Nov. 10, 1964 F. A. PACHMAYR 3,156,060

SHOTGUN CHOKE

Filed Dec. 26, 1962

FIG. 1.

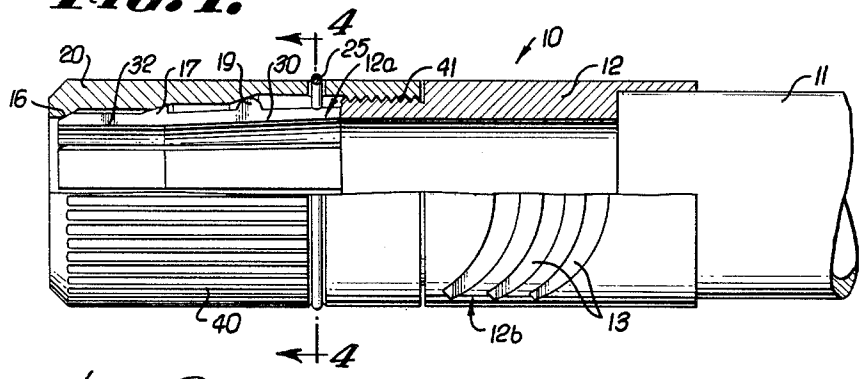


FIG. 2.

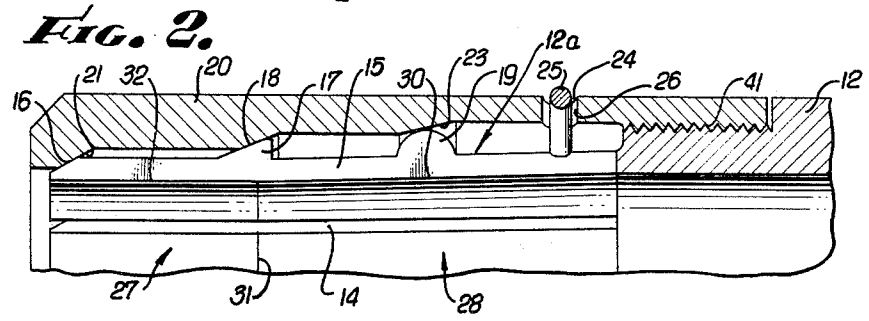


FIG. 3.

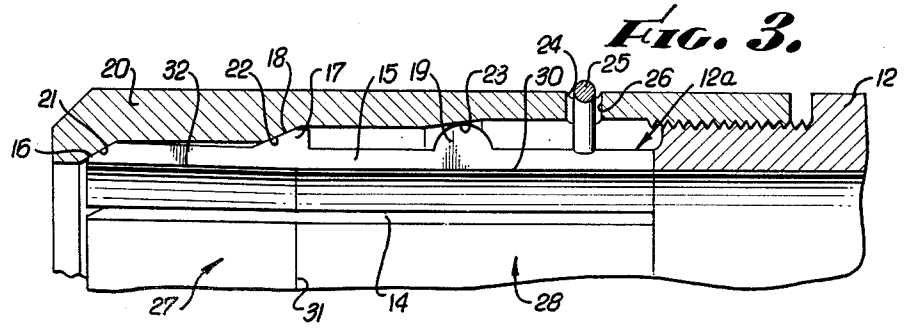
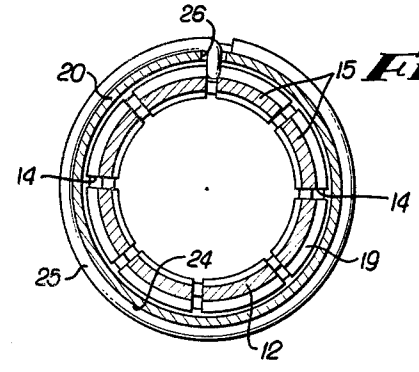


FIG. 4.



