

# THE HAYSTACK NEEDLE

*By Clyde Walker and Myron G. Cropsey*



Figure 1. Claude Butts holding hay needle with point attached.

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# The Haystack Needle

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## INTRODUCTION

**T**RANSFERRING hay from the stack to a sled or wagon for winter feeding of beef cattle on the meadow is a laborious job at best when performed in the conventional manner with a pitchfork. A labor-saving method of loading hay from stacks onto sleds has been devised by Claude Butts, foreman of the Norman Elliott ranch in Baker County, Oregon.\*

The method consists of threading the ends of two cables through the stack several feet below the top and eight or ten feet apart, by the use of a special needle, and attaching the cable ends to chains on the sled. Another cable is attached to an iron ring connecting the opposite ends of the cables and passed over the top of the stack to a position 30 or 40 feet beyond the sled at right angles to it. A team or tractor is hitched to the end of this cable and driven forward causing the hay to roll from the stack onto the sled. With this method two to three tons of hay can be moved from the stack to the sled in less than ten minutes.

## EQUIPMENT NECESSARY

The equipment required consists of a  $3/8$  inch rod, threaded at each end, long enough to pass through the stack of hay; a sharp pointed blade and a shielded hook, each with threads for attaching to the rod; and two lengths of  $5/16$  inch cable, each 30 feet long, connected with a heavy iron ring. In addition, two 3 or 4 foot lengths of chain attached to the center of the sled about eight feet from each end are needed. A sled or slip with a 12 by 24 foot flat bed is used to transport the hay from the stack to the feeding ground.

A  $3/8$  inch pump rod is the best type of rod to use for the needle as it does not rust and slips through the stack easily. The couplings that are welded to the needle point and shielded hook should also be pump rod couplings, so the threads will match. The ends should be ground round.

The dimensions and design of the needle point, the shielded hook, and the loops in the ends of the cables, can vary somewhat; but

\* Credit is due Clifford Conrad, Baker County Agricultural Agent, for assistance in preparing this bulletin.

they must be adapted to one another. The loops in the cables should be as small as possible, and streamlined, to pull through the stack easily. The hook must be large enough to receive the cable loop, and the tapered shield around the hook must be large enough to keep the hook from catching in the hay. The needle, in turn, must be large enough to cut a passageway that will permit pulling the shielded hook and cable through without excessive effort. All parts should be as small as possible and still do an efficient job.

### PROCEDURE

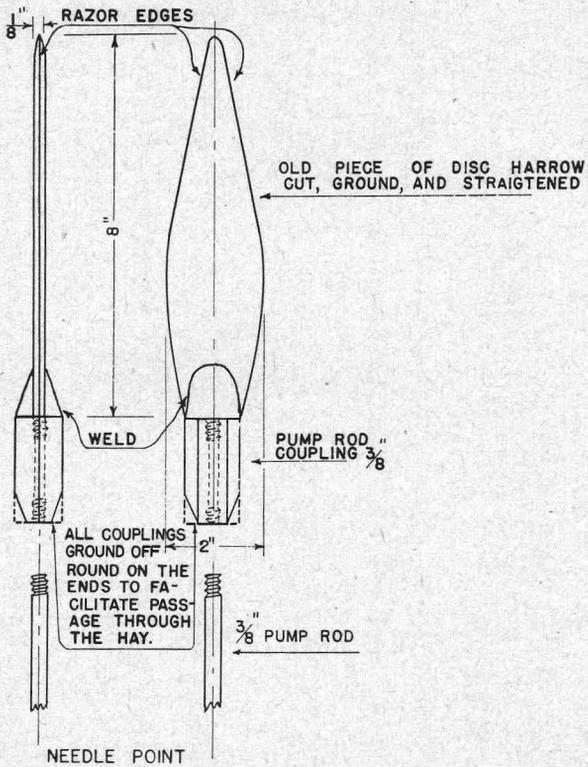
The point is placed on the needle, as shown in Figure 1. The blade, or point, of the needle is about 8 inches long and 2 inches wide. It is flat, with a razor sharp edge that will cut through the hay easily.

The needle is next pushed through the haystack. It should be inserted vertically rather than flat, as the blade may tend to "drift" somewhat. The vertical insertion reduces "drifting" and tends to standardize the quantity of hay above the cable. If put in flat, the blade will "drift" up or down, varying the size of load removed from the stack. When working near the butt of a hay stack, the needle may "drift" into the ground if started flat.

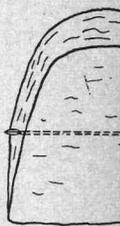


Figure 2. Inserting needle in the haystack.

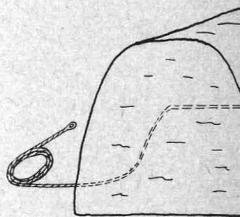
Mr. Butts states that the only time he has had any difficulty in getting the needle through the stack has been on the bottoms of old hay stacks. In such cases he uses a driver made from a 6 foot length of one-inch pipe with about 6 inches of babbit poured in one end.



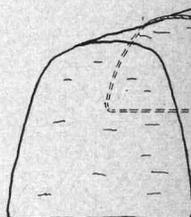
SCALE  $\frac{1}{2}$



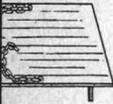
1.  
NEEDLE HAS BEEN PULLED THROUGH THE HAY READY TO BE USED. THE SHIELDED CABLE WHICH WILL BE USED THROUGH THE HAY.



