

# A War Wagon for Wes

by Kari Moulton

This project all started a little over two years ago on a visit to the Wes Luper family ranch in southwest Wyoming. In a natural progression of events, the after-dinner conversation had turned from world peace to horses to cattle to feeding cattle with horses, and

continued on to the problem of how to feed cattle round bales without starting a tractor.

The Luper Ranch is as close to paradise as you can get in Wyoming. Much of the land was homesteaded by Wes' ancestors and holds a rich history. The ranch has the Smith's Fork running through it, and consists mostly of meadows, cottonwood and willow parks, and a few sagebrush and grease wood high spots. Wes

is set up with several stack yards scattered throughout the ranch. He needs to be able to move the bales to different locations depending on the weather and lay of the land. Cattle are scattered in various bunches and fed according to needs, requiring the ability to feed partial bales and different lots.

Discussions lead to what is known as the "Verle Unroller." This is a simple C-shaped steel framework with 5/8-inch diameter hardened steel pins that are driven into the bale center. A team can then roll the giant wheel out of the stack yard. The goal is to get out a ways before the twine comes off and the bale starts to unroll. Sometimes it is 100 feet and sometimes, on a good bale, 100 yards. The "Verle Unroller" worked, but with limited range, and no ability to feed a partial bale or to haul bales any distance from the stack yard.

In order to feed bales at a greater distance from the stack yard, round bales were pulled out of the stack and onto the wagon or sleigh. This worked well for the ones on the second tier, but the bottom bales required ramps for rolling the bales up with a team and proved to be both more difficult and time consuming. It was time to evolve.

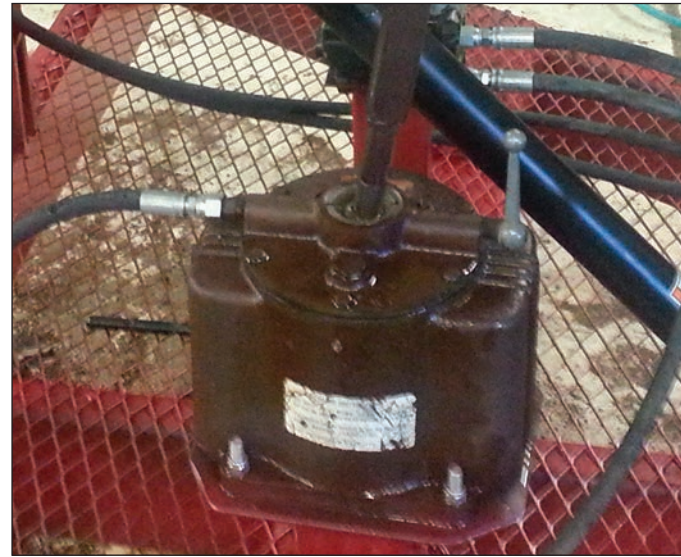
The goal became to build a rig that was simple to operate with minimal moving parts, would run at any temperature, and -- as is always the case on a ranch -- cheap. The Bridger Valley sits at 6,500 to 7,000 feet of elevation. It is not uncommon to be -35 degrees with a brisk breeze. In Wyoming, anything under 20 mph is considered a gentle breeze. Engine starting was to be avoided, and this constraint started the thought process with the design. Over the next two years, I would sketch up "War Wagon" plans and then toss the sketches. Several designs, while great in concept, failed for one



