

Solution à la Brenneke

by Harald Wolf

Firearms with a barrel hinged to the action are much more vulnerable to high pressures than guns with fixed barrels such as bolt action or falling block rifles. With the latter the tightly screwed-in barrel cannot move anywhere and the pressure developed by the cartridge works straight back to the lugs of the bolt or the block.

Express guns and rifles work differently. During the shot, the barrel tends to move away from the standing breech towards the shooting direction. The hinge of the action transforms the longitudinal force generated by the cartridge pressure into a serious pressure momentum revolving around the center of the hinge pin. The barrel is kept in place by relatively small mechanical bolting components, which clamp the barrel lumps to the frame. These bolts and slots of the action frame and barrel lumps have to cope with rather high pressures per square inch, which exerts a serious stress on the steel. The entire action and its bolting components withstand a significant stretching cycle with every shot.

At the advent of the breech loading gun the common use of comparatively low pressure black powder was still easily manageable. Later however, with the change to more powerful nitro-propellants, which produce much higher pressures, the mechanical requirements changed drastically. The action frames had to be entirely re-constructed in order to withstand the increased pressures, resulting in considerably larger and heavier guns. In the early 20th century, the golden age of gunmaking, the action frames were usually made of very mild low-carbon steel,



which was case hardened at the surface. The glass-hard surface prevented wear and the soft core helped to absorb the stretching stress at peak pressure. While we have much more refined qualities in steel these days, which absorb much more stress, the harder the steel however, the less stretching capability it usually has.

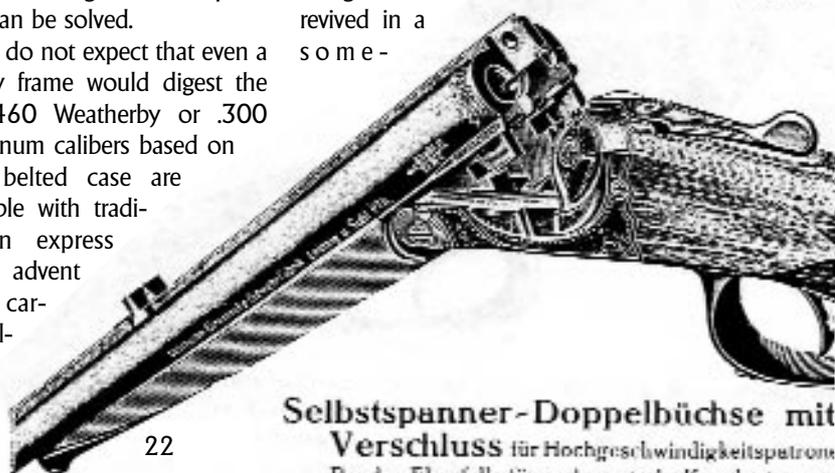
We also have to consider that modern high performance cartridges deliver two to three times higher pressures than early nitro-express cartridges. In fact, we have experienced a quantum leap in ballistics. Building a reliable and long lasting hinged barrel gun for modern rifle cartridges is much more demanding than building a bolt action or falling block rifle. The former requires an expert job of fitting by a very experienced gunmaker, while the latter is more or less a machine job. There is nothing so costly these days than expert handwork, which makes the cost of an express gun or rifle much higher. In any case, provided the technical design is suitably dimensioned for the cartridge ordered, appropriate steel used and barrel jointing and fitting done precisely, the problem of the actions stretching due to the powerful momentum can be solved.

However, do not expect that even a monstrously heavy frame would digest the pressures of a .460 Weatherby or .300 Pegasus. Even magnum calibers based on the .375 H&H belted case are already questionable with traditional breakdown express actions. Since the advent of nitro-express cartridges, some brilliant gunmakers searched for the

ideal solution to compensate the momentum and the continuous stretching of the frame. Numerous designs were patented, but most of them disappeared, because they either looked ugly or proved to be too complicated.

