

TECH ON THE TRAIL



COWBOY S.T.E.A.M.



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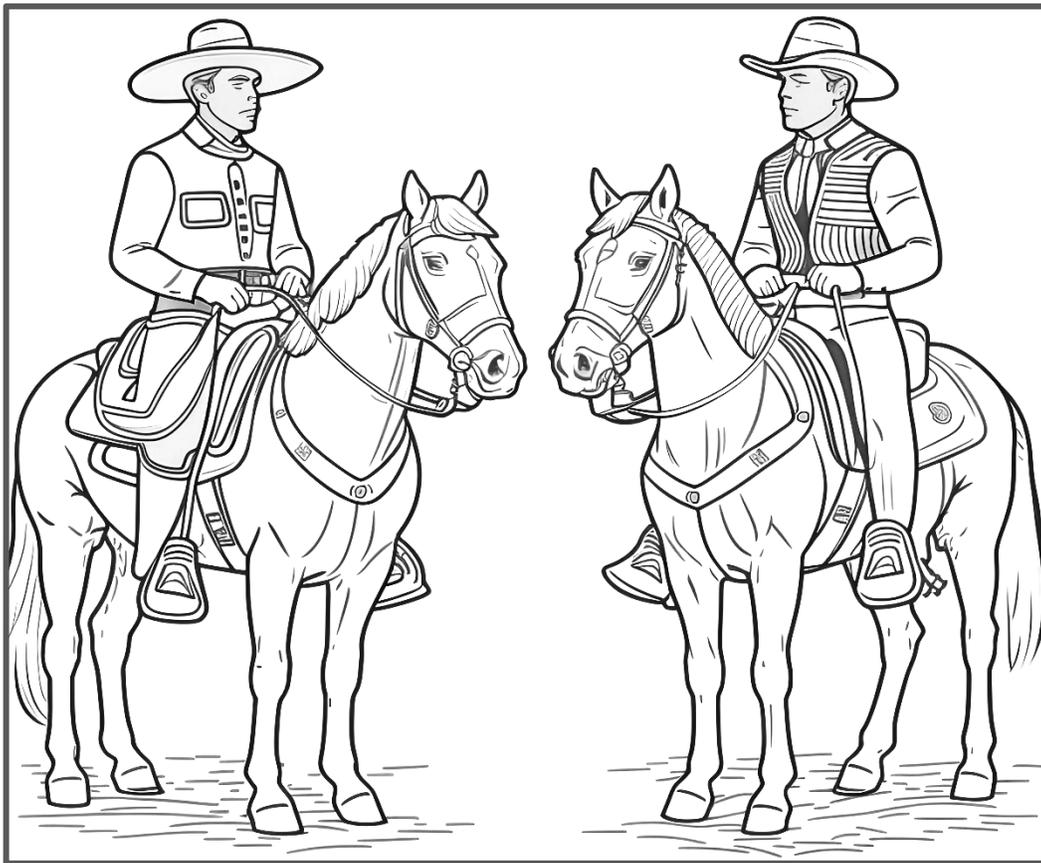
COWBOY TECHNOLOGY

What is a technology?

Some people think that technology involves machines and new tools. But technology is anything made by people that helps us do things better or faster. It can be simple things like a pencil, which helps you write down your ideas, or a computer, which helps you learn and play games.

How do cowboys use technology?

Cowboy technology is like a super smart set of tools, clothes and ideas that helps solve problems on ranches and cattle trails. Imagine early cowboys on the wide-open plains of North America. They had a tough job moving large herds of cattle for many miles. Sometimes they crossed wild rivers. Sometimes thunderstorms were a real danger! They used technology to help them with the problems of their job. And cowboys still use technology today raising cattle to feed our nation.



DID YOU KNOW?

Many years ago, the Spanish brought horses and cattle to Mexico. The word "vaquero" comes from the Spanish word for cow ("vaca"). The vaqueros were expert riders, often Native Americans, who worked the herds of cattle on big ranches. They used special skills, wore special clothes and knew how to use cowboy technology.

Later, American settlers moved to the West. They learned much from the vaqueros. The American cowboy tradition was born from sharing technology! So, the next time you see a cowboy, remember they owe much to vaqueros.

THE RAILROAD

Why was the railroad important technology for cowboys?

