No. 786,306. PATENTED APR. 4, 1905.

W. M. NECKERMAN.

SLIP GEAR.

APPLICATION FILED FEB. 18, 1904.

FIG. 3

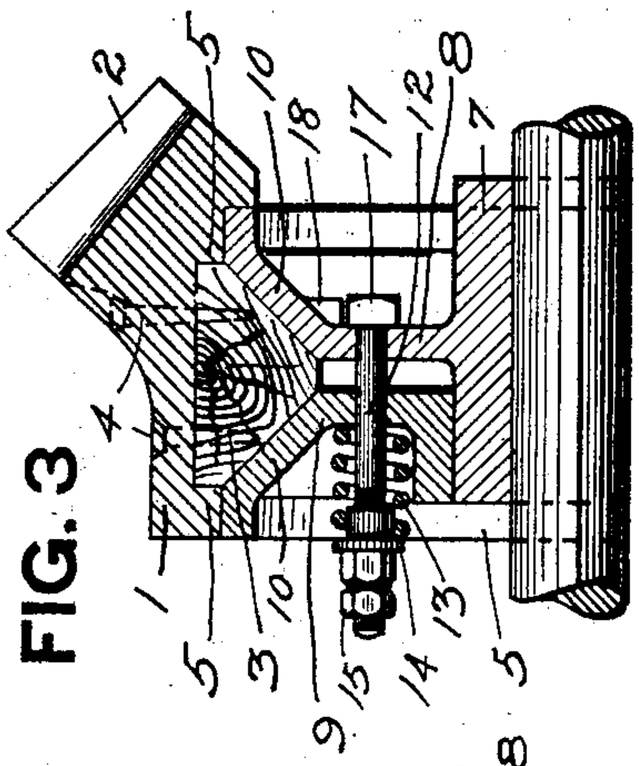