The most intelligent solution was designed by Franz Jaeger of Suhl/Germany, who was granted a patent on his brilliant tumbling block design, even before WW I. His design features a massive steel block, which positively locks directly into the barrel(s). The pressure was absorbed longitudinally as with any bolt action or falling block rifle, without generating a momentum around the hinge pin. The direct working bolting surface was larger, provided by the legendary Mauser 98 action, which is still considered the strongest bolt action design. Yet Franz Jaeger managed to keep his gun along conservative lines with the convenience of utilizing the common top lever. The whole gun looks like any traditional and elegant express rifle and yet accepts virtually any pressure.

Although Franz Jaeger was far ahead of his time, his intelligent design vanished with WW II. However, the basics of his design were revived in a s o m e -



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what distorted, and certainly much simplified form a few years ago, by companies such as Blaser and Merkel of Germany and Scheiring of Austria, to build light-weight express rifles chambered for high pressure cartridges. One or the other of these modern gunmakers boasts that they designed this special action, but the plain truth is that nobody can re-invent the wheel. The honor of designing this high-pressure absorbing action is doubtlessly due to the genius of Franz Jaeger, and I feel obliged to point this out.

However, this article is not going to deal with the Jaeger patent in detail. I will do so in a future article, since I have built numerous high-pressure express rifles, even several .460 Weatherby doubles, on the Jaeger patent for almost 25 years. This article will deal mainly with yet another, usually disregarded, pressure problem inherent in side-by-side guns and rifles.

Since the centerlines of the barrels are positioned at a distance to the left and right of the barrel lumps, hinged-barreled guns with a side-by-side barrel configuration produce an additional pressure momentum, producing a horizontal momentum also. With every shot the barrels tend to move to the left and right of the standing breech by the pressure of the cartridge. The wider apart the barrels, the more pronounced is this momentum. This is why side by side double rifles should have the barrel brazed as close together as possible. On a frequently shot double rifle, and even on a light-weight side by side shotgun, this horizontal momentum almost inevitably results in a slackening of the originally tight fitting between the barrel lumps and the action frame – the barrels become loose and in the worst case start rattling. If this happens, the vertical momentum of the barrel bolting also becomes increasingly effected. This is why



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cheaply made side by side double smooth-bores of inferior fitting quality virtually disappeared from the market – they just did not last very long. Cheap shotgun doubles are nowadays a clear domain of the over-and-under, which do not have this additional, disproportionate, sideways wearing momentum. Once the barrel to frame fitting of a hinged barrel gun starts to get loose it might be re-tightened by re-jointing and fitting a slightly larger underbolt. Unfortunately, if the tight sideways fit of barrel lumps and action slot on a side by side get loose, there is virtually nothing which can be done to save the gun. You simply cannot make the lumps wider to fit tightly again if the slots are worn out.

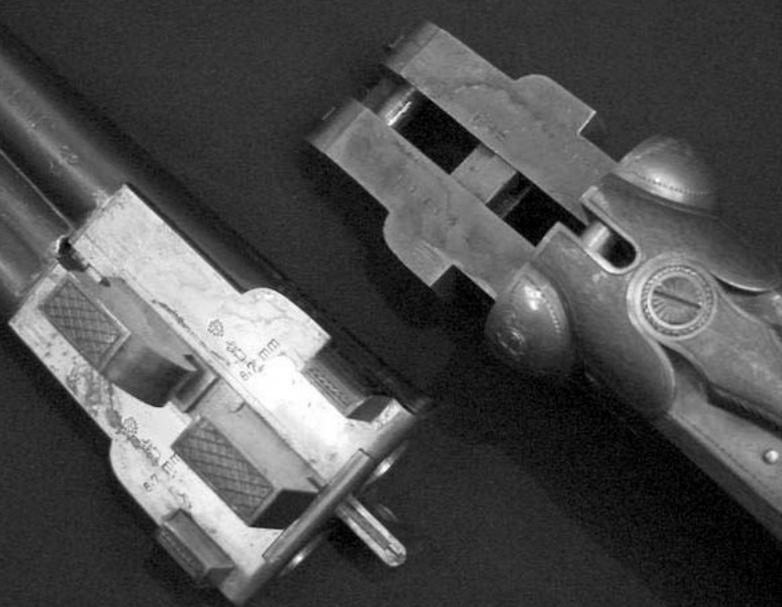
A solution to this inherent problem in side-by-sides guns also occupied the brains of the grand old gunmakers. Again, it was Franz Jaeger