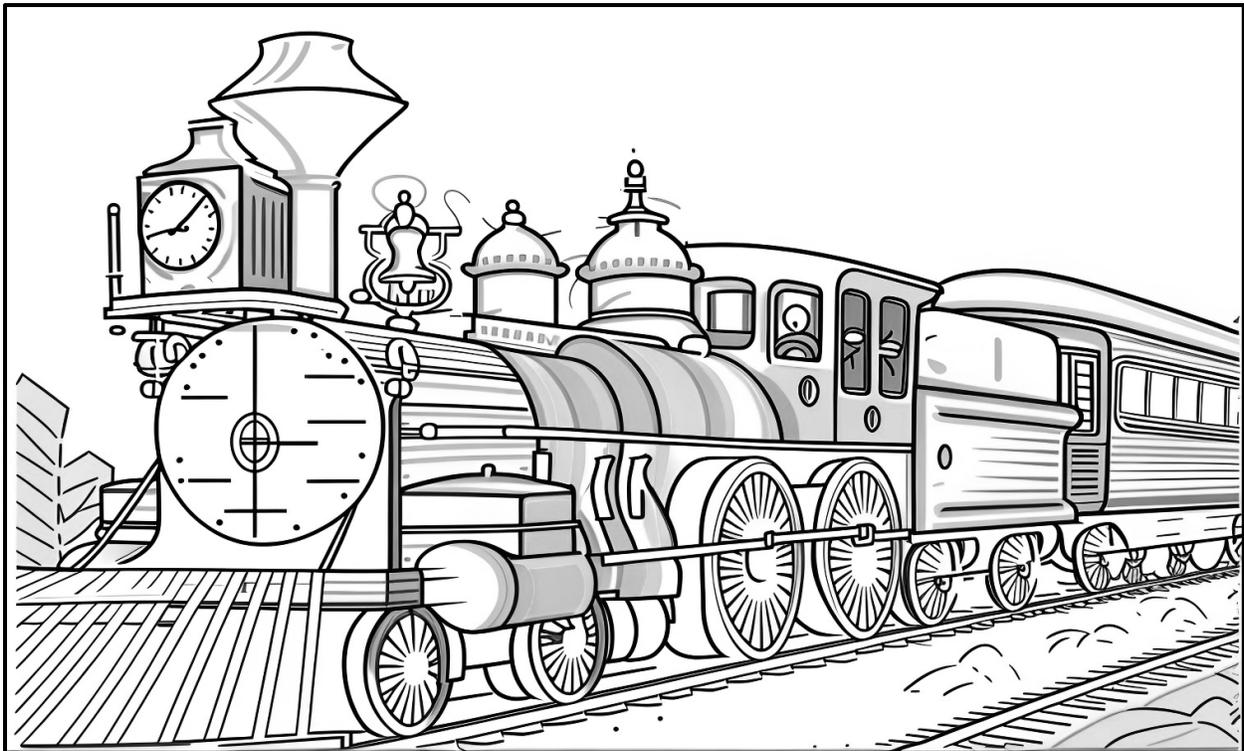
Before the railroad, Texas had millions of cattle, but no easy way to get them to the people who wanted to eat beef far away. But then the railroad came! Train tracks started stretching far out into the West. Railroads connected the East and West coasts, including everything in between.

How did cowboys use railroad technology?

The railroad created a shipping solution! Cowboys didn't have to walk the cattle all the way to big cities. Before the train, traveling from the East Coast to the West Coast on horseback would take months! The railroad made that same trip super-fast, sometimes in less than a week. Now, cowboys just had to walk the cattle to a "cow town" like Dodge City or Abilene, Kansas. From there, the trains carried the cattle to markets.

What technology is used for a steam-driven railroad?

A steam railroad train works like a giant, powerful teapot on wheels! It uses fire to boil water and create a special kind of power called steam power. The steam power then pushes the train's wheels to make them roll. This is how it works: fire makes heat, heat makes steam, steam pushes a piston, and the piston turns the wheels!



WATCH AND LEARN:

Explore more about steam power and how it created a technology that helped develop the American West!



THE CHUCKWAGON

How was the chuckwagon special?

The chuckwagon cook (or "Cookie," as the cowboys called him) was one of the most important people on the cattle drive. His wagon was an amazing, but simple technology! The Chuckwagon, invented by Charles Goodnight, was a mobile kitchen. It fed a moving outfit of hungry cowboys for months at a time. It made sure the crew got a hot, filling meal every day. This kept them strong and happy enough to do their job.

How did a chuckwagon's technologies solve problems?

