

**FELIN BROYAN &
THE MYSTERY OF THE IMPROVED MILL STONE
STAFF**

John Peck

Jo and I bought Felin Hescwm in 1993 and finally extricated ourselves out of the grip of the Big Smoke to move down here for real in 1995. Fairly early on we met Dafydd James, known locally as Dafydd Cilrhedin from the name of his wife Gweni's farm. He was very supportive of us restoring our mill back to working order, and encouraged us in our desire to gradually restore all the buildings using traditional techniques. He told us that he had been brought up on a farm with a corn mill, Felin Broyan. On his father's death the farm and mill were sold and his brother had rescued a slate disc that Dafydd thought I ought to take a look at. Eventually Dafydd and I made it to his brother Gareth's farm, and there leaning against a barn in the farm yard was indeed a magnificent slate disc, 4' in diameter and 3" thick. On the face was inscribed:- Geo. T. Smith *Improved* Mill Stone Staff. Interestingly Gareth had found it difficult to read the word "*Improved*", because it was not only inscribed in *italics*, but also the whole slate is mottled with lichen, as you can see from the photograph. He had assumed it was Mr Smith's address and of course the town of Stone is in Staffordshire! I did put a short entry into the newsletter in the late 1990s without a photo, but I can't tell you which newsletter, because I'm damned if I can find it in the jumbled chaos known as John and Jo's mills archive. Sadly Dafydd had diabetes which quarrelled with his Welsh farm diet

and his love of pints in Bessy's down in the Gwaun Valley, and he has since died.



PLATE 1 Slate Staff

All this got us thinking about mill stone staffs. A miller would own two staffs, a working staff made of hardwood and a proof staff made of steel. These are the basic tools for assisting in the truing up of mill stones to remove any unevenness that

inevitably occurs with prolonged use. I knew that the traditional working staff was a hardwood beam, 4' long and 3"-4" square. It would have been sawn horizontally along its middle and the top half turned over lengthwise and glued back on, all this to prevent warpage. The bottom face would have been brushed with paint, and whilst still wet would have been rubbed over the face of the mill stone to be dressed. All the high points on the stone face, that need chipping away, would have paint on them and the low areas would be clear. The paint would traditionally have been made from raddle or red oxide. This was regularly used as well for marking sheep and painting farm shed doors and windows, illustrated by Thomas Hardy's Diggory Venn, the raddleman. A lot of farm sheds still have red doors and windows, though of course now in modern paint. The miller would also own a proofing staff. This was a polished steel beam which was always kept in a felt lined box and was used to true the wooden staff, because the wood would wear when rubbed over the abrasive mill stone. It seemed that Geo T Smith had put his inventive mind to sophisticating the truing process. I said to Jo wouldn't the slate wear as you pushed it to transfer the paint, but she pointed out that it wouldn't need to be pushed around as the weight of the slate would transfer the paint on its own. However there was still the problem of how such a heavy piece of slate was lowered accurately into place. I had checked, when at Gareth's farm, to see if there were holes in the side to take the pins of the calipers which come with stone cranes but there weren't any. I asked Dafydd and he remembered some sort of wooden contraption which was with it, which may have had something to do with it.

When Mike Bennett told me that the October 2014 WMS AGM was the thirtieth anniversary of the society, and he wanted exhibits in the hall, I was minded of the mill stone staff and wondered if we could borrow it for the occasion, so I got in touch with Gareth who sounded a bit dubious and suggested that I should insure it against damage. The NFU were willing to do it and I set the value at £1,000. Jo and I went to see Gareth, armed this time with a camera. We immediately sensed that Gareth was really very unhappy at it leaving the farm, and also on re-looking at it, I realised it was far more difficult to transport than I had thought. Gareth told us it had never moved since it had arrived from Broyan. He questioned my insurance figure mentioning that for him and his family the staff was priceless. We agreed that it shouldn't be moved and Gareth offered for members of the WMS to come and look at it and we agreed that we should all come at the same time, so maybe when the meeting is next in N Pems...! I asked Gareth if he remembered how it might have been operated and he told us of the same wooden contraption as his brother, but sadly in no more detail. Will we ever find out?