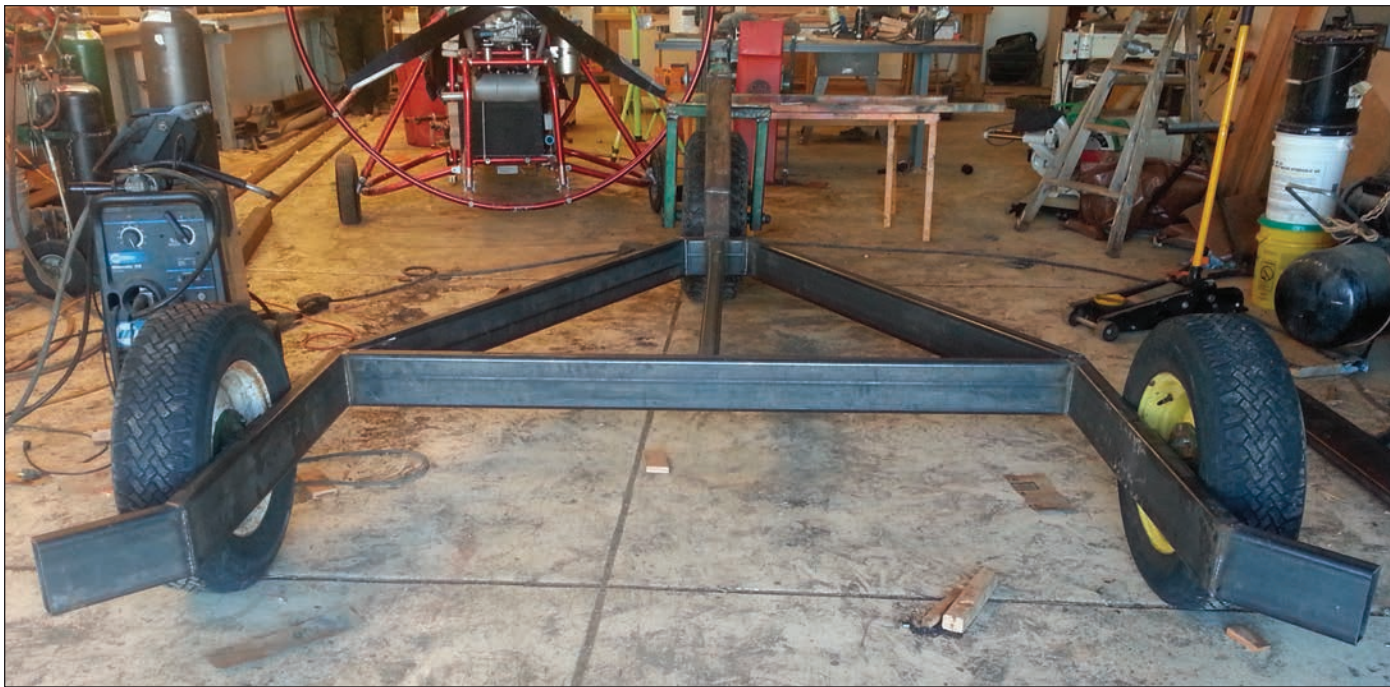
Wes Luper stands atop the War Wagon round bale unroller.



A crazy wheel from a Lockwood potato planter provided the unroller's front wheel.



The pump was recovered from a very old potato piler



The "wishbone" frame was made with 2 by 6 by 1/4-inch wall tubing. The rear hubs and wheels came from John Deere small hay balers.

reason or another. Some needed more clearance, and some were too big and awkward in the stack yard.

I thought that if I could figure out how to mount a commercially manufactured bale squeeze to a hitch cart it would work. My initial calculations showed that the weight required on the front to balance a bale on the back would make the cart too big and heavy to be efficient. Then one day I drove by a power company installing

new overhead wire. They had a little cart pulled behind a pickup truck with a big roll of wire. The concept of having wheels mount to arms without a true axle was born. Instead of trying to make a true three-point hitch, I figured we could simply pin the bottom where the arms attach and then have the top or third link adjustable. By replacing the top link on the three-point with a hydraulic ram, a bale could be lifted and moved.



Wes located a Worksaver three-point hitch unroller and Kari fastened it to the wishbone frame.

Next came the scavenger hunt part of the project. Figuring I needed a front wheel, rear hubs, wheels and hydraulic pump, I ended up at an equipment bone yard. Taking a crazy wheel from an old Lockwood potato planter, and hubs and wheels from John Deere small balers, I had a start. The hydraulic pumps became my quest for the Holy Grail. I finally located a nearly ancient potato piler that had a mostly working pump. This pump had a little valve to lock it while you pumped, then was unlocked to let the boom down. Perfect. Emptying my pockets, I was able to get these parts. Meanwhile, Wes

located a Worksaver three-point hitch unroller in great condition.

The problem then shifted to how to operate the squeeze on the Worksaver machine. Somehow, somewhere, we needed a small pump that would pump both ways. I was talking to a trucking friend that had an old cab over truck, and realized that was the pump needed. A call to a couple of truck salvage yards and we had the last component to the "War Wagon."

The first order of business was to stand up the crazy wheel to make the front third wheel. We have proven



The deck was enlarged with 2 x 3-inch tubing. Expanded metal grate provided flooring and receivers were installed for the seat posts and to anchor the hydraulic ram. A front dash is built from 1 x 1 x 1/8-inch wall tubing.

that the three-wheeled concept works great for stability and maneuverability in our wagons. I cut the crazy wheel assembly apart and welded it back together. This is when we encountered the first setback -- a bad wheel bearing that would need to be replaced. It took a cutting torch to get the bearing off, and then two days to locate the correct replacement. It has always been my experience the hitch point should be no more than 16 inches off the ground. This keeps the lines of draft at the appropriate angles and also helps lift the front wheel as the horses pull. I use 1-by-3 inch tubing for eveners so I had a piece in the shop. It made for a fun trigonometry and geometry lesson for my boys as we built the front hitch. I like all the connections to the tongue to be done with steel, so using a piece of 4-by-4-by-3/16 inch wall tubing, I built a receiver to accept a 4-by-4 inch wood tongue.