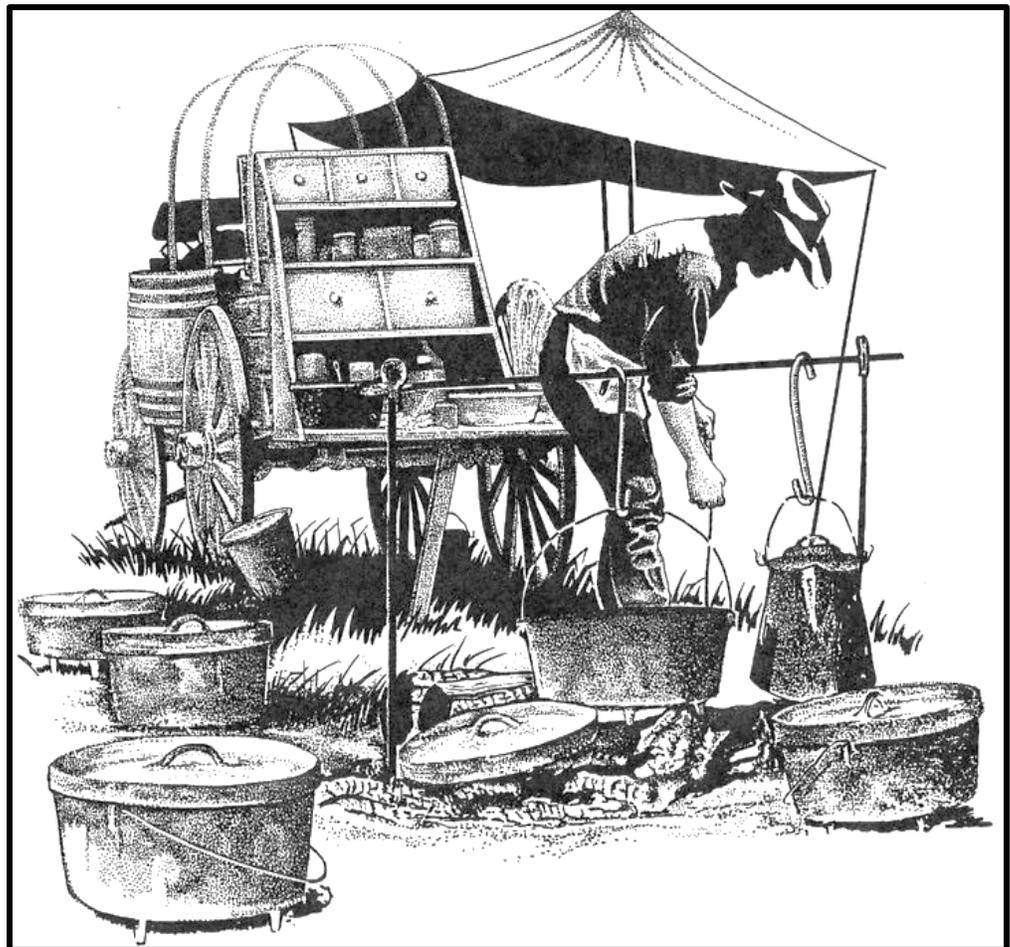
The Chuck Box: The chuckwagon itself was the biggest piece of technology. The "Chuck Box" was a special cabinet built right into the back of the wagon. It had shelves and drawers to keep food and supplies organized and safe from dust and bumps on the trail. The hinged lid would fold down flat. This created a table for the cook to chop vegetables or roll out dough. It was his kitchen island!

The Water Barrel:

A large barrel was attached to the side of the wagon. It was a simple storage system for water. Plenty of clean water could be hard to find on the open range. But, the cook made sure the cowboys always had water for drinking or for their coffee.

The Dutch Oven:

This was the cook's most important cooking technology. A Dutch oven is a heavy cast-iron pot with a tight-fitting lid and three little legs. The cook would put the food inside and bury it near the fire. He would then place hot coals right on top of the lid. Food would bake slowly, even out on the open prairie!



WATCH AND LEARN: Find out more about the technology of the chuckwagon. Discover how important the cook was to cowboys on the cattle trail!



COWBOY BOOTS

How are cowboy boots special?

The cowboy's boots were a kind of "job technology" that helped cowboys do very hard work with cattle and horses. They weren't always the fancy ones you might see today. The first cowboy boots used engineered designs that solved problems for the cowboy.

How does "boot technology" solve problems?

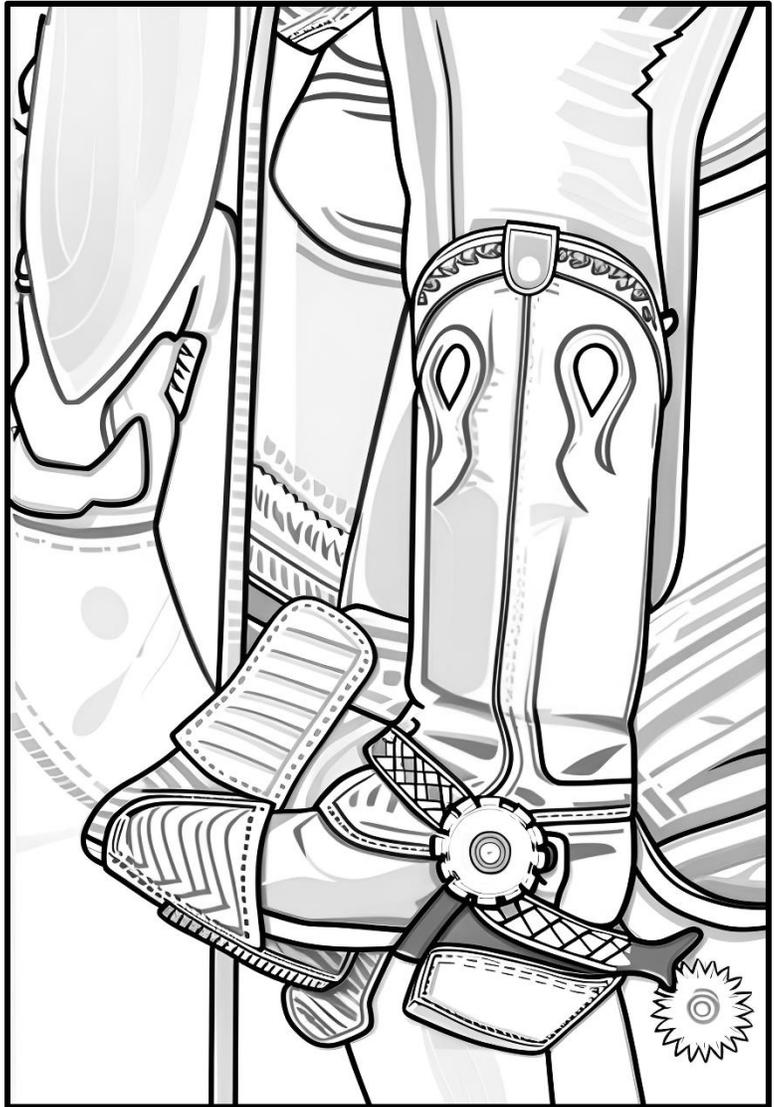
Tough Leather. Cowboy work is very rough—mud, water, dirt and long hours. Shoes would wear out fast. But boots are made of thick, strong leather, which makes them super tough and durable. They can stand up to the weather and hard work, lasting a long time.

