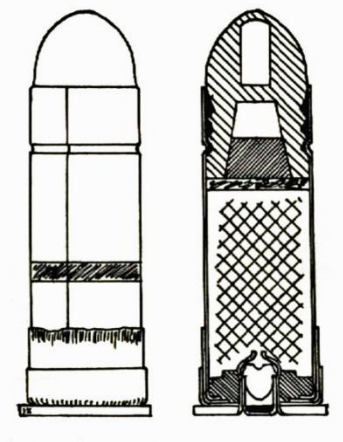
Thoughts on the 450 Martini-Henry

The defeat of Denmark in the Danish-Prussian War of 1864 demonstrated the advantages of the Dreyse breech loading Needle Gun used by the Prussian military. Muzzleloading rifles used by the Danes were outclassed by the breechloader.

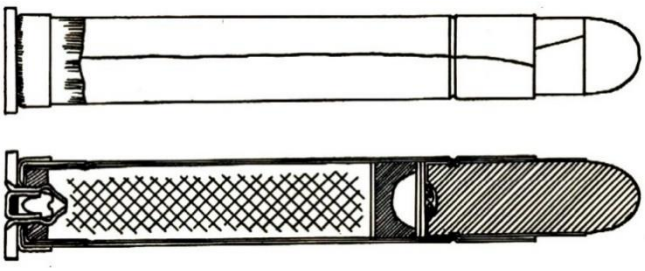


The British paid attention to this and knew the muzzle-loading Enfield rifle was now obsolete. As a stopgap measure the Enfields were changed to breech loaders using the Snider conversion. The rifles were known as Snider-Enfields.

The conversion worked reasonably well but accuracy was not acceptable. This proved to be the fault of the new cartridge which combined features of the French Pottet and the Schneider. A new design by George Henry Daw was tried and worked better but had a number of faults. Colonel Boxer, Superintendent at the Government Ammunition Factory at Woolwich Arsenal, designed a new cartridge that worked well and gave acceptable accuracy.

The new cartridge had a built-up case using a pulpboard paper case and a lubricated, grooved .577" bullet. Later versions of the 577 Snider-Enfield cartridge had a coiled brass case covered with brown paper.

However, a better rifle and cartridge were still needed. On October 22nd of 1866 the War Office Prize Competition was opened to anyone wanting to submit a new rifle and cartridge. The rifle that was chosen was the Martini-Henry and the new cartridge was the Boxer-Henry. This cartridge was 45 caliber and had a straight coiled built-up case that was 3.220" long and had a base diameter of .555". The overall length of the cartridge was 3.750". This long cartridge was not satisfactory although improvements to it did make it better.

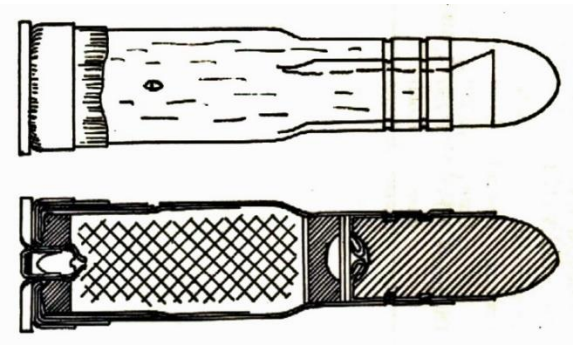


45 Boxer-Henry Long Chamber

But a new cartridge had been designed by William Thomas Eley of Eley Brothers. The new bottleneck cartridge was much shorter than the long 45 Boxer-Henry cartridge. The base diameter and body size of the new cartridge was the same as for the 577 Snider cartridge. This enabled some of the existing machinery, tooling, and some components used to make the 577 Snider cartridge to be used to make the new cartridge. 577 Snider blank cartridges and some shot cartridges could also be used.

The long cartridge was called the Long Chamber and the newer cartridge the Short Chamber. The official name of the long chamber cartridge was: Cartridge, Small Arm, Ball, Boxer-Henry, 0.45-Inch, Martini-Henry Rifle, Long Chamber (Mark A). A later version was the Mark B. The long chamber cartridge was never used other than in test trials.