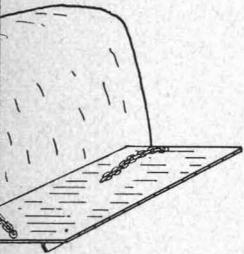
2.  
CABLE HAS BEEN PULLED THROUGH THE STACK AND HAS BEEN ATTACHED TO THE OTHER END OF THIS WHOLE PROCEDURE. THE CABLE AND CHAIN ON THE OTHER END.



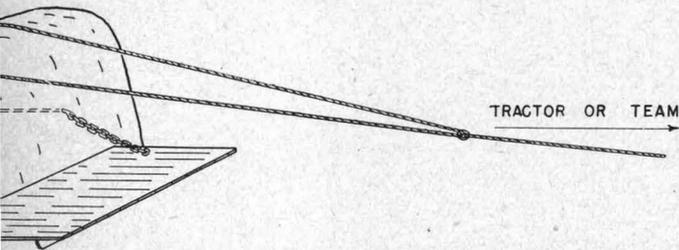
3.  
THE SECOND CABLE HAS BEEN PULLED THROUGH AND HAS BEEN ATTACHED TO THE OTHER END. THE CABLES HAVE BEEN ATTACHED AND ARE READY TO BE USED.



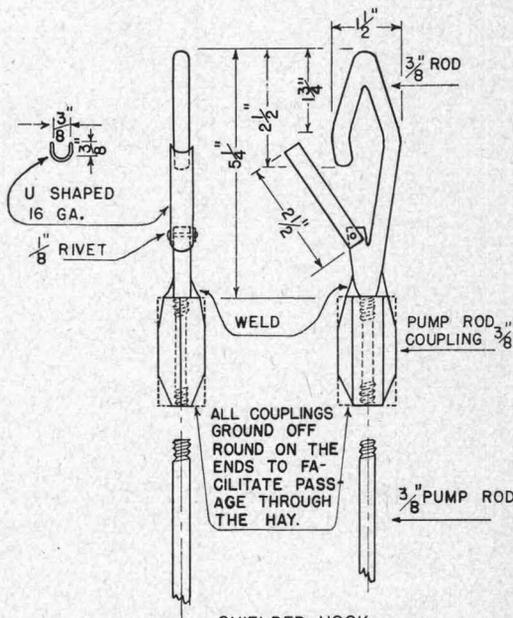
IS  
Y  
CABLE  
RACK



THROUGH THE  
CHAIN ON SLED.  
REPEATED FOR THE  
END OF THE SLED.



DRAWN THROUGH THE STACK  
CHAIN ON THE SLED.  
D OVER THE STACK  
TEAM OR TRACTOR.



SCALE  $\frac{1}{2}$

COOPERATIVE RESEARCH & EXTENSION WORK IN  
AGRICULTURE & HOME ECONOMICS

**OREGON STATE COLLEGE**  
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DEPT. OF AGR. ENG.

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**HAY STACK NEEDLE**

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DESIGNED BY-CLAUDE BUTTS, BAKER CO., ORE.  
DRAWN BY MYRON G. CROPSEY



Figure 3. Removing point from needle.

The driver is slipped over the back end of the needle, after it is started in the stack, and the needle can be driven through with little difficulty. The needle can usually be inserted by hand at other points in the stack, as shown in Figure 2.

The needle is inserted until the point protrudes from the opposite side. One end of a cable is then thrown over the stack and held by one man while the other uses the cable to aid him in climbing up the side of the stack to locate the point of the needle. The point is unscrewed, and the shielded hook screwed on in its place.



Figure 4. Removing the shielded hook from the needle.

The end of one 30 foot length of cable is attached to the shielded hook, and the needle withdrawn pulling the end of the cable through the stack after it. When the end of the cable has been pulled through the stack, it is attached to one of the chains on the side of the sled next to the stack.

Next, the shielded hook is removed from the needle, the point replaced, and the needle again inserted in the stack at a point near the second chain on the sled. After the needle has been inserted, the point is removed, and the shielded hook again attached. The second 30-foot length of cable is attached to the hook, pulled through the stack, and fastened to the second chain on the sled.

The two 30-foot lengths of cable are now in place through the stack with the iron ring that joins them on the side of the stack opposite the sled. The second cable (60 to 75 feet in length) is then thrown over the stack, and one end is attached to the iron ring connecting the two 30-foot lengths of cable. The team or tractor used for pulling the sled is hitched to the other end of the long cable. By driving the team or tractor away from the stack at right angles to it, the hay above the 30-foot cables is rolled from the stack onto the sled. See Figure 5.

### TIME REQUIRED

Two men who are experienced in this method can drive alongside the stack, place the cables, and load from two to three tons of hay on the sled in 10 minutes or less with a minimum of labor. Some



Figure 5. Hay rolling from the stack to the sled.

hay may fall on the ground, but a few minutes work with a pitchfork will trim the load ready for hauling to the feeding grounds. Less than two minutes were required to perform this operation on the load in Figure 6.

### APPLICATION

This method of loading hay from a stack onto a sled is well-adapted to any situation where it is desired to remove hay from a stack to a vehicle for transportation over a relatively short distance. For long hauls it would be necessary to have the hay placed more carefully in order to obtain a capacity load, but for short hauls this method of loading saves both time and labor when compared with other practices. Mr. Butts states that two men can easily feed 900 head of cattle in the forenoon with this method and still be in condition to work in the afternoon. He estimates that the use of the haystack needle requires about one-third of the physical energy consumed by the conventional pitchfork method.



Figure 6. The load, ready to go to the feeding grounds.