Pointed Toe: A cowboy might have to quickly put his foot into the stirrup while getting on a moving horse! The narrow, pointed toe was like a guide that made it easy to quickly slide the foot into the stirrup without looking.

Tall Shaft: Cowboys ride through tall grass, thorny bushes and sometimes near rattlesnakes! The tall leather part ("shaft") went high up protect legs from scratches, thorns and even snake bites! It is like built-in armor for a cowboy's legs.

Stitched Designs: The patterns that you see stitched on the shaft were not originally to make the boot "fancy" alone. They strengthen the leather and keep the boot from slouching down.

High, Angled Heel: When a cowboy rides a horse, his foot can easily slip right through the stirrup (the loop your foot goes in) and get stuck, which is very dangerous if he falls off. The tall, angled heel is a perfect hook! It grips the back of the stirrup. So the foot stays in place while riding and, most importantly, won't slip all the way through if a cowboy is thrown.



WATCH AND LEARN:

Watch how a pair of cowboy boots are made today!
How has technology changed the way boots are made?



SPURS

How are a cowboy's spurs special?

Just like the boots, the cowboy's spurs are a helpful tool—a kind of simple technology—that let him and his horse be a perfect team. Spurs are all about talking to the horse! They are a type of communication.



What problems do cowboys need to solve?

Cowboys have to do fast, tricky jobs like separating one cow from a whole herd or chasing a cow across rough land. They need to tell their horse exactly what to do, right now, without using their hands (which were busy holding a rope or the reins).

How do spurs solve the problem?

Most times, a cowboy asks a horse to move by gently tapping his body with his feet or legs. But what if the horse is tired, distracted or needs to turn very fast? That's where the spur comes in. The spur is a small metal tool worn on the heel. When the cowboy gently taps his heel, the spur touches the horse's side with a little nudge. A well-trained horse knows what that little nudge means. Spurs make the cowboy's job working with cattle much easier and faster.

How are spurs a kind of technology?

At the end of many spurs is a tiny, spinning wheel called a "rowel." You might think it looks sharp, but they are engineered to not hurt the horse. The spinning rowel allows the cowboy to roll the spur on the horse's skin instead of poking it.

WATCH AND LEARN: Watch cowboy Carson James explain how spurs work! Why does he always wear spurs when riding his horse?

DID YOU KNOW?

Horses are one of the earliest kinds of transportation. Riders have always needed help to talk with their horse. Spurs have been used since the ancient Roman military and Chinese horsemen!



THE SADDLE

How was a cowboy's saddle special?

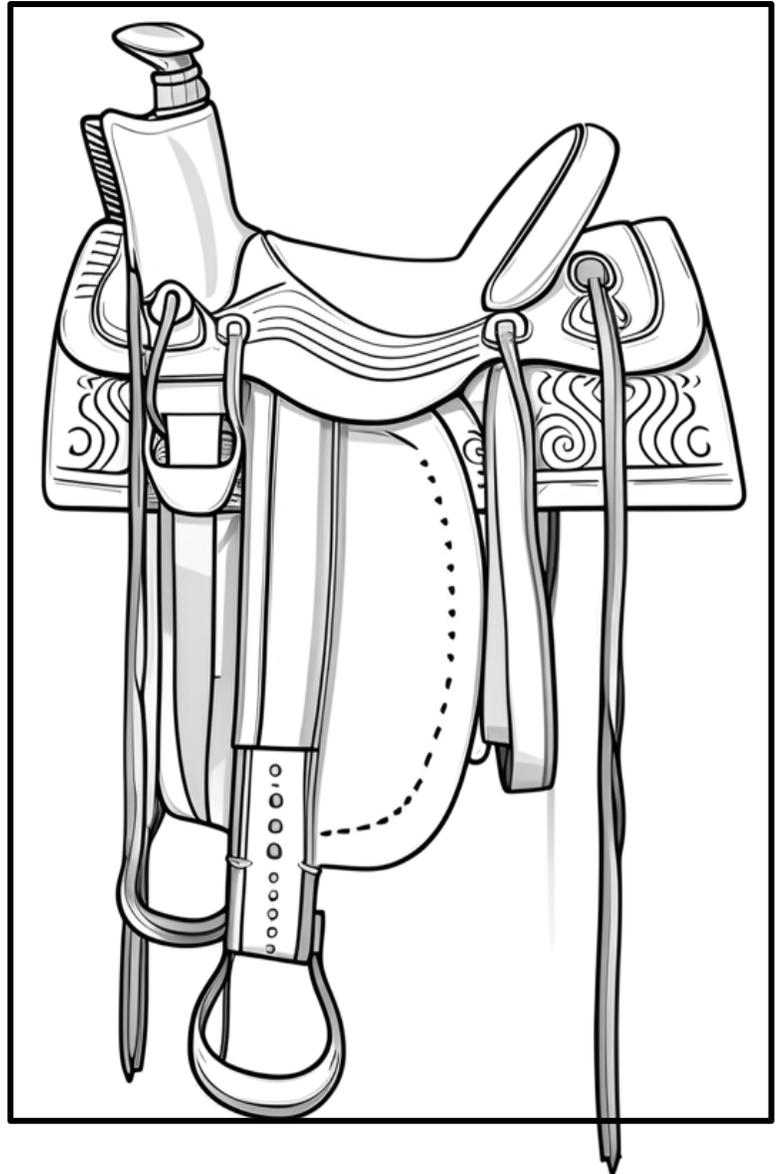
The saddle was one of the most important pieces of technology that cowboys had on the cattle drives and ranches from long ago. And it is still a special tool that turns a horse into a mobile, all-day workspace! It was called a Western saddle and it was different from other riding saddles. It had special technologies for the tough work of ranching.

