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BETTER TEAM HITCHES FOR SOUTH DAKOTA



EXTENSION SERVICE
SOUTH DAKOTA STATE COLLEGE
OF
AGRICULTURE AND MECHANIC ARTS
BROOKINGS, S. D.

South Dakota needs more good horses. In some parts of the state such as west of the river, there are too many horses, considering the kind. However, if every range horse would be replaced by a good, sound, serviceable draft horse, South Dakota would have an income much greater than it has at the present time. Farmers owning ten work horses, one-half of which are mares, should be raising four or five colts each spring, keeping them until they are six or seven years old, then selling them. By working them from the time they are three years old, they will pay their way and be growing into money.

Better Team Hitches for South Dakota

W. R. Hauser, Extension Specialist*

SOUTH DAKOTA has 160,000 less horses now than it had seven years ago. This has resulted in an increasing demand for more definite information in regard to multiple hitches and how to make them. To some it might seem unnecessary to explain in detail the methods of constructing these different hitches and the importance of proper hitches on different farm implements because of the fact that farmers have worked horses for the past forty years and will continue to work them indefinitely. Nevertheless, it seems that many men today work horses to a great disadvantage because they, seemingly, have no better method.

During October, a trip was made from Milbank to Brookings. Ninety-two horse outfits were counted working in the fields that afternoon. Out of these ninety-two outfits, fifty-seven were working five horses abreast on a two bottom plow. It has been proved that the five horses abreast can be removed from the plow, one of them tied in the barn, and the other four properly hitched to the same plow can pull it easier than the original five. Why? Because the side draft has been eliminated. In order to get away from this side draft the horses are hitched tandem.

An explanation of terms used in these hitches follows:

Wheel Team—The group of animals nearest the implement.

Lead Team—Those animals directly in lead of team.

Swing Team—Any team between the lead team and wheel team. "First swing team," "second swing team," numbering beginning with the first team ahead of the wheel team.

The advantage of hitching horses tandem are: added coolness to the animals in hot weather; more freedom for each animal while working; less danger from trampling of feet, especially in turning; and the making a more simple operation of hitching. Many say that the further a team is away from the implement, the harder it pulls, but this is not necessarily true provided the proper angle of draft is maintained on the traces of all teams.

In starting out to make these different hitches, always begin with the lead double trees. In measuring double tree eveners, always measure the distance from center of hole to center of hole; for example, a 46-inch double tree evener would be like the upper drawing in Figure 1 rather than like the lower drawing. That is, the bottom evener is actually 50 inches long, but the end holes are 2 inches from the end, making an addition of 4 inches to the original 46 inches, a total of 50 inches.

The four-horse hitch, shown in Figure 3, in tandem style, two in front and two behind, to be used on a sulky. All four single trees are 30 inches in length. E represents the lead double tree evener which is 42 inches long. The four capital letters A, B, C, D, will stand for the

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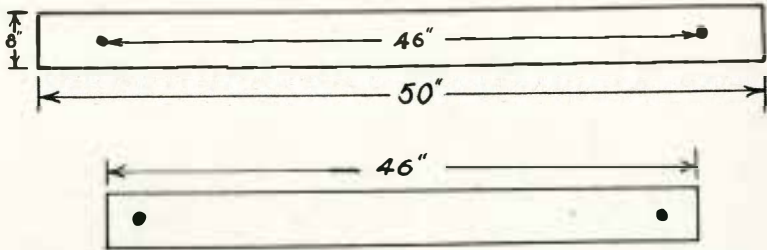


Fig. 1.—A 46-inch double tree evener, measured correctly (top) and another double tree (bottom), measured incorrectly.

four horses. A 10-foot $\frac{5}{8}$ -inch log chain should be used for the draw chain from e to f. Horse D must work and follow horse B. B has one-half of 42-inch double tree or 21 inches. Therefore, stick F will be the same length or one-half of the stick E, or 21 inches.. Three horses, namely, A, B and D, are working on the stick F. Consequently, this is a three-horse evener which has a total of 21 inches. Twenty-one divided by 3 equals 7, or the short length, with 14 inches left for the long end. Horse C must work and follow directly behind horse A. Therefore, 21 inches must be given to him and it has been shown that the short end of F is 7 inches. Twenty-one plus 7 equals 28, or the total length of G. This evener has four horses working on it so the total or 28 inches is divided by 4 which gives us 7 inches. The hole is bored and the evener has been equalized, three horses, A, B and D, pulling on the 7-inch end with one horse, C, pulling on the 21-inch end. Horse C's single tree is the same distance from G as is D's.

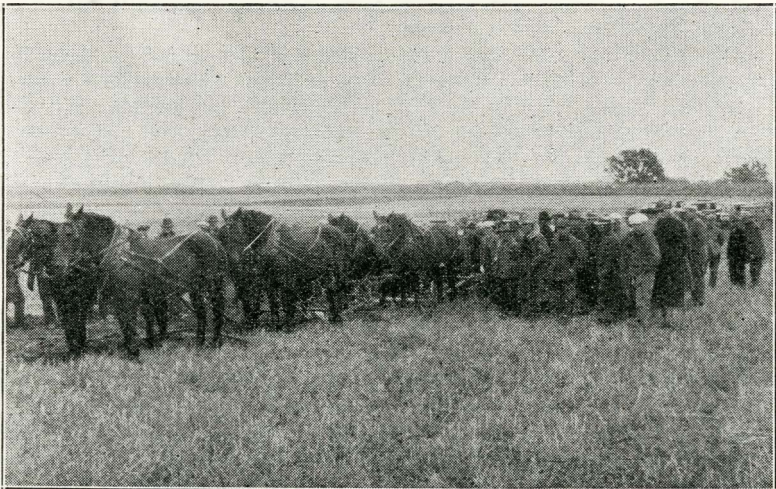


FIG. 2.—SIX HORSE HITCH IN OPERATION

A team of six high grade and purebred Percheron mares and geldings hooked to a tw-bottom plow on a farm in Union County, three and one-half miles north of Elk Point

