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C. H. SEIFERT

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## GEAR

Filed June 27, 1932

*Fig.1.*

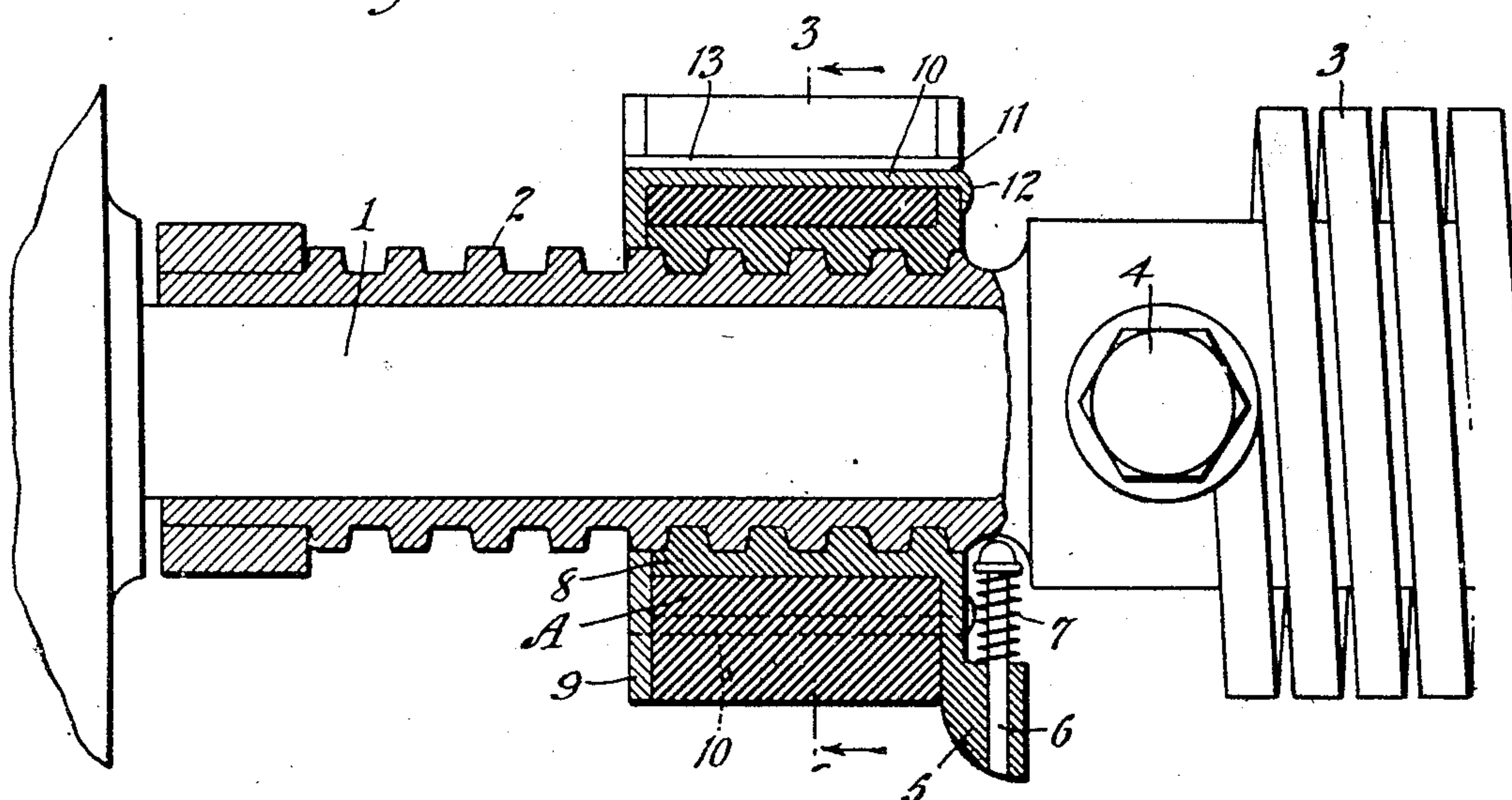
