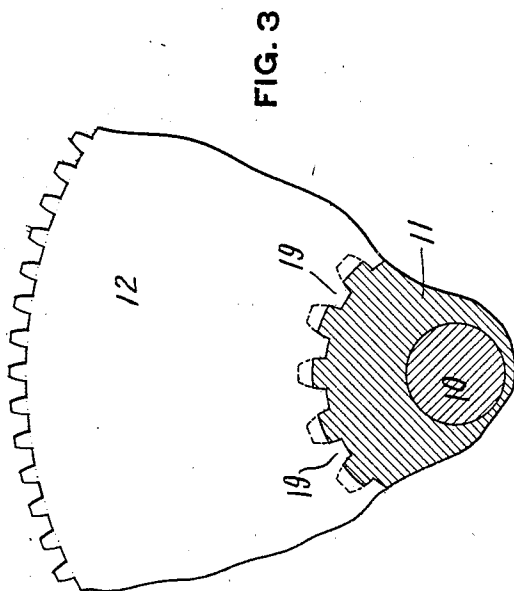
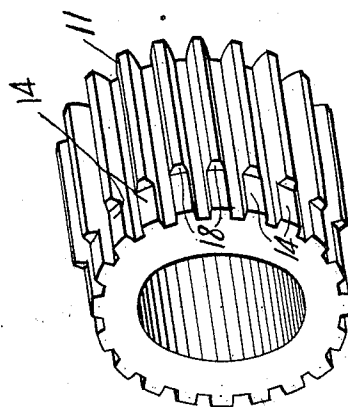
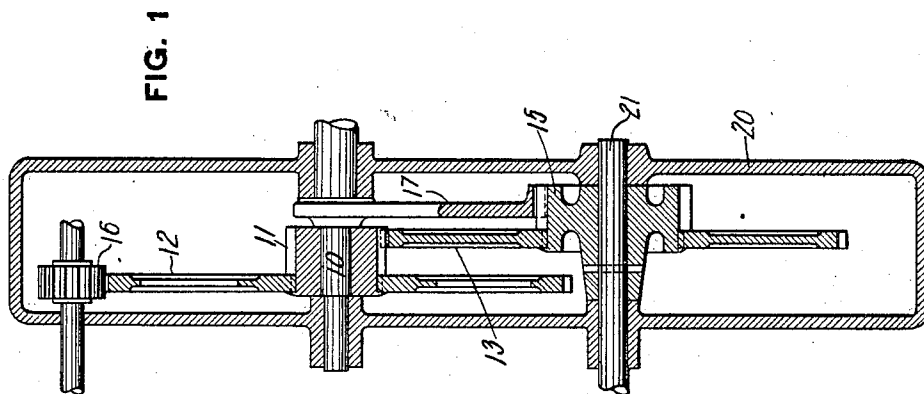
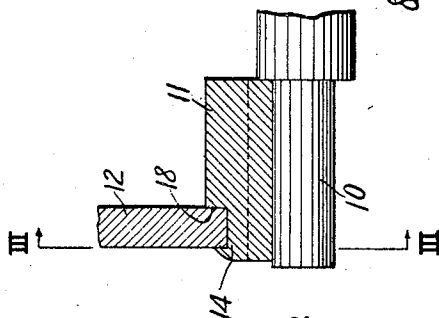


J. P. COLEMAN.
GEARING.
APPLICATION FILED MAY 23, 1913,

1,109,900.

Patented Sept. 8, 1914.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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GEARING.

1,109,900.

Specification of Letters Patent.

Patented Sept. 8, 1914.

Original application filed August 5, 1912, Serial No. 713,239. Divided and this application filed May 23, 1913. Serial No. 769,403.

To all whom it may concern:

Be it known that I, JOHN P. COLEMAN, a citizen of the United States, residing at Edgewood Borough, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gearing, of which the following is a specification.

My invention relates to gearing of the type in which a comparatively small gear wheel (usually termed a pinion) and a comparatively large gear or disk are mounted to rotate as a unit.