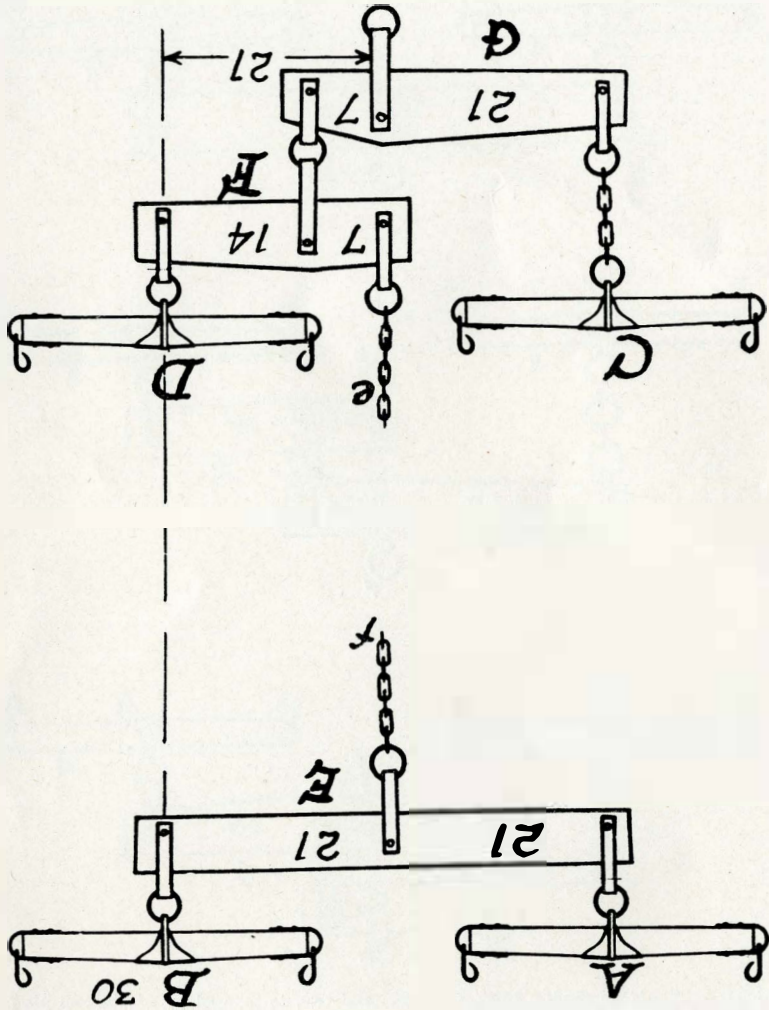


FIG. 3—Four horse hitch, tandem style, to be used on a sulky.

This hitch is practical and is used when four horses are needed on the sulky or in hauling heavy loads with the wagon. Each horse has plenty of freedom as well as being able to derive the benefit from all stirring breezes if it is during the hot weather period.

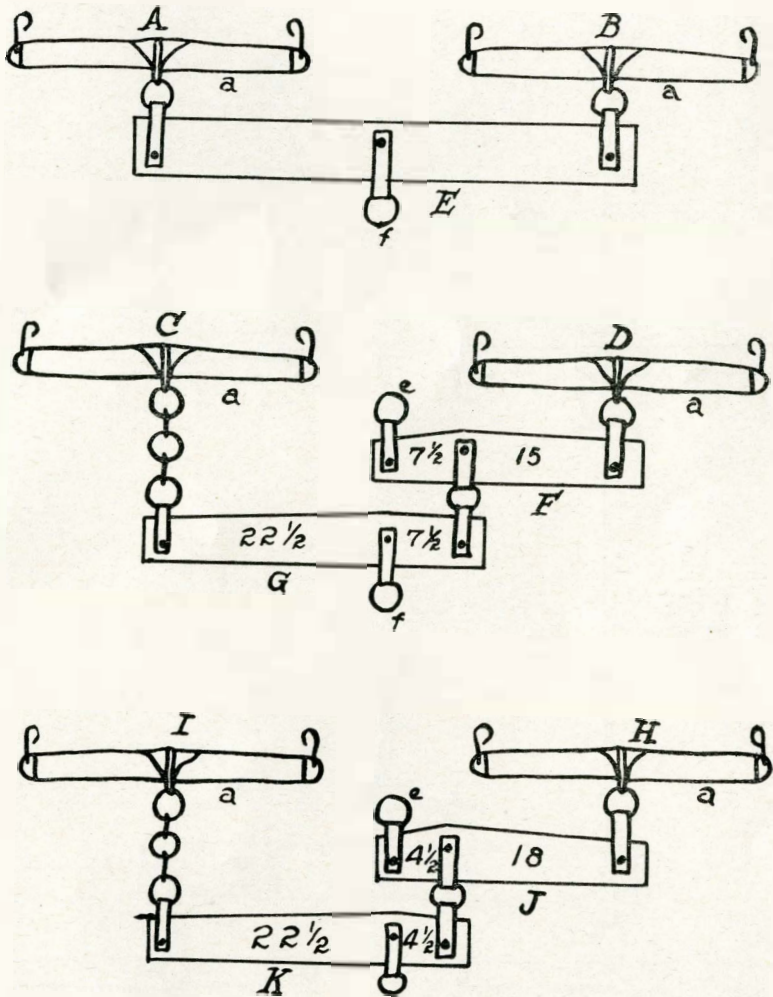


FIG. 4.—Six horse tandem hitch, two, two, and two, to be used on two bottom plow.

