A Practical Rule

for

Cutting Mine Timber

by

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Freeland, Pa.

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A PRACTICAL RULE FOR CUTTING MINE TIMBER

By BERNARD J. CARR

To Find the Bevel on the Heel

To find the bevel on the heel upon which the collar rests, divide the spread of the leg in inches by the length of the leg in feet. Cut the notch in the collar horizontal or

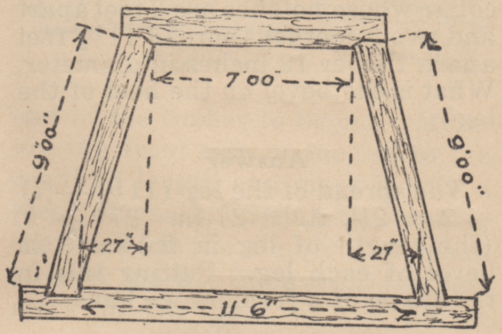

Figure 1
Note-All Timber 12" in diam.

bevel. This rule will be found perfect for 12" timber regardless of the length or spread of the leg.

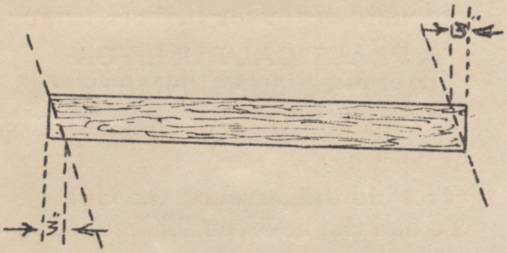

Fig #2

Example

A gangway is timbered with a collar whose notches are 7 feet apart and two 9-foot legs spread 11½ feet apart, timber 12 inches in diameter. What is the bevel on the heel of the leg?

Answer

The spread of the leg (11½ — 7) ÷ 2 = 2¼ ft. = 27 in. 27" ÷ 9' (the length of leg in ft.) = 3 in bevel of each leg. Putting this in the shape of a formula we have

$$B = \frac{S}{L}$$

in which B = the bevel in inches, S = spread of the legs in inches, and

L = length of the leg in feet. If laid on a mud sill as shown in Fig. 1 top and bottom will have the same bevel.

Cutting Crooked Timber

In cutting the bevel in a crooked piece of timber proceed as follows:

Place a knife in the ring of the tape and stick it in the center of the

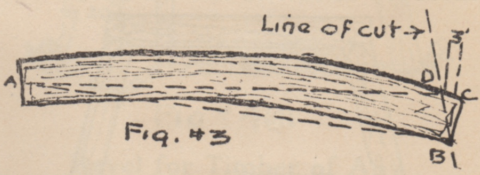

Fig. 43

end of the timber to be cut. Measure the front side of the leg to the required length and mark it with a piece of chalk. Swing the tape to the back of the timber and make another mark. Then from this last mark in the back of the timber measure down the bevel distance 2, 3 or 4 inches as determined. From the foregoing rule it will be found that this bevel will fit perfectly.

Replacing a Broken Leg

When one of the legs in a set of timber is broken, the broken leg may be replaced as follows:

After putting a brace under the collar as shown in Fig. 4 (a) chop the broken leg out. Hang the tape plumb from the notch in the collar and the floor of the gangawy to obtain the vertical height and then measure in inches the distance from

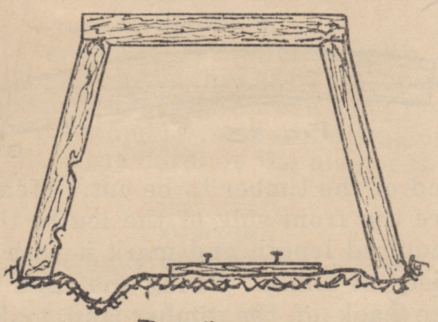

Fig #4

the tape over to the hole in which the leg stands. This will give the spread which divided by the length of the leg in feet will give the bevel to be cut on the new leg.

For instance—If the timber is 12"

in diameter, the length of the leg 8′ and the spread 20″, the bevel will be 20″ ÷ 8 = 2½″.