Whilst we were at the farm I asked Gareth a bit about his memories of Felin Broyan. Gareth and Dafydd's father Merfyn rented the farm. Both the farm and mill were owned by a Miss Morris of Morris House, Prior Street, Cardigan. When the last miller retired Miss Morris sold the farm and the mill to Merfyn. The wheel was still usable and Merfyn installed a DC generator to light the farm and house. Gareth and his siblings were encouraged to read and could have as much light as they wished, but eventually electricity came to the valley and from then on their parents rationed the light, because of the

bills! Gareth remembered a great big old chestnut tree in the yard in front of the mill. He managed to get us a copy of a painting that his sister had, showing the front of the mill as well as the tree. As he handed us the copy he said he had remembered the tree as far bigger and right in the middle of the yard. We all know how our childhood memories can sometimes be quite misleading! We noticed a mill stone leaning against the little office in the painting, much to our surprise the mill stone is still there!

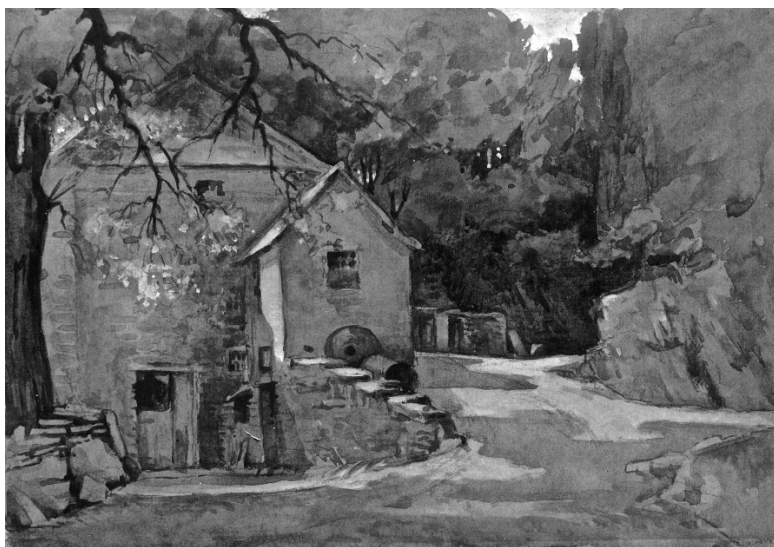


PLATE 2 Painting of Felin Broyan by anon with kind permission of the James family

We went to see Mike Hall during the run up to the 2014 AGM, to buy flour and we mentioned the slate mill stone staff. Mike said he knew of one and we started to get excited, two already, when it transpired that we were talking about the same one. It turned out that Mike and Jane had known Merfyn and his wife Mair, and Mike had seen the slate staff at Broyan when Merfyn and Mair were still there. Mike remembered that Mair was a wonderful baker of cakes.

When Merfyn died Mair sold the mill to Peter Kinsey who still lives there. On the off chance of catching him we went across to Felin Broyan, which is situated on the Afon Piliau in N Pembrokeshire. This small river rises near the village of Llantood and flows in the reed beds past the Wildlife Centre and so into the River Teifi just above Cardigan. When we knocked on the house door we were lucky enough to find Peter Kinsey at home. He was more than happy to tell us what he knew about the old mill, which is now sadly silent and empty and so hedged around with blockwork and corrugated iron offshoots, that, when I first saw it, the only clue of it being a mill was its hipped roof rising above the shanty sheds that surrounded it. Now the roof is so swathed in an abundance of wisteria, even that clue is gone. The yards around the farmstead are all now concreted, with only one reminder of old working surfaces, the drive from the yard up to the house being of bedrock slate, looking like a sea with a gentle swell, with cobbled patches in the troughs. It is very beautiful.

