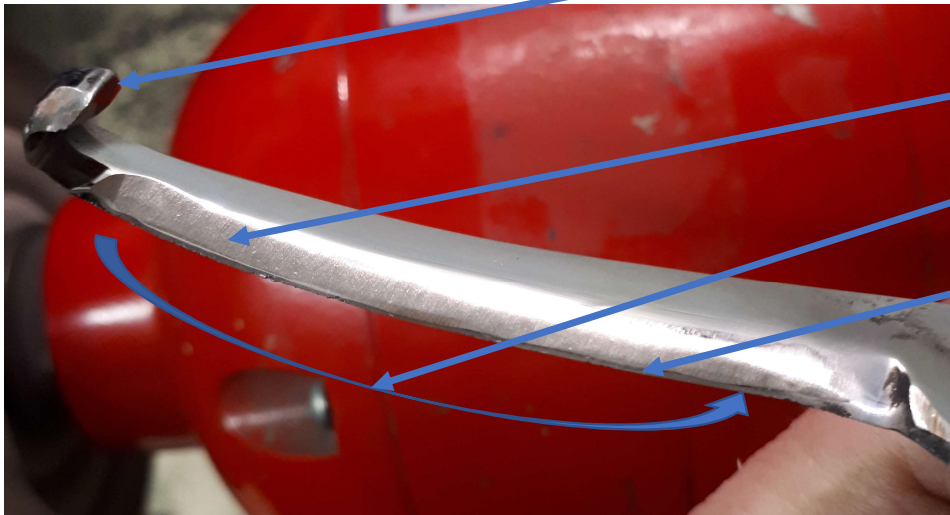


Sharpening hoof knives

By Dr Nick Bell

Glossary of terms



- Hook = the thing vets like for digging holes
- Bevel = the bit we sharpen
- Bow = bend in the blade
- Burr – runs along the back of the cutting edge after sharpening

- Sharp knives are essential for effective trimming and treatment
- Sharpening stones and files will struggle to match the sharpness achieved with a grinding wheel
- Knives need sharpening after/before each time they are used. In sand conditions swapping to sharp knives every 1-5 cows is normal

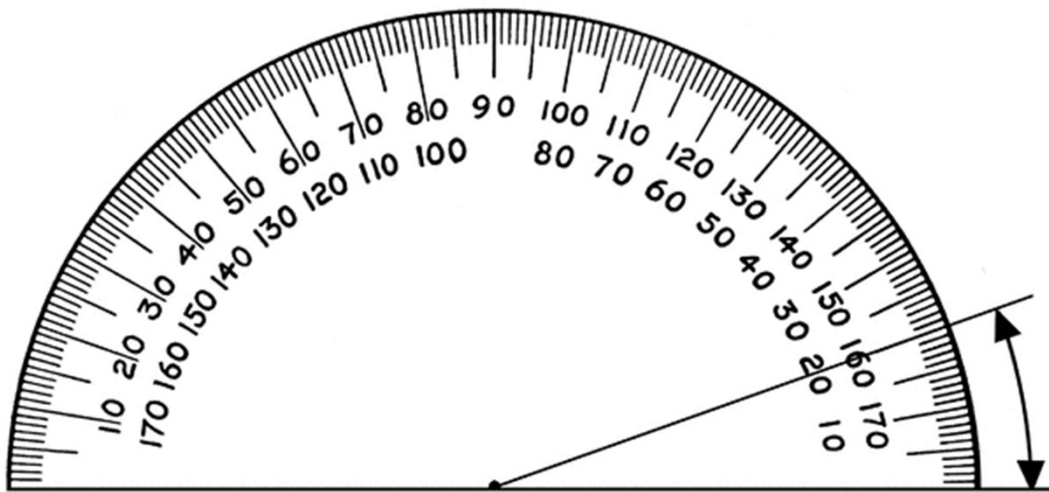
Health and safety

- Please take care – you can badly hurt yourself while sharpening
- NPTC City and Guilds offer a qualification which covers all aspects of safety (I hold this qualification) and so my caveat is to say only attempt the following procedures if suitably trained and qualified to do so
- Please always have some qualified supervision if you are a novice
- The main risks are:
 - Fragments of metal burr in eye (you only experience this once to realise how bad this is, with real risk of lost sight)
 - Skin abrasion
 - Heat of the sharpened blade
 - Entanglement of clothing or hair on the wheel
 - Projectile objects (usually fast moving sharp knives)
 - Noise and hearing injury (pardon)
 - Electrocution
 - It could be possible to experience all of the above in quick succession and that would make a bad and devastating learning experience

Safety considerations

- Follow manufacturers recommendations. Keep guards on if possible
- Wear eye and face protection
- Make sure you are wearing appropriate protective clothing
- Have wheels spinning away from you and towards a wall. This means positioning the switch on the opposite side to you or having a reverse spin wheel.
- It won't work if it spins towards you (you'll shred the wheels)
- Make sure all nuts are tight and leads are out the way. The grinder needs to be fixed to a bench as they vibrate and fall off surfaces, which can be alarming

The aim might seem obvious but let's think about it....