Once the front wheel was ready, it was time to build the rear end. Laying out the angles, we built what I call the "wishbone." This was constructed of 2-by-6-by-1/4 inch wall tubing. Things take a beating on the Lupher Ranch, and I wanted this stout. Once the wishbone was connected to the front wheel, the dream was beginning to take shape. The Worksaver unroller was attached with



The pole receiver is shown with the evener attached and with stay chains in place.

1-inch bolts and 3/8-inch thick plates. We built a front dash out of 1-by-1-by-1/8 inch wall tubing, and enlarged the platform with some 2-by-3 inch tubing I had in the shop. Wes already had two Pioneer forecart seats, and they work well, so we added some stubs to receive the seats. The main pumps mount to a section of 2-by-6 inch tubing that is on the flat. We built short stands to raise the pumps to a comfortable working height.

We used expanded metal grate as the floor. Working with that stuff will cause the Pope to take up cussing! It is hard to cut and equally difficult for me to weld, although it works well for the application.

My calculations showed that we would need a ram with at least 1 1/2-inch bore and at least a 20-inch stroke to make this work most efficiently. A larger bore would give us more capacity, but that would take more pumps to move. A 2-inch bore would also have worked well. I located a ram on the clearance of a hydraulic shop that met the specification. I figure this will lift up to a 1,400-pound bale with 2,900 psi of pressure.

The most frustrating and ultimately expensive part of this project was identifying the fittings needed to connect new rams to old pumps. The guys at the parts house would see me daily at lunchtime as we worked on the connections and ordered parts.

After 10 evenings and a big Saturday it was time to make the rig pretty. I asked Wes what color he wanted



Pretty in Pink — The "Circus Pink" paint was applied to a small portion of the machine, photographed and sent to Wes in an attempt to call his bluff when he said "I am partial to pink."



The War Wagon is jacked up and a red coat of International Harvester red is applied.

and he said, "I am partial to pink but red, green, or silver will do." It so happened that I had a partial can of "Circus Pink" paint left over from a pinewood derby car a daughter had made. We painted a small portion of the "War Wagon" and sent Wes the pictures. Figuring pink would also act as an anti theft device. Being a fan of the older International Harvester colors the boys and I decided to go with red running gear, white wheels, and black eveners. A couple of jack stands and a mechanic creeper and the painting was done.

I still use small square or "Idiot Cubes" as we refer to them for all my hay. I needed a test subject to try out the bale on. A neighbor has rounds and offered one in exchange for permission to use the idea for a "War Wagon" of his own. I tested the squeeze and lift mechanism and figured it was time to head south to the Lupher Ranch.

I am not sure which one of us had the bigger grin when the first bale was lifted. It was a wet, soggy thing, misshapen, and missing some twine. Wes backed his



Kari used a 2x4 to take the place of the hydraulic ram that was on order during the later stages of construction. The smaller hydraulic pump shown here was salvaged from a cab-over truck and is used to run the "squeeze".



This photo shows the larger pump that operates the now-installed hydraulic ram to raise and lower the round bale.



Kendall Potter, a neighbor of the Lupher Ranch, shows the hay hooks and chains used to pull round bales from their spot in the bale yard so they can be grabbed by the War Wagon.



Once the War Wagon is backed up to the bale, the unroller is positioned and squeezed onto the bale.



Next, the bale is lifted and the unit is driven away by the mule/horse team.




At the feeding site, the string is cut, the bale is lowered, and as Wes moves out, the hay unrolls behind him.



Hungry cattle follow Wes as he unrolls his hay.

team into the bale and we put the squeeze on it, lifted, and headed out. Once we arrived where we wanted to feed, we removed what was left of the twine and dropped the bale. It worked perfectly. Mrs. Luper was laughing at our antics of hauling hay and running around. Wes' son Logan said, "Dad is like a kid at Christmas." Me, I felt like a proud papa watching my son accomplish great tasks.

There are some things we will change. The seats need moved out 3 inches each way. It works, but you better be comfortable getting close to your travel companion. The cab over pump is a little slower than I would like. It takes 45 seconds to a minute to close on a bale, and about that to open. Possible upgrades include a battery pack and an electric pump leaving the manual pumps as backup.

Total costs with new steel, new ram, salvaged pumps, new hoses and fittings, shop supplies, tongue, single tree hooks, paint, nuts and bolts brought the War Wagon to \$1,700. Wes has the additional expense of the unroller. I figure I have spent more than that on a trip for entertainment. My only hope is Wes has half as much fun using it as I had figuring and fabricating. 

*Kari Moulton and his family operate Teton View Farms near Teton, Idaho. He was assisted during the manufacturing process by sons Allan and Denton.*

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