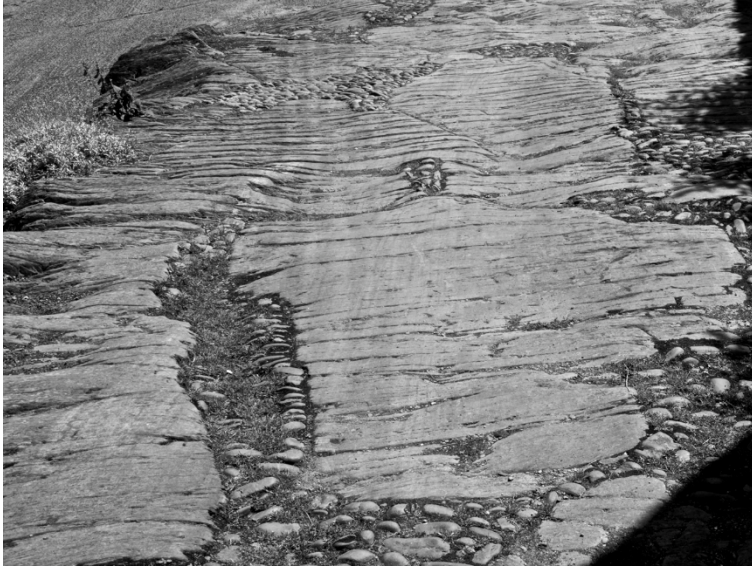


PLATE 3 Drive made from bedrock and cobbles

Even the leat is silent. On the second OS map the access lane to the next holding upstream, Gaer, went through the field on the other side of the river to the leat. At some point in the 20th Century a deal was struck with the then owner of Gaer, and a new access lane was built on top of the old leat before crossing the river well below the mill pond by a new bridge built in blockwork on a former of curved corrugated iron still in position. We have yet to discover whether Merfyn or Peter did the deal.

Mike Bennett sent me his historical diggings on Broyan Mill. B G Charles in his book "The Place Names of Pembrokeshire" says the mill was called Melyn Vrogan in 1660, Bryan Mill in

1760 and Froyan Mill in 1851, it has also been called Felin Freuan. He says the reason for all the names is the mixture of Welsh and English and different interpretations of the River Breuan. I find this confusing because all the modern maps call the river Afon Piliau.

Mike also sent a somewhat disjointed list of owners and occupiers compiled by Glen Johnson. When we were photographing the drive to the house, we came across a slate plaque inscribed:

D JOHN

J MORRIS

BROYAN

1803

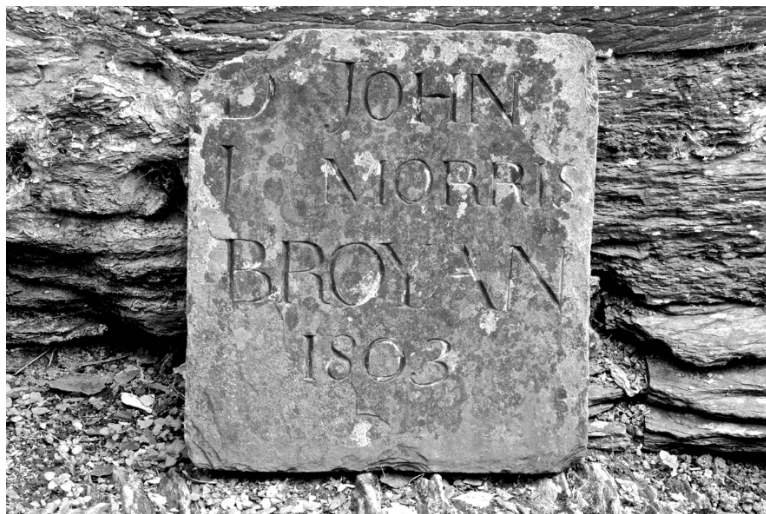


PLATE 4 Slate Plaque

I checked with the list and D John was the owner of Felin Broyan at that point and J Morris was his son in law. The Morris family were connected to Broyan from then on right up to the death of Mary Morris in 1947. In the second half of the 19th Century the mill was run by Thomas Morris & Co. Peter Kinsey put us onto a fascinating book about the history of the Afon Piliau valley "Give Me Yesterday" by James Williams. He describes having to hide under an overhanging bank as he was swimming in a millpond because a young couple that he knew, but didn't know were courting, appeared and proceeded to make love, in their ardour they had failed to spot him. I don't know which mill pond it was, there were a number of mills along the river. The next one up from Broyan was Gaer Factory, presumably a woollen mill from the name. On another occasion James Williams describes inadvertently having to guide a coffin as a toboggan when it careered down a snow blocked lane towards the grieving family. He does however also give us a wealth of interesting history including the fact that on 18th July 1911 Mrs. Morris of the mill gave a tea party for the children of Bridell school, and gave each of them a mug commemorating the Investiture of the Prince of Wales.

Peter Kinsey suggested we might try and follow the public footpath through the wood and find the remains of the millpond. When we checked it out it looked very overgrown, so we came back a second time complete with boots, gloves and a pair of loppers. We had checked the old OS map and the pond had been surprisingly big. The whole of the valley bottom had been dammed, in one section of the river. The dam appeared to have been about 36 yards long with the pond

stretching for about 150 yards. In my experience, rivers are normally only blocked by weirs sufficient to send enough water down the leat. If a pond is needed it is formed at some point along the leat. The engineering required to dam a river to this extent is quite considerable. Before plunging into the undergrowth we noticed a little tin shed down by the river sitting on a pair of concrete walls, we wondered if it had anything to do with a hydro scheme. We fought our way through brambles, stingers and fallen trees following the old dried up leat, at one point coming upon a slate slab footbridge, marked on the old OS map.

Finally we spotted a big dark wall looming through the undergrowth, it was the remains of the central part of the original mill pond dam. The dam was 9' high. Its outer wall was 4' thick. Behind it was a mass of clay with the remains of an inner wall, the whole being at least 10' thick. Jo spotted a hole at the bottom of the wall, possibly at the right height to feed the leat. It measured 18" wide by 15" high. The tunnel went the 4' through the thickness of the wall but was blocked beyond that. The original dam was breached at either end, but now the Western breach is filled up to 4' by a cast concrete wall. The Eastern breach confirmed our suspicions of a hydro scheme, a concrete dam the same height as the other side leads the water into a slate clad chamber past a filtering system.

