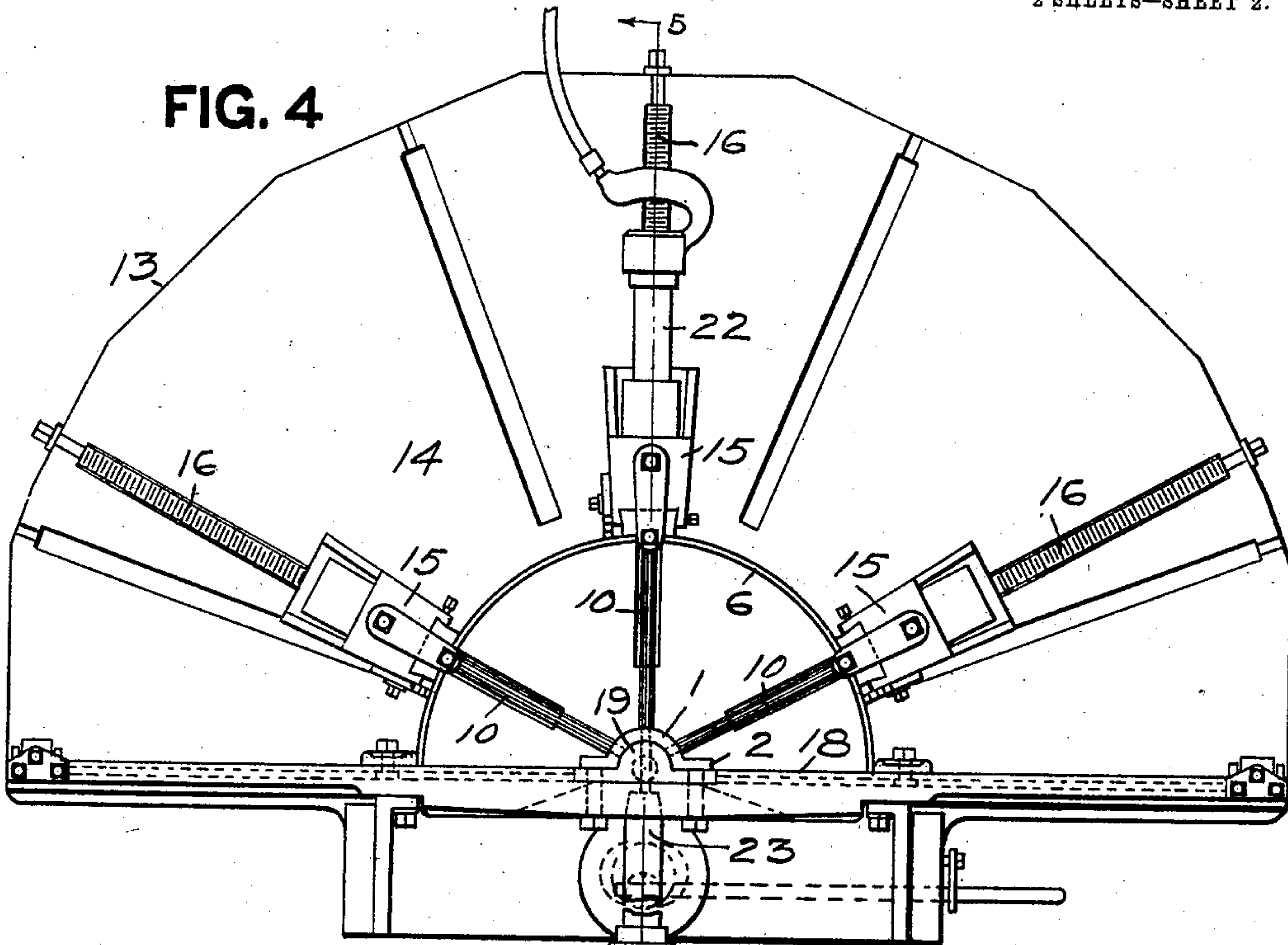


FIG. 5

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WILLIAM H. LATSHAW, OF PITTSBURG, PENNSYLVANIA.

METHOD OF FORMING SECTIONAL PULLEYS.

No. 861,663.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed April 10, 1906. Serial No. 310,992.

To all whom it may concern:

Be it known that I, WILLIAM H. LATSHAW, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Methods of Forming Sectional Pulleys; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the manufacture of sectional pulleys, its object being to provide for the accurate assembling and uniting of the pulley parts in a wrought metal pulley. In pulleys of this kind it is necessary that the parts be firmly and permanently united and that the pulley be absolutely concentric. The necessity for the formation of pulleys absolutely concentric has heretofore led to the manufacture either of wood or cast metal, and while attempts have been made to form them of wrought metal parts, difficulty has been found in assembling the parts and uniting them firmly together and yet preserving the concentricity of the pulley sections. By the present invention this desirable end is attained.

It consists, generally stated, in providing the hub section and the rim section with spoke holes, forming the spokes with shoulders and tenons at the ends, assembling the pulley section by seating the spokes in the hub and rim and clamping the parts so as to bring the pulley section to exact concentric form and then uniting the sections by simultaneously upsetting the two tenons of each spoke in the hub and rim, this being preferably done by means of successive upsetting hammer blows upon the unheated tenons of the spoke.

To enable others skilled in the art to practice my invention I will describe the same more fully, referring to the accompanying drawing in which

Figure 1 is a view of the hub section; Fig. 2 is a view of the rim section; Fig. 3 is a view of the spoke; Fig. 4 shows the pulley section assembled and clamped in place, and illustrates the simultaneous upsetting of the spoke tenons to unite the parts of the pulley section; and Fig. 5 is a vertical section on the line 5—5, Fig. 4.

