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## Deadwood Gold Rush Transportation Artifacts

Feature 36 Livery Dump Site

Doug & Holly Hansen examined and evaluated the artifacts in person on  
7/8/2022 .

### Observations

Our focus during the physical examination of the artifacts was to identify the metal objects that pertained to horse-drawn vehicles.

Many of the artifacts we identified were manufactured from an early era of 1860-1870 and were primarily components from working wagons.

They also seem to be loose individual parts -not assemblies, which suggests that the parts are either discarded or repair parts, like one would expect to find behind a repair shop.

The period of the artifacts is interesting as well, as they are much earlier than most wagon parts found around the region at farm and ranch sites. These are early wagon components that may have been on some of the first wheeled vehicles to enter the region; and as the wagons wore down, replacements were made, and the worn parts discarded.

Keeping in mind that just as today we continue to use and drive vehicles that are 10, 20 or 30 years old, the same is true of the 1876 Gold Rush. The prospectors came with what vehicles they had on hand and were in use at the time. Therefore, we are seeing wagon parts from an era earlier than the 1876 era.

When I look at this group of artifacts, the first thing that comes to mind is that they are early period and this group is primarily from working wagons, not fine driving vehicles. The finer vehicles would have been later, coming into use as the society developed. It could be either that this was a working wagon shop (not very probable as a blacksmith would likely repair a variety of parts), or this was early in the development of Deadwood, before it became settled with more sophisticated vehicles.

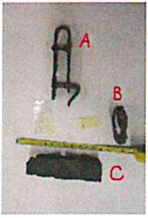






The period represented with these wagon components is 1860 to 1880. Based on the evaluation of design in the wagon trade, I see parts made by a village smithy, utilizing technology seen in the early wagon trade. This really supports the observation that these parts are very likely from wheeled vehicles that traversed the prairie, in quest of fame and fortune in Deadwood's gold fields.

## Archaeology








This era of wagon components, discovered via archaeology efforts of the Deadwood History team, are the only physical evidence we have to study, understand and replicate the vehicles in use during this period. These are very rare artifacts of a bygone era; artifacts that got used up, consumed and discarded, and are nearly nonexistent. As a student of early wheeled vehicle study, I really appreciate the vastness of lost knowledge that a find like these exposes. I rely heavily on original components and artifacts to build interpretive replicas that allow the vehicles that built America to tell their story. The covered wagons, stagecoaches and freight wagons made it possible for a remote society such as Deadwood to flourish. Without these vehicles there would be no Deadwood. Not only do these artifacts give us valuable insight into the vehicle technology from mid 19<sup>th</sup> century, but more importantly, if we look deeper into this chasm, we begin to see the logistics of operating these vehicles, the human interaction and the enormous tasks that these vehicles performed.

Doug Hansen  
Hansen Wheel & Wagon Shop








2022 Hansen Wagon Survey of  
Feature 38

Thumbnail Image	HWWS ID #	Image ID #	Catalog Number	File Box Number	Site Location	Item Name	Description	Vehicle type	vehicle size large med small	Suspected Maker	Circa	Notes
	1a	4270, 4271, 4272	#689	na	Feature 36, Livery Dump 2002	Peter Schuttler type pole cap	2 piece hand forged pole cap	Light Wagon	Small	Peter Schuttler	1860's	Definatly early
	1b	4270, 4271, 4272	#689	na	Feature 36, Livery Dump 2002	Light wagon singletree staple	early	Light wagon	Small		1860's	
	1c	4270, 4271, 4272	#689	na	Feature 36, Livery Dump 2002	Medium wagon doubletree plate	early	Medium weight wagon	Medium		1860's	
	2		#013009	na	Feature 36, Livery Dump 2002	Light wagon rear hound band		Light Wagon	small			Remainder in this bag was mostly unidentifiable
	3		#012759	na	Feature 36, Livery Dump 2002	Wagon Box draw strap		farm wagon	Medium		1870's	
	4		#537	na	Feature 36, Livery Dump 2002	Pole chain		freight wagon	Medium			
	5a		#701	na	Feature 36, Livery Dump 2002	Drag Shoe	very sweet find	Possibly Stagecoach	Medium		1870's	6 lots together form an assembly - 5a,5b,6,7a,7b,7c








2022 Hansen Wagon Survey of  
Feature 38

Thumbnail Image	HWWMS ID #	Image ID #	Catalog Number	File Box Number	Site Location	Item Name	Description	Vehicle type	vehicle size large med small	Suspected Maker	Circa	Notes
	5b		#832	na	Feature 36, Livery Dump 2002	Drag shoe	separate box- pieces together	freight wagon	Medium		1870's	6 lots together form an assembly - 5a,5b,6,7a,7b,7c
	6		#781	na	Feature 36, Livery Dump 2002	Rough lock clevis	this is an extra traction device	freight wagon	Medium		1870's	6 lots together form an assembly - 5a,5b,6,7a,7b,7c
	7a		#013062	na	Feature 36, Livery Dump 2002	Chain Links		farm wagon	Medium		1870's	6 lots together form an assembly - 5a,5b,6,7a,7b,7c
	7b		#007475	na	Feature 36, Livery Dump 2002	Chain Links		farm wagon	Medium		1870's	6 lots together form an assembly - 5a,5b,6,7a,7b,7c
	7c		#012781	na	Feature 36, Livery Dump 2002	Long Chain link for Drag Shoe		freight wagon	Medium			6 lots together form an assembly - 5a,5b,6,7a,7b,7c
	8a		#008962	na	Feature 36, Livery Dump 2002	Wagon Draw Strap		farm wagon	Medium			
	8b		#008962	na	Feature 36, Livery Dump 2002	Rear hound reach retainer strap		early farm wagon	Medium			






Feature 38

Thumbnail image	HWWS ID #	Image ID #	Catalog Number	File Box Number	Site Location	Item Name	Description	Vehicle type	vehicle size large med small	Suspected Maker	Circa	Notes
	9		#012827	na	Feature 36, Livery Dump 2002	Freight wagon axle clip		Heavy freight wagon	Large		1870's	
	10		#576	na	Feature 36, Livery Dump 2002	Wagon brake roller stay brace	early style brake roller bushing	Wagon	Medium		1870's	
	11		#780	na	Feature 36, Livery Dump 2002	Wagon Hound reach plate	early, before cast plates	Heavy wagon	Large		1870's	
	12		#777	na	Feature 36, Livery Dump 2002	Wagon hub boxing	11" hub boxing from heavy wagon, wedge taper collar	Heavy wagon	Large		1860	
	13		#012722	na	Feature 36, Livery Dump 2002	Pole Cap Hook	early like #689	Medium heavy wagon	Medium	Peter Schutler	1870's	
	14		#02734	na	Feature 36, Livery Dump 2002	Twisted Singletree staple	early type	Wagon	Medium	Peter Schutler	1870's	
	15		#779	na	Feature 36, Livery Dump 2002	Wagon box stake pockets		Wagon	Medium		1870's	





