

No. 712,480.

Patented Nov. 4, 1902.

A. BENSON.

SAND REEL FOR OIL OR ARTESIAN WELLS.

(Application filed May 24, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig 9

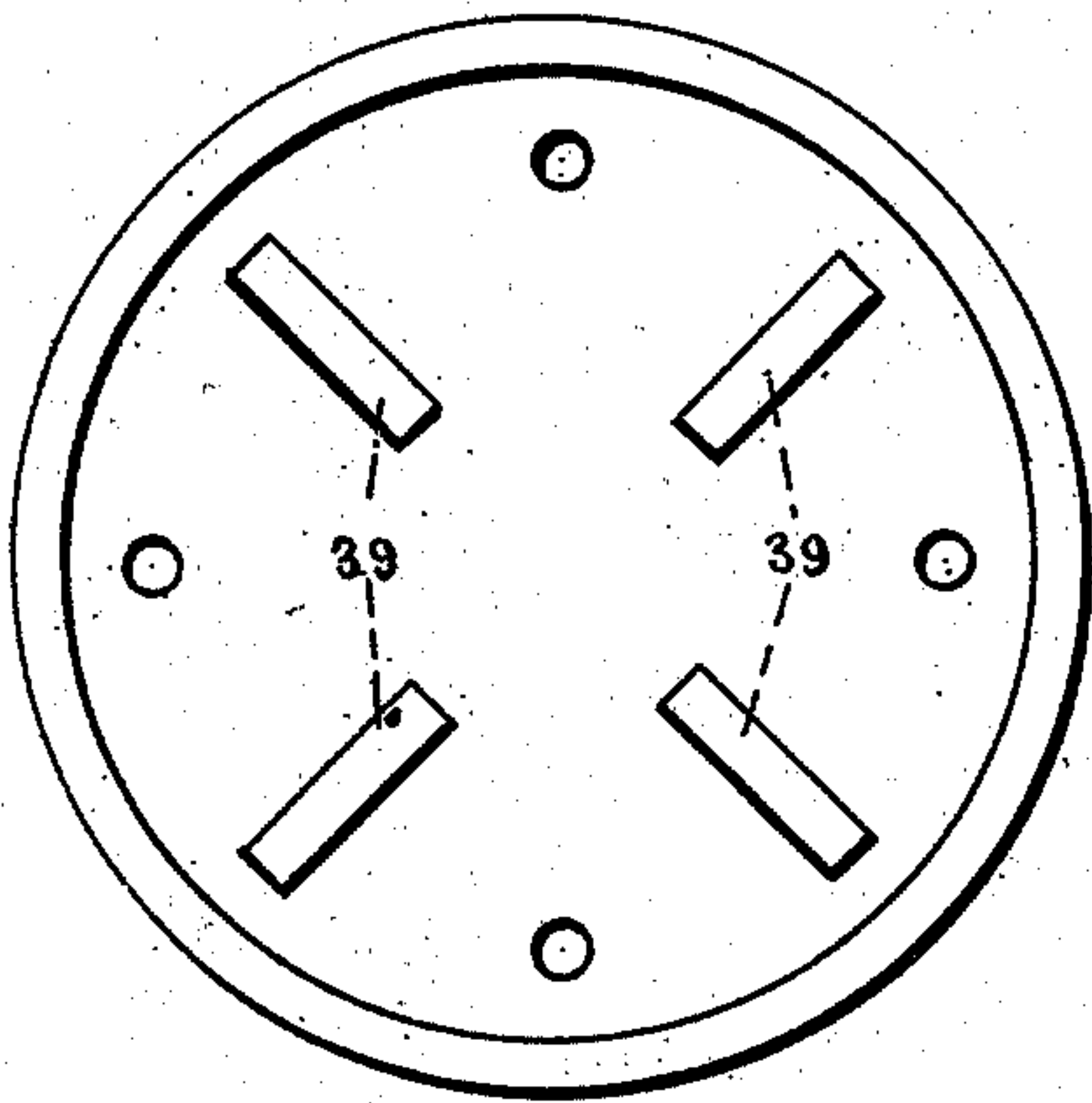


Fig 10

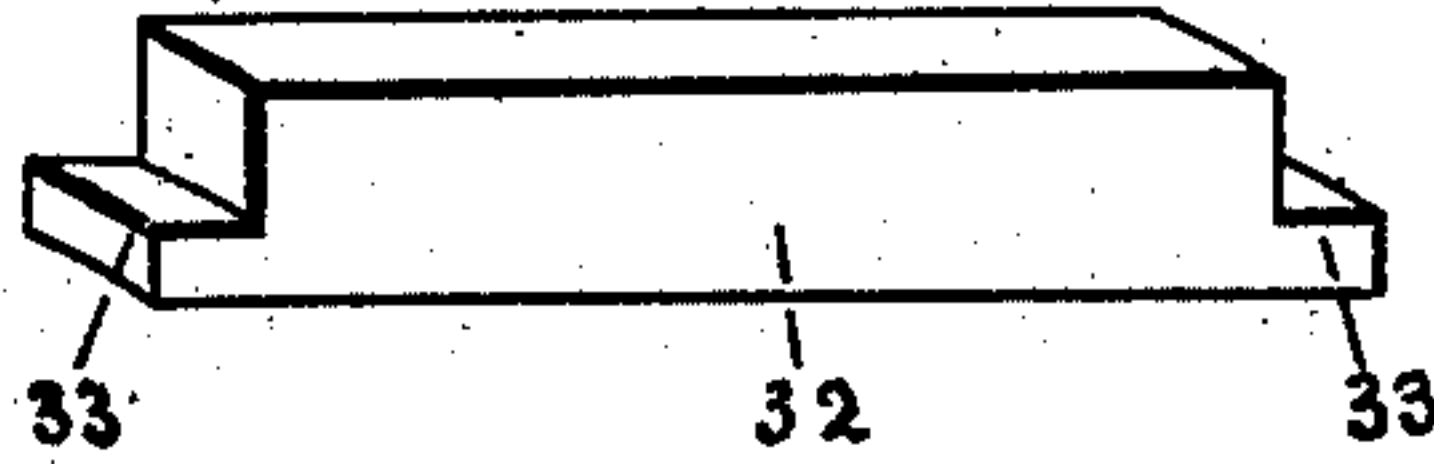
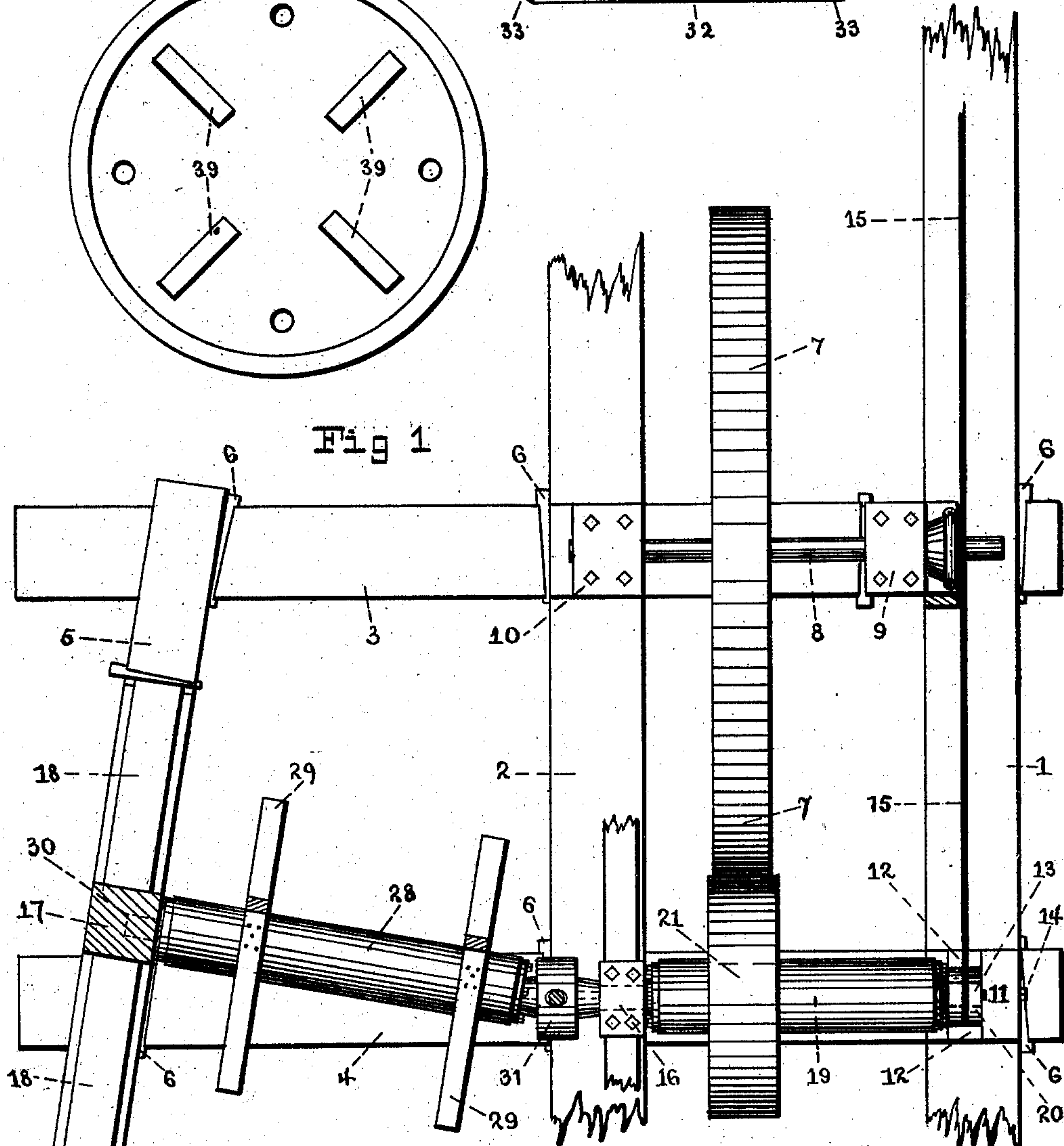