How do the different technologies of saddles help solve problems?

The Horn: The cowboy needs to catch a running cow with a rope (lasso). Once caught, the cow is very strong and can pull the cowboy right off his horse! The tall, sturdy horn is like an anchor or a locking hook! The cowboy wraps the end of his rope around the horn very quickly. This holds the cow safely and the horse helps keep the rope tight.

The Cantle: Cowboys spend many long hours each day riding over bumpy, rough land. They need to stay on their horse and be comfortable. The saddle has a nice, deep seat and a high back part called the "cantle." This cradles the cowboy and keeps him in place, even if the horse jumps or stops fast. It's like a super shock-absorbing chair for riding!

The Skirts: The weight of the cowboy, plus all his gear, can press down hard on a horse's back. A saddle has wide, flat parts called skirts underneath. These pieces of leather are like weight-distributing pads. They spread the cowboy's weight over the horse's back, helping the horse to work all day long.



WATCH AND LEARN: Find out more about the history of saddles and how they helped the working cowboy.



THE ROPE

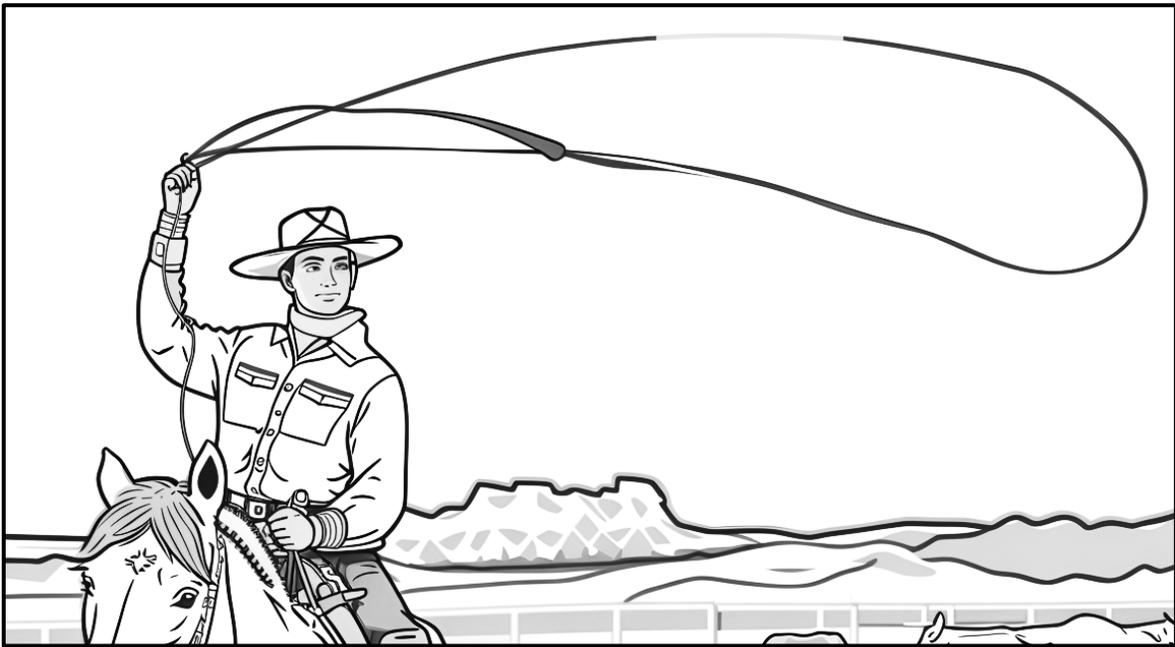
How was a cowboy's rope special?