FIG. 1

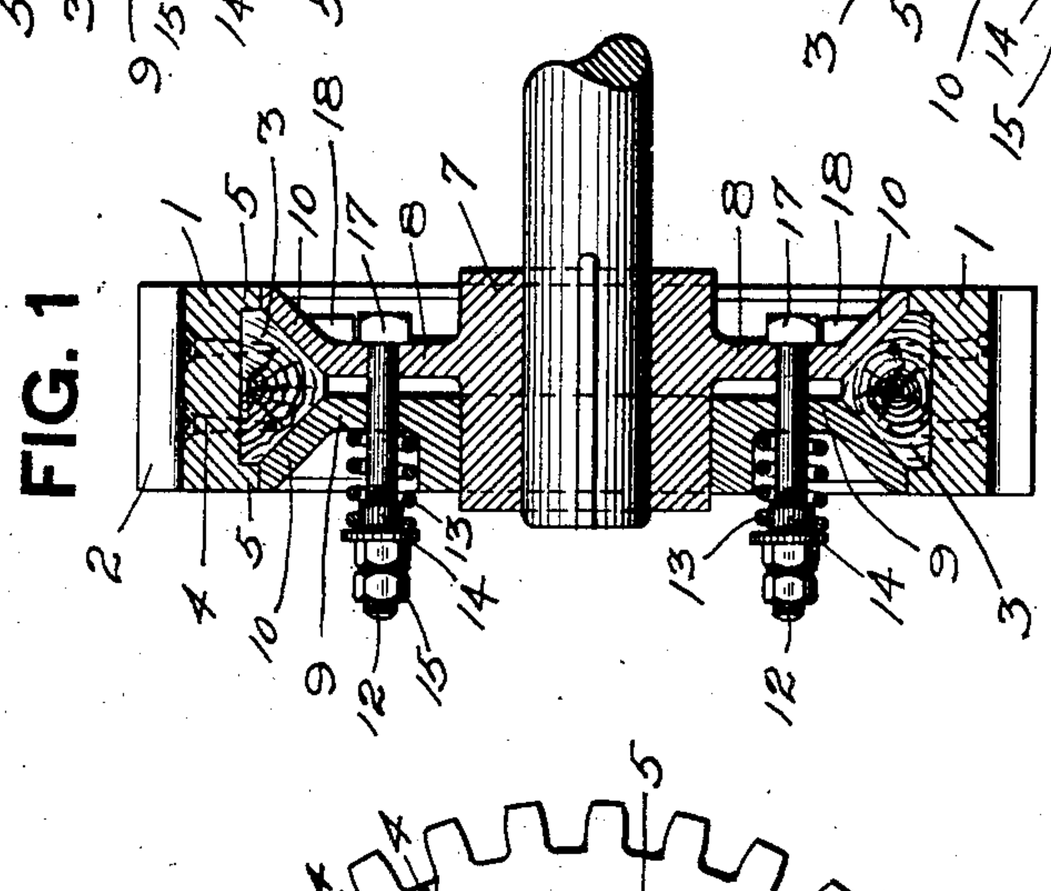


FIG. 4

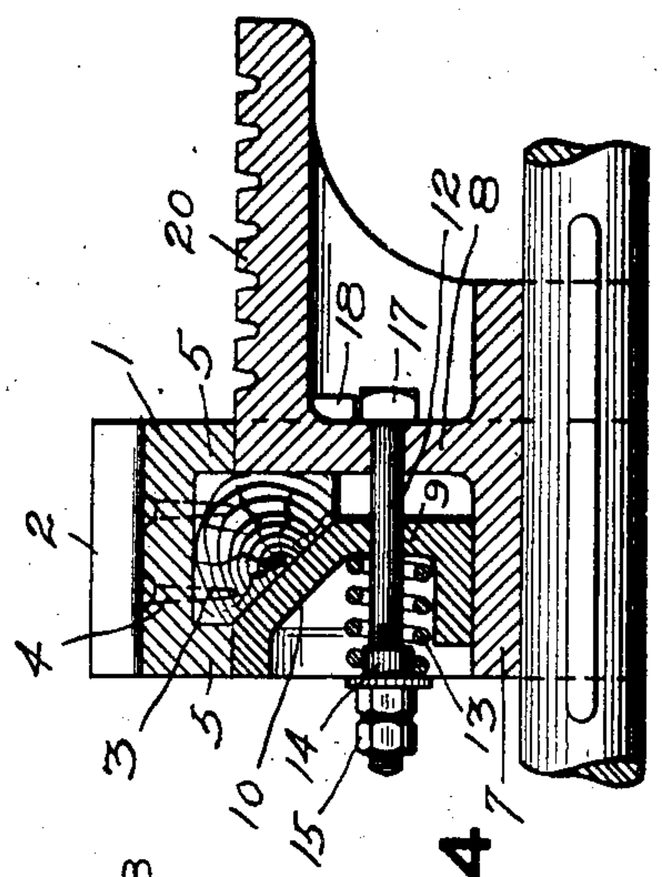
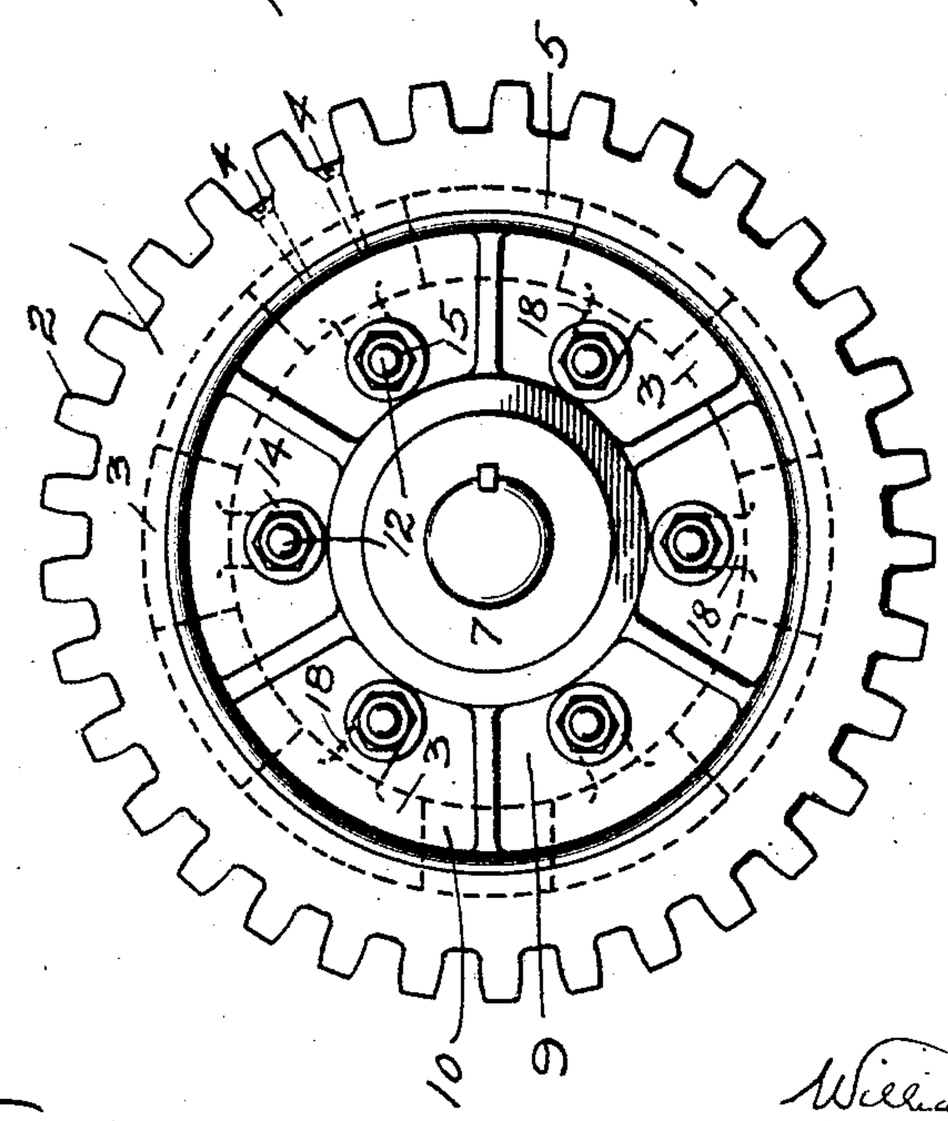