Fig 1



WITNESSES,

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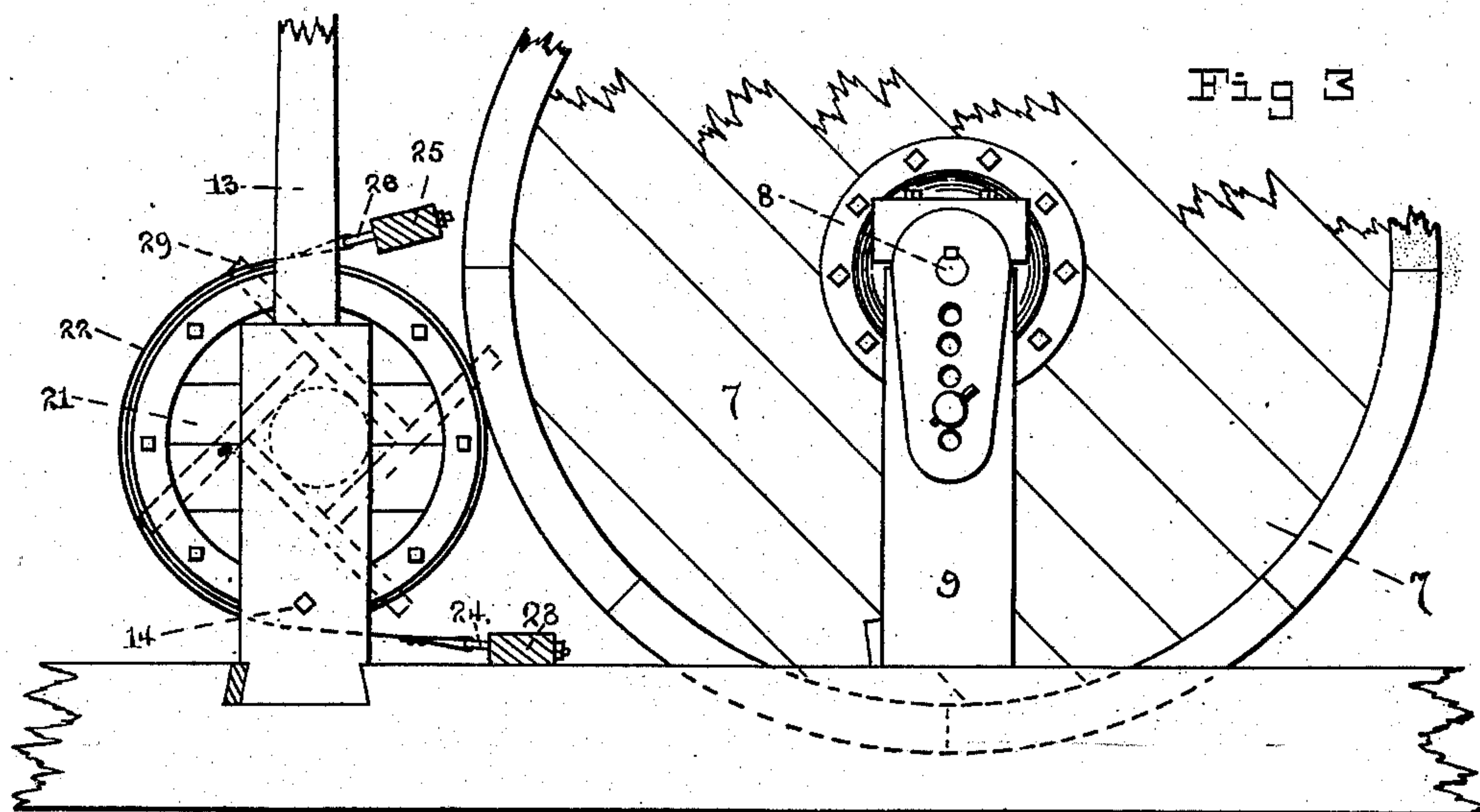
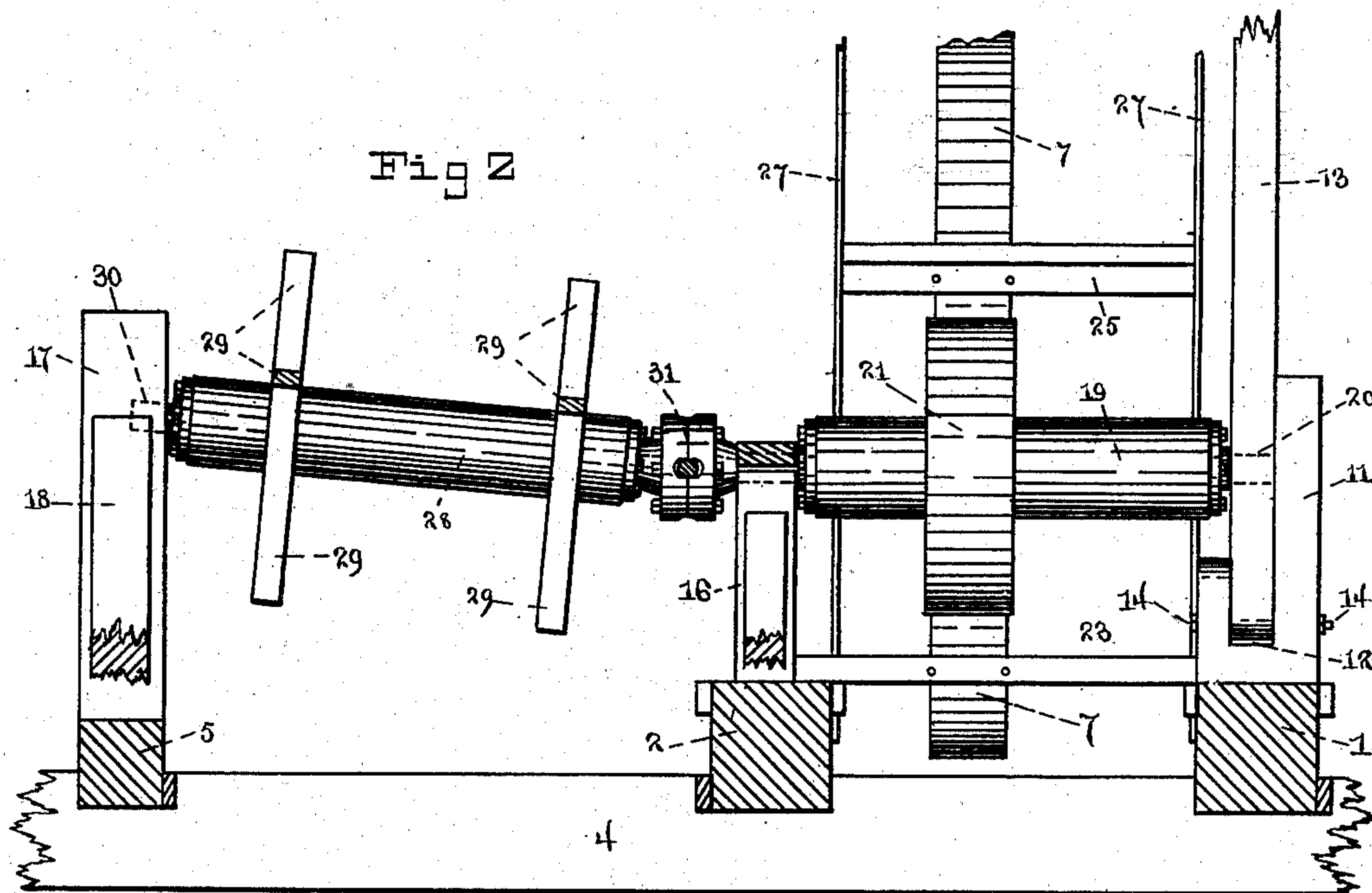
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3 Sheets—Sheet 2.