The cowboy's lasso—which he usually just called his "rope" or "lariat"—was a special kind of technology. The word "lariat" comes from the Spanish "la reata" which means "the rope."

How did cowboys use rope to solve problems?

Before the lasso, catching a fast-running cow was very hard and dangerous. The lasso changed everything by giving the cowboy a long-distance hand! The problem? A cowboy needed to catch a cow that was running away from him and he couldn't get close enough to grab it. The solution? The lariat is very long—up to 60 feet! A cowboy could swing it and build up speed. Then he could throw it far (like a baseball pitcher throwing a fast pitch) to catch the cow.

But ranch work is not always about rounding up cows. The rope is versatile. This means it can solve many different problems. For example, cowboys can use it as a portable winch or tow truck. They can rope a tree branch or use their horse to pull a wagon out of the mud.



How is the lasso a kind of technology?

The lasso is more than just a piece of rope. It is designed with special features that turn it into an effective tool. The lasso has a special, reinforced loop at one end called the "hondo." The rope slides through the hondo to form the big loop. The rope is also made to be stiff so the loop holds its circular shape in the air. This gives the cowboy a big target to aim with!



WATCH AND LEARN: Watch an expert roper and practice your own roping skills!

DID YOU KNOW?

Roping contests are rodeo events for cowboys. These events test a cowboy's roping skills for tie-down roping, team roping and steer roping. The rodeo is much like ranch work or work on the trail, catching animals.

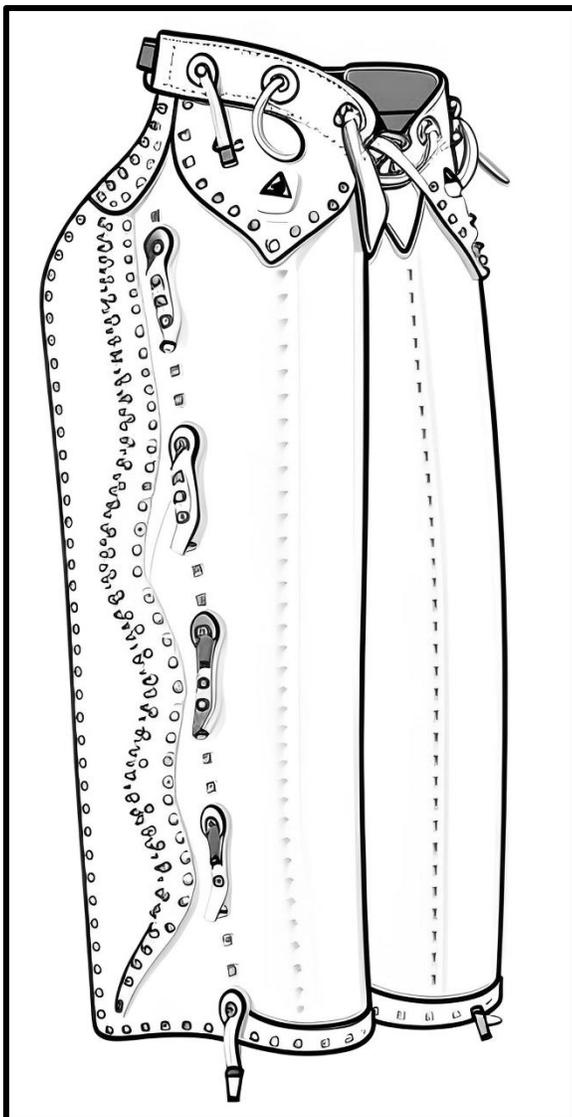
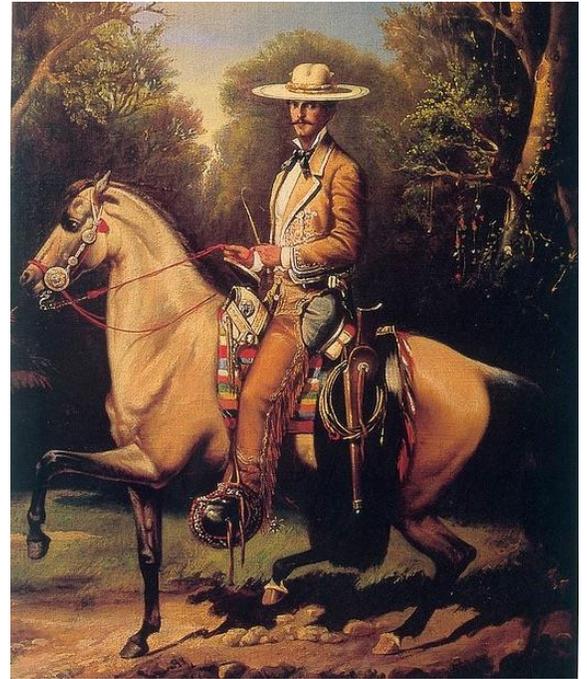
CHAPS

How was a cowboy's chaps special?

The cowboy's chaps are like a super-strong, protective technology! They are heavy leather coverings that the cowboy wears over his regular pants. They were designed many years ago to solve big problems on the ranch!

How do cowboys use chaps to solve problems?