The official name of the short chamber cartridge was: Cartridge, Small Arm, Ball, Boxer-Henry, 0.45-Inch, Martini-Henry Rifle, Short Chamber, (Mark 1, 1st Pattern). Later on the official name was changed to: Cartridge, Small Arm, Ball, Martini-Henry, Rolled Case, (Mark IV).



Martini-Henry Short Chamber cartridges

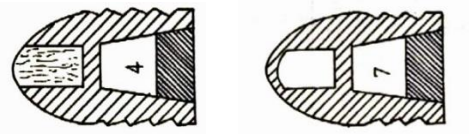
The Mark IV never saw service and was experimental only. It was probably the last of the short chamber cartridges. There were a number of changes to the cartridges so different Mark numbers can be found. Buckshot loads, blank ammunition, and carbine loads were made.

It should be noted that the new cartridge was never officially called the 577-450 Martini-Henry. The correct name for military rifles and cartridges is 0.45-Inch, Martini-Henry Rifle, Short Chamber. However, the cartridge was produced by ammo companies for civilian use and was at times incorrectly called the 577-450 Martini-Henry. 577-450 Martini-Henry has become the popular name right or wrong.

Brass drawn cases were also used, but the rolled or coiled brass case continued to be made and used for almost the life of the cartridge. The reason for this was that it was cheaper to make than the drawn case as child labor was used to assemble the cases. Eventually child labor laws along with the development of Cordite powder put an end to the rolled case.

To withstand the possibly greater chamber pressure of the smaller cartridge, a reinforcing cup was placed inside of the case. An inspection hole in the side of the outer brass wrap was used to see if the reinforcing cup was there.

The 577 Snider-Enfield used a 480 grain pure lead bullet. Early production bullets, the Pattern of 1859 and the Boxer Bullet-Type 1, were 530 grains and 525 grains.



577 Snider bullets. An early form, the Mark 4, had a hollow base filled with a fired clay plug and a sycamore wood plug in the nose cavity. The Mark 7 had the nose cavity spun closed and had saw tooth lube grooves.

The Pattern of 1859 had a solid nose and a hollow base. All of the Boxer designs had a hollow nose cavity that was sometimes exposed, sometimes filled with a plug, and Types 5, 6, & 7 had a hollow cavity in the nose that had the lead spun over the cavity making the bullet appear to be solid.

The bullet had a deep truncated conical hollow base that had a clay plug inserted into the cavity. The plug served to insure the bullet would expand into the rifling when fired. Different cannelures were tried and the saw tooth design proved to be the best.

At the time it was thought that a (lead) bullet needed to have a ratio of bullet length to bore diameter (length/caliber ratio) of between two to three. This is still a useful rule for lead rifle bullets. The ways to achieve this with the 577 were to make the bullet heavier (which was impractical), to reduce the bore diameter while keeping the same bullet weight, or to mechanically lengthen the 480 grain bullet. This was achieved partly with the large hollow base and partly by the large, deep hollow cavity in the front of the bullet.

With the modifications the Snider-Enfield bullet had a ratio of 1.98 which was less than desired. The decision was made to keep the bullet weight of the new cartridge at 480 grains but reduce the bore diameter to .450". The smaller bullet could also be solid which improved penetration and was more tolerant of rough handling. The new smaller bullet had a ratio of 2.82.

The new 45 Martini-Henry was first used with a bullet designed by Colonel Boxer. The Boxer bullet was designed as if it were for a muzzleloading rifle not the new breechloader. The bullet was not a success and Alexander Henry created a new bullet that was designed for breech-loading rifles. The Henry bullet was

adopted, and though it was modified slightly now and again, the basic design was used for the life of the 45 Martini-Henry.

The Henry bullet was made using a 12-1 lead/tin alloy and was paper patched. It had a base diameter of .450", .330" up from the base the diameter was .447", and .747" from the base the diameter at the beginning of the ogive was .439". This would suggest that the bullet had a tapered bearing but this is not the case.

Instead the bearing was slightly concave. From the base of the bullet to .300" from the base a radius of 119.4" was used. Then the radius changed to 25.028" to the beginning of the ogive. There is a good reason for this design and it explains why it can be difficult to obtain good results with straight sided or tapered bearing bullets. More about this later.