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Fig 4

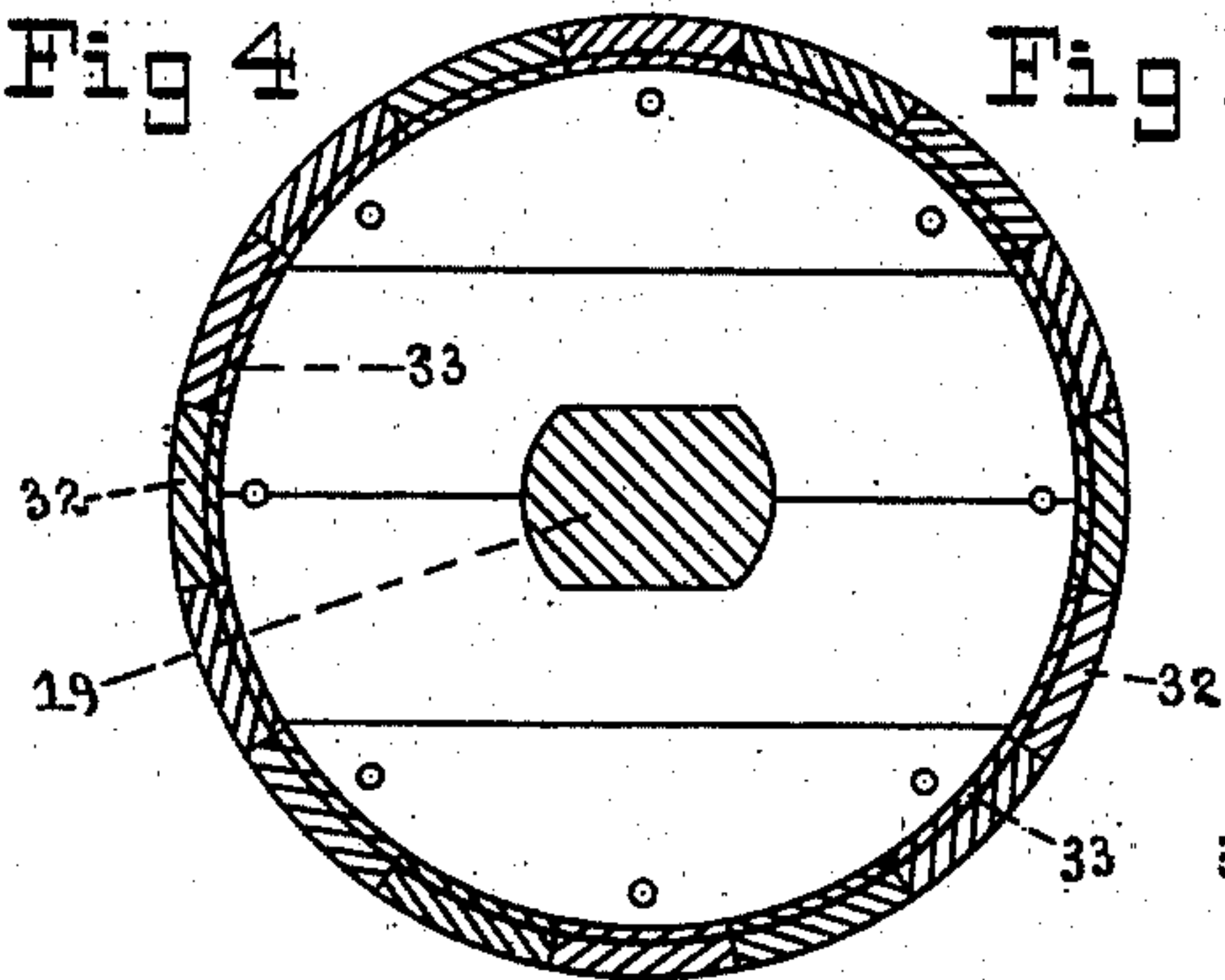