2022 Hansen Wagon Survey of  
Feature 38

Thumbnail Image	HWWWS ID #	Image ID #	Catalog Number	File Box Number	Site Location	Item Name	Description	Vehicle type	vehicle size large med small	Suspected Maker	Circa	Notes
	16		#003687	na	Feature 36, Livery Dump 2002	Single tree staple		Wagon	Medium		1870's	
	17		#003978	na	Feature 36, Livery Dump 2002	Wagon reach pin	Cone head is early	Wagon	Medium		1870's	
	18		#7005	na	Feature 36, Livery Dump 2002	Tail side wagon body brace	could be from a freighter	Wagon	Medium		1870's	
	19		#813	na	Feature 36, Livery Dump 2002	Bolster standard irons w/ 2 loose rings		Wagon	Medium		1870's	
	20		#993	na	Feature 36, Livery Dump 2002	Buggy fifth-wheel		Buggy	Small		1870's	
	21		#688	na	Feature 36, Livery Dump 2002	Formal carriage step		Possibly a Victoria or similar carriage	Medium		1870's	
	22		#785	na	Feature 36, Livery Dump 2002	Fifth-wheel caster plate		Wagon	Medium	very early - rare	1860's	

2022 Hansen Wagon Survey of  
Feature 38

Thumbnail Image	HWMS ID #	Image ID #	Catalog Number	File Box Number	Site Location	Item Name	Description	Vehicle type	vehicle size large med small	Suspected Maker	Circa	Notes
	23		#7026	na	Feature 36, Livery Dump 2002	Wagon Box draw strap		Wagon	Medium		1870's	
	24		#783	na	Feature 36, Livery Dump 2002	Wagon Axle stay chain hook & stay strap		Wagon-possibly same wagon as #22-catalog #785	Medium	very early-rare	1860's	
	25		#1006	na	Feature 36, Livery Dump 2002	Lower front hound brace			Medium		1870	
	26		#587	Box 2002-077	Feature 36, Livery Dump 2002	Wagon Hub band	Tapered standard wagon hub band	Standard wagon	Medium		1860	
	27		#00771	Box 2002-078	Feature 36, Livery Dump 2002	Wagon Axle Nuts		Wagon	Medium		1870	
	28		#776	Box 2002-085	Feature 36, Livery Dump 2002	Wood-axle Stein/Boxing/ and Axle Nut Assembly		Light One-Horse Wagon	Medium		1880's	
	29		#1029	Box 2003-022	Feature 36, Livery Dump 2002	Wagon Wheel Hub Band	Half-oval, tapered spoke hub-band from medium weight wagon wheel	Wagon - Medium	Medium		1860	

Feature 38

Thumbnail Image	HWWS ID #	Image ID #	Catalog Number	File Box Number	Site Location	Item Name	Description	Vehicle type	vehicle size large med small	Suspected Maker	Circa	Notes
	30		#574	Box 2002-084	Feature 36, Livery Dump 2002	Wood-axle wheel hub boxing	11 inch wooden axle, wheel hub boxing	Medium Heavy Wagon	Medium		1860	
	31a		2022-001		Rec Center?	Larger Boxing	11 inch axle skein - 2 boxings that seem to be a pair (2022-001 & 2022-002)		Large		1870	
	31b		2022-002		Feature 36, Livery Dump 2002	Smaller Boxing	11 inch axle skein - 2 boxings that seem to be a pair (2022-001 & 2022-002)		Large		1870	
	32				Interpretive Center exhibit	Wood-axle skein with axle hook	11 inch wood axle skein with axle hook		Large		1870	





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Supporting illustrations to help identify the wagon parts artifacts from Deadwood

Feature 36 Livery Dump site 2002

Our focus during the physical examination of the artifacts was to identify the metal objects that pertain to horse drawn vehicles.

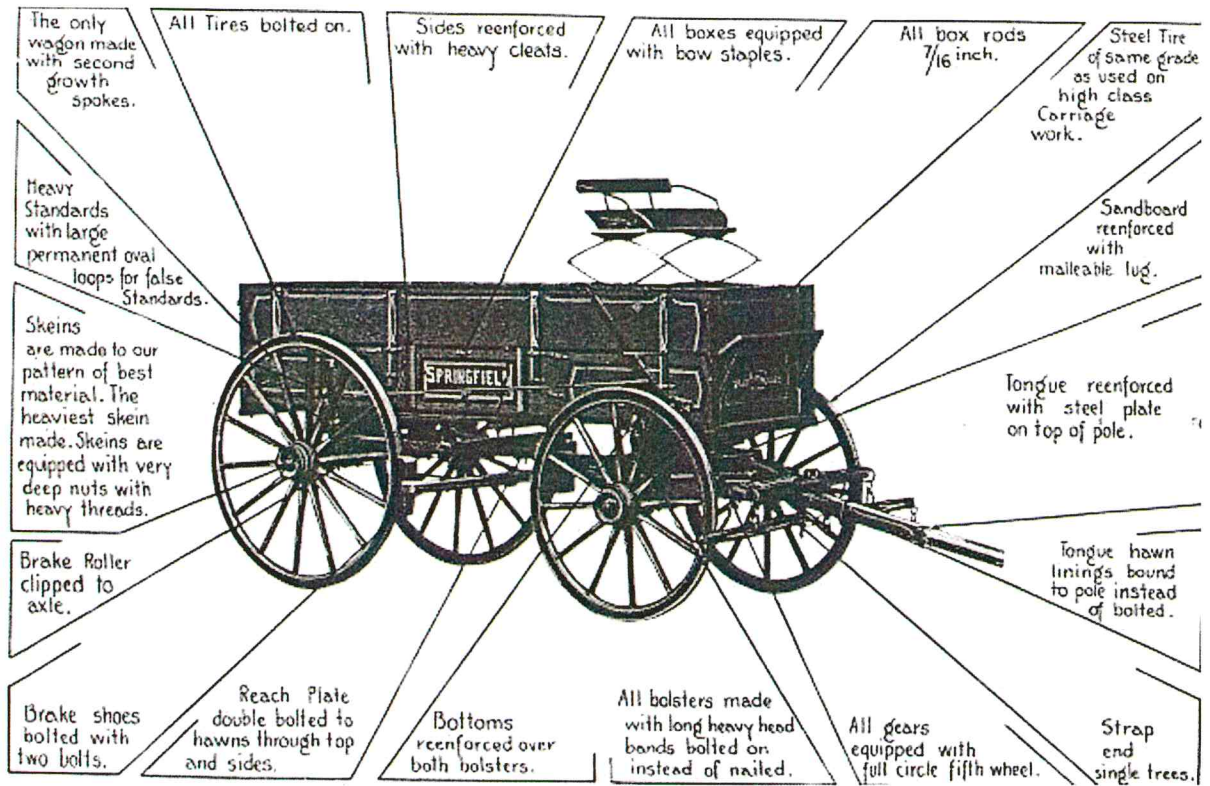
Many of the artifacts we identified were from an early era of 1860-1870 and were components from working wagons.