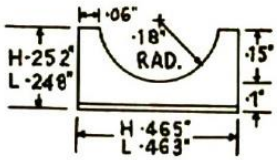
The bullet was paper patched with the patch being applied left to right. If the bullet is held with the base toward the person the leading edge of the outer wrap will be to the left of the bullet. Two wraps were used. The patch was twisted into a tail and pressed into a hollow in the base of the bullet.

Some drawings of the bullet would appear to show a flat base bullet but only the cup base was used. The excess of the tail would be cut off so that the bullet would sit flat on the over powder wads. When wrapped the bullet was dipped into molten beeswax coating the bullet and paper wrapper from the base to .450" from the base.

After the wax had cooled and hardened the bullet would be hot gauged, that is pushed through a heated sizing die which softened the wax and removed excess wax. After sizing the paper patched and lubricated bullet measured .458".

Two wads of jute fiber, jute cardboard, were below the bullet in the cartridge case. Jute is a long fiber obtained from the plants Corchorus Capsularis (White Jute) and Corchorus Olitorius (Tossa Jute). It is used to make twine, rope, carpet backing cloth, clothing, and is edible. And by happy coincidence it served well to make wads for cartridges.

A grease wad of pure beeswax was placed under the jute wad. The wad was .250" thick, was .465" to .463" in diameter, and had a deep cup in the side facing the bullet. The cup had a radius of .180" leaving an edge on the wad of .060". Testing had shown that the cupped grease wad would fill the rifling grooves more easily than a flat wad and provided better lubrication. One flat jute wads was placed between the beeswax wad and the powder. The over powder wad served only to separate the wax wad and the powder.



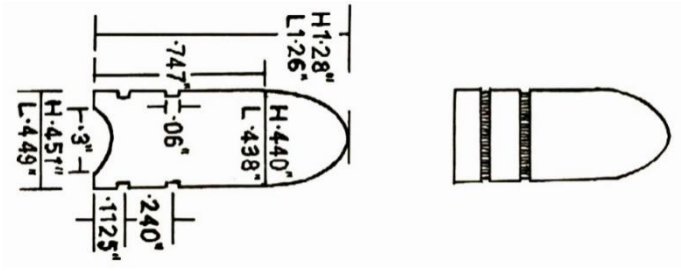
Beeswax wad

The wads and bullet were seated into the cartridge case so that there was no air space in the case but without compressing the black powder. It had been found that accuracy was better if the powder was not compressed. The wad column and bullet were regulated so that the bullet was seated in the case with the wax coating on the bullet just below the case mouth.

The patched bullet was smaller than the groove diameter of the barrel. This was in accordance with the "overtaking principle" which simply meant that on firing, the rear of the bullet would briefly move faster than the front of the bullet so that the rear would "overtake" the front end. The bullet would thus expand fully into the rifling grooves.

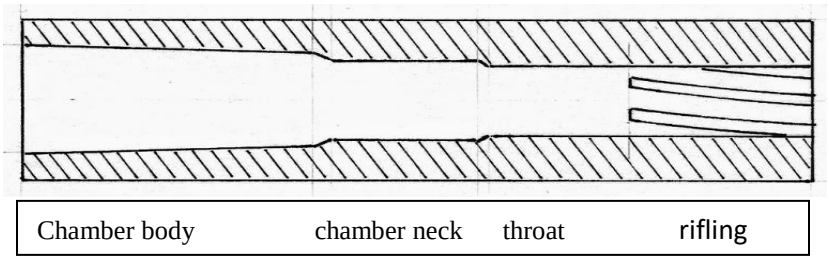
To make this happen reliably the special bullet was used. The slight concave side or waist of the bullet encouraged the upsetting of the bullet. A straight sided bullet or a tapered bearing bullet would not work as well.

One groove was used on the Type 1 Henry bullet and two grooves were used on the Type 2 and Type 3 bullets. The grooves were not for lubrication and only used to secure the bullet in the case. A 360 degree ring crimp was used. The Type 1 bullet with one groove was not held in the case well enough so the two groove Type 2 and 3 bullets solved the problem.