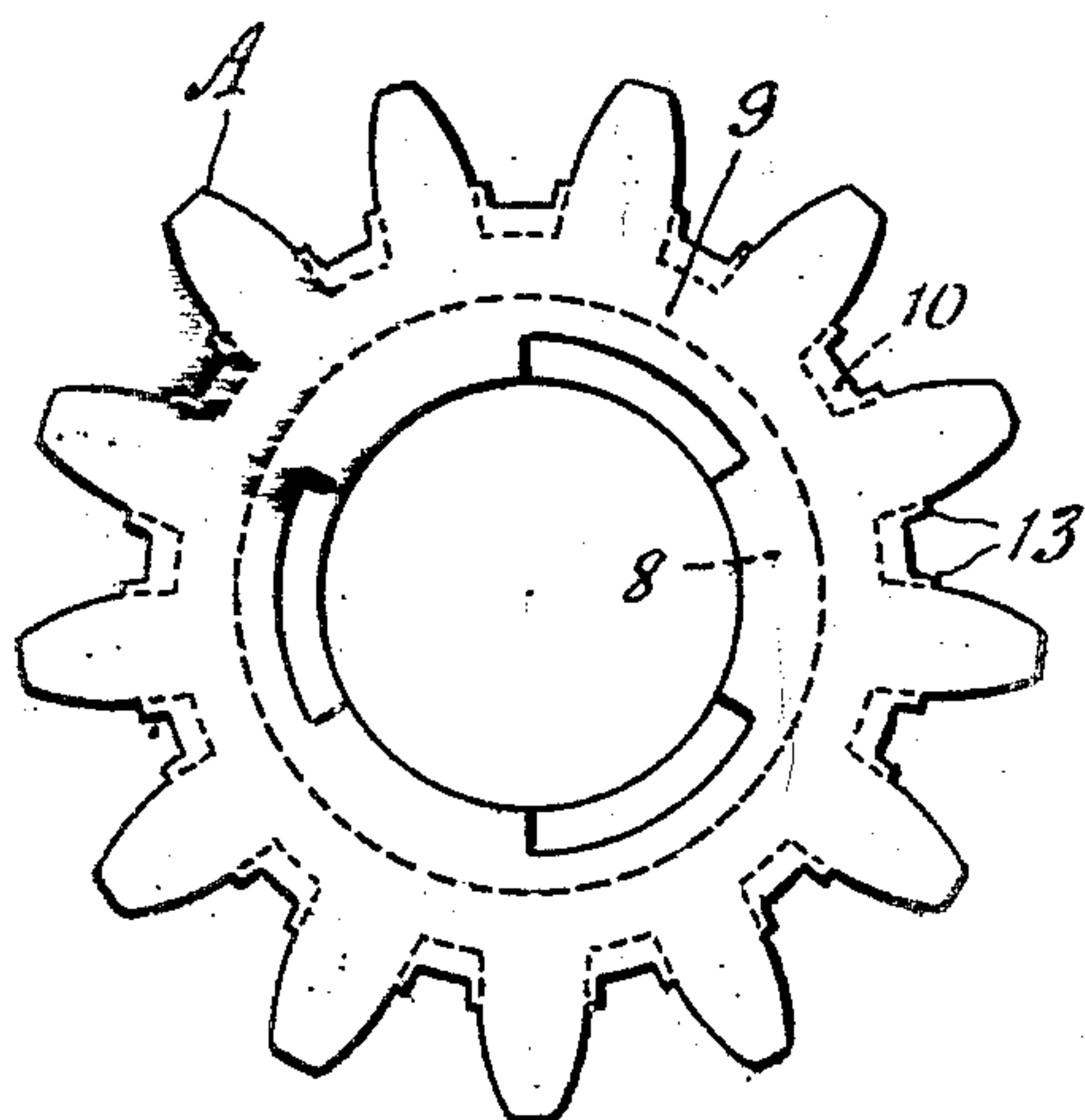
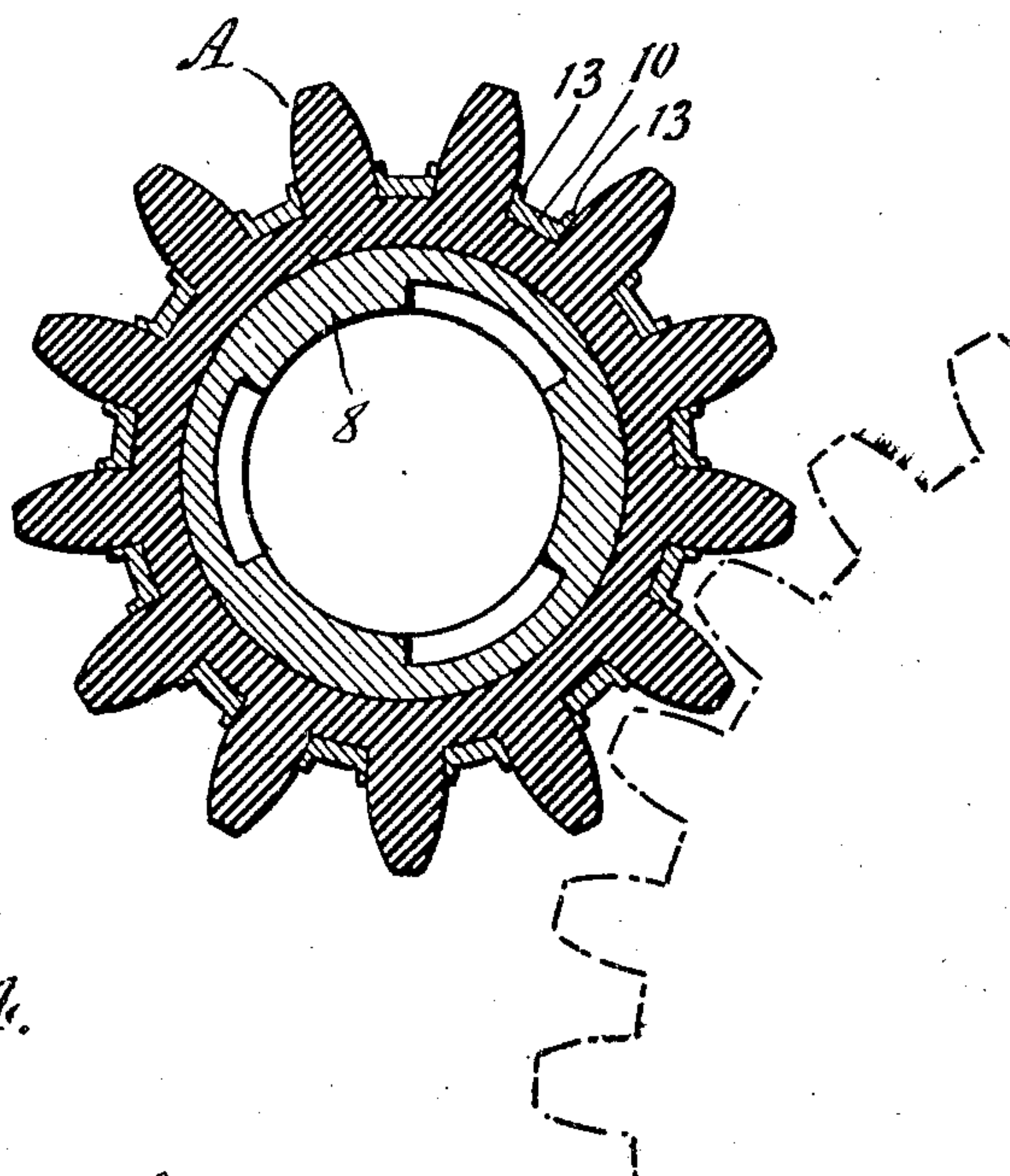