Cowboys rode through thick bushes and cactus called "chaparral" which is full of sharp thorns. The word "chaps" even comes from the Spanish word for those thorny bushes! The chaparral could easily rip regular fabric pants and scratch a cowboy's legs.



Chaps were a kind of technology designed to be a shield that took the beating instead of the cowboy's legs.

When a cowboy roped a running cow, the stiff rope would sometimes whip close to his legs. This could cause a rope burn. The leather chaps were also like an extra layer of skin. They protected the cowboy's legs.

Cowboys spent all day outside—it could be windy, rainy or freezing cold. Pants don't do a great job of keeping you warm or dry when you're riding on the range for hours. But the leather chaps were great for blocking the cold wind and rain. They were a kind of technology that kept the cowboy's legs warm and dry during long days on horseback.

The chaps were a perfect example of how leather can be the best kind of technology for a rough, outdoor job!

EXPLORE:

Learn about Nez Perce rodeo champion, Jackson Sundown, who was known for his colorful cowboy "duds" including his "woolie" chaps!



DID YOU KNOW?

As rodeo became more of a show in the early 1900s, cowboys began wearing big "woolie" chaps made from angora goat hair!

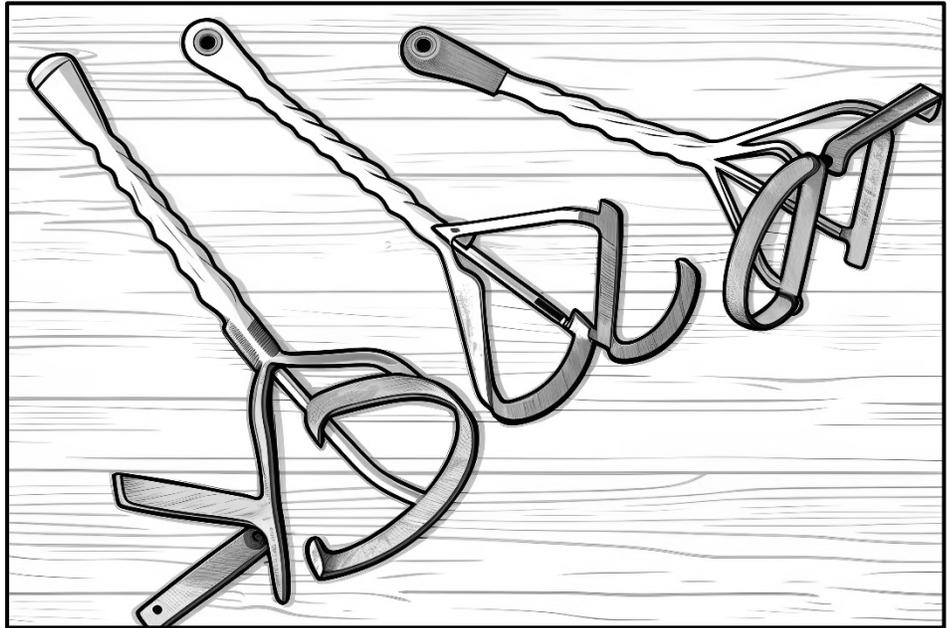
THE BRANDING IRON

What are branding irons?

Branding irons are like a permanent marker. A brand made from metal gives every cow a permanent ID card. A brand can be made into any shape, like a letter, number or symbol that stands for the rancher who owns that cow. A brand gets heated and then pressed onto a cow's hide. That leaves a mark that lasts the cow's entire life.

How did cowboys use branding iron technology?

The branding iron was one of the most important tools on the open range because it let ranchers share the land without worrying that their cows would be lost or stolen. Remember, in the past, cattle lived on open range, roaming free. This created a problem for ranchers. How could a rancher prove which cows were his? If a thief (rustler) stole a cow, how could a rancher prove it was theirs?



How did branding technology solve a problem for cowboys?

The branding iron was an innovative solution for its time, much like modern technology does today. Every ranch had its own brand that was registered with the government. Each brand was unique. And each brand became the ranch's trademark. It said, "This cow belongs to the Lazy-J Ranch" or "This cow belongs to the Circle-Bar Ranch."

What technology is used today to solve these same problems?

Modern technologies are now used, like freeze branding (liquid nitrogen turns the cow's hair white), lip or ear tattoos and electronic tags. Other new technologies like GPS devices, drones and computers do more than tell who owns a cow. Now ranchers can track their herd's health and even grazing patterns!

DID YOU KNOW?

Cattle were brought by Spanish explorers to America, along with the tradition of cattle branding. Historians tell us that three crosses on the brand owned by conquistador Hernán Cortés might well be the first brand to be used in the Western Hemisphere.