- We are aiming for edge angle of 17-20 degrees on one side only, leaving the back of the knife flat (and polished)
- This creates a thinner blade, which slices through hard horn
- Kitchen knives must cut through softer food with a vertical action and so are sharpened differently. They are sharpened both sides at 15 degrees and so the inclusive angles of both sides will be 30 degrees.
- More acute (<20 degrees) will be sharper, but more prone to blunting
- Steeper will be less sharp, but more durable and better suited to presence of sand or stones
- We want the edge angle to be consistent around the entire bow
- Sharpening little and often is best because:
 - We don't want the steel blade to overheat with intensive sharpening, as the blade then loses strength
 - We want the abrasive grinding surface to be as fine and gentle as possible so we have a quality cutting edge

What do you need

Small rotary bench grinder



- Personal protective equipment (face protection)
- 6 inch bench grinder
- Cloth wheel
- Rubber sharpening wheel
- Abrasive polish
- Circuit breaker
- You can also buy emery sand belt attachments



- You can buy thin and thick clothes. I like the thin cloth due to greater precision of polishing and they cope better with the shorter blades available now (Buffalo knives)

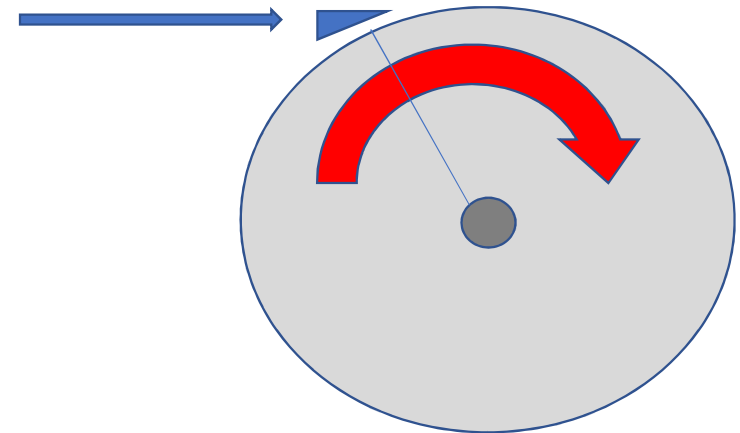
Polish



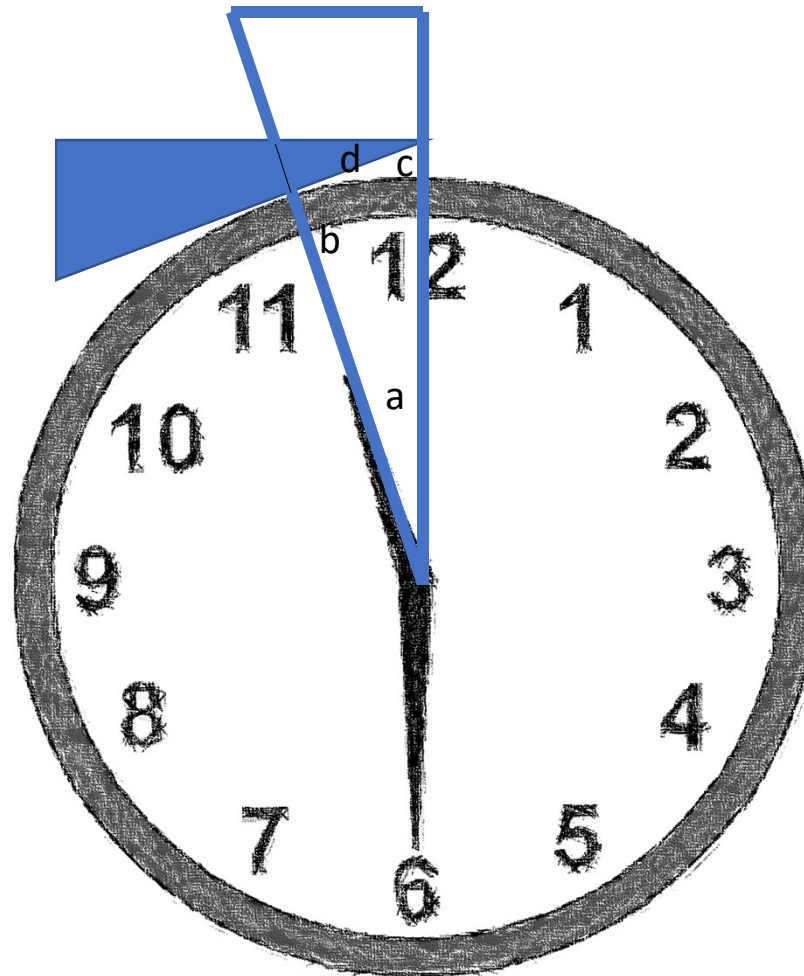
- Most of the sharpening should be done with polish on the cloth wheel
- Use an abrasive polish (grey or green – I prefer Endless green)
- Don't put too much on wheel – add a little and often. You will see black polish on the knife if over-done. 1-2 seconds on the spinning cloth wheel is enough
- Over time the knife will develop a slight “aeroplane wing” profile. Periodically the bevel on the knife will need flattening on the abrasive wheel