Figure 4 shows the six-horse tandem hitch two, two, and two, to be used on a two bottom gang plow. E represents the lead double tree. The six capital letters A, B, C, D, H, and I, represent the six horses. A 10-foot $\frac{5}{8}$ -inch log chain is used from the rings E and F. The evener E is 45-inches long. The horse D works directly behind horse B. Evener F is made 22 $\frac{1}{2}$ inches long. Three horses are working on it; 22 $\frac{1}{2}$ divided by 3 equals 7 $\frac{1}{2}$; 7 $\frac{1}{2}$ inches against 15 inches, 1 vs. 2; F is used



FIG. 5.—EIGHT HORSE HITCH

A pretty picture of eight coal black Percheron mares and geldings working as one single unit. Note space between each horse and how the wheel team is directly back of leaders, each horse following in the footsteps of the horse ahead of him.

for a three horse evener; horse C follows A; G is made 30 inches long. $22\frac{1}{2}$ inches plus $7\frac{1}{2}$ inches equals 30 inches. The horse H must work and follow directly behind horses B and D. The evener J is made $22\frac{1}{2}$ inches long. Five horses are working on this, therefore, $22\frac{1}{2}$ divided by 5 equals $4\frac{1}{2}$; the hole is made $4\frac{1}{2}$ inches from the end of the evener leaving 18 inches at the other end, one horse vs. four. The horse I follows the horses A and C. The evener K has a length of 27 inches and has six horses working on it. 27 divided by 6 equals $4\frac{1}{2}$. The short end is $4\frac{1}{2}$ inches long with $22\frac{1}{2}$ remaining for the long end, one against five.

This six horse hitch is used and has a great many advantages. It is used on a two bottom plow with three horses in the furrow. The line of draft is entirely in front of the plow and each and every horse has as much freedom and can work as easily as they can pull a wagon (of same weight) on the roads. This eliminates all trampling of feet and crowding at ends and turns, with every horse receiving as much breeze as is possible with two horses working abreast. A number of South Dakota farmers are using this hitch at the present time.

Figure 6 illustrates a six horse hitch, three abreast in the lead and three in the rear. The leaders are hitched on a common three horse evener. Evener G is 32 inches long, equalized for two horses, each having 16 inches of the double tree. The evener H is 48 inches long divided between three horses with two on one end and one on the other, 32 inches against 16 inches. The horse D follows C and is attached to evener I which is 18 inches long and divided among four horses, three against one; $4\frac{1}{2}$ inches on the short end with $13\frac{1}{2}$ inches on the long end.

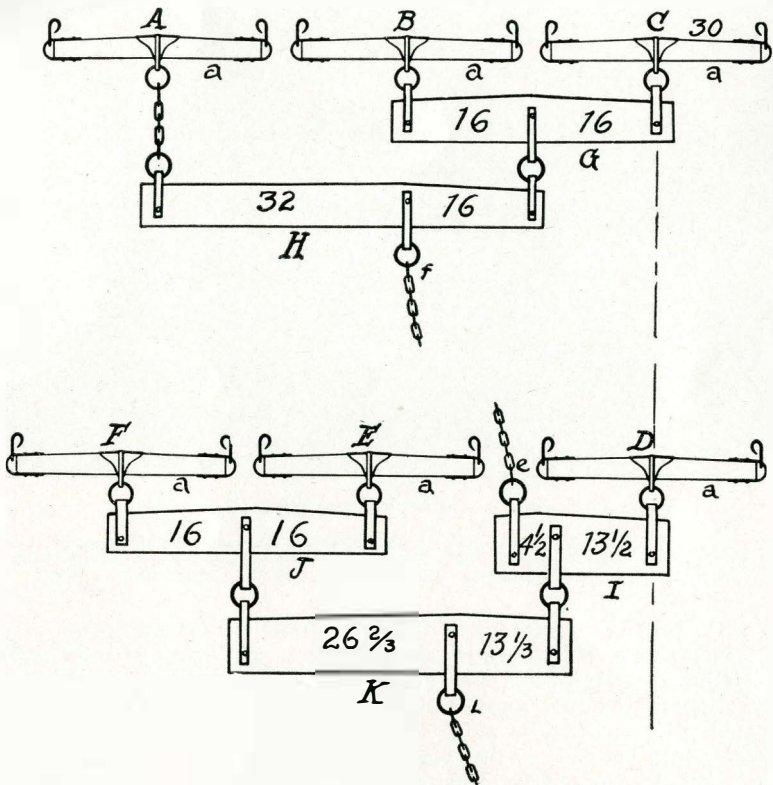


FIG. 6.—Six horse hitch, three abreast in the lead and three in the rear; used on two bottom plows.

E and F follow B and A respectively, and are on a 32-inch double tree evener. The evener K has all six horses pulling on it, four on one end and two on the other end. This evener is 40 inches in length equalized properly with four horses, A, B, C and D pulling on the $13\frac{1}{2}$ end and E and F on the $26\frac{2}{3}$ end. The plow is attached at L.

This hitch is one of the most practical hitches shown in South Dakota at this time. Many farmers are using six head of horses on two bottom plows. Many different ways of constructing hitches are used, but the system shown in Figure 5 has a great many advantages over other hitches that have been used.

Many farmers use five horses on a two bottom plow. Some work five abreast with one horse out on the plowed ground, others work three behind and two in front but the system of working five horses as shown in this illustration has advantages over all of the rest that the writer has seen.