They also seem to be loose individual parts not assemblies, which suggest that the parts are either discarded or repair parts. Like one would find behind a repair shop.

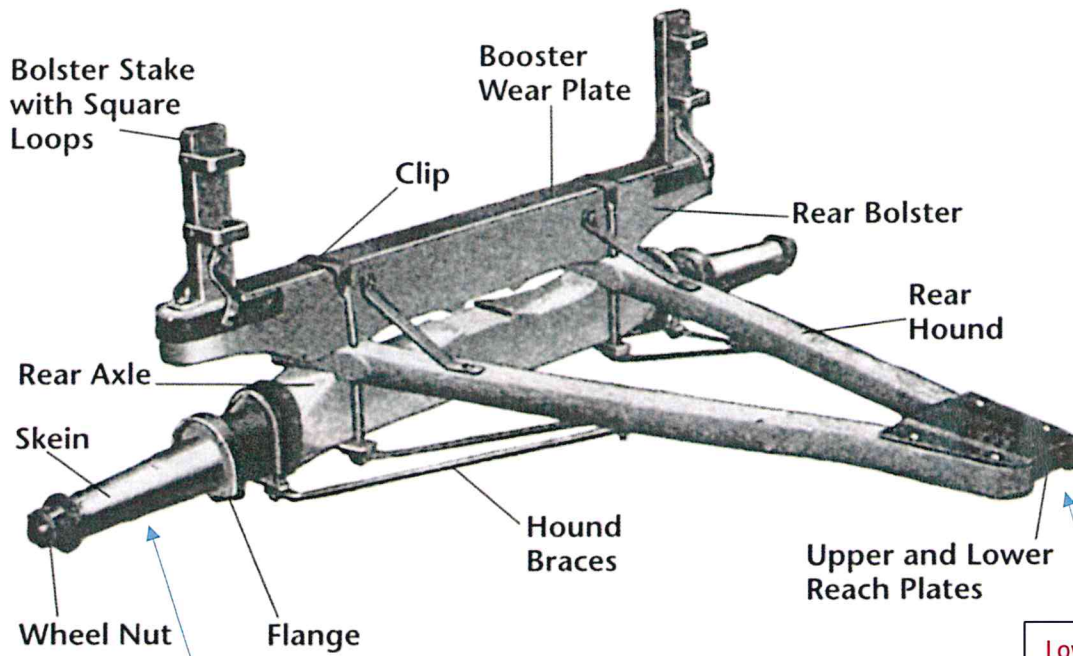
The period of the artifacts is interesting as well, as they are much earlier than most wagon parts found around the region at farm and ranch sites, these are early wagon components that may have been on some of the first wheeled vehicles to enter the region, and as the wagons wore down, replacements were made, and the worn parts discarded.

Keeping in mind that just as today we continue to use and drive vehicles that are 10, 20 or 30 years old, the same is true to the 1876 gold rush, the prospectors came with what vehicles they had on hand and were in use, therefore we are seeing wagon parts from an era earlier than the 1876 era.