who came up with a suitable idea, which is renowned as Jaeger Rekord action. With this design each barrel features its own barrel lumps below the barrels centerlines. These guns gained some popularity shortly before and after WW I. However, in the long run they failed, perhaps because of their odd appearance. Jaeger's domestic competitor, the German company of Thieme & Schlegelmilch, successfully marketed a more conventionally looking design, renowned as the Nimrod projecting nose action. However, I doubt whether the Nimrod patent had ever been as efficient as the Jaeger Rekord action. There was yet another German action, which, in the cause of efficiency, might be rated the in-between of the two mentioned previously. However, this action, designed by Wilhelm Brenneke, the father of all modern shotgun slugs and several high performance rifle cartridges, is exceedingly rare and was only built in rather small quantities up to the 1930s.

The patent for the ingenious, so called Brenneke action, was granted in 1905.

Its main features are two additional lumps to the left and





Although built on elegant lines the Brenneke action with the additional side hooks makes for a very strong gun.

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rels, which firmly fit into recesses through the bolsters at the outsides of the actual action frame. These two additional projections, if properly fitted, provide an extremely tight connection between barrels and action, which could hardly become affected by any wear from the horizontal momentum, even after many shots. The Brenneke action was mainly designed to improve side-by-side double rifles and the popular German three-barreled configuration. Oddly enough, old pre-war Brenneke brochures show single barreled express rifles also featuring these additional two side lumps, although a single barrel gun or over-and-under guns do not develop a horizontal momentum.

The basic breech loading and hammerless guns were certainly designed by the British gun trade. However, once they designed a suitable action, the British never felt the need of improving their models. Since the British are essentially very conservative, they still build the same guns as they did already 120 years ago. However, their German colleagues, engineers by nature, made essential, important improvements on the basic hammerless actions, particularly between 1900 and the 1920s. I therefore personally consider that collecting the early German sporting arms is much more interesting than collecting British guns. In general, the old gun trade differentiated between luxury guns, built with fancy sidelocks mostly as status symbols and working guns for true hunters. British and Belgian working guns were usually boxlocks of Anson & Deeley type. The German gunmakers had the same two grades, but for working guns they preferred the so-called "Blitz-Action" which is mounted on the trigger-

plate. The reasons were as follows. Particularly with powerful rifle cartridges, the slots to accommodate the Anson type box-lock, seriously weakened the action at strategically important points. Thus, box-locks chambered for powerful calibers had to employ rather bulky frames. The German triggerplate or Blitz action keeps, even an elegant action much stronger, though more wood has to be removed behind the receiver to house the locks. Nevertheless, I believe the German Blitz action makes for a stronger gun.

There is a very active German Gun Collector's Association in the USA, but surprisingly not in Germany. Regrettably, it seems that German hunters of today, no longer show much interest in all the fine old sporting guns of German design and manufacture. Nowadays it is fairly difficult to find old, pre-war German brochures and catalogues to research. Finding specimens of certain rare gun designs is almost impossible. Undoubtedly, after the end of WW II in Germany most privately owned sporting guns were destroyed, confiscated or exported westward across the Atlantic. Indeed, today you can find more unusual pre-war German sporting guns in collections in the U.S.A. than exist in their country of origin.