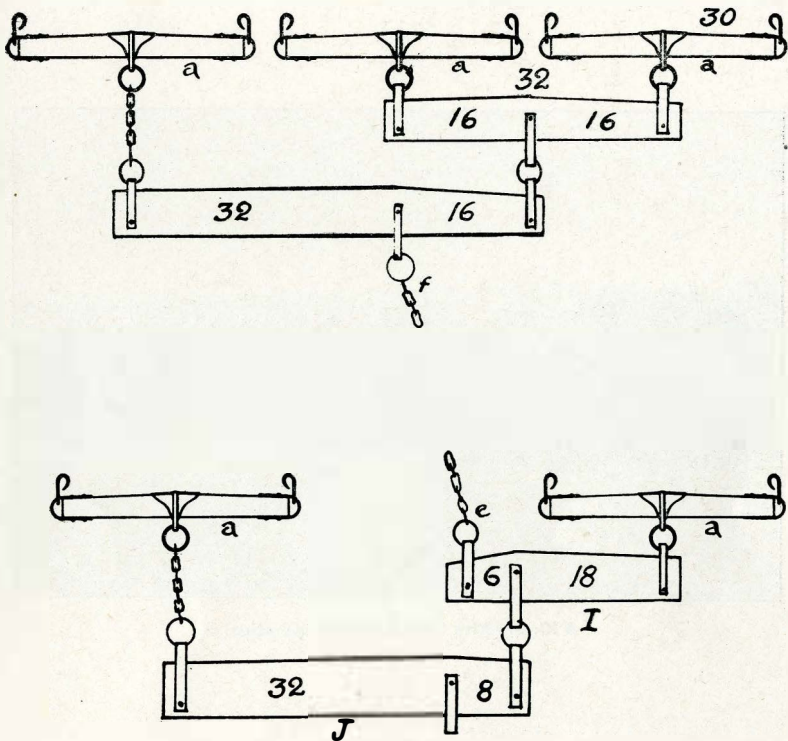


FIG. 7.—Five horse hitch; fine for two bottom plow.

The five horse hitch shown in Figure 7 is very similar to the six horse hitch, three abreast in the lead and three in the rear, except that the middle horse of the rear three has been taken out, leaving three in front and two behind. The lead three are just the same as in the six horse hitch. The evener I is 24 inches in length with four horses working on it, one against three, thus 6 inches against 18 inches. The evener J is 40 inches long with five horses working on it, one against four or four horses on the 8-inch end and one on the 32-inch.

The picture used in Figure 8 was taken in Union County, north of Elk Point on Tuesday, September 20, 1927. One can see that the horse on the land side behind has been so hitched that he will work directly back of the second land leading horse. The neckyoke must be made 20 inches longer in this hitch, with the ring remaining as before—the 20 inches all being on the land end of the neckyoke. Some of the advantages of this hitch are: (1) As a rule three lead horses can be driven and handled easier than two. (2) The first horse to get hot in a six horse hitch, three ahead and three behind, is the middle horse of the rear three.



FIG. 8.—Five horse hitch in operation.

He is out in this hitch. With all that extra air space between the two wheel horses, it would take a "terrific hot" day to affect them very much. (3) The driver sitting on the seat can easily see every horse in the lead and just exactly how his tugs are working. (4) The position of land wheeler affords a wonderful place to work a mare heavy with foal, a big, awkward, clumsy horse, or a green broken colt, and it has been said that down in Missouri where mules are more or less in fashion, that the "skimmers" from the "show me" state use a fishpole with a nail in the end of it, lay it across from the seat to the neckyoke, and when they speak to a leader he soon realizes that they don't mean "perhaps."

The nine horse hitch shown in Figure 9 is exactly the same as the six horse (three in front and three behind, Fig. 5) except that three more horses are put on back of the six. A description will only be given of the wheel team, as the leaders and swing teams can be taken from the six horse hitch, three abreast in the lead and three in the rear. Evener L is 21 inches long and seven horses are working on it, six against one, 18 inches against 3 inches. M is a 32-inch double tree with two horses on it. The evener N is 36 inches in length and the back evener of entire nine, 2 against 7, or 8 inches against 28 inches.

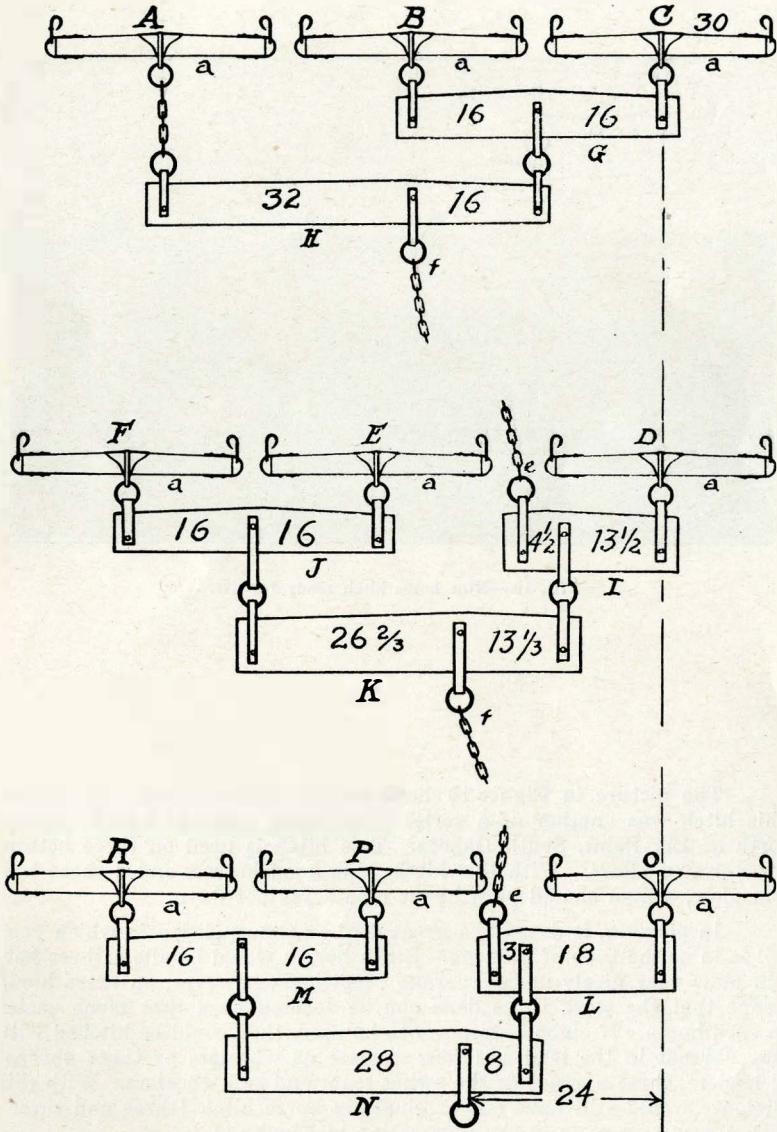


FIG. 9.—Nine horse hitch, three, three, and three.