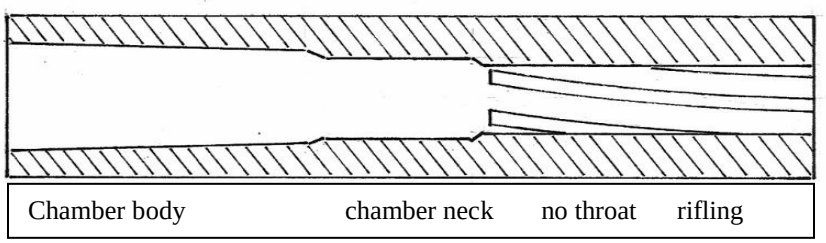
The Henry bullets were swaged since that produced a more perfect and uniform bullet and the bullets could be made more quickly than casting them.

Modern rifles made for metal jacketed bullets have a portion of the rifling removed forward of the chamber. This is called the throat. The throat is reamed to allow the bullet to enter the rifled barrel without contacting the rifling.



Modern rifle chamber for metal jacketed or lead bullets. The throat keeps the bullet from contacting the rifling when the round is chambered.

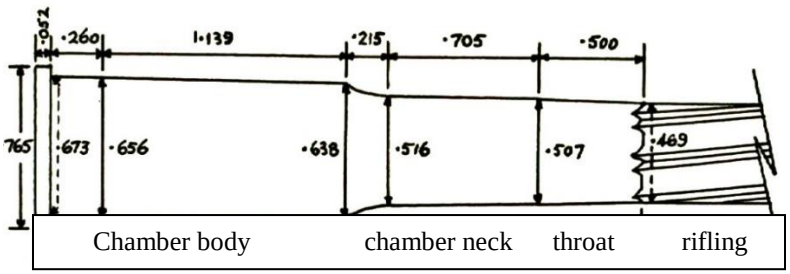
Blackpowder cartridge rifles, both original and many replicas, usually do not have a throat and the rifling usually has about a 45 degree lead angle which begins just forward of the end of the chamber neck. Single shot hunting rifles and most target rifles were not throated. Repeating rifles usually were throated.



Chamber made for paper patched bullets. There is no throat and the bullet slips into the barrel and rests on the rifling.

The usual practice with non-throated rifles was to make the paper patched bullet just smaller than the bore diameter. When the cartridge was chambered the bullet would slip into the barrel and rest on top of the rifling. Bullets would often have a cup base but flat base bullets were used. When fired, the powder gasses would cause the bullet and patch to expand to fill the rifling grooves. This is the British "overtaking principle" at work.

The Martini-Henry chamber is different. The patched bullet is sized to be a slip fit in the barrel and rest on the rifling just as with American rifles. But there is a difference. The chamber has a tapered section .500" long between the end of the case neck of the chamber and the beginning of the rifling. The throat immediately in front of the chamber neck measures .507" and then tapers to .469". The bullet is held in the cartridge case and extends into the tapered "throat" of the chamber.



This would seem to be a curious arrangement but two things must be considered. One is that blackpowder is the propelling charge. Blackpowder tends to foul the barrel so that with a few shots the fouling would render the rifle unusable. The tapered throat allows for

many shots to be fired before the fouling interferes with the functioning of the rifle. This is not a problem with a target rifle that can be cleaned between shots or a hunting rifle that may only be fired a couple of times during the day's hunt. But for a military rifle that may be used for volley fire with many shots fired fouling can be a serious problem that can disable the weapon.

Second and probably of more importance considering the hardness of the bullet, the tapered throat allows for overtaking or upsetting of the bullet on firing. When chambered, the front of the bullet enters the rifling but does not engage the grooves. It does guide the bullet into the rifling and keeps the bullet in alignment with the bore. When the cartridge is fired the back of the bullet leaves the cartridge case and as it does the powder gasses cause the back of the bullet to expand. The tapered throat allows the rear of the hard bullet to expand or upset more easily and fully. It also resizes the bullet to groove diameter as the bullet moves through the throat. The result is that the bullet is kept in good alignment with the barrel while the bullet upsets to fill the rifling grooves.

The use of and need for the tapered throat is because of the hardness of the 12-1 alloy the bullet is made from. Such a hard bullet would not expand nearly as well or as easily as would a pure lead bullet. The special throat and concave sides on the bullet were needed to insure proper upsetting of the bullet to fill the rifling grooves.