**Below are supporting illustrations with nomenclature, of the parts Doug & Holly Hansen examined on 7/8/2022.**

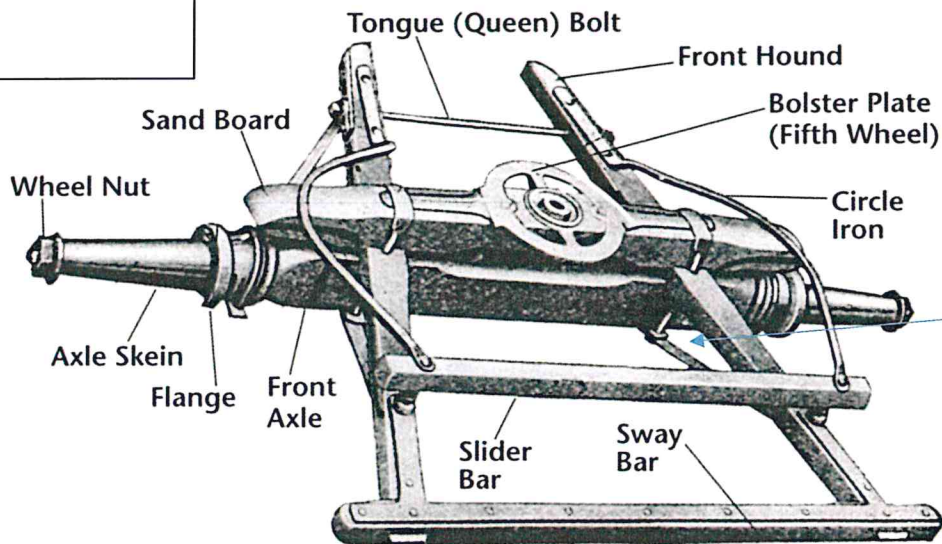


**Common Wagon Nomenclature**



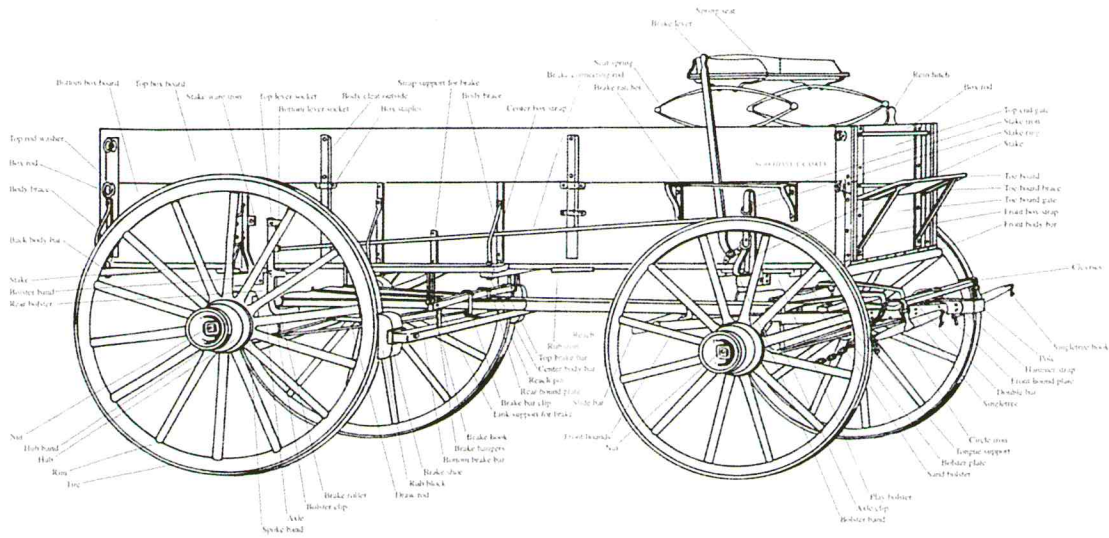
Wood-axle Skein/Boxing/  
and Axle Nut Assembly  
#776