Over the years I added quite a few old Brenneke pamphlets and catalogs to my research archives. However, I tried for years in vain to find an original side-by-side built on the special Brenneke design. At the end of the day plain luck helped. A Californian member of the German Gun Collector's Association (U.S.A.), Rick Zobelin, had one of those rare Brenneke side-by-side doubles in his collection and was kind enough to take the rifle along to the SCI Reno Convention, so I could closely examine and measure-up the unusual piece. Those how are interested in old German guns and rifles should consider joining the German Gun Collector's Association (U.S.A.). They also publish a nice, well-illustrated periodical (see also: www.germanguns.com).

Fortunately, Rick Zobelin's old Brenneke double rifle was in perfect, original condition and had not been "refurbished" by a semi-professional, who usually do more damage than good. According to the proof marks that double rifle was finished in the 1920s. However, the caliber identification caused problems, since the rifle was obviously chambered for a non-standard .35 (9 mm) caliber, something German gunmakers hardly ever did. I was so impressed by the refined design and the impressive workmanship that I immediately worked out the plan to reproduce a Brenneke patent side-by-side double, and do so in connection with yet another Brenneke rarity, the 9.3 x 65 Rimmed caliber. This is the rimmed version of Brenneke's very popular rimless 9.3 x 64 (see Hatari Times Nr. 6), a powerful cartridge which has ballistics similar the .375 H&H Magnum. From 1916 onwards Wilhelm Brenneke designed and commercialized a series of high-powered cartridges. He started with the rimless versions for Mauser rifles featuring a case length of 64 mm and followed one year later with a largely identical rimmed version for express guns. The rimmed versions all have a slightly longer case neck and a total case length of 65 mm.

Brenneke also launched a series of super magnums, but the timing of the introduction, just at the onset of World War II was not favorable and the rifles never made it. Original Brenneke ammunition with a headstamp reading Brenneke Leipzig were manufactured by DWM. The 9.3 x 65 Rimmed, his very well balanced flagship cartridge, came out in 1928. Unfortunately, German sporting rifle ammunition manufacturers were forced to close down for 10 years after WW II. When production was resumed by DWM in the mid 1950s the 9.3 x 65 Rimmed Brenneke caliber fell by the wayside – as not many German sportsmen would have been prospective buyers of big game double rifles immediately after the war.

Since the original Kynoch-CIC sporting rifle ammunition came to an end in the 1960s, many medium-heavy double rifles have been built in the U.K, Belgium, Germany and Austria for the belted .375 H&H magnum. It works, but it is certainly not the ideal combination. The old 9.3 x 65 Rimmed Brenneke would have been much more suitable than the .375 H&H belted magnum.

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Original-Brenneke-Großwild-Patronen

Die 1926 eingeführte **BRENNEKE-GROSSWILD-PATRONE**, Kaliber 9,3x64 und 9,3x65 R, ist die wirksamste gewaltige Jagdkugelpatrone. Anfangsenergie: EO 730 m/kg, Endenergie: E 300 450 m/kg. Sie liefert fast doppelt soviel Energie wie die bekannten deutschen Hochwild-Kugelpatronen. Dem Tropen- und Großwildjäger, der sehr starkes Wild zu erlegen hat, leistet sie daher die zuverlässigsten Dienste. Trotzdem bedingt diese Patrone kein höheres Waffengewicht als ca. 4 kg. Die Waffe bleibt also handlich und leicht genug, um damit schnell auf bewegliches, gefährliches Großwild fertig zu werden. Unübertreffliche Präzisionsleistung (siehe Attest der deutschen Versuchsanstalt, Berlin-Wannsee). Hervorragende Anerkennungen. Gemäß Urteil bedeutender Afrikajäger: Die beste Großwildpatrone der Welt.