Shooting the 45 Martini-Henry.

The first question that must be asked is: is it safe and wise to fire the old rifle or is it better to simply keep it as a wall hanger and part of firearms history The rifles were reasonably strong and if loaded with blackkpowder or a blackpowder substitute there should be no problems. But it must be remembered that these rifles can be up to one-hundred fifty years old. Much can happen in that amount of time.

Were the rifles cared for, maintained, inspected, and kept ready for use or were they just obsolete weapons that were improperly stored and not maintained and sold as surplus?

If determined to be safe, to use they can be interesting and fun pieces to shoot occasionally. But only with low pressure loads comparable to the original loadings. Some of the last rifles produced were chambered for the 303 British cartridge which was loaded with Cordite powder. Chamber pressure was higher than for the blackpowder cartridge. This should not be considered the "go-ahead" to load with modern powders to modern chamber pressures. A Martini-Henry in good condition is worth several Pence and Shillings. One that is blown up and in pieces is just scrap.

Accuracy with the Martini-Henry is not going to be that of a modern target rifle. They were mainly volley fire weapons intended to put as many bullets into the massed ranks of an enemy as quickly as possible. Once an enemy advance was stopped then individual marksmen could engage single targets.

Accuracy at the time was judged by something called "Figure of Merit" (FOM) or "Mean Deviation". It is beyond the scope of this paper to explain in detail how FOM is determined but roughly the vertical and horizontal deviation of the shots divided by the number of shots fired gives a figure to two decimal places that indicates the accuracy of the rifle and/or cartridge.

Shooting was normally done at a range of 500 yards.

The Royal Laboratories on December 20, 1884 conducted accuracy tests of the 577 Snider-Enfield and the 45 Martini-Henry. Firing was done at a range of 500 yards. The target was twenty-four feet square. It was divided by lines that were three feet square making sixty-four three foot squares on the target. The three foot squares were divided by lines that formed six inch squares.

This gave an easy way to tell where the hits on the target were and to measure the FOM for both rifles. The 577 Snider gave a FOM of 13.35 inches with 70 grains of black powder and a 480 grain bullet. The Martini-Henry firing 85 grains of blackpowder with the 480 grain Henry bullet had a FOM of 9.25".

Looking at the target it can be seen that acceptable accuracy for the Snider was a group at 500 yards that was 48" wide by 42" tall. The group size for the Martini-Henry was 30" wide by 36" tall. The 45 Martini-Henry was a definite improvement. Firing was done from a rest.

Rifles that produced a FOM of 1.25 feet were deemed unsuitable and were rejected and rebuilt. Ammunition that did not measure up was usually broken down and the components salvaged. Powder was most often the cause of poor performance and was used to make blank ammo.

I have been told that with a good rifle, proper loads, and a bit of accurizing that two inch groups are possible at 100 yards. That is 2 MOA. If so then at 500 yards a ten inch group might be reasonable but a lot happens in the extra four hundred yards. I suspect that the group size could be considerably larger.

Accuracy with the issued rifles was no doubt good enough for the times and battles but nothing to compare to a Gibbs target rifle of the time or one of the personal rifles used by some of Berdan's Sharpshooters in the American Civil War.

How to get the old rifles to shoot well with modern components and especially modern bullets? The rifles were designed for use with blackpowder and should be used with blackpowder or possibly a blackpowder substitute. Blackpowder varies in quality today just as it did back then. It may take working up loads with different brands until one is found that gives the best results. A charge of 85 grains with a 480 grain bullet should be used.

There are smokeless powders that could be used but smokeless will not upset the bullet as much as blackpowder does. Bullets that I have examined that were fired in blackpowder cartridge rifles, not throated, would typically have around two-thirds or more of the bearing expanded or upset to fill the rifling grooves. Smokeless loads would usually cause about one-third to one-half of the bullet's bearing to fill the grooves. This was with pure lead bullets. A hard alloy bullet used with smokeless powder will not expand as well and could strip the rifling (skid in the rifling).

It is also possible to have too high of a chamber pressure with smokeless loads although if care is taken that's not too much of a worry.