Lower wagon  
hound reach plate  
#780

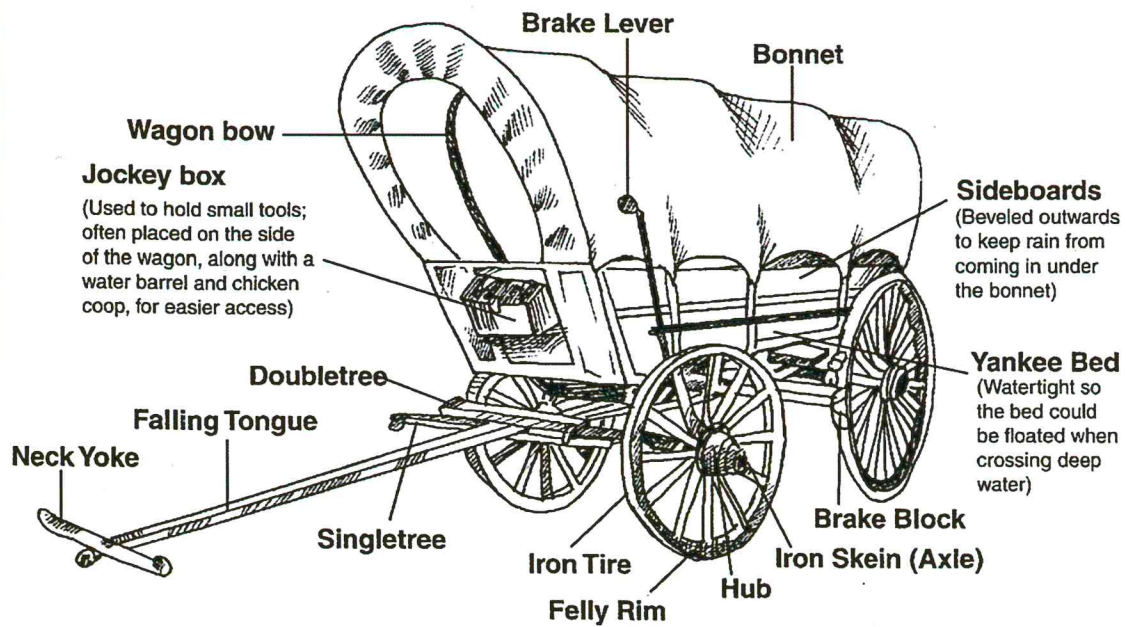


Lower front  
hound brace  
#1006

## Wagon Parts

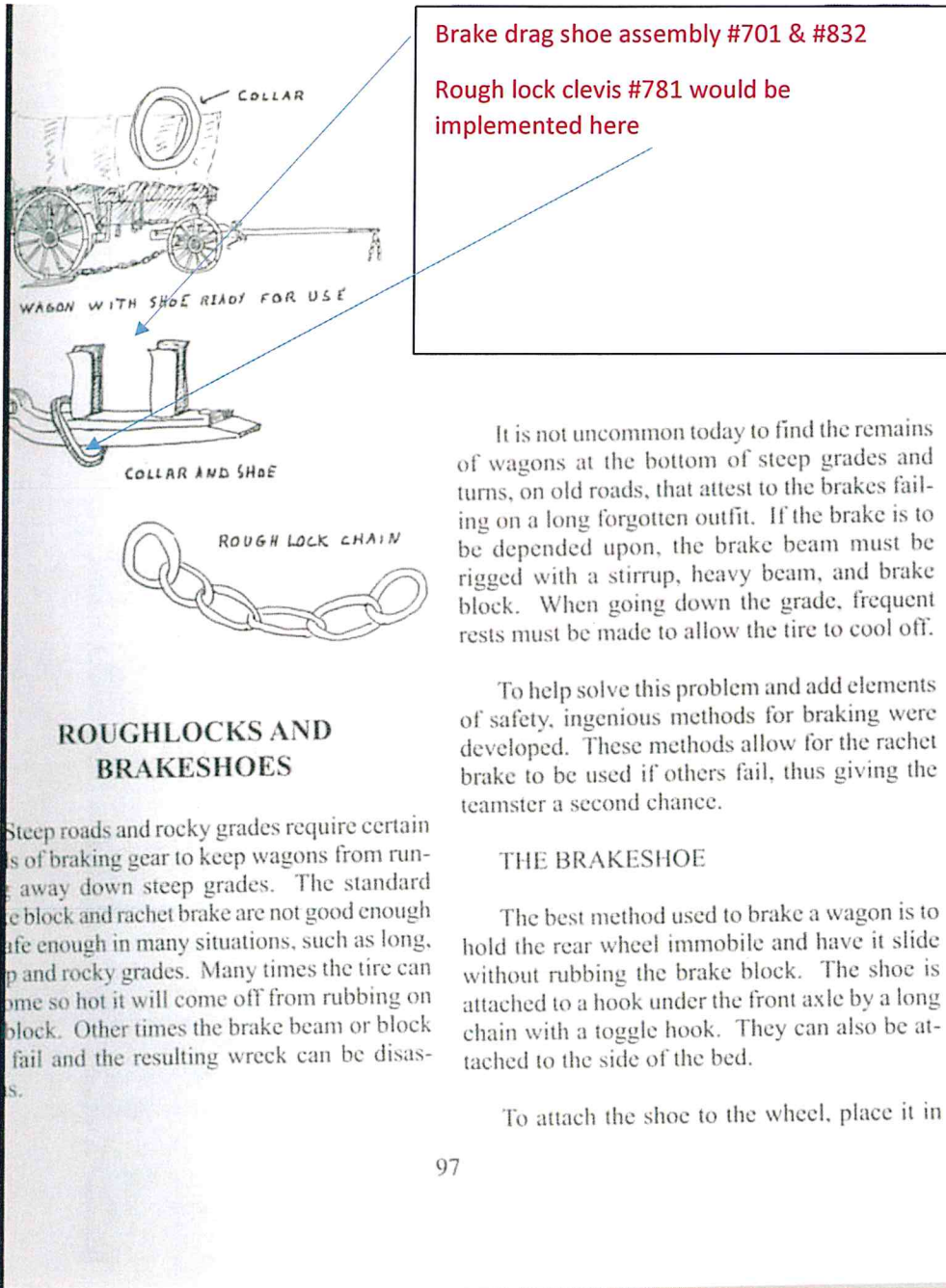


CURIAL HERITAGE      HOLIDAY 1997



## General Wagon Nomenclature

**Description of the use of a Drag Shoe & Rough-Lock on a wagon wheel or sleigh runner.**



Brake drag shoe assembly #701 & #832  
Rough lock clevis #781 would be implemented here

**ROUGHLOCKS AND BRAKESHOES**

Steep roads and rocky grades require certain  
s of braking gear to keep wagons from run-  
away down steep grades. The standard  
e block and ratchet brake are not good enough  
afe enough in many situations, such as long,  
p and rocky grades. Many times the tire can  
ome so hot it will come off from rubbing on  
block. Other times the brake beam or block  
fail and the resulting wreck can be disas-  
s.

It is not uncommon today to find the remains  
of wagons at the bottom of steep grades and  
turns, on old roads, that attest to the brakes fail-  
ing on a long forgotten outfit. If the brake is to  
be depended upon, the brake beam must be  
rigged with a stirrup, heavy beam, and brake  
block. When going down the grade, frequent  
rests must be made to allow the tire to cool off.

To help solve this problem and add elements  
of safety, ingenious methods for braking were  
developed. These methods allow for the ratchet  
brake to be used if others fail, thus giving the  
teamster a second chance.

**THE BRAKESHOE**

The best method used to brake a wagon is to  
hold the rear wheel immobile and have it slide  
without rubbing the brake block. The shoe is  
attached to a hook under the front axle by a long  
chain with a toggle hook. They can also be at-  
tached to the side of the bed.

To attach the shoe to the wheel, place it in

front of the rear wheel with a chain and toggle attached. Make sure the shoe is put on the wheel that is on the downside. This pulls the wagon toward the high side of the grade. Drive the wagon forward onto the shoe and drive to the bottom of the hill where the shoe is taken off by using a hammer to knock the toggle loose. Drive ahead and the wheel rolls out of the shoe.

### SHOE IN COLD WEATHER WITH A COLLAR

A collar is used on the shoe to hold a wagon back by digging into the ice on a grade. It is a large washer that fits over the end of the shoe.

### ROUGH LOCK

Another device is a short chain with large links that is wrapped around the felloes and tire of a rear wheel. It is attached by a toggle to the wagon in the same way as a shoe. When putting the rough lock on, care must be taken to keep the links from grabbing the felloe or spokes because the rough lock is hard on wheels. It is primarily used on icy grades since it makes a solid grip. Sometimes when the road is very slick and hazardous, it has been an advantage to use the collar, shoe, and rough lock all on one wheel at the same time.

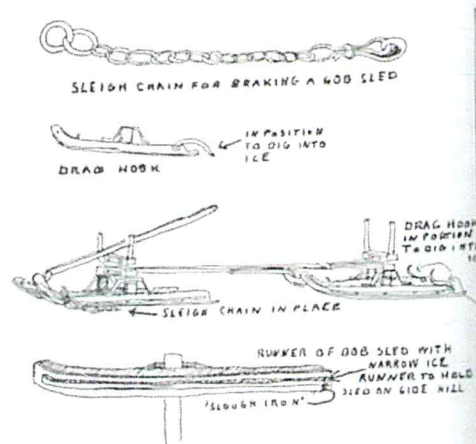
### TRAIL WAGON

A set of chalk blocks issued to stop the trail wagon on a steep grade. When pulling a grade the team needs a breather. When they take off again, it is hard for them to start both wagons at the same time. A chalk block is hung from the rear of the trail wagon and the trail wagon rolls up against it. The brake is set on the lead wagon. The teamster or his swamper goes back and releases the crotch chain and gives it an additional link. When the team starts, it only starts one wagon at a time. This is the origin of the saying, "Give her a link."

If the grade is steep enough, the trail wagon

is dropped and the team comes back for it. The stubby tongue that connects the trail wagon to the lead wagon has a stirrup on it which is large enough for a longer tongue to fit through. This longer tongue is used by the team when the trail wagon is retrieved and pulled up the grade to the lead wagon.

When the two wagons are hitched up, a link called a jews harp or bitch link, is hooked on the crotch chain and stretchers or a fifth chain is hooked in it. The trail wagon is pulled up alongside the lead wagon to the rear. The trail tongue's collar is then slipped over the trail horn and the crotch chain toggle fastened. The wagons pull ahead, then the teamster stops and takes the slack out of the crotch chain by taking up a link. There



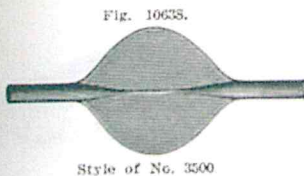
should always be a little slack between the two wagons.