The present application is a division of my copending application filed August 5, 1912, Serial No. 713,239, for railway signals.

I will describe one form of gearing embodying my invention and then point out the novel features thereof in claim.

In the accompanying drawings, Figure 1 is a sectional view showing one form of gearing embodying my invention; Fig. 2 is a view showing on a larger scale a portion of the gearing shown in Fig. 1. Fig. 3 is a view on the line III—III of Fig. 2 looking in the direction of the arrows. Fig. 4 is a view showing in perspective a pinion shown in the preceding views.

Similar reference characters refer to similar parts in each of the views.

In many instances of the use of gearing, economy of space is of considerable importance, and for this reason it is desirable that when a pinion and a comparatively large gear or disk are to be concentrically mounted to rotate as a unit, the two should be as close together as possible. The pinion and the gear or disk could, of course, be cast as one piece and the gear teeth of the pinion afterward milled out, were it not for the fact that the pinion teeth could not be milled close to the disk; and the space required for clearance near the disk would, therefore, be wasted.

One feature of my invention is the provision of means for mounting a gear or disk directly on the teeth of a pinion, thereby securing the greatest possible economy of space and avoiding the use of a key for securing the gear or disk to the pinion shaft.

Referring to the drawings, 10 is a shaft upon which a pinion 11 is mounted to rotate

freely. As shown clearly in Fig. 4, the teeth of the pinion at one end are cut down leaving only stubs 14. 12 is a gear wheel, the bore of whose hub is provided with one or more teeth 19, which match with the stubs 14 of the pinion. As here shown the number of teeth in the bore of the gear wheel corresponds with the number of teeth on the pinion. The gear wheel is forced over the stubs 14 until the hub of wheel rests against shoulders, 18 formed by the unreduced portions of the pinion teeth. The length of the reduced portions of the pinion teeth is slightly greater than the width of the hub of the gear wheel, so that portions of the stubs 14 project beyond the gear wheel hub. These projecting portions of the stubs 14 are peened over against the hub as shown in Fig. 2, thereby holding the gear wheel securely in place against the shoulders 18.

By this means it will be clear that each tooth of the pinion 11 serves as a separate key to hold the gear wheel 12 in place. I therefore avoid the use of keys. I also obtain a structure which is the equivalent of a gear and pinion cast in an integral piece, with the advantage that there is no wasted space on the pinion near the gear wheel as would be the case with an integral casting.

13 is a gear wheel meshing with the pinion 11, which gear wheel is mounted upon a pinion 15 in the same manner as gear wheel 12 is mounted on pinion 11.

A gear train embodying my invention is particularly adapted for use as the reduction gearing in the mechanism of a motor-driven railway signal, and especially in mechanisms of this type which are mounted at the top of a signal pole. In such mechanisms economy of space is of great importance as it is essential that the inclosing casing should be as small as possible. In the drawings I have shown a portion of a signal mechanism of this type. The shaft 10 is journaled in suitable bearings in a case 20, and pinion 15 is mounted on another shaft 21 also journaled in the case 20. Meshing with the gear wheel 12 is a pinion 16 which may be rotated by a motor of any suitable kind, which motor is not shown. 17 is a segmental gear which meshes with pinion 15 and which is fixed on the shaft 10. A rail-

way signal semaphore (not shown) may be secured to the end of shaft 10 in any desired manner.

Although I have shown and described
5 only one form of gearing embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claim without departing from the spirit and
10 scope of my invention.

Having thus described my invention, what I claim is:

In combination, a pinion whose teeth are partially cut down adjacent one end leaving

shoulders, a gear whose hub is slightly narrower than the length of the reduced portion of the pinion teeth, said hub having a bore provided with teeth which match with the reduced portions of the pinion teeth, the projecting ends of said reduced tooth portions
20 being peened over against the gear hub to hold the gear against the said shoulders.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN P. COLEMAN.

Witnesses:

A. HERMAN WEGNER,
R. L. KISTLER.