The different parts of the pulley section can be formed in any desirable way to bring them accurately to shape. I prefer to forge the hub sections 1 in suitable dies. These sections have the ears 2 through which are formed suitable bolt holes 3, and in the semi-circular body portion 4 of the hub are drilled spoke holes 5. The rim sections 6 are first punched to form the spoke holes 7, these spoke holes being then countersunk on the outer face, and the rim sections are then bent to shape, preferably by rolling, and by subsequent trimming at the ends to bring them to accurate size. Connecting lugs 8 are then preferably riveted at the ends of the rim sections, as shown. It is necessary in making these pulleys that the spokes 10 shall be formed accurately to length, as even slight variations affect the concentricity of the pulley. To this end I prefer to

cut them from round metal bars and at the same time cut on their ends the tenons 11 forming shoulders 12 at the base of the tenons. It is necessary that the distance between the shoulders of the spokes be made exact so that when the pulley section is united the parts will be firmly and permanently connected and the accurately formed spokes support the rim in exact concentricity.

Having provided the necessary parts to form the pulley section it is necessary to assemble the parts in exact relation and to hold the parts firmly to place while they are united, and to so unite them as to prevent upsetting of any parts of the spokes which will destroy the concentricity of the pulley section. Where the parts are united by upsetting the spoke tenons I find that if they are subjected to such an upsetting action as would require the shoulder at one end of the spoke to sustain the strain in upsetting the tenon at the other end of the spoke there is great danger of also upsetting such shoulder and so deforming the pulley section; and as the pulley rim is necessarily made of comparatively thin plate there is also great liability of deforming the body of the rim in upsetting the tenon within the hub. By the present invention these difficulties are entirely overcome. After the parts composing the pulley section are thus prepared the pulley section is assembled by placing the tenons of the spokes within spoke holes in the hub section and rim section and clamping the parts firmly together so that the pulley section is brought to exact shape and held there when the parts are being united. To this end I provide the assembling and riveting table 13 having a flat supporting face 14 on which the assembled pulley is placed, and having abutments in line with the spokes, as shown, these abutments being arranged for accurate adjustment by suitable means such as by screws 16, and the abutments having openings 17 exposing the tenons of the spokes where they project through the pulley rim in the upsetting action.

To clamp the pulley section against the abutments on the table I provide the vertical clamping plate 18 provided with the semi-cylindrical projection 19 fitting in the semi-cylindrical seat of the hub section, the body of the plate contacting with the ends of the rim section and the clamping plate being advanced and withdrawn toward and from the table 13 by suitable mechanism. In this way the assembled pulley section can be firmly clamped and brought to accurate shape ready for the upsetting action. The semi-cylindrical projection 19 of the clamping plate has a suitable slot 20 formed therein in line with the spoke holes of the hub section for the passage of the upsetting mechanism, this slot being formed flaring where it passes through the clamping plate 18 so as to enable the operator to operate the riveting hammer in direct

line with the different spokes where their tenons project through the hub section.

I have illustrated as the means for upsetting the tenons of the spoke sections pneumatic hammers 22 and 23, these pneumatic hammers being guided in their operation by workmen, as usual. In the upsetting operation the pneumatic hammers are caused to act simultaneously upon both tenons of each separate spoke where they project through the hub and rim, so that the force of the upsetting or riveting blows balance each other, and in such upsetting of the tenons the shoulders of the spokes are largely if not wholly relieved from pressure. Both tenons of each spoke are thus upset simultaneously by means of the pneumatic hammers without liability of such deforming or shortening the spokes or upsetting the shoulders thereof, as would injuriously affect the concentricity of the pulley section, it being found that by such simultaneous upsetting of both tenons of each spoke the parts of the pulley section can be firmly and permanently united, and a finished pulley section of great strength and of exact concentric shape produced. Each spoke is thus successively upset while the pulley section is clamped within the clamping table, and the pulley section is thus completed ready for the assembling of the sectional pulley by the uniting of the two sections thereof. The two sections of the pulley when they are thus formed are then united by bolts through the ears of the hubs and the lugs on the rims and the outer face of the sectional pulley ground and the pulley thus finished.

In uniting the parts of the pulley sections by up-

setting the spoke tenons the spokes are unheated so that any difficulty arising from expansion or contraction in the spoke sections or upsetting of the shoulders of the spokes when softened by heat is avoided, and it is found that the parts of the pulley section can thus be firmly and permanently united.

Sectional pulleys of great strength and accuracy of shape can be produced at low cost.

What I claim is:

1. The herein described method of making sectional pulleys, consisting in providing a hub section and a rim section with spoke holes, forming spokes with shoulders and tenons at the ends, assembling the pulley section by seating the spokes in the hub and rim, and simultaneously upsetting both tenons of each spoke in the rim and hub.

2. The herein described method of making sectional pulleys, consisting in providing a hub section and a rim section with spoke holes, forming spokes with shoulders and tenons at the ends, assembling the pulley section by seating the spokes in the hub and rim and clamping the parts to exact shape, and while so clamped simultaneously upsetting both tenons of each spoke in the rim and hub.

3. The herein described method of making sectional pulleys, consisting in providing a hub section and a rim section with spoke holes, forming spokes with shoulders and tenons at the ends, assembling the pulley section by seating the spokes in the hub and rim, simultaneously upsetting both tenons of each spoke in the rim and hub by successive upsetting hammer blows upon the unheated tenons of the spokes.

In testimony whereof, I the said WILLIAM H. LATSHAW have hereunto set my hand.

WM. H. LATSHAW.

Witnesses:

ROBERT C. TOTTEN,
EDNA L. WATKINS.