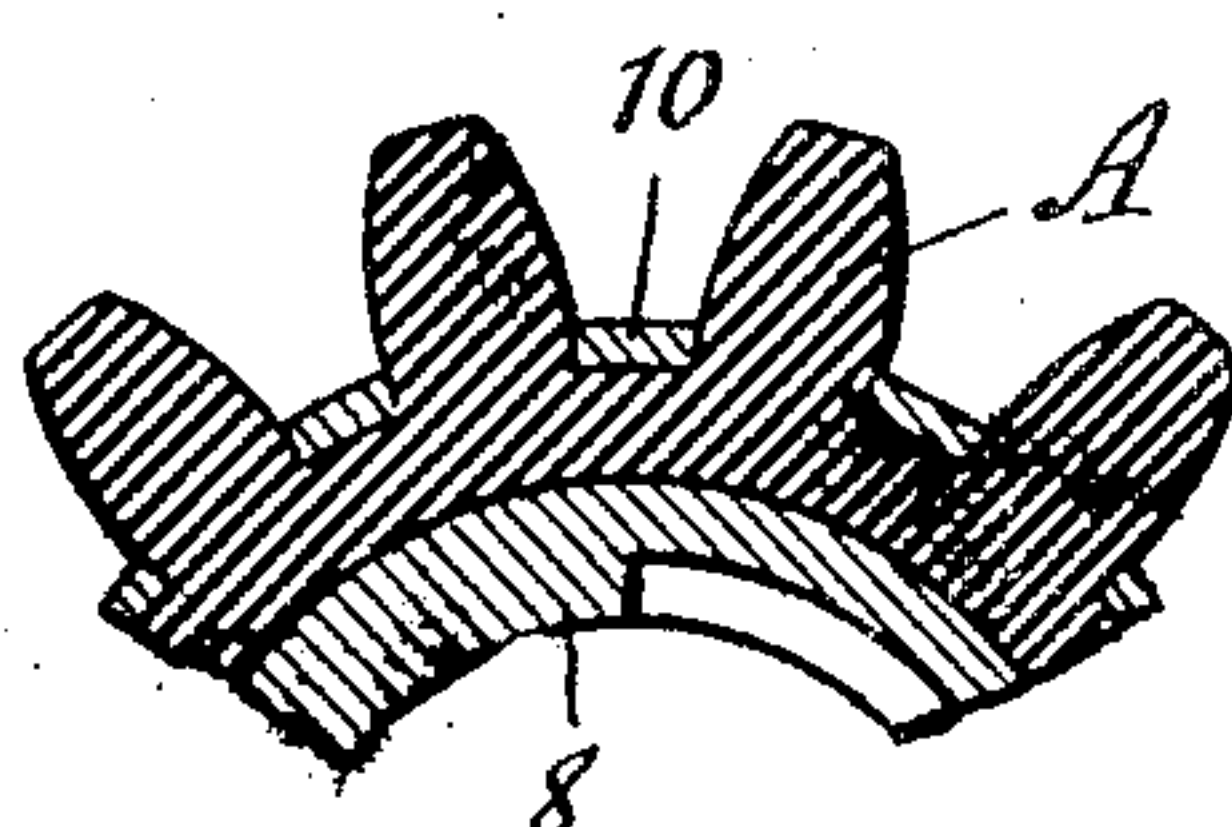
Fig. 2.