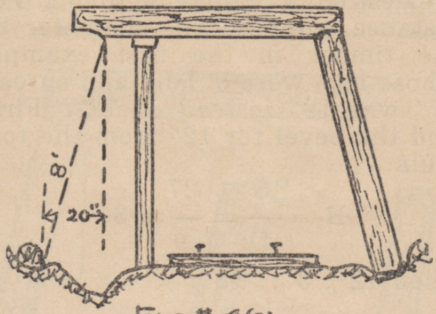

Fig "4(a)

Bevel for Timber of Any Diameter

The foregoing rules for obtaining the bevel to be cut on the heel of the leg was figured for 12″ timber. The bevel on the heel of any leg will vary as the length of the leg and its diameter. Given the length of the leg and its spread, the bevel can be found from the formula

$$B = \frac{S}{L}$$

This bevel will be based on 12″ timber. Then by proportion and by comparing the diameters and bevels the desired bevel may be found. For instance, suppose the diameter of the timber in the first example whose legs were 9′ long and spread 27″ was 18″ instead of 12″. First find the bevel for 12″ from the formula

$$B = \frac{S}{L} = \frac{27}{9} = 3''$$

Then 12 : 3 :: 18 : × × = 4½″ Ans.

For 8″ timber the proportion would be

12 : 3 :: 8 : × × = 2″. Ans.

Thus it may be seen that regardless of the length or spread of the leg the correct bevel for 12″ timber is found from

$$B = \frac{S}{L}$$

and by proportion, the bevel for any timber of any diameter is readily determined.

Depth of Notch in Collar

The depth of the notch in the collar, like the spread of the leg, varies with local conditions. As a general rule, however, the depth of the

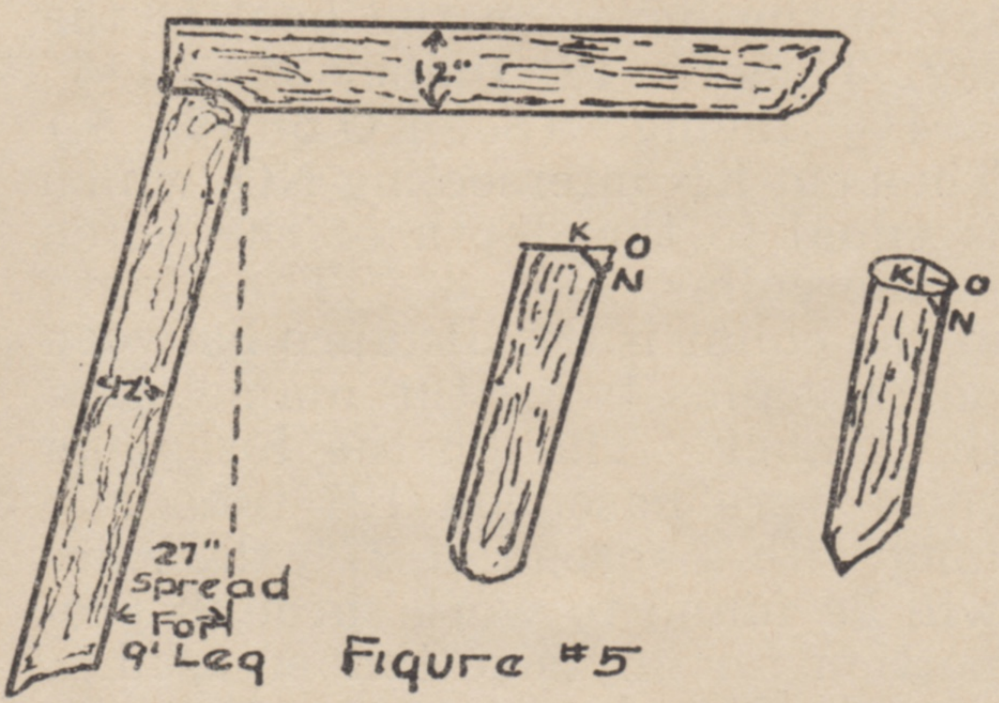

Figure #5

$\frac{12}{8} = 1\frac{1}{2}$ in.

notch should be cut to about one-fourth the diameter of the collar. That is, a collar 12" in diameter will have its notches cut 12" ÷ 4 = 3" deep.

All collars should be cut with a bevel to rest on the facing of the leg. This bevel in the collar should be 1/8" for each inch of diameter of

the collar. Thus for a 12″ collar the bevel will be

Facing on Front of Leg

To find the facing on the front of the leg add the bevel on the collar to the bevel on the heel of the leg. Thus for 12″ timber 3″ + 1½″ = 4½″ facing. (See KO on Fig. 5.) Then cut KN intersecting NO, which is equal to the depth of the notch in the collar, i. e., 3″. The length of the collar is the distance between notches plus twice the diameter of the timber. Though the foregoing rules were based on 12″ timber 9′ long with a spread of 27″, the rules will be found to work through proportion for any size timber used.

NOTE

This rule is for the person who works in the mines, to assist him in finding the bevel on round timber. The author has built bridges with it, which is standing timber on a mud sill.

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