### FREIGHTING WITH A BOB SLED

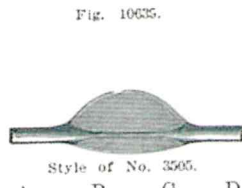
When the winter weather snowed in the roads, freight was moved by bob sled. On the road to Silver, wagons could go as far as the Democrat Station where they unloaded and the loads were transferred to sleds.

Four horses were used because any more than that would get fouled up in the deep snow.

Center and End Clips.

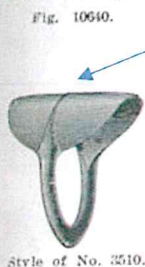


Twisted single tree staple or clip #02734



No. 3500.	Straight Center Clips, Wrought Iron.....	per hundred	\$14 50
No. 3505.	Straight End Clips, Wrought Iron.....	per hundred	\$8 20

Letter	A	B	C	D	E
Size of Round Part, in.	3/4	3/4	5/8	1/2	1/2
Length over all, in.	13	12	11	10	9
Letter	G	H	K	L	M
Size of Round Part, in.	5/8	1/2	1/2	1/2	3/8
Length over all, in.	11	10	8 1/2	7 1/2	7



Straight Single tree staple clip #02734

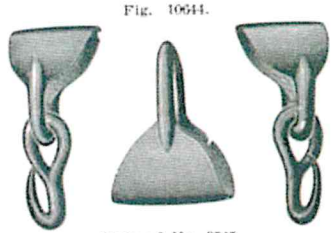


No. 3510.	Welded Center Clips, Wrought Iron.....	per hundred	\$17 00
No. 3530.	Twisted Clips, Wrought Iron.....	per hundred	\$19 00
No. 3540.	Welded End Clips and Hooks, Wrought Iron, in Pairs, Right and Left.....	per hundred	\$13 00
No. 3520.	Welded Center Clips with Rings, Wrought Iron.....	per 100	\$21 00

Letter	A	C	D	E
Size of Round Part, in.	3/4	5/8	1/2	1/2
Letter	A	B	C	D
Size of Round Part, in.	3/4	5/8	1/2	1/2
Letter	G	C	D	E
Size of Round Part of Clip, in.	3/8	1/2	1/2	3/8
Size of Round Part of Hook, in.	1/2	1/2	3/8	1/2

Letter	A	B	C	D	E
Size of Round Part of Clip, in.	3/4	5/8	5/8	1/2	1/2
Diameter of Ring, in.	5/8	1/2	1/2	1/2	1/2

WHIFFLETREE TRIMMINGS.



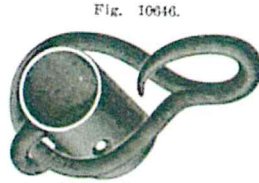
No. 3545A.	Whiffletree Trimmings, Wrought Iron, Set Consists of one 3/4 in. Center Clip and one pair 1/2 in. End Clips with 1/8 in. Hook (composed of Nos. 3510A and 3540C).....	per dozen sets	\$4 40
3545B.	Whiffletree Trimmings, Wrought Iron, Set Consists of one 5/8 in. Center Clip and one pair 1/8 in. End Clips with 3/8 in. Hook (composed of Nos. 3510B and 3540D).....	per dozen sets	3 20
3545C.	Whiffletree Trimmings, Wrought Iron, Set Consists of one 1/2 in. Center Clip and one pair 1/8 in. End Clips with 3/8 in. Hook (composed of Nos. 3510D and 3540D).....	per dozen sets	3 00

CENTER IRONS.

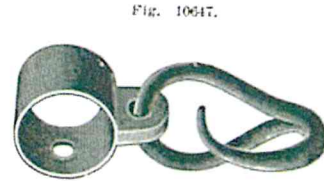
FERRULES AND HOOKS.



Style of No. 195.



Style of No. 3550.



Style of No. 3555.

	Inside Diameter Inches	Width Inches	Length overall Inches	Per Pound
No. 195B. Whiffletree Center Irons, Beaded Pattern, Malleable Iron	2 3/8	2 1/2	4 1/2	\$0 12
195C. Whiffletree Center Irons, Beaded Pattern, Malleable Iron	2 1/2	2 5/8	4 3/4	12
195D. Whiffletree Center Irons, Beaded Pattern, Malleable Iron	2 3/4	2 3/4	5	12

	Letter A	B	C	D	E	F
Diameter of Ferrule at Small End, in.	1 1/4	1 3/8	1 1/2	1 1/2	1 5/8	1 3/4
Diameter of Ferrule at Large End, in.	1 3/8	1 1/2	1 5/8	1 5/8	1 3/4	1 7/8
Diameter of Hook, in.	3/8	3/8	3/8	7/8	7/8	7/8
No. 3550. Malleable Ferrule and Wrought Hook.....per 100	\$7 60	8 10	9 10	10 70	12 20	13 20

	Letter A	B	C	D	E
Diameter of Ferrule at Small End, in.	1 1/4	1 3/8	1 1/2	1 1/2	1 5/8
Diameter of Ferrule at Large End, in.	1 3/8	1 1/2	1 5/8	1 5/8	1 3/4
Diameter of Hook, in.	3/8	3/8	3/8	7/8	7/8
No. 3555. Mall. Ferrule and Wrought Hook, Direct Pull...per 100	\$9 00	9 50	10 50	12 50	14 25

WHIFFLETREE STRAPS AND HOOKS.



Style of No. 3565.



Style of No. 3580.



Style of No. 3585.



Fig. 10651.

