

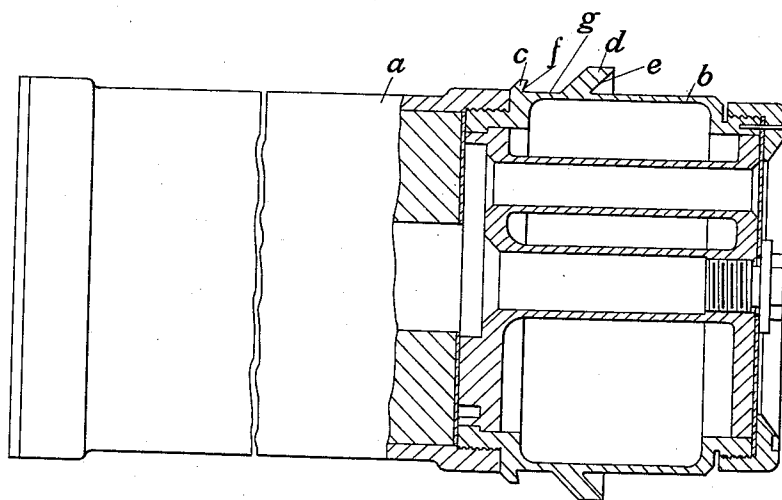
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T. W. MILLNS

2,758,544

ENGINE-STARTING CARTRIDGES

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2,758,544

## ENGINE-STARTING CARTRIDGES

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Application August 14, 1952, Serial No. 304,374

Claims priority, application Great Britain  
August 15, 1951

1 Claim. (Cl. 102—39)

This invention relates to cartridges used for starting gas turbines or other engines. A conventional form of cartridge comprises a cylindrical shell containing a solid propellant material which on ignition provides a quantity of gas at high pressure for starting the engine. Ordinarily the cartridge is inserted in a closely fitting cylindrical chamber and is held in position by a removable cover on the outer end of the chamber. This arrangement has been found to be inconvenient, as it is often difficult to withdraw the cartridge shell from the chamber after firing.

The object of the present invention is to provide an improved form of cartridge shell which when held by appropriate means enables the above mentioned difficulty to be obviated.

The invention comprises a cylindrical cartridge shell having combined with its forward end a nose piece on which one or more circumferential collars are formed, the collars being adapted to be gripped by a clamping means.

The accompanying drawing is a sectional elevation of a cartridge provided with the invention.

Referring to the drawing, there is secured to the forward end of a cylindrical cartridge shell *a* a hollow

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cylindrical nose piece *b*. On the exterior of the nose piece are formed two circumferential collars *c*, *d* of larger diameter than the shell. The forward face of the collar *d* is formed with an under-cut *e*, and the other face is bevelled as shown. The collar *c* is of rather smaller diameter than the collar *d* and has an under-cut front face *f* which is shallower than the corresponding face of the collar *d*. The portion *g* of the nose between the collars is of cylindrical form.

A cartridge as above described is intended for use with a clamping means for securing it in position, which means is adapted to grip only the collars *c*, *d* on the nose piece.

By the use of a cartridge as above described in association with appropriate clamping means (such as that forming the subject of the concurrent application for Patent No. 304,375 of even date, now Patent No. 2,705,398), the above mentioned difficulty of removing a spent cartridge is obviated.

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

An engine-starting cartridge comprising in combination a cylindrical shell containing propellant material, and a separately formed cylindrical nose piece secured to one end of the shell and having formed thereon a pair of circumferential collars one of which is of larger diameter than the other and can be gripped by clamping means for holding the cartridge in its firing position, the collar of larger diameter having its front face undercut and its rear face bevelled, and the other collar having its front face undercut.

### References Cited in the file of this patent

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