Fig 5

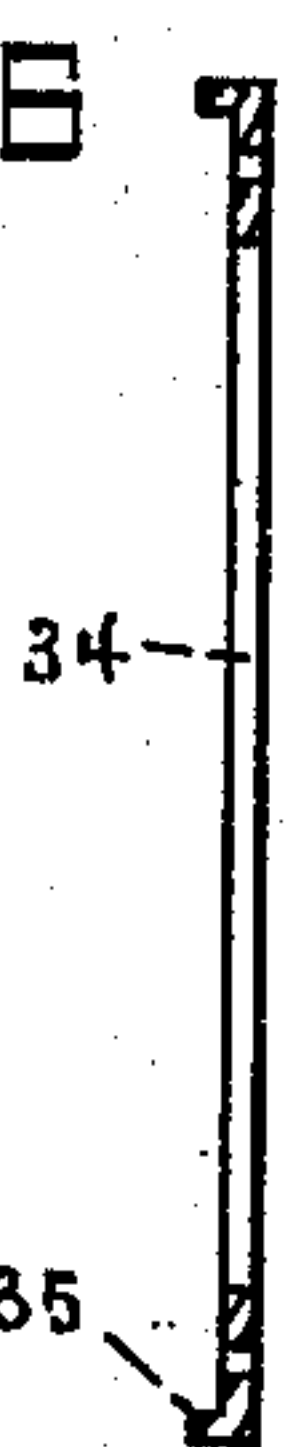


Fig 6

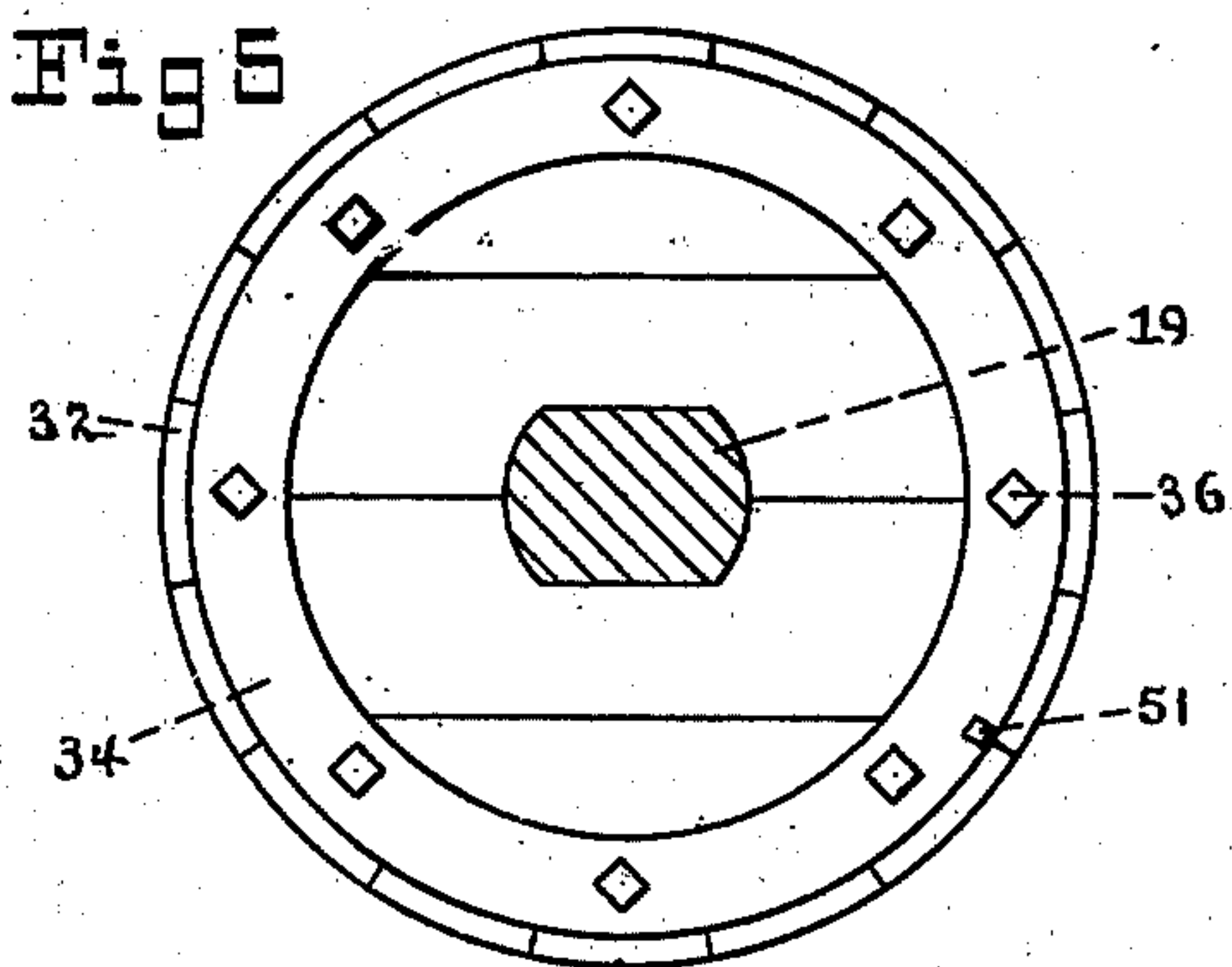