FIG. 10.—Nine horse hitch ready for use.

The picture in Figure 10 shows the nine horses in readiness for use. This hitch was another of a series of pictures taken in Union County, north of Elk Point, South Dakota. This hitch is used on three bottom horse-drawn plows. With this hitch, nine good horses, and a three bottom plow, a man should plow about nine acres per day.

In plowing, it depends a great deal on the condition in which your soil is in at the time of plowing. Eight horses would handle a three bottom plow very nicely under average conditions; however, an extra horse means that the work to be done can be accomplished that much easier on each horse. If eight horses are to be used, they could be hitched with four abreast in the lead and four abreast as wheelers or three abreast as leaders, three abreast as the swing team and two wheelers. With this hitch we would still have our original six horse hitch (three and three) with a new evener as in the illustration in Figure 11.

This hitch shown in Figure 11 would be preferred over 8, 4 and 4, because of the elimination of side draft.

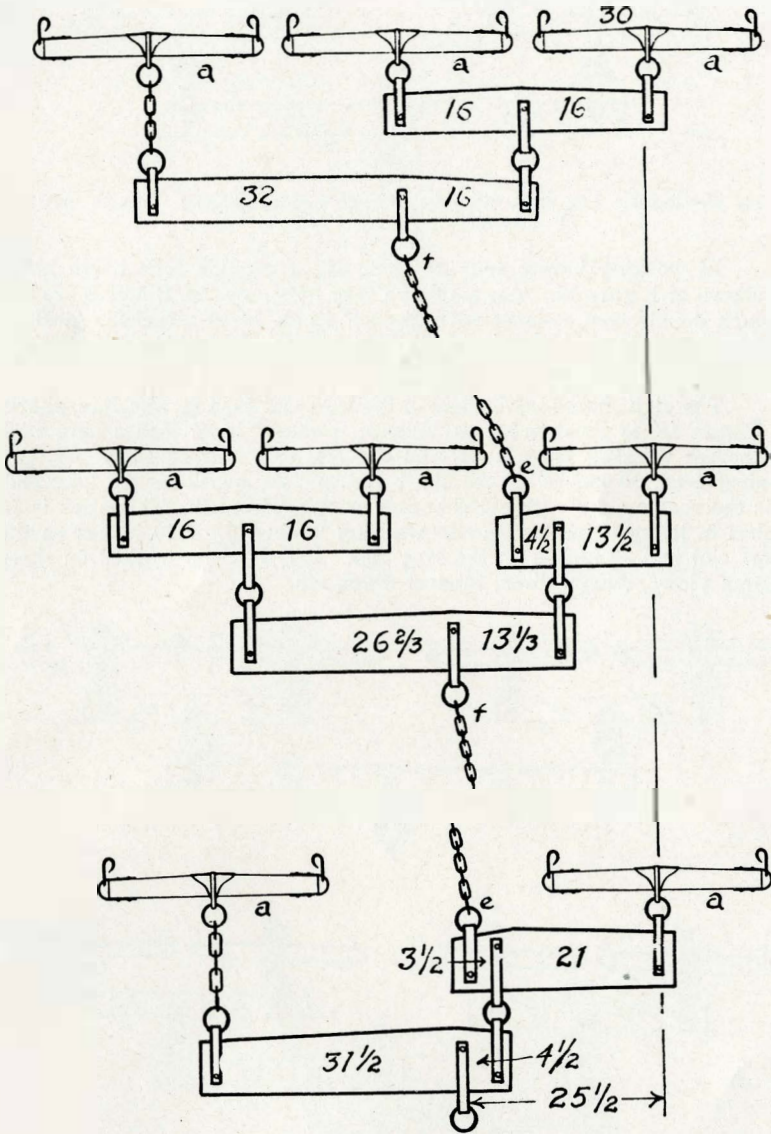


FIG. 11.—Eight horse hitch, three, three, and two.

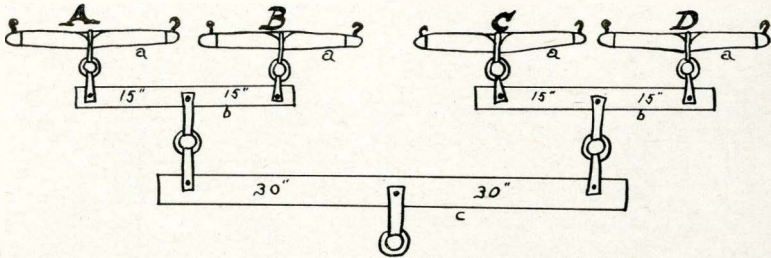


FIG. 12.—Regular four horse hitch, four horses working abreast. Used in making up eight and twelve horse hitches also.

In working horses four abreast, use a regular four horse hitch, as shown in Figure 12. C is a 10-inch four horse evener. B and B are two 30-inch double tree eveners with 28-inch single trees attached. A, B, C, and D represent the positions of the four horses. In making up our eight and twelve horse hitches, this four horse hitch is used in the lead.

The eight horse hitch, four in the lead and four as wheelers, shown in Figure 13, is constructed as follows: evener I is 30 inches long with six horses working from it, two on one end and four on the other, two against four, 10 inches on the short end and 20 inches on the long end. J is the rear evener with eight horses working from it. This stick is 40 inches in length with two horses working against 6, or 10 inches on the short end and 30 inches on the long end. This hitch is worked on three bottom plows, double discs, tandem discs, etc.