9,3 x 65 R
mit Rand

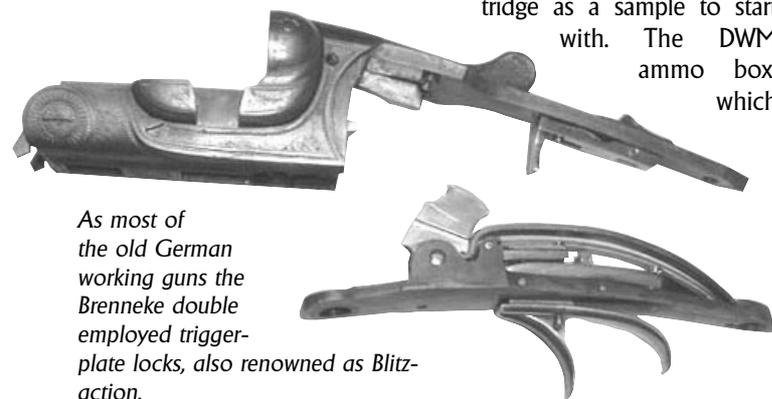


24	4,8	Spez.P.	19	37,5	Torpedo - Universal- gesch. m.Scharfrand, Bleispitze	781	718	591	500	3850	74	64.50
25	4,8	Spez.P.	19,65	36,5	Spezial-Geschoß mit Bronzespitze	830	768	691	591	3850	74	71.50
26	4,8	Spez.P.	18,5	30	Für Dickhäuter: Vollmantel-Geschoß	805	630	611	375	3800	74	60.50

Sämtliche Patronen haben SINOXID-Zündung

As I mentioned before, by coincidence after years of fruitless searching I was finally lucky enough to find an original rifle. Finding original 9.3 x 65 Rimmed factory ammunition turned out to be equally difficult. Even the most sophisticated cartridge collections are missing this round. The time span from its introduction in 1928 to the beginning of WW II, when German sporting rifle ammunition production ceased, was only 11 years. In such a short period, obviously very few rifles were chambered for that cartridge and accordingly the demand on ammunition production must have been correspondingly rather low. My dear old friend Guenther Freres, was the last DWM engineer in charge of sporting rifle ammunition production. He confirmed that only a few thousand rounds were manufactured on special order by the Brenneke company between the late 1950s until about 1970, when DWM closed down the sporting rifle ammo production for good. Guenther was kind enough to lend me an original pre-war cartridge as a sample to start with.

The DWM ammo box, which



As most of the old German working guns the Brenneke double employed trigger-plate locks, also renowned as Blitz-action.

came along with the sample, was from post-war production, presumably dating back to the 1960s. In fact, it was a box for the rimless 9.3 x 64, with a little sticker converting 64 into 65 R.

From old 1930s Brenneke sales brochures it seems that the 9.3 x 65 rimmed was a fairly powerful cartridge, with an edge over the .375 H&H and .375 flanged magnum, at least on paper. Until the late 1930s, when sporting rifle pressure standards were reviewed in Germany, rimmed versions of given calibers were usually loaded to the same maximum chamber pressures as the rimless counterparts. The last German firearms proof laws, passed before the advent of the war, generally reduced the maximum allowable chamber pressures of rimmed versions by 10% against the rimless versions, thus slightly reducing the ballistic performance as well. Nevertheless, the 9.3 x 65 Rimmed Brenneke remains a very potent medium big bore caliber perfectly suited for heavy big game, including buffalo, big cats and large bears.

At the present time European makers of classic express rifles presently have a serious problem. They are running out of so called demi-block or chopper lump barrel blanks. The demi-block is a forg-

The barrel jointing and precise fitting of the three hooks drove me mad.