FIG. 2



WITNESSES.

J. R. Kellen

Robert C. Tolton

INVENTOR.

William M. Neckerman

By Kay Tolton & Winter

attorneys

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UNITED STATES PATENT OFFICE.

WILLIAM M. NECKERMAN, OF PITTSBURG, PENNSYLVANIA.

SLIP-GEAR.

SPECIFICATION forming part of Letters Patent No. 786,306, dated April 4, 1905.

Application filed February 18, 1904. Serial No. 194,212.

To all whom it may concern:

Be it known that I, WILLIAM M. NECKERMAN, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Slip-Gears; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to yielding or slip gears; and the object is to improve gears of this character in details of construction to be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section through a spur-gear constructed according to my invention. Fig. 2 is a side view thereof, and Figs. 3 and 4 are sectional views of modifications.

In my improved gear the rim and hub are formed in separate parts, and the friction device or devices are located between the same and are preferably arranged symmetrically or centrally of the periphery of the gear. The rim 1 will be provided with any suitable peripheral driving-face, those shown being gear-teeth 2, either straight, as in Figs. 1 and 4, or beveled, as in Fig. 3. The inner face of this rim is provided with an inwardly-projecting friction-face or element 3, which preferably is V-shaped, as shown, and which preferably will be formed of wood or other fiber, the drawings showing blocks of soft wood, such as basswood, of the desired shape and secured to the rim by ordinary wood-screws 4. To more securely hold these friction-blocks in place, the rim is provided at its edges with inwardly-projecting flanges 5, thus forming, in effect, a groove in which the friction-blocks 3 are seated.