Both card wads and a grease wad, for some reason called a cookie, should be used. Jute cardboard is in short supply but a reasonable substitute is available. The cardboard backing of note pads is worth trying. It is uncoated, plain paper and is about the correct thickness. Bright paper, colored paper, coated papers, or slick paper should not be used. The wads should be about .020" thick and .463" to .465" diameter. This may seem too large but a snug fit in the cartridge case is a must and the wads will fill the grooves when they get there.

There should be one wad on top of the powder charge and two wads under the bullet.

A grease wad of pure yellow beeswax is the best choice. As with the original cartridges a spherical depression must be in the forward side of the wad. The dimensions for the wad are given earlier in the article.

When loaded there will be one card wad on top of the powder, the grease wad, then two of the card wads, and the bullet. The powder charge can be lightly compressed but only a little. Best accuracy was had when the powder charge was not compressed.

Care should be taken that the wads are not seated below the case neck. If a card wad is below the case neck and in the shoulder area of the case the wad might be turned sideways on firing and stick in the barrel or in the cartridge case.

The bullet is of a somewhat odd design with the sides being slightly concave. This was necessary with the rather hard bullet alloy used in order for the bullet to expand properly when fired. The conical throat of the chamber also aided upsetting or expansion of the hard bullet.

The question that needs to be asked is why such a hard bullet when almost all other blackpowder rifles that were not throated used pure lead bullets? Paul Mauser when working with the M-71 single shot found pure lead to be best. Dr. Mann, "The Bullet's Flight from Powder to Target", after conducting many experiments also found the same thing to be true many years after Paul Mauser. Pure lead is nearly always the best choice for paper patched bullets.

A partial reason for the hard Martini bullet is that the bullet extends out of the cartridge case for about .800". When target shooting or even hunting this is not a problem as the cartridge can be handled and chambered with care so as to avoid damage to the bullet. In a military rifle in the heat of battle, cartridges will be handled roughly and the exposed bullet can be damaged so that accuracy could be negatively affected or the cartridge might not chamber.

A more complete reason is that the British Service was not satisfied with the penetration of the pure lead Snider-Enfield bullet. Better penetration was needed and at the time, that could only be achieved by using a hard alloy bullet. The 45 Martini-Henry with the hard 480 grain bullet at a muzzle velocity of 1,300 to 1,323 fps would penetrate four 3/8" wood boards or nine inches of packed earth. That may not seem like much, but when that amount of penetration is at a distance of 3,000 yards, it is impressive. More importantly it was enough to kill or disable a man or horse at the extreme range of the rifle.

The hard bullet has nothing to do with accuracy and in fact would work against that if loaded in a conventional non-throated rifle. Nearly all of the bullet exposed beyond the case mouth would be in the rifled portion of the barrel when the round was chambered. When fired a pure lead bullet and patch would expand properly and fill the rifling grooves. A hard straight sided bullet is unlikely to expand well with poor accuracy as a result.

The special concave sided bullet along with the .500" long tapered throat of the Martini-Henry chamber insured that the hard bullet would be able to expand as it left the cartridge neck and entered the rifled portion of the barrel.

Recommendations for loading the 45 Martini-Henry

Blackpowder or a blackpowder substitute would best duplicate the original load. Smokeless powder could be used but it would be best with a powder that would bulk up well and fill the cartridge case. As to which smokeless powders could be used, contacting the powder companies for loading data is best.

After that, duplicate the wad column as closely as possible to the original one. Use two .020" card wads under the bullet, the one-quarter inch thick beeswax grease wad with the cup facing the bullet, and one .020" thick wad under the grease wad. As mentioned, the back of most note pads should work OK but other wad material is worth trying.

As to the bullet that gets a bit trickier. Duplicating the concave sided bullet would be best but finding someone to make the swaging dies would be difficult and the tooling would be costly. Most likely the best and most affordable approach would be to use a straight bearing bullet.

The unpatched bullet should be no larger than .450" although making a Cerrosafe casting of the breech end of the barrel is a good way to determine the bore and groove dimensions so that the bullet could be sized for that rifle. A patch that is .0025" thick will be dampened and wrapped twice around the bullet. The patch will stretch a small amount when applied and will shrink some as it dries making the increase in the patched bullet diameter .008" not .010".

