Jan. 6, 1959 E. C. McMILLAN 2,867,041

SCREED SUPPORT AND METHOD OF USING

Filed April 10, 1957

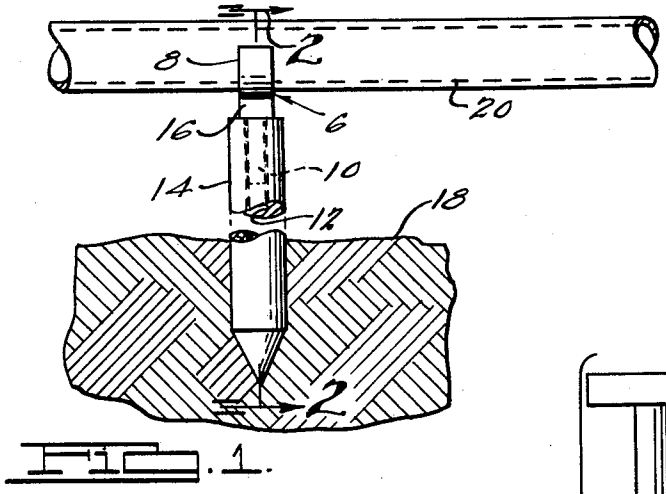

FIG. 1.

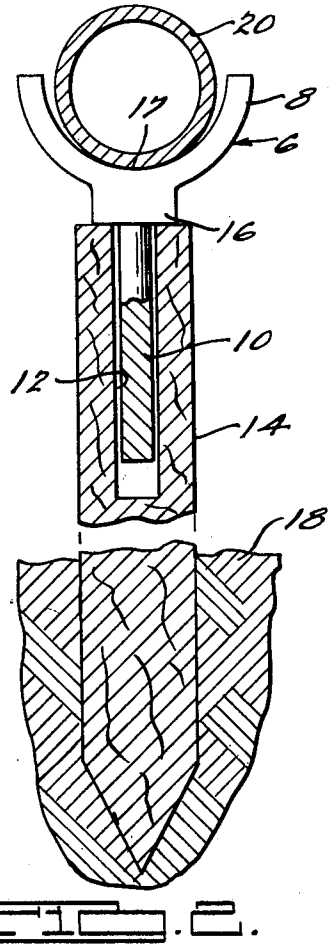

FIG. 2.

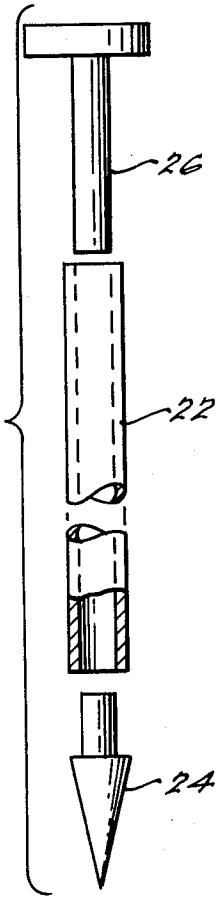

FIG. 3.

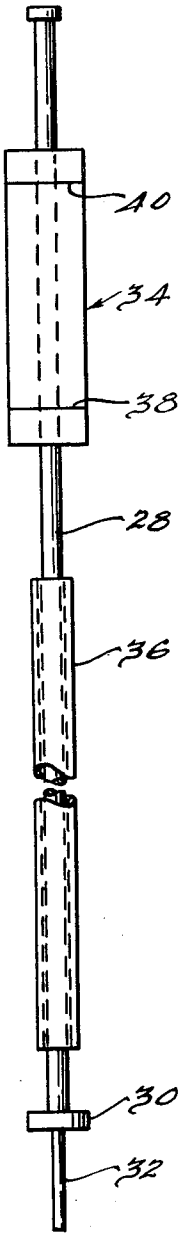

FIG. 4.

INVENTOR.
Eugene C. McMillan.
BY
Harness, Dickey & Pierce
ATTORNEYS.

United States Patent Office 2,867,041
Patented Jan. 6, 1959

2,867,041

SCREED SUPPORT AND METHOD OF USING

Eugene Campbell McMillan, Detroit, Mich., assignor to McMillan Floor Products Company, Hazel Park, Mich., a corporation of Michigan

Application April 10, 1957, Serial No. 652,047

6 Claims. (Cl. 33—74)

The present invention relates to temporary screed supports, and more particularly to temporary screed supports having portions which may be easily removed after the concrete has been poured and screeded.

The normal procedure in pouring concrete floors is that the area to be poured in any one day is outlined by bulkheads or a combination of bulkheads and the permanent walls of the building, the top of any such bulkheads being set to finished floor elevation. This invention has to do with the intermediate screeds which must be provided to insure the entire area being uniformly brought up to the specified finished floor grade. Intermediate screeds of various types have been used, one of the most common being to nail 2 x 4's to a plurality of wooden stakes driven in the ground with the top of the 2 x 4's being set to the heights desired for the finished surface of the concrete. Such screeds are set in parallel lines usually about 12' apart. Concrete is poured between these parallel lines of screeds to a height slightly above the top of the screeds. The workmen then strike the concrete down flush with the top of the screeds by reciprocating a plank, commonly known as a straight edge, back and forth over the aforesaid screeds and simultaneously advancing backward slowly along the screeds. When this operation is completed, workmen remove the temporary screeds and fill in the resulting void as well as their footprints as they retrace their steps.