ing where half the chopper lump is an integral part of the barrel blank. For decades, the production of high quality express rifles has been on a constant decline, and we are now down to a mere fraction of what the European gun trade used to manufacture. It is no longer profitable for the steel manufacturers to supply the ever-decreasing gun trade with low quantities of specially forged barrel blanks. For the time being there is still no shortage, as yet, of demi-block smoothbore forgings for classic shotguns, but it seems the days of chopper lump rifle barrels are definitely numbered. The only solution would be milling and turning rifle barrels with integral hooks at prohibited cost, from oversized 80 or 100 mm round bar. To cut a long story short, if you can hardly find chopper lump forgings for conventional side-by-side double rifles, you have virtually no chance of finding a raw barrel with enough material to make barrels for a Brenneke action with the additional hooks on the side. I therefore ordered two plain round contoured barrels, milled the piece with the central and two additional sidehooks from a separate chrome molly-steel bar and brazed all the components together with silver solder. The result makes for a safe and sound set of double rifle barrels, but admittedly it does not have the class of the original Brenneke demi-block barrels.

Barrel jointing, the ultra precise fitting of the barrel breech, flats and hooks to the action frame, is without doubt the most difficult job in the making of a high quality gun. Any compromise on the tolerances will invariably result in the barrels moving off the standing action breech, resulting in excessive headspace after shooting a few rounds, rendering the entire gun useless. I am convinced that proper barrel jointing is a job no one can do without years of apprenticeship under an expert master gunmaker. A young talented, barrel jointer will master shotguns after a few years, but he will still need several more years till he may think of jointing traditional side-by-side double rifles, as this is the royal class of gunmaking. A double rifle, which does not fit tightly on the so-called circle of the rear hook, is a total waste since it would not give a lasting service. Achieving a proper fit on the circle and the breech ends at the same time is much more difficult than the amateur may think. Now, the Brenneke action features three parallel circles, all of which have to fit at the same time. The grand old master gunmakers of the 1920 and 30 must have been larger than life craftsmen to accomplish such meticulous precision work without having problems. For several years, I learned barrel jointing in Ferlach/Austria, under the supervision of a very experienced master, yet the Brenneke action really pushed me to my limits and I stopped keeping track of the countless hours I spent filing and fitting.

Suffice to mention that I could not use a readily available action forging as well, so I milled and filed one from scratch, partly with special, self-made tools. To cut at least slightly down on working hours, I decided to buy ready to fit sidelocks. A visiting college from Liege saw the semi fitted barrels and frame on my workbench and



thought I was out of my mind. Who would pay for such a job? Unfortunately he was right. The Brenneke action is so difficult to make, demanding far more working hours than a conventional side-by-side double, that the selling price would be far too high. Back in the old days, when expert craftsmanship was not as outrageously expensive as today, such a Brenneke double would have been competitively priced, but today would be prohibitively overpriced. It is always interesting to take a look at today's commercial viability when retracing old handicrafts, and I certainly came to the conclusion that the Brenneke action, though a superior design, would not have any future under the pressures of modern marketing of our times. I went ahead with the building of the Brenneke action rifle, mainly for my own pleasure to rebuilt a technically superior and very interesting old firearm design. Unfortunately, I did not manage to finish the rifle in time to take it down to Zimbabwe, but I am planing to return to the game fields of Central Africa or Cameroon. For sure, it would be the perfect rifle and cartridge combination to hunt Lord Derby's Giant eland, Roan antelope and Northwestern buffalo.

However, Brenneke's rimmed 9.3 x 65 is a brilliant cartridge design and even today appears as modern as it was back in 1928, when it first came out. It is perfectly suitable for all sorts of heavy and dangerous game though of course, it would be marginal for elephant. The distinctively bottlenecked and sharp shouldered case makes for a more effective cartridge than the .375 flanged Magnum, which was designed to utilize inferior Cordite propellant. Factory loaded ammunition could be easily made at very reasonable cost, if one of the larger European cartridge makers would realize the potential of the big Brenneke round. But, I suspect that this is merely wishful thinking, as even the enthusiasm for once extremely popular 9.3 x 64 Rimless cartridge is slowly winding down, mainly because the big firearms' manufactures decided to rather promote the .375 H&H Magnum. Metric big bore calibers are no longer fashionable.



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