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Spitfire - Make Spollettes the Fulcanelli way



The fuse is getting harder to get. For larger shells it doesn't work well anyway because you want to spit fire into the center of the canister which can be several inches down from the top of the cylinder shell. The larger diameter of the spollette provides better mechanical integrity and a place to hang your spiking string on

Word on the street is that time fuse is getting harder and harder to get, and what is the reason? Supply chain glitches, bird flu, competency crisis, quiet quitting, three letter agencies are buying up all the supply. Choose your conspiracy theory, I believe them all.

Well what about the idea that God is trying to speak to you and tell you that you should be making spollettes instead of using time fuse anyway?

In researching this article I stumbled upon a correspondence between a young man who was just starting off on his cylinder shell building odyssey being advised by Mike Swisher, the eminence-gris from the Northern Lighters, a man who has forgotten more than most of us will ever know about fireworks. Key to his development as a pyro, and the promulgation of Italo-American cylinder shell construction techniques in the US clubs WPA, PGI, Northern Lighters etc. was his spiritual relationship with the famous pyro author/journalist "Fulcanelli". Fucanelli, the nom de plume of the writer documenting the construction techniques of the Sons of Italy who brought their techniques with them from the Italian peninsula to the USA one hundred years ago. You could say it was a labor of love, you could say it was the acetone vapors, or the delerium of living in Frostbite Falls, MN during the winter. You be the judge:

Newbie -

"I have noticed that Fulcanelli's basic method for loading and spiking single break canister shells doesn't always result in a uniform break of stars."

Swisher response -

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You aren't using spolettes - that's your problem. A spolette will throw fire vigorously right down the center of the shell. Spun fuse is not advised for shells over 4" in size. It makes it difficult to paste a good heavy crown on the shell, and a good crown is necessary for a good break. I like to use a 3" spolette on a 5" shell and have a beautifully conical crown pasted up to maybe 3/4" from the end of the spolette. You'll get a nice break every time.

...
You do need to pinion the vertical strings at the bottom of the shell with a couple of turns, and pinion them again at the top with a clove hitch, as described in the text pp. 20-21. More is not necessary. The figure on p. 19 is not as well drawn as it could be and does not show this.

Your bad breaks are most likely to be a consequence of inadequate pasting. In particular, you need to pay close attention to pasting a heavy and solidly rubbed down crown.

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https://rec.pyrotechnics.narkive.com/h0vNNU7D/loading-and-spiking-fulcanelli

I have to say I wasn't aware of the issue of making a large crown, but that is a subject we will save for a later article.

To simplifiy what I think is the most important parts of the Fulcanelli article below and what I myself have learned through the making and use of spollettes:

1. Spollettes are better because they really do spit fire into the center of the shell. Yes you can do that by attaching quickmatch to a 1-1/2 piece of time fuse but tying the string with only two hands is a pain and at some point you are doing just as much work as pressing or pounding out a spollette.
2. Spollettes give you a much better place to hang your spiking string on.
3. USE MEAL D OR IF YOU MAKE YOUR OWN BP MAKE SURE YOU CAN MAKE IT CONSISTENTLY EVERY TIME. I did not follow this in the beginning and wound up with spollettes that were all over the map. They are very sensitive to slight variations in

powder speed. You spend all this time and effort rolling stars, building the canisters, stringing, pasting. Its not worth it. Speaking as an inherent cheapskate.

4. I have not seen any difference between spollettes made on an arbor press vs those that I pounded so your cost of materials besides the tubes can be as simple as a piece of rod stock from a hardware store and a dead blow hammer. Maybe you need a grinding wheel to make the pointy part for the tool used at the very end.

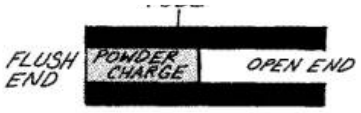
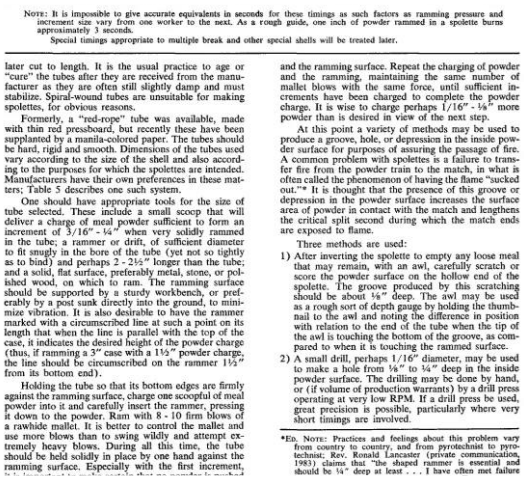


Figure 4. Spolette, before matching and nosing.