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SHOTGUN CHOKE

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5 Claims. (Cl. 42—79)

This invention has to do with improvements in shotgun variable chokes, i.e., shot pattern control devices applicable to the gun barrel and radially adjustable to vary the pattern of shot discharged through the device.

More particularly, the invention is concerned with improvements in shotgun chokes of the type comprising a body applicable at its rear to the gun barrel, and having associated therewith, e.g., as by integral formation, a forward section split longitudinally at circularly spaced intervals from the front discharge end of the sections to render the sections radially expandable and contractable for shot pattern control. Such radial variation results from rotation of a surrounding sleeve having wedge engagement with the body section within its split length. The shot controlling effect results from axial variations of the section bore wall angularity in relation to the body axis.

Shot pattern control devices as thus broadly characterized, are well known in the art. In some instances the bore variation has been changed in the angularity of an essentially single taper, while in other instances different lengths of the bore wall have had different angular relations to the bore axis and the effect of the adjustment has been to vary the relationships between those angularities, as well as to the bore axis.

The present invention, being in the latter category, has for its object to provide for a particular and novel relation between different bore length angularities, which permit more effective shot pattern control primarily in two conditions; first, when the pattern is to be relatively scattered, and second, when the pattern is more concentrated. These requirements are met by simple relationships between the forward and rear extents of the radially variable bore wall in the fully expanded and fully contracted conditions of the split body section.

Specifically contemplated are bore surface angularities such that in the expanded condition of the choke, the rear bore length wall will be straight, i.e., in substantial parallelism with the body axis and the forward length will progressively enlarge, thus to give a relatively enlarged pattern to be shot initially under straight wall control. Upon adjustment from radially enlarged to contracted condition of the split body section, the relation of such forward and rear bore surfaces reverses in that the rear extent is deflected to converge forwardly and the front section becomes straight, i.e., substantially parallel with the body axis. The result then is that the straight front section is fed with shot convergently directed by the tapering rear section.

The invention further contemplates interengaging wedge means on the split body section and surrounding sleeve, so positioned axially of the body to accurately support and predetermine the bore angular relations discussed in the foregoing.

All these, as well as additional features and objects, will be more fully understood from the following detailed description of an illustrative embodiment shown by the accompanying drawing in which:

FIG. 1 is a view showing the choke device partially in longitudinal section;

FIG. 2 is a fragmentary enlarged section showing the device in one condition of adjustment;

FIG. 3 is a view similar to FIG. 2 showing the device in a reversed condition of adjustment; and

FIG. 4 is a cross section on line 4—4 of FIG. 1.

The choke device, generally indicated at **10**, is shown to be mounted on the end of a shotgun barrel **11**, it being understood that the mode of attachment of the device to the barrel, which constitutes no part of the present invention, may be in accordance with any of the various known types and designs of mountings. The device is shown to comprise a tubular metallic, e.g. steel, body **12**, preferably of one-piece construction, having a forward radially adjustable extent **12***a*, and a rearward portion **12***b*, the wall of which is slotted to provide an appropriate number and arrangement of apertures or slots **13** for venting discharge gases in advance of the shot entry to the forward extent of the body.

Referring particularly to FIGS. 2 and 3, the forward body extent **12***a* is slotted at **14** rearwardly from the forward end of the body throughout a longitudinal extent sufficient to accommodate and permit the bore angular extents and variations later described, the slots **14** being circularly arranged at uniformly spaced intervals, as shown in FIG. 4. As will be apparent, the arcuate section, finger-like extents of the body between the slots are radially expansible and contractable by reason of the slotted configuration and the resilient elasticity of the body.

Each of the body fingers or segments **15** between the slots is shown to have a terminal angular and arcuate wedge surface **16**, a forward intermediate arcuate lug **17** with a correspondly angled arcuate wedge surface **18**, and a rearwardly intermediate rounded surface, wedge-acting arcuate lug **19**.

