

DANISH INVENTION —gives peace in the stable

A dead horse and a substantial amount of stubbornness has resulted in a revolutionary Danish invention which is set for world-wide distribution. But there have certainly been challenges along the way, explains Simon Thorkelin - the inventor of the Kick-Stop plate - in this article.

By Britt Carlsen

Simon Thorkelin has worked with horses since his youth. Today he owns a well-located stud farm in Northern Sealand, Denmark, where he has his own riding horses

as well as broodmares and their offspring.

In 2006 he bought a gorgeous Holsteiner, which was intended for the role as his new jumping and hunting horse. In terms of riding, the horse was perfect, but in the stables it was a plague for itself and its surroundings.

During the transformation from a young horse to a riding horse it had developed the bad habit of kicking in the box. No amount of hay, licks, hours in the field or daily exercise could change this bad habit.

The kicking was so violent that his horse injured itself, so the veterinarian was a frequent guest in the stables as was the smith, to hammer the loose shoes back in place. The expenses for veterinary treatment and smith services exploded; every effort was made to get the horse to stop its bad habit, but all to no avail.

A solution that many resort to in this situation is to tie the horse's hind legs or forelegs with chains when it is in box, but I think this is extremely brutal, explains Simon Thorkelin. The horse's bad habit resulted in irreparable injury, so in the end it had to be put to sleep.

Mulling over the problem

While he was experiencing the problem firsthand he heard from several other horse owners,

how they were plagued by horses with the same problem - where everything had been tried and nothing had worked. Simon Thorkelin began to search for solutions to the problem both at home in Denmark and abroad, but even though it is a common problem, he did not find any useful solution.

Simon Thorkelin does not have a technical education, but he has a lot of specialist acquaintances, and through many conversations with technicians and veterinarians his, from the beginning somewhat diffuse idea, slowly started to take shape.

It took him three years to develop what the horse world today knows as the kick plate "Kick-Stop". Prior to this a lot of hours were spent in the garage and almost as many "Storm P" solutions, all of which were useless, but they guided Simon on his way towards the actual invention for which he now has world-wide patent.

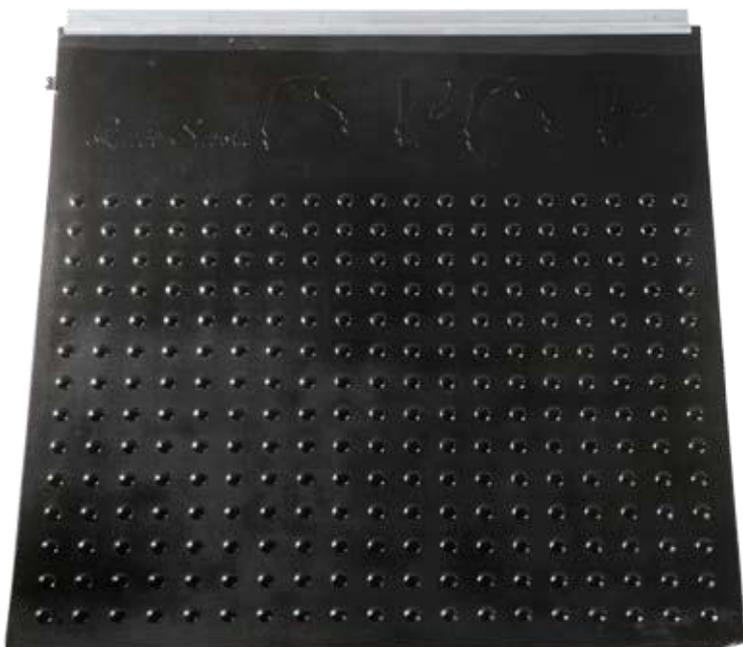
Electricity-conducting rubber

If you have paid attention during the physics class (or can remember anything from these lessons) you know that rubber cannot conduct electricity.

Since Simon does not have a technical education (but is well aware of the position; rubber is not conductive) he decided that rubber would be the perfect solution.



▲ Simon Thorkelin, the inventor of Kick-Stop, seen here at an awards ceremony in the Bernstoffs park in Denmark this spring, where the kick-plate was also introduced to the foreign riders. Together with the inventor is marketing Director May-Britt Katstrup. (Photo: Ridehesten.com/Jørgen Bak Rasmussen).



◀ *Kick-Stop is a rubber plate which is installed in the box in the place here the horse is kicking. A very weak current impulse is connected, eg. in connection with feeding, if the horse is kicking into the box wall. When the horse hits the rubber plate, it will get a little hock corresponding to approx. 40% of the strength of an average electric fence and it is the manufacturer's experience that this usually makes the horse stop kicking the wall. (Photo: Ridehesten.com / Malene Reismer Vestergaard).*

The purpose of

Kick-Stop is:

- To get the horses to stop to kicking in the box
- Avoid that horses injures themselves
- Reduce the stress level in the stable
- Avoid expensive treatments and rehabilitation
- Reduce wear on fixtures

See more at www.quietstable.com

The horses cannot hurt themselves on rubber in the box, so the challenge was to make rubber to conduct a low voltage impulse which via the learning mode "negative reinforcement" can get the horse to stop kick in the box when it kicks the rubber plate.

The chemical engineers from the rubber industry, who were associated with the project were from the beginning somewhat skeptical, but Simon was persistent and the whole idea behind the conductive rubber plate is conceived on the farm in North Sealand.