The open end of the tube is filled with as many short pieces of high-quality black match as can easily be put into it (without force); a nosing of strong, light-weight paper is rolled around the end of the spolette and tied snugly (but only enough to hold the match firmly in place — not so tightly as to choke off or break its black powder coating). The pieces of match should be carefully cut, with a *very* sharp knife or razor blade, because dull cutting tools crumble the powder from the match leaving cotton fibers exposed without a powder coating. The pieces of match should extend perhaps 1 - 1½" beyond the open end of the spolette, when held firmly in contact with the powder charge in the tube. Figure 5 depicts a spolette that has been matched and nosed.



NOTE: It is impossible to give accurate equivalents in seconds for these timings as such factors as ramming pressure and increment size vary from one worker to the next. As a rough guide, one inch of powder rammed in a spolette burns approximately 3 seconds.

Special timings appropriate to multiple break and other special shells will be treated later.

later cut to length. It is the usual practice to age or "cure" the tubes after they are received from the manufacturer as they are often still slightly damp and must stabilize. Spiral-wound tubes are unsuitable for making spolettes, for obvious reasons.

Formerly, a "red-rope" tube was available, made with thin red pressboard, but recently these have been supplanted by a manila-colored paper. The tubes should be hard, rigid and smooth. Dimensions of the tubes used vary according to the size of the shell and also according to the purposes for which the spolettes are intended. Manufacturers have their own preferences in these matters; Table 5 describes one such system.

One should have appropriate tools for the size of tube selected. These include a small scoop that will deliver a charge of meal powder sufficient to form an increment of 3/16" - ¼" when very solidly rammed in the tube; a rammer or drift, of sufficient diameter to fit snugly in the bore of the tube (yet not so tightly as to bind) and perhaps 2 - 2½" longer than the tube; and a solid, flat surface, preferably metal, stone, or polished wood, on which to ram. The ramming surface should be supported by a sturdy workbench, or preferably by a post sunk directly into the ground, to minimize vibration. It is also desirable to have the rammer marked with a circumscribed line at such a point on its length that when the line is parallel with the top of the case, it indicates the desired height of the powder charge (thus, if ramming a 3" case with a 1½" powder charge, the line should be circumscribed on the rammer 1½" from its bottom end).

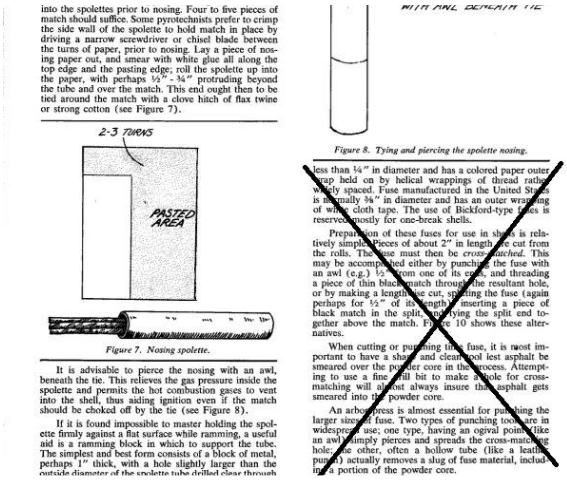
Holding the tube so that its bottom edges are firmly against the ramming surface, charge one scooptul of meal powder into it and carefully insert the rammer, pressing it down to the powder. Ram with 8 - 10 firm blows of a rawhide mallet. It is better to control the mallet and use more blows than to swing wildly and attempt extremely heavy blows. During all this time, the tube should be held solidly in place by one hand against the ramming surface. Especially with the first increment, and the ramming surface. Repeat the charging of powder and the ramming, maintaining the same number of mallet blows with the same force, until sufficient increments have been charged to complete the powder charge. It is wise to charge perhaps 1/16" - ⅛" more powder than is desired in view of the next step.