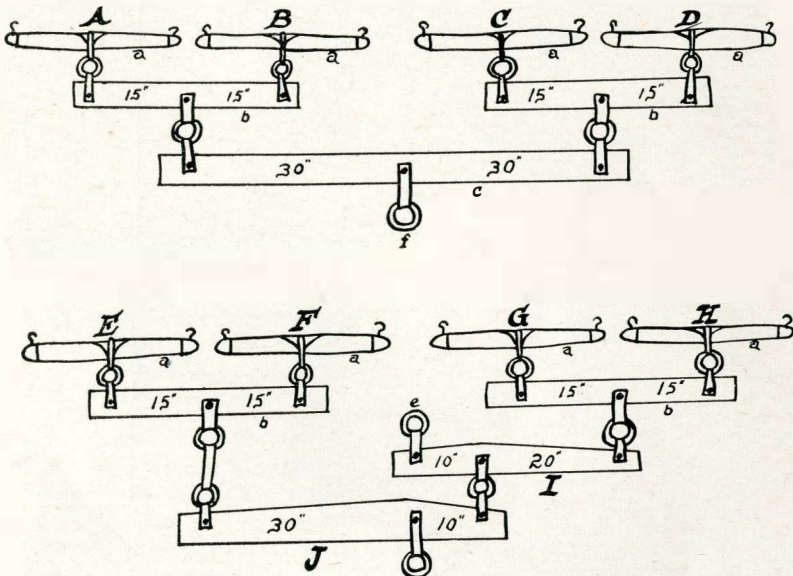
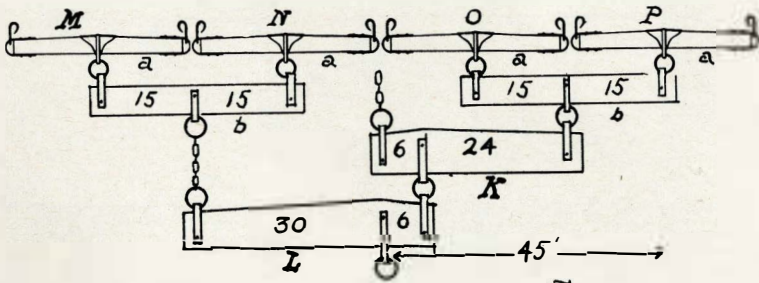
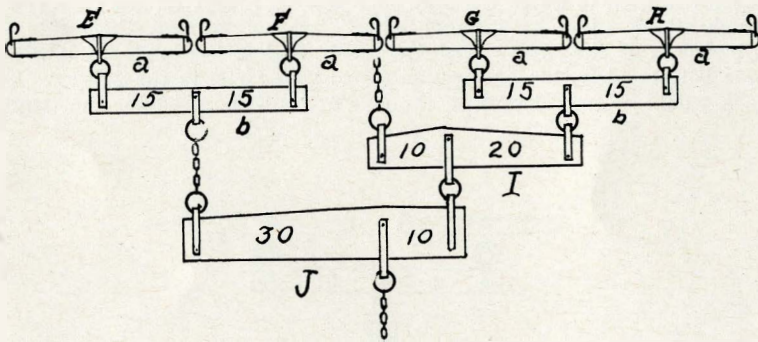
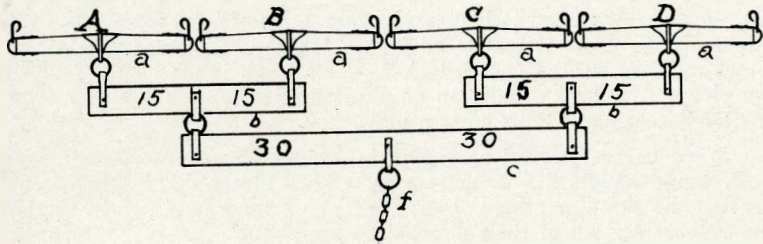


FIG. 13.—Eight horse hitch, four in the lead and four as wheelers.



Eight or twelve for three bottom

Furrow wall

FIG. 14.—Twelve hrse hitch used on a four bottom plow.

The twelve horse hitch as shown in Figure 14 is identically the same as the eight with four more horses back of the eight. The evener K is 30 inches long with 10 head of horses working from it: two against eight, 6 inches against 24 inches. Evener L, the back evener has twelve horses pulling from it and is 36 inches long; two horses against ten horses or 30 inches against 6 inches. This hitch is used on a four bottom plow. A farmer could plan on plowing 12 acres per day with twelve head of horses and a four bottom plow.

Ten horses hitched as shown in Figure 15 under ordinary conditions, would handle a four-bottom plow very nicely. This hitch is constructed the same as others shown, except we have only two in the lead. The eveners and all of their dimensions are shown.

The picture in Figure 16 shows how a three or four bottom tractor plow can be hooked to with horses. The back wheels and axle of a wagon are used to guide the plow and furnish a seat for the driver. For a four bottom plow, both wagon wheels are on the land, the inside one 14 inches from the furrow with the reach used as the tongue, but with a three bottom plow, the one wagon wheel would run in the furrow. The reach would be moved over to the side and still be used for the tongue.