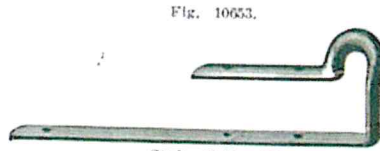
No. 3565A. Whiffletree Straps, Wrought Iron, Bent, width of Strap 1/2 in.....per 100	\$7 15
3565C. Whiffletree Straps, Wrought Iron, Bent, width of Strap 5/8 in.....	9 65
3580A. Whiffletree Hooks, Wrought Iron, diam. of Hook 7/8 in., for use with Strap.....	4 60
3580B. Whiffletree Hooks, Wrought Iron, diam. of Hook 3/8 in., for use with Strap.....	3 70
3580C. Whiffletree Hooks, Wrought Iron, diam. of Hook 7/8 in., for use with Strap.....	2 70
3585A. Whiffletree Hooks, Wrought Iron, diam. of Hook 7/8 in.....	5 00
3585B. Whiffletree Hooks, Wrought Iron, diam. of Hook 3/8 in.....	4 10
114A. Whiffletree Hooks, Malleable Iron, diam. of Hook 3/8 in., Screw Shank.....per pound	15
114B. Whiffletree Hooks, Malleable Iron, diam. of Hook 1/2 in., Screw Shank.....	15
114C. Whiffletree Hooks, Malleable Iron, diam. of Hook 5/8 in., Screw Shank.....	15

WHIFFLETREE HOOKS AND END IRONS.

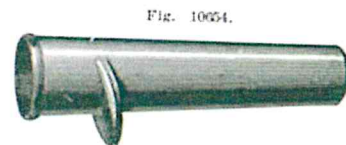
POLE TIPS.



Style of No. 140.



Style of No. 150.



Style of No. 3850.

No. 140. Whiffletree Hooks, Malleable Iron, diam. of Hook 1/2 in.....per pound	\$0 12
150. Whiffletree End Irons, Malleable Iron, width 3/8 in., distance between Clips 1 1/2 in., length over all 10 in.....	12

	Letter A	B	C	D	E
Inside Diameter Large End, in.	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4
Outside Diameter Large End, in.	1 1/2	1 5/8	1 3/4	1 7/8	2
Length over all in.	7	7	7	7	7
No. 3850. Pole Tips, Malleable Iron.....per pound	\$0 12	0 12	0 12	0 12	0 12



## POLE CAPS AND HOLD BACKS.

Fig. 10660.



No. 3860.

Fig. 10661.



No. 3260.  
Fig. 10662.



No. 3275.

No. 3860.	Pole Cap and Hold Back, Malleable Iron, length over all 17 in., diameter 2½ in., size of Loop 1¾ in.....	per pound	\$0 12
3260.	Pole Cap and Hold Back, Wrought Iron, Heavy, One Piece .....	each	30
3275.	Pole Cap and Hold Back, Wrought Iron, with Wear Iron .....	"	50

Style of No. 1889.

No. 1889.	Cutter Step, Mall. Iron, diam. of Pad 3½x3¾ in., Drop 4½ in., Projection 4½ in..	per pound	\$0 12
1476B.	Surrey Step, Steel, with Brace, diam. of Pad 6x8 in., Drop 8½ in., Projection 18 in. ....	per dozen pairs	16 80

Style of No. 1410.

Fig. 10837.

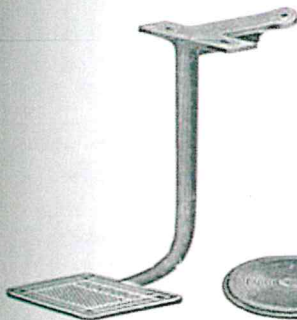


Fig. 10838.



Fig. 10839.




Fig. 10840.

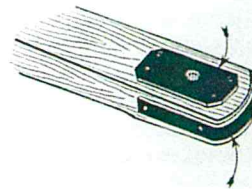
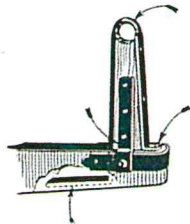
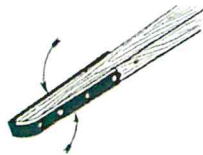


Fig. 10841.



Style of No. 1418.	Style of No. 1428.	Style of No. 1310.	Style of No. 1305.	Style of No. 1320.	
No. 1418B.	Steps, Steel, diam. of Pad 3½x4 in., Drop 7 in., Projection 5 in.....	per dozen pairs	\$3 84		
1428B.	Steps, Steel, diam. of Pad 4 in., Drop 7 in., Projection 5 in.....	"	3 84		
1310B.	Steps, Steel, Oval Rubber Pad, diam. of Pad 3½x4½ in., Drop 7 in., Projection 5 in. ....	"	12 00		
1305B.	Steps, Steel, Square Rubber Pad, diam. of Pad 3½x4 in., Drop 7 in., Projection 5 in. ....	"	12 00		
1320B.	Steps, Steel, Round Rubber Pad, diam. of Pad, 4 in., Drop 7 in., Projection 5 in. ....	"	12 00		

 *Peter Schuttler Wagons in the Making*



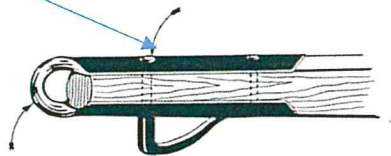
which turns each axle to the size and shape of the skein which is fitted on it, thereby insuring an accurate, tight fit of skein on axle. By this process skeins are also set on the axles with the proper pitch and gather, so that wheels will run on a plumb spoke.

IRONING—To secure the proper fit of irons on woodstock, such as hounds, poles, bolsters, reaches, etc., the irons are put on hot. This insures an absolute fit of iron to the wood part, and also serves the purpose of charring the wood under the iron, making it

Box sides are planed a plump thickness; top edges are protected with bevel edge steel, fastened with wood screws, not nails. These wood screws insure perfect tightness of the iron against wood. (You never see loose iron on any part of a Schuttler Wagon.) Top boxes have hardwood stakes and are further reinforced by wide cleat in center. Where grain cleats are ordered we use an extra heavy material, well secured to the top box by means of rivets and screws, not nails, as generally used. This heavy cleat maintains its shape under the hardest usage, and is in every way a superior construction. Box rods are solid-collar type, with deep, self-centering malleable nuts. When clamps or binding rods are specified, we furnish two for each side of the box.

Peter Schuttler  
type pole cap  
hook #012722

And #689



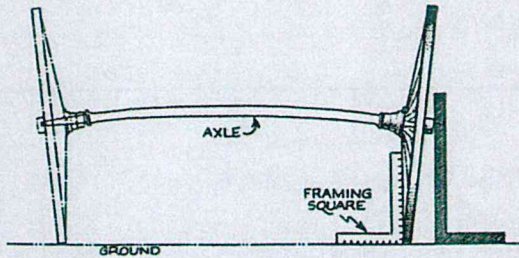
impervious to moisture. All braces and clips are of sufficient size to give the various wagons the required strength, and are shaped and fitted in such a manner as to secure the greatest strength and durability. We call particular attention to the Schuttler pole-cap, which is extra heavy material and fitted with a special holdback. All pole-caps are made in our own shops.