Since penetration at 3,000 yards is probably not an issue a hardened bullet is not necessary. A pure lead bullet will do the trick. However the long tapered throat needed to upset the hard bullet may cause the pure lead slug to over-expand and possibly damage the paper patch. A slightly hardened bullet may be needed to prevent that from happening in which case a 40-1 or 30-1 alloy could be used. Even better would be to forget the tin and use a lead–antimony mix of 3% antimony.

The bullet should have a cup base so the patch tail can be pressed into it. When dry the excess patch tail can be cut off allowing the bullet to sit flat on the over-powder wad. The ogive of the bullet should be a blunt round nose with an ogive length of one caliber. The ogive should be on the full side much like the old Sharps bullets or the 45-70 500 grain rifle bullet. Avoid long ogives or ogives that have a flatter profile.

Lubing the bullet by dipping it into melted pure yellow, not refined, beeswax would be the first choice. The bullet should only be coated with beeswax up to .450" from the base of the bullet. Then the problem would be to remove the excess wax which was done by pushing the bullet through a hot sizer die.

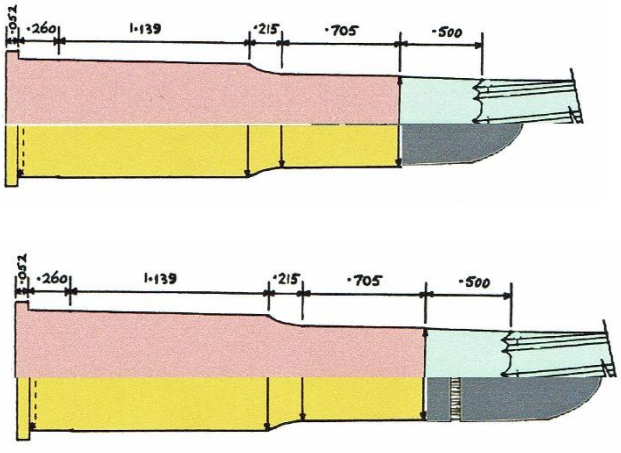
An easier way to lube the bullet could be to simply soak the paper patch with Neetsfoot Oil after the patch has dried on the bullet. This was commonly done with patched bullets for target rifles and usually gave good results. The patch should be wrapped left to right so that the rifling will loosen the patch allowing the patch to come free when the bullet exits the muzzle.

In order to start the wads and bullet into the case neck, it will be necessary to slightly expand the case neck for about the same length as the wad column. A wood dowel turned down to fit loosely into the case neck can be used to push the wad column down to the powder charge. The dowel can have a pin put through it so that the over-powder wad is not below the shoulder of the case. The pin will stop the dowel from pushing the wads down too far.

A standard reloading die can be used to seat the bullet into the case. Starting the bullet into the case by hand is best and then use the die to finish the job. Remember that care must be taken not to damage the paper patch. If the patch is torn or otherwise damaged accuracy is sure to be lost.

The original cartridges had one or two ring crimps to hold the bullet securely in the case. But for target work the crimp can be omitted. If the case neck is sized properly it will hold the bullet firmly enough. Should a crimp be wanted, a taper crimp would be superior to a roll crimp at the case mouth or the ring crimp. Crimping other than the taper crimp is likely to cause damage to the paper patch on firing, not good.

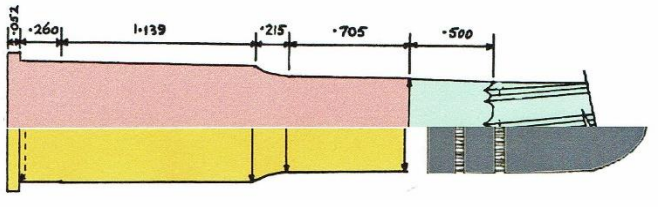
It is suggested sometimes that a groove diameter patched bullet should be used to prevent the bullet from "rattling" around in the tapered throat of the rifle. Nothing could be further from the truth. The patched bullet must be no more than .458" diameter to shoot well. The drawings that follow will show how and why the bore diameter bullet is best.