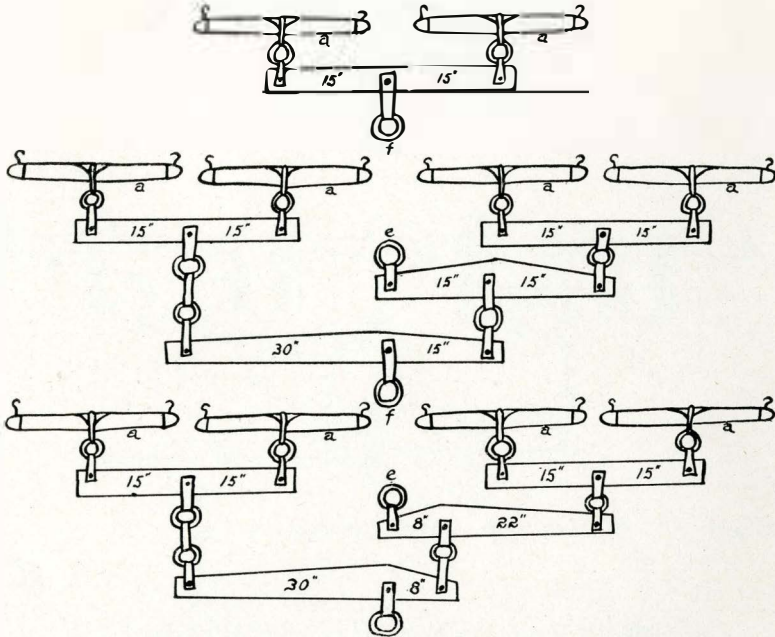


FIG. 15.—Ten horse hitch.

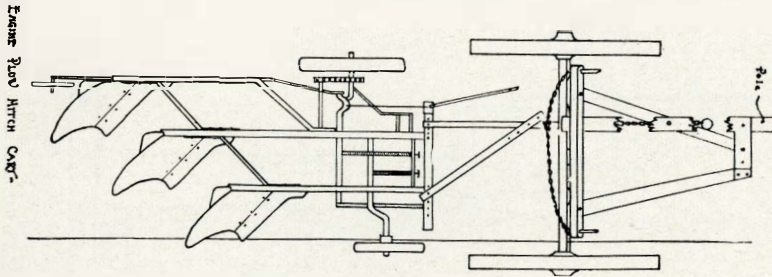


FIG. 16.—Tractor plow hitch cart. Showing how a three or four-bottom tractor plow can be hooked with horses.

The sketch in Figure 17 shows how an eight section harrow can be hooked together and pulled with eight horses abreast with one man operating.

The sketch in Figure 18 shows a system of hooking one gang plow behind another and pulled with one team and one man. This is a great time saver.

The style of equalizers shown in this bulletin is as old in principal as the laws of physics, but was adapted to big team hitches and made famous by Talkington Bros. of Harrington, Washington, who are notably successful in the operations of big teams.

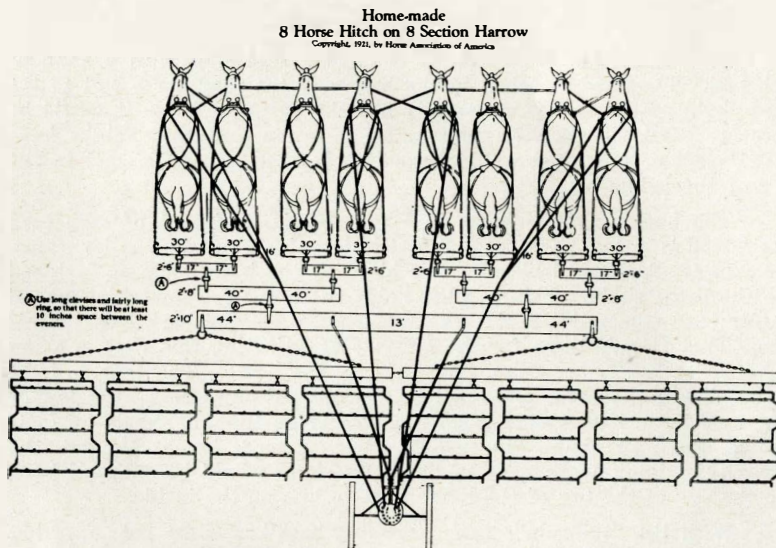


FIG. 17.—Home-made eight horse hitch on eight section harrow.

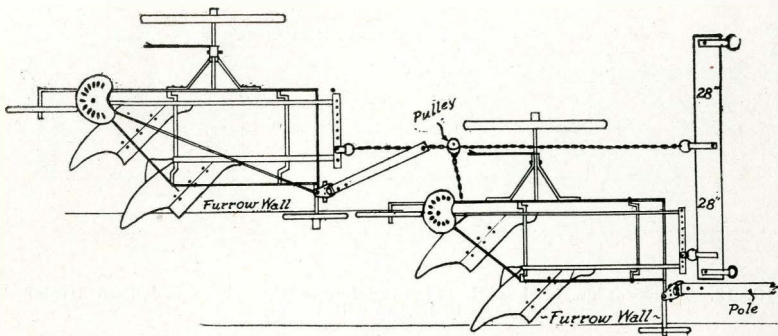


FIG. 18.—Showing system of hooking one gang plow behind another. To be pulled with one team and one man.

These eveners can all be made at home. The chances are that most farmers already have enough double trees on hand to outfit a big team so that the equalizing eveners are all that it is necessary to make. It would be well to make these out of 2 by 8 inch ash or hickory material, however, hard pine could be used. It is a good plan to strengthen the equalizers with iron bands when making a set for permanent use. When so constructed they should last for twenty years, making the annual cost very little.

With all the hitches shown in this bulletin, lines are only used on lead teams. The leaders are driven while all the other horses are controlled by the "tying-in" and "bucking-back" system. Tie chains and bucking ropes used for this are illustrated in the diagrams below.

The tie chains are made of chain $4\frac{1}{2}$ feet long with a snap at each end. They are attached to the halter of the rear horse and to the trace chain of the horses diagonally ahead. In using these it would be better to work horses with halters on in order that they might have more freedom than they would have if this snap were fastened in the ring of the bridle bit.