Needless to say, removing such a wooden or other type screed after the concrete has been poured on either side thereof is an extremely difficult job, particularly when the stakes are driven into rather hard ground. Picks and other tools must be used to remove the screed and oftentimes the stakes are so firmly wedged that the screed must be literally torn apart from the stakes and the stakes driven further into the ground or broken off. It is apparent that, in addition to being extremely awkward and difficult, such a procedure greatly disturbs the surrounding concrete and increases the work necessary to fill and smooth the resulting voids. Another disadvantage of such a wooden screed is that the 2 x 4 boards used to form the screed are more often than not warped and uneven and are consequently unsatisfactory for use as a support for leveling the surface of the concrete.

The present invention overcomes this problem by providing temporary screed supports comprised of a stake with a bore in one end thereof and a removable saddle having a cylindrical portion disposed within the bore in the stake. A plurality of the screed supports of the present invention are aligned along the floor to be poured and are leveled by means of a transit and special target rod to an exact height. A long pipe is then extended over the screed supports and is supported by the removable saddles to serve as a temporary screed. After the floor has been poured and screeded, the pipe is removed and a worker then walks into the wet concrete and removes each of the saddles from their respective stakes, leaving the stakes in the concrete. As before, the worker

will fill in his footprints and the imprint of the pipe in the concrete as he retraces his steps.

Under this arrangement, the major portions of the temporary screed may be removed with far less effort than a conventional board screed and with proportionately less disturbance of the wet concrete. Since the stakes themselves are recessed below the surface of the concrete they are left in position and covered with additional concrete so that the top of the stakes are well below the surface of the concrete. In addition, the long length of pipe employed by the present invention provides an inherently straighter edge than the conventional wooden screed and eliminates the warpage problem prevalent with wooden screeds.

Therefore, it is an object of the present invention to provide temporary screed supports having removable saddles.

It is another object of the present invention to provide temporary screed supports which may be quickly positioned in an efficient manner.

It is a further object of the present invention to provide temporary screed supports, having removable saddles which may be reused, and inexpensive stake portions which need not be removed after the concrete has been poured.

It is a still further object of the invention to provide a method for rapidly installing a temporary screed at exactly the desired elevation.

It is a still further object of the invention to provide a target rod construction for rapidly leveling the stakes used to support the screed support of the present invention.

Other objects and features of novelty of the present invention will become apparent when referring, for a better understanding of the invention, to the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is an elevational view of the screed support of the present invention with a pipe disposed in the saddle thereof;

Fig. 2 is an enlarged sectional view taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is an exploded view of another embodiment of the screed support of the present invention; and

Fig. 4 is an elevational view of a target rod construction for leveling the screed supports of the present invention.

Referring to Figs. 1 and 2, the screed support is comprised of a removable saddle **6** having a semicircular portion **8**, a boss **16**, and a cylindrical portion **10** adapted to be disposed within a bore **12** in the top of a wooden stake **14**. The bottom of the boss **16** is disposed a predetermined distance from midpoint **17** on the semicircular portion **8** of the saddle **6**. A plurality of the screed supports of the present invention may be driven into the ground **18** in aligned fashion and a pipe **20** supported by the semicircular portion **8** of the saddle **6** as shown in Figs. 1 and 2.

Referring to Fig. 3, another embodiment of the present invention is illustrated wherein a length of pipe **22** having a removable pointed tip **24** adapted to be slidably disposed in one end thereof is substituted for the wooden stake **14**. The saddle **6** is used as before with the cylindrical portion **10** slidably disposed within the upper end of the pipe **22** and the boss **16** resting on the top thereof. A driving plug **26** is illustrated which may be inserted into the top of the pipe **22** or of the stake **14**, whichever is used, to prevent damage to the tops thereof when the stakes are driven into the ground. After the stakes have been driven into the ground, the driving plug **26** is removed and the height of the top of the stakes is further adjusted to a predetermined, exact elevation with a level

rod 28 after which the saddle 6 is inserted in the top of the stake. The adjustment of the elevation of the stake with the level rod 28 will be described in greater detail hereinafter. Of course, if the ground or base upon which the concrete is to be poured is not too hard, the pointed tip 24 does not have to be used since the lower end of the pipe could be driven into the ground or base without the tip 24.

In operation, a plurality of wooden stakes 14 or pipes 22 are partially driven into the ground aligned along the floor where a line of screeds is to be placed with the top of the stakes at a predetermined elevation so that when the saddles 6 are inserted and a pipe 20 positioned in the saddles 6, the top of the pipe is at the elevation desired for the surface of the concrete floor to be poured. Concrete is then poured between the lines of the pipe 20 which is being supported by saddles 6 to a height slightly greater than the top of the pipe 20, and the workmen screed the concrete down to the desired height by reciprocating the wooden plank straight edge back and forth over the top of the pipes 20 in a conventional manner.