The drawing on the right shows a chambered cartridge (yellow color) in the chamber (pink color) with the bullet (grey color) in the chamber throat and rifling (light blue color). The bullet will extend beyond the case mouth .800" to .830". As can be seen the bullet (patch not shown) is well into the throat of the chamber and most of the ogive is in the rifling.

The next drawing shows the cartridge being fired with the bullet well into and resting on the rifling. The first crimp groove can be seen. The bullet is well supported and guided

by the cartridge case neck and the bore of the rifle. The bullet has just begun to expand from the pressure of the powder gas.



The third drawing shows the bullet has left the cartridge case and is fully supported in the barrel while the base of the bullet expands in the tapered throat to fill the rifling grooves. Both crimp grooves can be seen on the bullet. As the rear of the bullet expands it will seal grooves and engage the rifling fully. Because the bullet has a slight concave shape the beeswax lube is trapped forward of the expanding rear of the bullet and coats the barrel with the lube. The beeswax wad below the bullet (not shown) provides additional lube to soften fouling which the card wads scour out of the barrel.

Making the bullet larger than bore diameter is certain to cause the paper patch to be torn or damaged when fired. It also reduces the ability of the beeswax lube on the bullet to provide adequate lubrication.

Additional Notes

Before the 45 Martini-Henry cartridge was adopted, limited experiments were made with a .50" cartridge for the Martini rifle. A 450 grain bullet was used that had a solid nose with a boxwood plug in the hollow base. A 2.5" rolled copper case and a 2" rolled case were used.

An interesting feature of most of the 45 Short Chamber cartridges is a small hole in the side of the cartridge case. It was believed that the smaller bore size but with the same powder charge as the Snider would cause a higher chamber pressure than the rolled case could withstand. A brass reinforcing strip was placed inside the case to strengthen it. The small hole provided a way for inspectors to verify that the reinforcement was in place.

Most cartridges used an iron base disc or rim. However cartridges made in India had a brass base disc to prevent corrosion of the iron disc.

A carbine load was developed to reduce recoil of the lighter weapon. The rifle case and chamber specifications were used for the carbine so that rifle cartridges could be used in both weapons. The bullet weight was reduced to 410 grains but was otherwise the same as the rifle bullet. The lighter bullet could have one or two crimp grooves. A wad of cotton was on top of the powder charge in addition to the usual wads. This took up the extra space left by the shorter bullet. Later versions had a cardboard liner inside the case to take up the space and the wad of cotton was not used.

A number of variations of buckshot loads can be found. The full length Short Chamber cartridge case was used with a paper container holding the shot that was loaded into the case much like a bullet would be. Some of the paper containers were soaked in beeswax and shellacked when in the case to hold it in place.

Blanks were often made from rejected cases and were cut off at the shoulder of the case. The powder charge, sometimes blackpowder unacceptable for ball cartridges, was held in a brown paper container, placed in the case, and the case roll crimped. Sometimes a rose crimp would be used. 577 Snider-Enfield blanks could be used in the Short Chamber.

The British used the Maxim machine gun chambered for the 45 Martini-Henry. The rolled cases did not give good service so the drawn case was used instead. The cartridges were also used in the Nordenfelt, Gardner, and the Gatling gun.

Used to destroy hydrogen filled airships, a special cartridge loaded with the "Buckingham" incendiary bullet was used. The bullet had a copper jacket that was filled with incendiary compound and the bullet's base sealed with lead. A .110" hole in the side of the bullet exposed the compound to the heat of the Cordite charge and friction in the barrel to ignite the compound.

Tracer bullets were loaded at the Dum Dum Arsenal in India. The bullet had a cupro-nickel jacket filled with the tracer compound. A spitzer shaped bullet was used. The cartridge was known as Cordite, Mark 1.

Also loaded was a brass jacketed spitzer bullet that had a small hole in the tip and contained incendiary compound. The base of the bullet was filled with ignitor compound.

Given the long production life of the 45 Martini-Henry cartridge, the many different loads, and various weapons it was chambered in, collecting the cartridges can be an interesting and satisfying hobby. Unfortunately many of the older rolled case versions are somewhat costly but still can be found now and then at affordable prices. Collecting all of the variations would take considerable time and space for the collection.

But what better way to spend a winter night than identifying and organizing the collection.

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05-2018