The bucking rope shown in Figure 19 is made out of sash cord rope which is in two parts, each 8 feet in length. The two smaller snaps, a and b, are fastened in the horse's bit with the large snap, c, fastened into the draw chain. This is what holds the horse from working ahead too far; one can notice that there is a ring, d, on the back half of this rope. That ring is there for the purpose of adjusting this rope, making it shorter or longer according to the size of the horse. The rope, e, is at the outside of the horse and must be so adjusted as to be a little longer than f. Above, it was mentioned that the large snap, c, should be fastened in the draw chain. In case of three or more horses abreast, the horses that didn't work next to the draw chain would be snapped back into the eye of the tug of the horse next to him on the inside.

With the "tying-in" and "bucking-back" system of working horses, one man can drive, notice it says drive, as many horses as he cares to. Lines are used only on the leaders with "tie chains" and "buck-

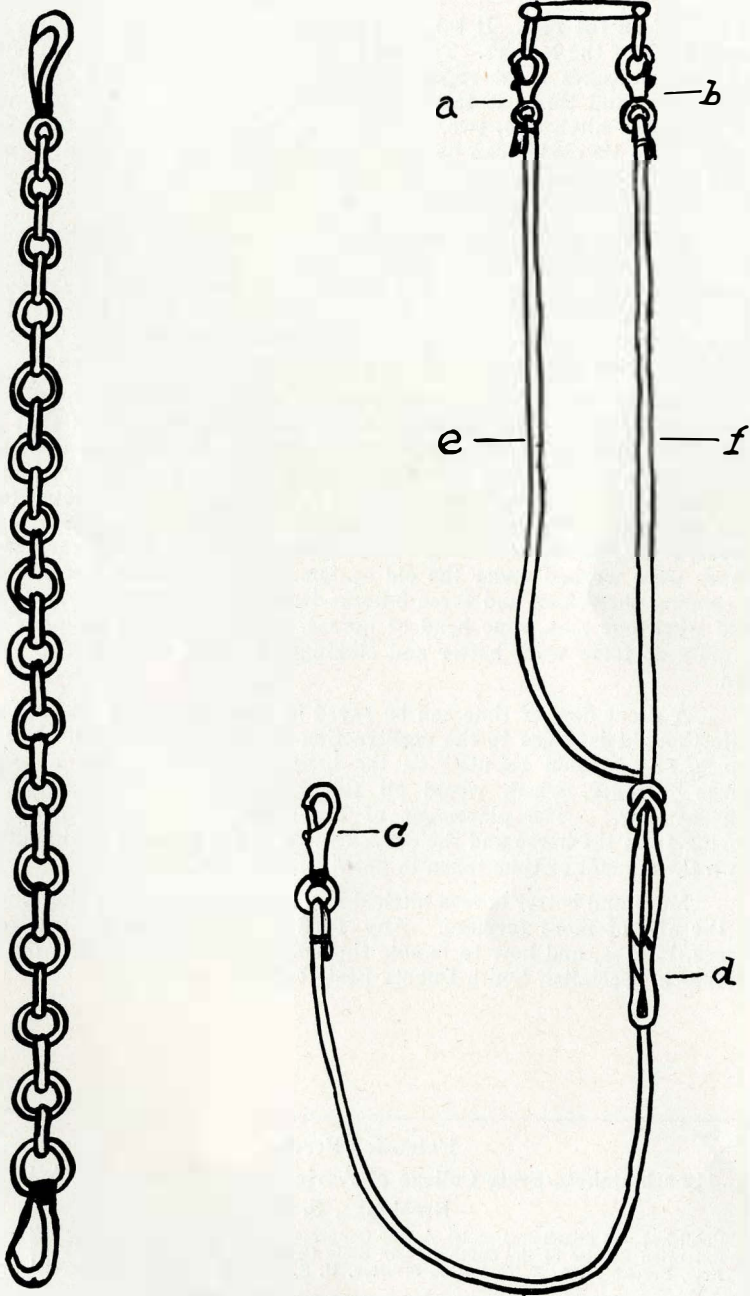


FIG. 19.—Tie chain and bucking rope.

ing ropes" on the rest. It takes as many ropes and chains as there are horses back of the leaders. That is, with a twelve horse team four, four, and four, it takes eight ropes and eight chains. With the six horse hitch, three and three, it takes three ropes and three chains, and with the six horse hitch two, two, and two, it takes four ropes and four chains. The tie chains can be made at home but should be made of material heavy enough to assure the driver that they will hold the horse. The "bucking ropes" can be made of leather, if one so desires.

With this system of working horses it is necessary that the leaders be broken and know "whoa" from "get up." Some people have made statements that "they haven't any leaders." If that be true, make some. That is the way the other man located his; horses are not born leaders. The leaders set the pace; they regulate the speed of the outfit. The slow horses and colts should be hooked in the swing or wheel positions.

Some of our better farmers who are not familiar with the type of hitches explained in this bulletin will be under the impression that one man cannot harness, hitch and work as many as twelve head of horses in one unit and be able to get around and out to the field before half of the forenoon has slipped away. This is far from true. The facts of the case are that, after adopting this system of working and controlling horses, it will be discovered that this can be done even faster than when horses were worked under the old system. The writer can see no need of sending three men and three 3-horse teams with 3 sulky plows to the field when one man, nine head of horses, and a three bottom plow can actually do more work better and eliminate expense of those two extra men.

A great deal of time can be saved in harnessing and hitching if a little thought is given to the construction of the harness used. For instance, snaps could be used on the bellyband, crupper, and a patent hames fastener, which would all take less time in harnessing and unharnessing. The placement of the collar and harness after removing from the horse and the conveniences in the barn all aid in cutting down the amount of time taken to get the horses to the field.

More and better horses hitched and handled in a better way should be the aim of more farmers. Any further information in regard to horses, hitches, and how to handle them may be secured by writing the Livestock Specialist, South Dakota State College, Brookings.

Extension Service

South Dakota State College of Agriculture and Mechanic Arts
Brookings, S. D.

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