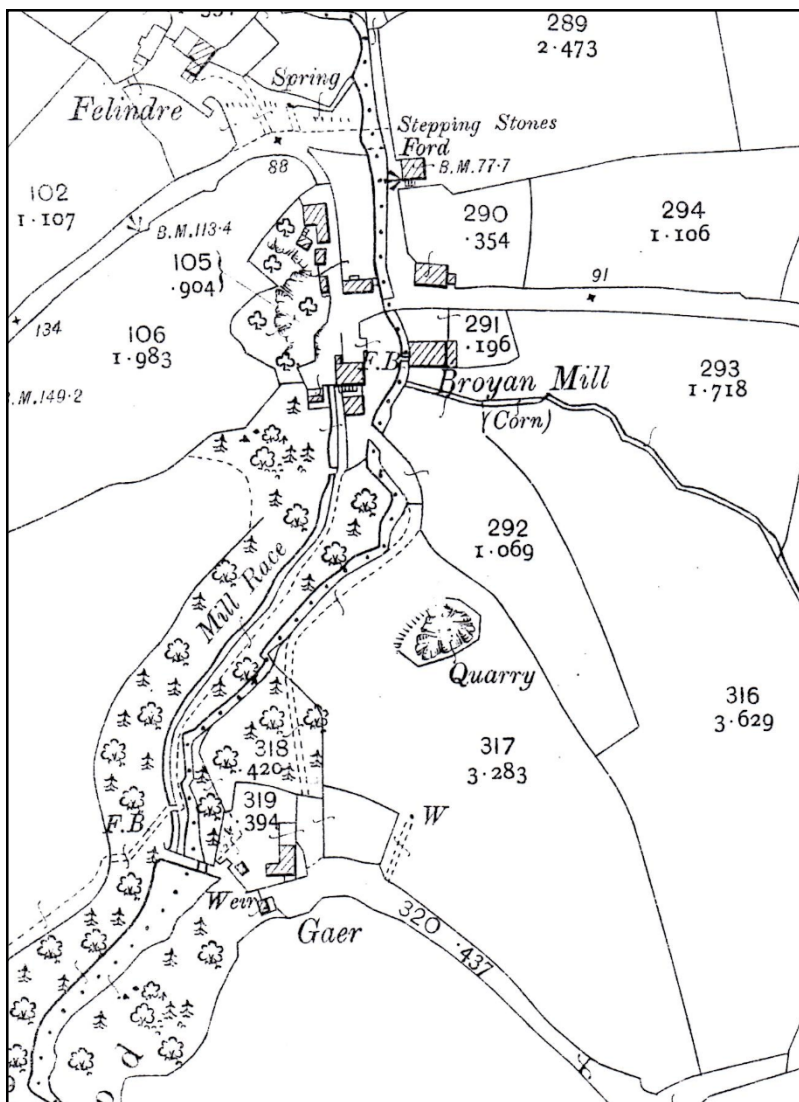


Figure 1 Broyan Mill taken from the Ordnance Survey County Series 25 inch to the mile 2nd edition (1906-7)

We walked up and knocked on the door of Gaer but no answer. Back home I rang Gareth for the owner of Gaer's name and telephone number. He told me a bit more about the old days. The postman used to walk up the public footpath, cross over the leat by the slate bridge and go on up the valley along the fields above the wood to deliver post. Gareth and Dafydd used to fish in the leat using the three bridges. He didn't know what the other two bridges were for. When he was about 10 someone "limed" the river above the Mill pond. All the fish died right down to below the mill. The two boys desperately tried catching trout well below the mill and carrying them in buckets up to the mill pond but to little avail. "They said the bag of lime fell off the cart by accident....but the damage was done," Gareth told me darkly. He was born in 1949 so the leat was still running round about 1959. I phoned the owner, Martin Davies, who was very helpful and sent us details of the hydro scheme. It is a low head scheme of 3.5m using a cross flow turbine giving him about 1kw of electricity for 5 months of the year. He had found a second outlet through the old dam wall, lower than the leat outlet and larger. We suspected it had been used to drain the silt out of the pond. He also told us, surprisingly that he bought the mill pond from the owner of Penralltddu, the next farm upstream, not from Peter Kinsey. Martin Davies described the hydro scheme as "a huge amount of work and very little gain, more of a hobby than a business enterprise."

Given the wonders of the Web, I idly typed in Geo T Smith one day, and to my surprise up came a patent with diagrams and a description, dated 9th November 1875. It seems that Geo. T Smith was a millwright and inventor living in St Louis,

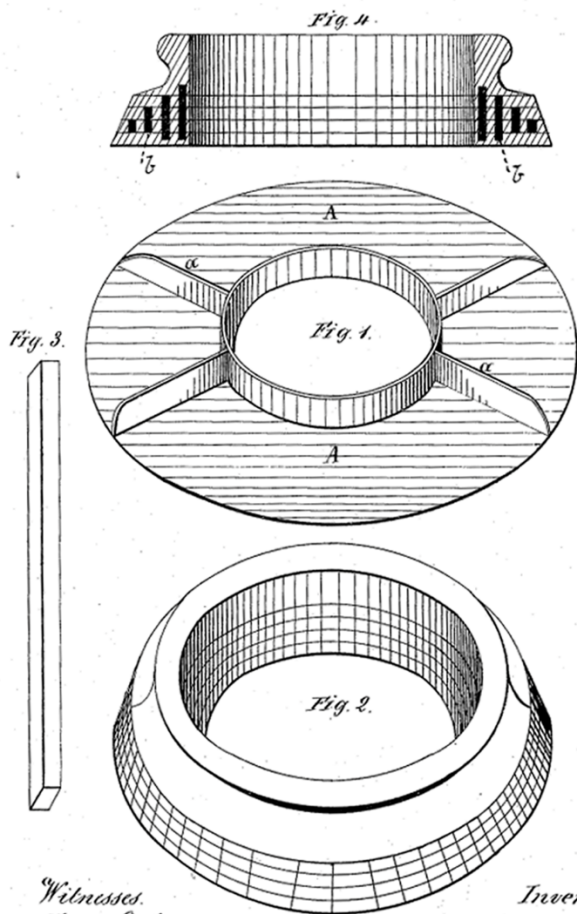
Missouri in the centre of the Great Plains wheat belt, and that he also had a company making corn processing machinery called The Geo. T. Smith Middlings Purifier Co in Jackson, Michigan. His staff was made of layers of wood with their grain running across each other as in plywood. How his patent came to have been used to make a slate version we will never know. On reading through the rather dense patent a bit more closely I realised that this was Geo. T. Smith's second patent, where he sophisticates the use of the circular staff together with the traditional long staff to set the eye or central part of the stone slightly higher than the skirt. Unfortunately he fails to mention either the date or the number of this earlier patent, which shows up my limited ability in surfing, because I have really no idea how to track down the first patent! Maybe one of you "gentle" readers with intimate knowledge of the subtle workings of the US Patent Records Office could come to my rescue. Might I request a note to the Newsletter?