- Make sure cloth wheel spinning away from you
- Hold firmly in 2 hands
- Carefully introduce the blade at between just above 11 o'clock with the back of blade level



Trigonometry



If $a=15^\circ$

and

$b=90^\circ$

then

$c=180-90-15=75^\circ$

and

$d=90-c = 15^\circ$

So if 20° is the ideal angle, the ideal wheel contact will be at 11.20am!

Also bigger wheels will be better for flatter bevels

Care as you roll the knife over the spinning cloth



- Make a pen mark for a reference point at 11 o'clock (or 11.20!).
- As you roll the knife with the bow, take great care as the hook comes near the cloth
- Watch out! The hook or the back of the knife can catch the cloth by accident. If this happens you will feel a violent yank as the knife is ripped from your hand
- Duck, as the knife will hit the wall and could go anywhere
- This only happens once for most people – the shock means you won't do it again
- Main tip – don't use a sharpener facing a window or an audience

Rubber sharpening wheel



- These can heat the blade as you sharpen (you'll smell burning rubber after a heavy sharpening session! Don't burn yourself)
- They come as square profile discs but get more rounded as you use them, which makes sharpening across the bow much easier

Think about the right angle (17-20 degrees)



- As you introduce the blade, keep the back of the blade (and handle) flat from edge across the blade width
- Like the cloth, introduce at just above 11 o'clock
- Roll the length of the knife over the wheel, dropping the end of the handle down as you pull towards the hook of the blade following the bow of the blade (see next slide)

Keep the blade moving over the wheel – this stops over-heating and gives a more consistent bevel



Other sharpening methods – emery bands vs wheels

Wheel

- Pros
 - Simple, cheap
 - Robust, more portable
- Cons
 - Requires skill to keep bevel consistent, especially close to hook
 - Easy to overheat

Emery band

- Pros
 - Easy to create a consistent and acute bevel
 - The blade can be sharpened into the hook
- Cons
 - Large arm makes harder to transport
 - Bands break and need replacing

Inspecting the bevels



Extend the bevel right to the edge

Use the cloth wheel (buffer) to remove the burr

Sharpen the hook from the outside (or remove completely)

- If the wheel has sharpened correctly, the bevel will extend for 2-4mm from the blade edge depending on the blade width/thickness
 - Narrow blades handy for paring out white lines and dishing out soles; these will have a 2mm bevel
 - Wide blades will have a wider bevel which can extend over much of the width of the blade
- The emery band can be used over most of the blade width



Narrow blades



Wider blades

Hooks

- Some trimmers cut them off, but you need to be experienced as the hook prevents accidental stabbing of the opposite claw
- Sharp hooks can be useful for some lesions (that's the vet in me talking)
- Sharpen the outside of the hook on the wheel



After using the rubber wheel or band, polish



- Take the burr off the back of the blade. Best way is with the cloth
- The polish out the grinding lines with the polish

Check sharpness



- Visually check for:
 - Burr on the back of the blade
 - Stone chips along the edge
 - A consistent bevel extending to the blade edge
- Carefully and gently test the length of the blade edge along a thumb nail at a 45 degree angle. If sharp the blade will hold on your nail. If there is a blunt area, it will slip
- A sharp knife will effortlessly cut through paper with a downward slice. It will also cut through hairs on the arm (and chin)

Prices

DIY assembly

- [Bench grinder](#) £79
- [Sharpening wheel](#) £40
- [Cloth wheel](#) £4.55
- [Green Polish](#) £5

Ready to use

- [Grinder, rubber wheel, cloth wheel, polish](#) from Cowsfeet.co.uk £135
- Emery band, cloth from Cowsfeet £195