The hub 7 of the gear carries friction members which coöperate with the projections 3, these friction members comprising a web 8 and a complemental movable disk 9, which is or preferably will be of practically the same shape as the web. Both the web 8 and disk 9 have their outer edges shaped to fit the side faces of the projection 3, and when the latter is V-shaped, as shown, the outer edges of the web and disk will be provided with flaring portions 10 of the same inclination as the side faces of the projection 3. The disk 9 and web 8 will be held against the friction-face 3 with the desired pressure and preferably with a yielding pressure. Various means for accomplishing this result may be employed, and, as shown in the drawings, the disk 9 is secured to the web 8 by means of bolts 12 passing through holes in the disk and web and springs 13 interposed between the heads on the bolts and one of these members, the specific construction shown having these springs interposed between the disk 10 and sleeves 14, adjustable on the bolts by the nuts 15. The heads 17 of the bolts preferably will be square or of other irregular outline, and formed on the web 8 in proximity to the holes through which the bolts pass are lugs or projections 18, so positioned that when the bolts are in place they will contact with the heads and prevent the latter from turning.

The form of driving-face on the rim may be varied, being either gear-teeth, as shown, a belt-pulley, an eccentric, an elliptic gear, or, in fact, any known variety of gear.

It is not necessary that the projection 3 be V-shaped, as both or one side may be straight. In Fig. 4 one face is straight and the other beveled. In this figure the gear is applied to a drum 20.

The operation of these slip-gears may be described as follows: The frictional disk 9 is pressed against the frictional face 3 by means of the springs 13 to produce the frictional resistance necessary to transmit the power normally required. The gear-rim 1 and the hub 7, which latter is fixed to the driven or to the driving shaft of a gear-train, will operate as a single element or ordinary gear as long as the power applied or the resistance offered is normal. If, however, a power greater than that normally required is applied or the resistance is increased above the normal, the frictional face 3, attached to the gear-rim 1, will slip on the friction members 8 and 9 until either the power applied or the resistance offered is reduced to normal.

It is obvious that various changes may be made in the details of construction of the gear. For instance, it is not necessary that the parts 8 and 9 be continuous annular webs; but they

might be formed of a rim and a series of radial spokes. The projections 3 also need not be V-shaped, but may be provided with substantially parallel side faces.

Various arrangements of yielding means other than that shown in the drawings may be employed for holding the web 8 and disk 9 in contact with the projection 3. It will be observed, however, that the friction elements are arranged between the hub and the rim and are preferably arranged symmetrically or centrally with reference to the periphery of the gear. By having the meeting faces V-shaped accurate and fine adjustment of the friction-faces is possible.

What I claim is—

1. A slip-gear, comprising a rim provided with a driving-face and with a projection extending inwardly therefrom, a hub, a web on said hub, a coöperating friction-disk, said web and disk being arranged to bear against the side faces of said projection, bolts for securing said friction-disk to said web, springs interposed between one of said members, and heads on said bolts, and projections on said web arranged to bear against the heads of said bolts.

2. A slip-gear, comprising a rim provided with a driving-face and with a V-shaped projection on its inner face and located centrally of the driving-face, a hub, a web secured to said hub and provided on its outer edge with a flaring portion arranged to bear against the V-shaped projection of the rim, a coöperating friction-disk also provided at its outer edge with a flaring portion arranged to bear against said V-shaped projection, and means for holding said web and disk yieldingly in contact with said projection.

3. A slip-gear, comprising a rim provided with a driving-face and having inwardly-projecting flanges, a friction member composed of fiber blocks secured to the inner face of said rim between said flanges and having an inwardly-projecting portion, a hub, a web on said hub, a coöperating disk, said web and disk being arranged to engage the side faces of said projection, and means for holding said web and disk yieldingly in contact with said projection.

4. A slip-gear, comprising a rim provided with a driving-face, a V-shaped fibrous friction member secured to the inner face thereof and located centrally of the driving-face, a hub, a web thereon provided at its outer edge with a flaring portion adapted to bear against said V-shaped friction member, a coöperating disk also provided at its outer edge with a flaring portion adapted to bear against said friction member, and means for holding said web and disk yieldingly in contact with said friction member.

In testimony whereof I, the said WILLIAM M. NECKERMAN, have hereunto set my hand.

WILLIAM M. NECKERMAN.

Witnesses:

HENRY HARLEY,

ANGUS L. MCTAGGART.