Geo. T. Smith makes life difficult for us readers. On looking at the diagram it was not obvious to me that fig. 1 (in Figure 2) was metal and not wood as were the other three figures. In the text the only clues he gives us are that the ribs are "cast" and to true it he prefers the method of "grinding". Of course I should have picked up that proof staffs are always metal. Given the date of the patent it was almost certainly made of cast iron. Having correctly described fig. 2 as the wooden working or red staff, in a later paragraph he confusingly describes it as the proof-staff!

G. T. SMITH.
MILLSTONE-STAFF.

No. 169,858.

Patented Nov. 9, 1875.



Witnesses.
Henry Orth
Chas. Jacobson

Inventor
George T. Smith
by H. H. Doubleday
att'y.

Figure 2 Millstone Staff

To cap it all he goes on, in the next paragraph, to say "The working face of this staff (which he has just called the proof-staff) is reduced to a plane using the metal staff (which he should have call the proof staff!) as a test or proof as will readily be understood."(!!!)

Geo. T. is concerned to keep his circular working staff as light as possible, and the central part is left open so individual millers can set the height of their "eyes" above their "skirts" to suit themselves, whereas the slate staff is immensely heavy and the central circle is solid and raised a fixed height above the main face. All this further mystifies the development of this slate staff with Geo. T.'s name on it.

Of course not all millers will want to go to the extraordinary lengths as to dress their "eyes" ever so slightly higher than their "skirts", in the form of a gentle hill in the centre of a plain. Instead they will use a straight and true old fashioned long staff to dress their stones flat all over, which is a difficult enough task in itself. Mike Hall tells me that the only refinement he carries out is to relieve the centre of the runner stone slightly to help the grain to enter, while keeping the runner stone truly flat. It seems that the industrialisation of the milling trade in the wheat belt in America in the 19th century was causing the likes of Geo. T. Smith to come up with extreme refinements.

We had put this unfinished mystery "to bed" and were going to send it off to the Editor at Melin, and decided to sleep on it. The next morning at breakfast Jo's eyes widened and she began waving her pointed finger up and down, lost for words. I was wondered what was coming when she finally burst out "We've got it all inside out, upside down. The slate staff is the

proof staff and the wooden contraption was the working staff." And then everything began to fall into place. The slate staff has no easy way of being moved because it didn't need to be moved! The "wooden contraption" was not kept, because Gareth was born two years after the mill ceased to work, and so didn't know the significance of its function, to him it was just a worthless wooden "thing". We had assumed that the slate staff was a working staff right from the start, and remained stuck in that erroneous view right up to Jo's breakthrough, but I suspect that the muddles of description and terminology in Geo. T. Smith's patent helped to keep us from seeing the light any earlier. Experienced Millers might well have a laugh at our expense! It seems proof staffs are not always made of metal, if we are right some are made of slate.