The plate, which measures 58 cm x 58 cm, is equipped with an aluminum rail for mounting. It is made of pure rubber and is revolutionary on several levels; firstly, it can conduct current, and secondly, there are no kind of wires inside the rubber plate, meaning that it can be cut as desired with an ordinary hobby knife to adjust to size.

Against the wall, the plate is insulated, it is only the front that conducts the electric impulse. The plates are pressed together at a pressure of 50 tonnes and are produced in Denmark. The kick plate comes with a Gallagher Energizer, earthing rods and wiring – complete and ready for quick and easy setup, says Simon.

Electricity and horses

- I asked myself, "what do horses not like", tells the inventor of the kick plate. It was therefore only natural to think of the electric fence.

Horses in fields are often fenced in with an electric fence that prevents them from leaving the field and harming themselves and others

Usually, horses are in contact with the fence only once, after which they understand the fence's function and remain in the field without coming into contact with the fence again. How far can you go to achieve an effect without violating the horse's private sphere and feeling of security inside the box? This was an issue that also had to be solved and by talking to veterinarians and behavioral scientists on horses' response pattern, they reached the conclusion that a current impulse, which reaverage is around a 40th part of the current in an average electric fence was enough to give an effect without the horse's sense of security and comfort in the box was compromised.



Three years, a lot of headaches and a myriad of different options have preceded the invention of the Kick-Stop, Simon Thorkelin has obtained world-wide patent on a rubber plate that can conduct electricity at varying strengths. (Photo: Ridehesten.com / Jørgen Bak Rasmussen).

The plate in practice

- We add decisive importance to the fact that it is people experienced in handling horses who sell our products both in Denmark and abroad, so that we can provide proper guidance along with the sale, says the manufacturer.

The kick plate is installed in the box, in the place where the horse has the habit of kicking. Usually the horse kicks at feeding time or when other horses pass the box. And it is these events which trigger the horse's reaction, that we must exploit. The plate is activated in connection with, for example, feeding, and when the horse then kicks out and hits the plate it receives an uncomfortable power impulse at the same time, and it will immediately associate this discomfort with the kick.

Experience with the use of the plate shows that the horses after the first contact learns not to kick, and the flow can therefore be interrupted immediately

The plate must not be connected when there is no one in the stable. It must only be activated when we know from experience that the horse kicks, emphasises the inventor. Although the horse ceases to kick, the disconnected plate must remain in the box. - We have learned that if you remove the plate, the horse resumes its bad habit, he adds.

Negative reinforcement

Kick-Stop is based on learning through "negative reinforcement" which means that the horse's behaviour is connected directly with the subsequent impacts from the surroundings, i.e. here the rubber matting.

A negative reinforcement can be defined as something an individual will actively try to avoid. Negative reinforcement should not be confused with punishment. Punishment is something that follows after a behavior has occurred and usually at a time when it is no longer possible to alter the behaviour. Negative reinforcement is used when you give the horse the opportunity of changing an unwanted behaviour and thus the horse receives something unpleasant in order to stop.

This learning, which is well known among researchers of animal behaviour, is based on making the horse believe that its action alone creates the negative feedback.

In order for the learning to work, it requires that the horse is focused 100% on what it is doing. The best and most effective learning happens when the horse is experiencing the impact, while its focus is 100% on its action, thereby linking it with his own action directly to the effect.

Research at Aarhus University

When the company sells a kick plate, they ask the buyers to report back after using it.

- Both we and others have learned that the horses show no fear of the plate, even though they have kicked on it while it was activated and has stopped kicking. Many recount, and we have even seen ourselves, that the plate buds, which really only act as ornaments, are used by horses to scratch and rub on, says the inventor.



▲ The kick plate is produced in Denmark. The rubber plate is a world first and completely revolutionary product in its function. (Photo: Ridehesten.com / Annette Boe Ostergaard).

Some feedback concerning the horses' pattern of reaction has been a cause of wonder, for which reason the company owner is in contact with the behaviour department at Research Center Foulum at Aarhus University. They have also expressed interest in the using kick plate in a research project.

- We have received reports that horses which also seemed aggressive and stressful in the box have calmed down and become far more sociable.

Horses which have responded violently if other horses were led past, have remained calm. Many different reactions for which there actually is not a scientific explanation.

Quiet Stable which is the name of Simon Thorkelin's company, is already cooperating with the Danish Foreign Ministry's Export Council, a cooperation which is extremely rewarding and fruitful, stresses the business owner.

The fact that rubber can conduct electricity is in fact a revolutionary invention, and a lot of communications and requests to use the conductive rubber for other purposes have poured in from other firms and parts of industry.

So what simply began with a desire to protect kicking horses against debilitating injuries now appears to be applicable in many other contexts.

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Kicking injuries

Horses which kick often and a lot in the box often incur health-related problems. The horse's legs and hooves are damaged, just as it often will kick its shoes off and create a general unrest in the stable. The turbulence gives rise to stress not only for the horse that kicks, but also to other horses in the stable. Not to mention the damage to the inventory in the stable, which is a consequence of the horse's behavior.

According to veterinarian Linus Camitz from the Danish horse clinic, Kasernens Hesteklinik in the city of Næstved, a kicking horse usually sustains following injuries:

1. Shoulder and muscles for conveying forelegs
2. Front knees
3. Front of limb joints and toes
4. Crown
5. Cross muscles (gluteal muscles)
6. Back of thighs
7. Achilles tendon
8. Top of hamstring
9. Bones, joints and ligaments in the toe
10. Sole, costume and buttock region