*Fig. 3.*



*Fig. 4.*



**WITNESSES**

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## UNITED STATES PATENT OFFICE

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## GEAR

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This invention relates to improvements in gears, an object of the invention being to provide a gear in which the teeth of the gear, and preferably the body of the gear, are of non-metallic material so as to reduce to a minimum the noise of contact between the gear and the metal sleeve as it is moved into and out of mesh.

A further object is to provide a gear of this character having teeth of non-metallic material, strengthened by means of a protector or cap covering one face of the gear and portions of the teeth.

A primary object of the invention is to provide a non-metallic gear with improved strengthening means whereby it may have the necessary resistance to contact in meshing and intermeshing and yet in normal operation when in mesh will be free of any metal contact.

My invention has particularly to do with the construction of what is generally known in the art as a pinion gear, constituting portion of the starting mechanism of a standard well-known type, but, of course, the invention in its broadest aspect is not limited to any specific use of gear.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, all of which will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawing,—

Figure 1 is a view partly in longitudinal section and partly in elevation, illustrating my improved pinion gear constituting a part of the motor starting mechanism;

Figure 2 is a face view of the gear;

Figure 3 is a view in section through the gear, the view being taken on the line 3—3 of Figure 1; and

Figure 4 is a fragmentary view in section illustrating a modification.

The reference character A is employed to indicate generally my improved gear or gear pinion, and in Figure 1 of the drawing I illustrate this gear pinion as part of a standard type of starting mechanism, which includes an armature or mounting shaft 1 on

which a screw shaft 2 is located. The armature shaft 1 is provided with the ordinary torsion driving spring 3 connected thereto by the medium of a shaft spring nut 4.

Gear pinions A of the character illustrated are provided on one face with a weighted disk 5 carrying a drift pin 6 with a spring 7 thereon for holding the drift pin in operative position.

As the parts above enumerated constitute parts of standard construction it is unnecessary to go into details as to the construction and operation thereof, as the invention has particularly to do with the construction of the gear pinion A which in ordinary practice is of metal and which necessitates a certain amount of noise in its operation.

I construct my improved pinion gear of non-metallic material. In order to give to the gear the necessary strength and rigidity I provide a metal sleeve 8 constituting the center of the gear and this sleeve is screw threaded to engage the threaded shaft 2, as clearly indicated in Figure 1 of the drawing.

The weighted disk 5 above referred to may constitute a separate or integral part of the sleeve 8. To give to the non-metallic gear the necessary protection and strength I provide a metal cap 9 on the face of the gear opposite to the face of the gear where the weighted disk 5 is located. This metal cap 9, indicated in elevation in Figure 2 of the drawing, conforms in shape to the shape of the gear and the teeth thereof, and is provided at the base of the teeth with securing strips 10 extending to the opposite side of the gear and through openings 11 in the weighted disk 6 and riveted at its extremities, as shown at 12, to secure the cap 9 against the face of the gear. These strips 10 may have flanges 13 at their edges, which bear against the sides of the gear teeth, as indicated clearly in Figure 3 of the drawing, to give additional strength to the teeth or, if desired, these flanges 13 may be omitted, as indicated in the modification shown in Figure 4 of the drawing.

While I have illustrated what I believe to be the preferred embodiment of my invention, it is to be distinctly understood that



various slight changes may be made with regard to the form and arrangement of parts without departing from the invention, and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the claims.

What I claim is:

1. A gear wheel having teeth of non-metallic material, a metal protector for the teeth comprising a cap fitting against one face of the gear and conforming to the shape thereof and flush with the teeth of the gear, and strips on the protector extending between the teeth of the gear and secured against movement at their extremity.

2. A gear wheel having teeth of non-metallic material, a metal protector for the teeth comprising a cap fitting against one face of the gear and conforming to the shape thereof and flush with the teeth of the gear, strips on the protector extending between the teeth of the gear and secured against movement at their extremity, and flanges on said strips engaging the sides and base portion of the teeth.

3. The combination with a non-metallic gear pinion having a weighted disk at one face, of a protector at the other face of the gear constituting a cap conforming to the shape of the gear, and strips integral with the cap extending between the teeth of the gear and secured to the disk.

4. A gear pinion comprising an internally screw-threaded metal sleeve, a weighted disk integral with the sleeve at one end, a non-metallic gear on the sleeve, a metal protector on one face of the gear conforming to the shape thereof, and strips fixed to the protector and extending between the teeth and through the weighted disk and upset at their extremities to secure the protector against the face of the gear.

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