It seems someone with better access to Welsh slate than to a foundry decided to manufacture Geo. T. Smith's circular proof staff in slate rather than cast iron. So the only mysteries remaining are — Where are all the other slate proof staffs? Where were they manufactured? Has anyone else come across another one? Again may I request any feedback be sent to the Newsletter?

UNITED STATES PATENT OFFICE.

GEORGE T. SMITH, OF ST LOUIS, MISSOURI.

IMPROVEMENT IN MILLSTONE-STAFFS.

Specification forming part of Letters Patent No. **169,858**, dated
November 9, 1875; application filed
September 1, 1875.

To all whom it may concern:

Be it known that I, GEORGE T. SMITH, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Millstone-Staff; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 represents a circular proof-staff. Fig. 2 is the wooden working or red staff, as it is sometimes called. Fig. 3 represents a long square staff, similar to those in common use among millers, and Fig. 4 is a transverse section, Fig. 2.

My invention is designed to enable the miller to reduce the skirt or outer grinding -face of the stone to a

perfectly flat or plane surface, and at the same time to dress the central portion or eye to such height or face relative to the skirt as his judgement shall decide is advisable.

In Fig. 1, A is the body of the proof-staff, the lower face of which is reduced to a plane by any usual or preferred method, although I usually employ the method of grinding set forth in my application of earlier date. *a* are radial arms or ribs cast upon the back of the staff, for the purpose of insuring that it shall not spring or be accidentally warped.

The proof-staff shown in Fig. 2 is made of successive layers of wood, so arranged that the grain of each layer shall cross that of the adjacent layer or layers.

The working face of this staff is reduced to a plane, using the metal staff as a test or proof, as will be readily understood.

The sides of the long staff, Fig. 3, may be straight, or one or more of them may be made slightly convex.

After the skirt of a stone has been dressed to a satisfactory face by use of the circular wooden staff, and when it is on the stone swing it slowly round without allowing either end to project beyond the hoop of the stone, and dress each time such portions as are painted. The result will be that the height of the central part or eye will be determined by the plane of the skirt, as the ends of the staff will ride upon this skirt, and if care be taken only such part of the staff as will correspond to the inner diameter of the circular staff, a belt or skirt of uniform width and in a perfect plane, will be formed, and the eye will be very nearly uniform in its plane relative to the skirt—that is to say, supposing the long staff to be of a slight but regular curve on its working face, then all the radial

lines will be in a common plane from their inner starting points until they reach the skirt of the stone.

This operation requires that the long staff should be of a length corresponding to the diameter of the stone; but where this is impracticable care should be taken to place the staff centrally upon the stone, and in swinging it around keep its ends equidistant from the outer edge.

In case greater accuracy is desired in keeping the skirt of the stone of uniform width, two colors of paint may be employed, and after the central position has been staffed with one color—say, with red—blue may be applied with the circular staff, which will indicate clearly the line to which the eye or breast should be dressed.

I have found that two difficulties grow out of the weight of a wooden staff when it is made solid; first, it is heavy to handle, and, secondly, it wears away so fast where it touches upon the

high spots of the stone, that it requires to be frequently to be proved.

In order to obviate these two objections, and also to lessen the liability of its becoming warped from absorbing moisture and drying out, I have made it hollow or partially hollow, and, by preference, I have intervening walls between cavities, as shown in Fig. 2.

I do not in this patent claim, broadly, the idea of proving or testing the face of a millstone by means of a circular staff, as that forms the subject of another application heretofore filed by me.

What I claim is —

The herein-described method of proving or determining the face of a millstone by the use, first, of a circular staff, Fig. 2, which is employed to level the skirt; and, second, of a long staff, Fig. 3, to establish the height or plane of the eye or central part of the stone relative to the skirt, said skirt serving as a guide for the ends of the long staff, substantially as set forth.

In testimony that I claim the foregoing as my own, I have affixed my signature in the presence of two witnesses.

GEORGE T. SMITH.

Witnesses:

H. H. DOUBLEDAY,

S. C. TIBBITTS.