WATCH AND LEARN:

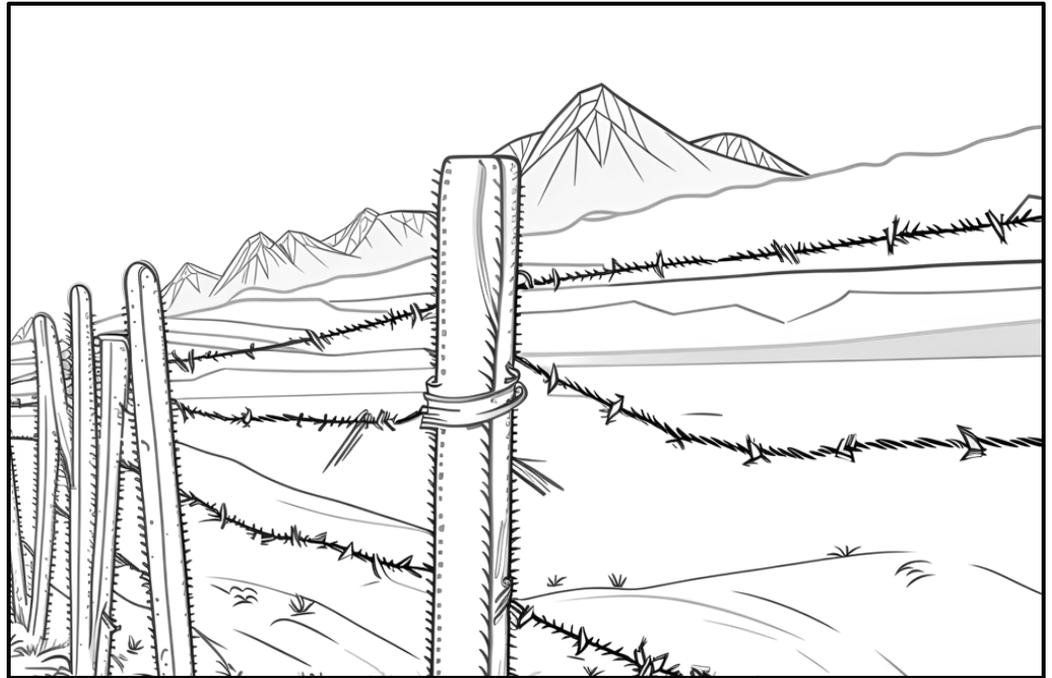
Explore more about how branding solved a problem for ranchers and cowboys!



BARBED WIRE

What is "barbed wire?"

A "barb" is a sharp point. So a "barbed wire" is a strong, metal wire with sharp little points sticking out. Imagine a regular piece of wire, but every few inches, there's a little twist of metal that is sharp, like a thorn. It was invented by a man named Joseph Glidden in 1874.



How do cowboys use barbed wire?

Ranchers and cowboys use it to build fences quickly and cheaply to keep animals, like cows and sheep, in their fields. It also keeps people from going into dangerous areas. The sharp points make it hard and painful to climb over a fence made from barbed wire.

What problems did barbed wire technology solve?

Barbed wire might not look like much, but it was a smart technology that completely changed the Old West. Before barbed wire was invented, all the land on the Great Plains was called the "open range." This meant that cows from different ranches could roam, eat grass and drink water wherever they wanted.

This was a problem for both ranchers and farmers. How could a rancher keep his herd from running off, getting lost or mixing with another rancher's herd? If a farmer tried to grow corn or wheat, how did they stop a hungry cow from walking right through their fields and eating everything?

How does barbed wire technology work?

It gave a warning to livestock. When a thick-skinned cow tried to push through the wire, the little barbs would give it a sharp stick. The cow learned very fast that the wire meant "Stop!" It also was cheap. Before barbed wire, if a rancher wanted to keep his cattle in one place, he had to build a fence out of wood, which was hard to find on the open prairie.

Barbed wire changed the cowboy's job forever. He couldn't drive his cattle to market wherever he wanted. He had to follow specific trails and respect the new fences. This led to the end of the long cattle drives!

WATCH AND LEARN:

Explore how barbed wire fences "made good neighbors" in the West. Learn why it was called "Devil's Wire" by some cowboys!



COWBOY TECHNOLOGY TODAY

How do cowboys do their job today?

Yes, cowboys still ride horses and work hard. But now they have amazing new technologies! In the old days (the 1800s), cowboys spent months on long, dusty trail drives. Today, it is much faster and easier. For example, instead of just horses, cowboys also use machines like four-wheelers (ATVs) and helicopters. Instead of trail drives, cattle are moved on large semi-trucks. The job of a cowboy is still tough, but modern ranches use smart technology to do many jobs.



How do modern technologies solve problems?

Smart Ear Tags: Ranchers put special tags on animals' ears or collars. These tags have little computers inside! They use GPS (the same technology that helps us find places in a car) so ranchers can find their livestock.

Health Monitors: Some tags can even tell a rancher if an animal isn't feeling well. Maybe a cow's body temperature is a little high. The rancher gets an alert on their phone!

Automatic Feeders and Waterers: These are like smart vending machines for cows! Ranchers use machines that give each animal the exact right amount of food at the right time. Some feeders use the animal's smart ear tag to know which cow is eating. This helps the rancher make sure all animals are eating well.

Smart Fences: Fences can be tricky to fix. Now, ranchers use smart fence systems. If a fence wire breaks, the rancher's phone gets a message. Cowboys don't have to ride the fenceline of a whole ranch just to find the break! This technology helps ranchers keep their animals on the ranch and safe. And it makes the cowboy's big job a little easier!