Fig 7

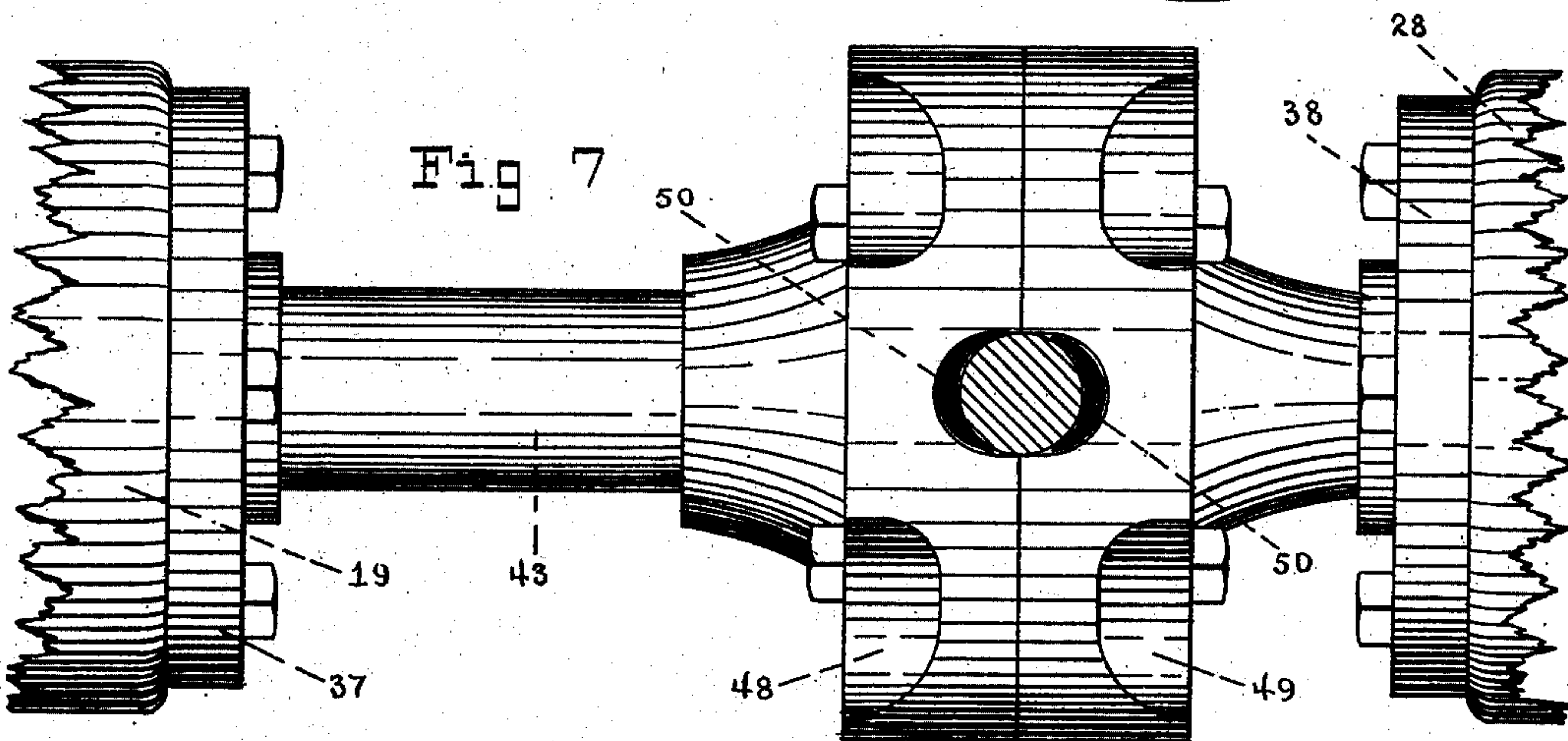
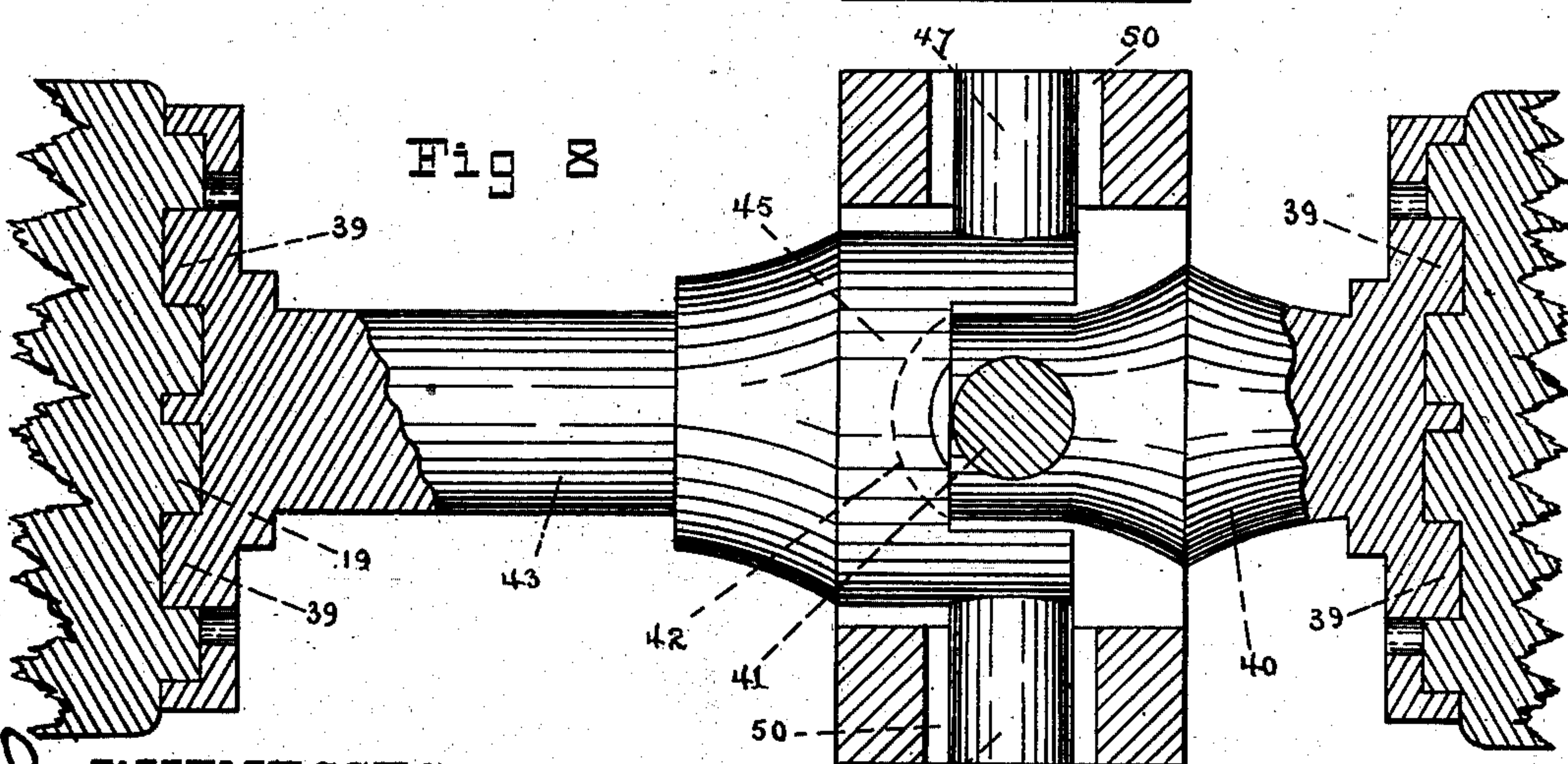