SPRING SEAT—Schuttler seats have been extensively copied, but not duplicated by wagon builders. We make them with an extra wide bottom, high back and ends, securely nailed. Seat springs are extra heavy gauge and longer than usual, insuring strength and easy riding.

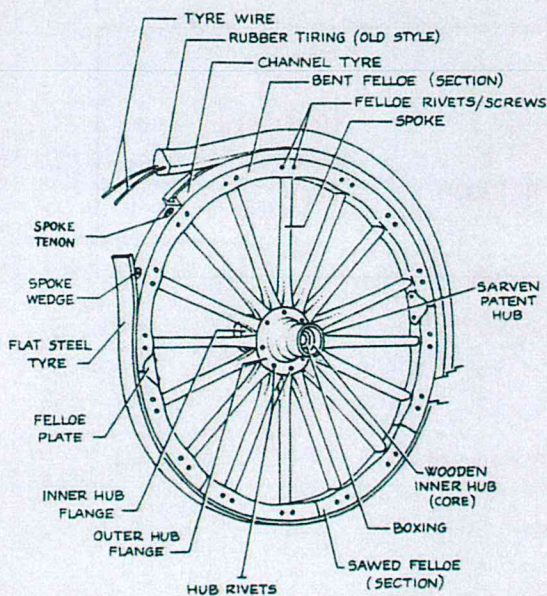
BOX—Box bottoms are thoroughly nailed and are reinforced over both bolsters. Cross-bars are made of hardwood, of extra large size.

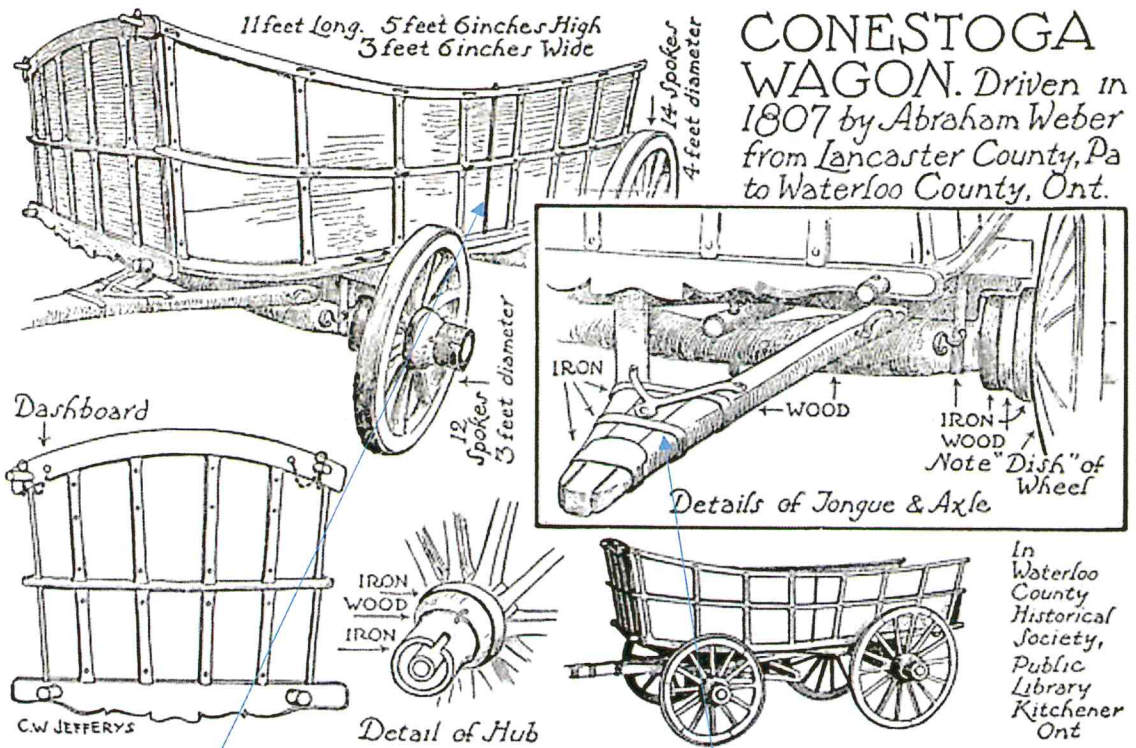
PAINTING—All gear wood parts, before being ironed, are saturated with linseed oil. This provides the best possible foundation for the succeeding coats of paint. Schuttler painting is done in the most painstaking manner. Gears and wheels are given two coats of paint, besides the oiling and one coat

## WHAT IS PROPER DISH...



All wooden wheels, light & heavy, should have a 'dish'. This dish creates a truss-like situation in the wheel that supports the wheel when the vehicle is turning or on a hillside. The size and style of the wheel determines the amount of dish. Proper dish is built into a wheel from the hub out. Axles and boxings are machined and gauged to coincide with the angle of dish in each wheel. Note: On a wagon, the dish of the front wheels will be different from those of the rear because the diameters are different.

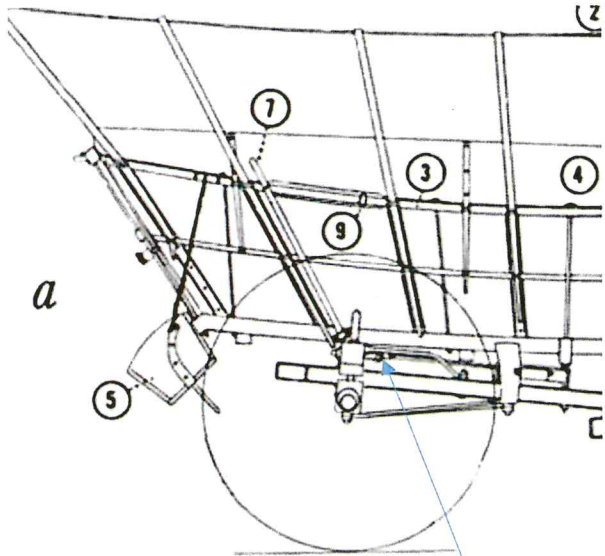




#012759  
Wagon Box draw strap

#013009  
Light wagon rear hound band





Wagon brake roller stay brace  
#576