At this point a variety of methods may be used to produce a groove, hole, or depression in the inside powder surface for purposes of assuring the passage of fire. A common problem with spolettes is a failure to transfer fire from the powder train to the match, in what is often called the phenomenon of having the flame "sucked out."* It is thought that the presence of this groove or depression in the powder surface increases the surface area of powder in contact with the match and lengthens the critical split second during which the match ends are exposed to flame.

Three methods are used:

1) After inverting the spolette to empty any loose meal that may remain, with an awl, carefully scratch or score the powder surface on the hollow end of the spolette. The groove produced by this scratching should be about ⅛" deep. The awl may be used as a rough sort of depth gauge by holding the thumbnail to the awl and noting the difference in position with relation to the end of the tube when the tip of the awl is touching the bottom of the groove, as compared to when it is touching the rammed surface.
2) A small drill, perhaps 1/16" diameter, may be used to make a hole from ⅛" to ¼" deep in the inside powder surface. The drilling may be done by hand, or (if volume of production warrants) by a drill press operating at very low RPM. If a drill press be used, great precision is possible, particularly where very short timings are involved.

*ED. NOTE: Practices and feelings about this problem vary from country to country, and from pyrotechnist to pyrotechnist; Rev. Ronald Lancaster (private communication, 1983) claims that "the shaped rammer is essential and should be ¼" deep at least . . . I have often met failure



into the spolettes prior to nosing. Four to five pieces of match should suffice. Some pyrotechnists prefer to crimp the side wall of the spolette to hold match in place by driving a narrow screwdriver or chisel blade between the turns of paper, prior to nosing. Lay a piece of nosing paper out, and smear with white glue all along the top edge and the pasting edge; roll the spolette up into the paper, with perhaps ½" - ¾" protruding beyond the tube and over the match. This end ought then to be tied around the match with a clove hitch of flax twine or strong cotton (see Figure 7).

2-3 TURNS

PASTED AREA

Figure 7. Nosing spolette.

It is advisable to pierce the nosing with an awl, beneath the tie. This relieves the gas pressure inside the spolette and permits the hot combustion gases to vent into the shell, thus aiding ignition even if the match should be choked off by the tie (see Figure 8).

If it is found impossible to master holding the spolette firmly against a flat surface while ramming, a useful aid is a ramming block in which to support the tube. The simplest and best form consists of a block of metal, perhaps 1" thick, with a hole slightly larger than the outside diameter of the spolette tube drilled clear through

Figure 8. Tying and piercing the spolette nosing.

less than ¼" in diameter and has a colored paper outer wrap held on by helical wrappings of thread rather widely spaced. Fuse manufactured in the United States is normally ¾" in diameter and has an outer wrapping of white cloth tape. The use of Bickford-type fuses is reserved mostly for one-break shells.

Preparation of these fuses for use in shells is relatively simple. Pieces of about 2" in length are cut from the rolls. The ends must then be *cross-matched*. This may be accomplished either by punching the fuse with an awl (e.g.) ½" from one of its ends and threading a piece of thin black match through the resultant hole, or by making a lengthwise cut, spreading the fuse (again perhaps for ½" of its length), inserting a piece of black match in the split, and tying the split end together above the match. Figure 10 shows these alternatives.

When cutting or punching time fuse, it is most important to have a sharp and clean tool lest asphalt be smeared over the powder core in the process. Attempting to use a fine drill bit to make a hole for cross-matching will almost always insure that asphalt gets smeared into the powder core.

An arbor press is almost essential for punching the larger sizes of fuse. Two types of punching tools are in widespread use; one type, having an ogival point, like an awl simply pierces and spreads the cross-matching hole; the other, often a hollow tube (like a leather punch) actually removes a slug of fuse material, including a portion of the powder core.

https://www.woodysrocks.com/store/p313/5%2F16_NEPT_Spollette_Tubes_-_3%22.html#/

https://pyrodirect.com/products/spollette-and-insert-set

UNCATEGORIZED

Read it online

With the videos and comments: https://www.westernpyro.org/blog/spitfire-make-spollettes-the-fulcanelli-way