Fig 8



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# UNITED STATES PATENT OFFICE.

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## SAND-REEL FOR OIL OR ARTESIAN WELLS.

SPECIFICATION forming part of Letters Patent No. 712,480, dated November 4, 1902.

Application filed May 24, 1898. Serial No. 681,632. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW BENSON, a citizen of the United States, residing in the city of Bradford, in the county of McKean and State of Pennsylvania, have invented a new and useful Improvement in Sand-Reels for Oil or Artesian Wells, of which the following is a specification.

My invention relates to reels on which the sand-pump line is spooled; and the object of my improvement is to provide for the oil and Artesian well operator a strong, effective, and satisfactory sand-reel, particularly to those who do deep-well drilling. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a top view of a portion of an oil or Artesian well drilling rig and shows my sand-reel and its connections in conjunction with the band-wheel from which it gets its motive power. Fig. 2 represents a back elevation of my sand-reel, its connections, and its position relative to the band-wheel. Fig. 3 represents a side elevation of a portion of the band-wheel, showing the outside jack-post, the rig-iron shaft, flange, and crank, the sand-reel knuckle-post, the lower portion of the sand-reel lever by which the sand-reel is operated, also the guide-arms and the back brake. Fig. 4 represents a transverse section of the driven wheel, the periphery consisting of peculiarly-constructed laggings, specified hereinafter. Fig. 5 represents an end view of the driven wheel, provided with flanged rings for holding the laggings in place. Fig. 6 represents a diametrical cross-section view of one of the flanged rings shown in Fig. 5. Fig. 7 represents a face view of the universal-joint gudgeon. Fig. 8 represents a view of the universal-joint gudgeons with portions in cross-section. Fig. 9 represents an inside view of the flanged disk of the gudgeons and shows the lugs which enter the recesses provided on the ends of the wood shafts. Fig. 10 represents a perspective side view of a lagging after it is formed to receive the flange.

Similar numerals refer to similar parts throughout the several views.

Numeral 1 is a portion of the main sill of an oil or Artesian well drilling rig.

2 is a portion of the sub or counter sill.

3 and 4 are mudsills.

5 is the tail-sill.

6 represents the several keys that hold the sills rigidly secured.

7 is the band-wheel, secured to the iron shaft 8, said shaft being supported on the jack-posts 9 and 10. The band-wheel 7 is driven by a belt from the engine, which is not shown.

11 is the knuckle-post, constructed as shown by top view in Fig. 1 and more distinctly by the elevation shown in Fig. 2. It consists of a post tenoned and keyed in the main sill 1. It is provided with the slot 12, in which the sand-reel lever 13 is movably secured by the bolt 14.

15 is the draw-bar, which extends into the derrick and is operated by the driller with a hand-lever. (Not shown.)