Radial variation of the slotted body extent **12***a* is effected by a surrounding manually rotatable sleeve **20** having longitudinal hand grip knurlings **40** and threaded at **41** to the body for rotation and consequent axial movement thereon. Within its forward end, the sleeve has an annular wedge surface **21** engaging with and corresponding in angularity to the body surface **16**; a forward intermediate annular surface **22** engaging with and corresponding in angularity to the body surface **18**, and a rearward annular angular surface **23** engageable by the body lugs **19**. Fitted within annular recess **24** in the body is split snap ring **25**, one end of which, projecting through opening **26**, is deflectably engageable with the irregularities produced by the slots **14** to provide a detenting action which releasably retains the sleeve in rotative positions of adjustment.

The forward and rear extents **27** and **28** of the bore wall defined within the slotted extent of the body, have predetermined individual and relative angularities in order to achieve alternate selective relative angularities of the bore extents, as and for the purposes previously discussed. In the FIG. 2 condition of rotative adjustment of the sleeve **20**, the relationship of the angularities of bore lengths **27** with **28** is such as to produce initial convergence and then straight direction of the shot discharged through the body. Here the wall of the rearward bore extent **28** is shown to converge at **30** toward the forward length **27** (generally delineated by line **31**), whereas the wall section **27** is shown at **32** to be straight, i.e., parallel with the body axis. Maintenance of the bore lengths in the described and illustrated configurations and relationship, is positively supported and assured by the interengaging wedge surfaces **16–21**, **18–22** and **29–23**, the support by **18–22** being at the juncture of the bore lengths **27** and **28**, and the support at **19–23** being centrally intermediate the rear extent **28**. In this manner, it is possible to maintain extreme accuracy in the angular relations of the bore extents and the consequent shot control.

By rotation of sleeve **20** a full turn to the FIG. 3 position, the wedge pressures are relieved to the extent that

the inter-groove segments expand by their resiliency to produce a reverse relative angularity of the bore lengths **27** and **28**. Here the bore extent **27** progressively enlarges or flares forwardly from its rear approximately at **31**, and the rear wall extent **30** assumes a straight configuration, i.e. parallelism with the body axis, the described relationships again being positively maintained by the three sets of interengaged body and sleeve wedge surfaces.

As will be understood by those familiar with the art, when it is desired to discharge the shot in a more concentrated pattern, the sleeve is adjusted to the FIG. 2 position, wherein the shot initially is gathered by the front taper at **30**, and the pattern is maintained in a straight course by the axially parallel wall at **32**. When it is desired to discharge the shot in a relative scatter pattern, the sleeve is adjusted to the FIG. 3 position wherein the shot initially gains straight alignment by the axially parallel wall **30**, and then is allowed to spread by reason of the front extent divergence at **32**.

I claim:

1. A shotgun choke comprising a tubular body applicable at its rear to a gun barrel and split from its front end rearwardly and at circular intervals to form a radially expansible and contractable shot pattern control section, said section having within its split length a bore having an axially inner extent the wall of which in the expanded condition of the section being in substantially straight parallelism with the body axis, and a forward wall extent which progressively enlarges to the discharge end of the section, said bore wall extents being angularly related so that in the radially contracted condition of the body said inner extent of the bore wall progressively tapers toward said forward extent the wall of which then is in substantially straight parallelism with the body axis, a sleeve rotatable about said split section of the body, and interengaging wedge means on said section and sleeve operable by rotation of the sleeve to radially deflect the section between said expanded and contracted conditions.

2. A choke according to claim 1, in which said wedge means comprise interengaging wedge surfaces on the sleeve and section at the forward end of the section and second and third essentially annular interengaging pairs of axially spaced wedge surfaces on the sleeve and section within the split length of the section.

3. A choke according to claim 2, in which said second pair of wedge surfaces are located at the inner end of said forward extent of the bore wall.

4. A choke according to claim 3, in which said third pair of wedge surfaces are located intermediate the ends of said inner straight extent of the bore wall.

5. A choke according to claim 4, in which said body is one piece from its front discharge end to its rear barrel attachment end, the body being slotted to vent gases rearwardly of said split section.

No references cited.