16 is the sand-reel jack-post, secured to the counter-sill 2.

17 is the sand-reel tail-post, secured to the tail-sill 5.

18 represents the braces, fastened to the tail-post 17 and to the sill 5 in the usual manner.

19 is a cylindrical shaft movably secured to the sand-reel lever 13 by a sand-reel gudgeon (shown by the dotted lines 20) at its one end and at its other end by the universal-joint sand-reel gudgeon 31, as shown in the several views, but more fully in Figs. 7 and 8, and explained below.

21 is a driven wheel permanently secured on the shaft 19 and is actuated by a friction-bearing against the periphery of the band-wheel 7. It is operated by the driller in the derrick, who pulls on the draw-bar 15, which is, as stated, connected to the sand-reel-lever 13. This contacts the driven wheel 21 with the band-wheel 7, causing it to rotate. A reverse movement of the draw-bar 15 will release the driven wheel 21 from its contact with the band-wheel 7 and throws it against the back-brake 22, (see Fig. 3,) which arrests its motion. The driven wheel 21 is a solid wheel, and the portion of shaft 19 on which it is built is flattened, as shown in Figs. 4 and 5, the object of which is to prevent the driven wheel from turning on the shaft 19. It is provided on its periphery with the laggings



32, (see Fig. 10,) which are constructed with the projecting end lugs 33. The back brake 22 is at its lower end fixedly secured, by means of the staple 24, to the cross-bar 23, which is  
 5 secured to the main sill 1 and the subsill 2, and at its upper end to the cross-bar 25 by means of the staple 26, the cross-bar 25 being shown in Fig. 2 as attached to the up-rights 27. The driven wheel 21 is further  
 10 provided with the side rings 34. These rings are provided on their periphery with the flanges 35, which fit over the lugs 33 of the laggings 32 and prevent them from flying off from the driven wheel 21 in its rapid revolution. The rings 34 are held in place by the  
 15 ring-bolts 36. In order to prevent the laggings 32 from sliding on the periphery of the driven wheel 21, the bolt 51 is inserted through the outer edges of the rings 34 and between  
 20 two of the laggings 32, as shown in Fig. 5, thus holding them in check in case of their shrinking.

28 is the sand-line spooling-shaft, provided with the several arms 29, which keep the several ends of the coils of the sand-line in place.  
 25 It is supported at its one end in the tail-post 17 by the gudgeon (shown in Figs. 1 and 2 by the dotted lines 30) and at its other end by the universal-joint sand-reel gudgeon 31. The  
 30 object of the universal-joint sand-reel gudgeon is, first, to permit the driven wheel 21, which is a substitute for the brake-wheel of the ordinary sand-reel, to be constructed with a rectilineal face, so that its friction-bearing will engage squarely with the face of the  
 35 band-wheel 7, the shaft 19 being at right angles therewith; second, to permit the spooling-shaft 28 to be set at such an angle with the top of the derrick as to perfectly spool  
 40 the sand-pump line. The universal-joint sand-reel gudgeons (see Figs. 7 and 8) consist of the flanged disks 37 and 38. These disks, as shown in Figs. 8 and 9, are provided on their inner side with the projecting lugs 39,  
 45 which fit into recesses made in the ends of the shafts 19 and 28, and thereby relieve the bolts that hold the flanged disks 37 and 38 in place from a side strain when the said shafts are revolving. Integral with the flanged disk  
 50 38 is the projection 40. This is provided with two pins, one of which, 41, is illustrated in Figs. 7 and 8, the other being diametrically opposite and further provided with a semi-spherical head, as shown by the dotted line  
 55 42. The flanged disk 37 is provided with its

journal 43, which is supported by the sand-reel jack-post 16, said journal being provided with the enlarged projection 45, having integral therewith or fixedly secured thereto the two pins 46 and 47, which are at an angle of  
 60 forty-five degrees with the pins of the projection 40 and is provided on its end with a concave socket, in which the semispherical end of the projection 40 works.

48 and 49 are two rings bolted together fitting over the projections 40 and 45 and provided with four oblong slots, (indicated by the numeral 50,) in which the pins play.

The method of operating my sand-reel is simple and is as follows: The driller by pulling on the draw-bar 15 contacts the driven wheel with the band-wheel. This by means of the universal-joint sand-reel gudgeon causes the spooling-shaft 28 to revolve in conjunction with the driven wheel, which winds  
 75 up the sand-line after the sand pump or bailer has been raised from the well. A reverse movement of the draw-bar will throw the driven wheel against the back brake 22, and the motion of the spooling-shaft is arrested.  
 80

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

1. In a well-rig the combination with a band-wheel and a brake device, of a rotatable  
 85 spooling-shaft comprising fixed and oscillating members, and a driven wheel upon the latter member adapted to engage either said band-wheel or said brake device, substantially as described.  
 90

2. In a well-rig the combination with a band-wheel and a brake device, of a rotatable  
 95 spooling-shaft comprising a fixed and an oscillating member connected by a universal joint, and a driven wheel upon the oscillating member adapted to engage either said band-wheel or said brake device, substantially as described.

3. In a well-rig the combination with a band-wheel and a back brake, of a rotatable  
 100 spooling-shaft comprising a fixed and an oscillating member, of a driven wheel upon the latter, and an operating-lever for shifting said oscillating member and driven wheel to or from either the band-wheel or the back  
 105 brake, substantially as described.

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Witnesses:

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