As the pouring of the floor progresses, the pipes 20 may be moved ahead and placed in previously aligned saddles 6. After concrete has been poured on both sides of a line of screeds, a workman walks into the wet concrete and removes each of the saddles 6 from the stakes 14 or 22, filling in and leveling off the disturbed portions of the concrete as well as his footprints as he retraces his steps back out of the wet concrete.

It is readily apparent that it is much easier to lift the pipe 20 from the wet concrete than it is to pull a conventional temporary wooden screed with the stakes nailed thereto from the wet concrete. In addition, since the pipe 20 is elevated above the ground, wet concrete may flow beneath it so that adjacent sections of the floor are integrally joined to one another.

Since the saddles 6 of the present invention are removable, they may be used again with only the less expensive stake portion of the screed support left embedded in the concrete. Of course, any screeding means which can be used with conventional temporary wooden screeds can also be used with the temporary screed support of the present invention.

Referring to Fig. 4, a target rod construction is illustrated which enables the stakes 14 or pipes 22 to be quickly and accurately driven to the proper elevation. It is comprised of an elongated rod 28 having a flange 30 and a reduced cylindrical portion 32 on the lower end thereof, with a target 34 adjustably mounted on the upper end thereof by a clamping device (not shown). An elongated sleeve 36 extends over the rod 28 between the flange 30 and the target 34 and is adapted to be manually reciprocated to hammer against the top of the flange 30. It will also be observed that the target 34 has two horizontal lines 38 and 40 thereon, the purpose of which will hereinafter be described in greater detail.

The cylindrical portion 32 is adapted to fit within the bore 12 of the stake 14, or within the pipe 22, with the bottom of the flange 30 resting upon the top of the stake as does the bottom of the flange 16 of the saddle 6.

In operation, each of the stakes 14 or pipes 22 are partially driven into the ground at points along a line on the floor where a line of screeds is to be set. The bottom end of the portion 32 of the target rod is then placed on a reference point having the same elevation as that desired for the top of the finished floor and the target 34 is adjusted so that the lower horizontal line 38 is aligned with the setting of the level or transit and the target 34 is secured in this position. The target rod is then positioned on top of a stake with the cylindrical portion 32 disposed within the bore 12 of the stake and the bottom of the flange 30 resting on the top of the stake 14 or pipes 22. The stake is then driven further into the ground by pounding the sleeve 36 on top of the flange 30 until the upper line 40 of the target 34 is aligned with the aforesaid level or transit.

The distance between the horizontal lines 38 and 40 is equal to the distance from the bottom of the cylindrical portion 32 to the bottom of the flange 30 plus the distance from the bottom of the flange 16 in Fig. 2 to the top of the pipe 20. Consequently, when the top of stake 14 or pipe 22 is driven down by the pounding action of the sleeve 36 on the flange 30 until the upper line 40 is aligned with the level or transit, the top of the pipe 20 will be exactly at the desired elevation when it is positioned within the saddle 6. By this method the stakes 14, or pipes 22, can be driven to the proper elevation without removing the target rod from the top of the stake and without interrupting the line of sight of the man operating the transit or level. Contrasting this with the old method wherein the target rod must be removed after each reading to permit the stake to be pounded down an estimated distance after which the target rod is placed back on the stake for another reading, and so forth until the stake is at the proper elevation, it can readily be appreciated that the target rod construction of the present invention provides a considerable time saving over the old method of leveling the stakes.

What is claimed is:

1. A screed support comprising, a stake having one end adapted to be driven into the ground and a bore in the other end thereof, and a saddle having a screed supporting portion on one end thereof with the other end thereof removably disposed in said bore and a transverse shoulder intermediate said ends of the saddle for engaging the top of said stake to longitudinally position the saddle relative thereto.

2. A screed support comprising, a stake having one end adapted to be driven into the ground and a bore in the other end thereof, and a saddle having a semicircular portion and a cylindrical portion with a transverse shoulder intermediate said portions, said cylindrical portion being removably disposed in said bore said transverse shoulder engaging the other end of the stake to longitudinally position the saddle relative thereto.

3. A screed support comprising, a relatively short length of pipe adapted to have one end driven into the ground, and a saddle having a semicircular portion and a cylindrical portion with a transverse shoulder intermediate said portions, said cylindrical portion being removably disposed within the other end of said pipe, said transverse shoulder engaging the upper end of the pipe to longitudinally position the saddle relative thereto.

4. A target rod construction comprising, an elongated rod having a flat shoulder near the one end thereof, a target adjustably mounted on the other end of said rod, and a tubular body slidably mounted on said rod between said target and said shoulder and adapted to be reciprocated to pound on said shoulder, said one end of the rod being blunt for engaging a stake to be driven into the ground by the pounding of said tubular body on said shoulder.

5. In a method for leveling the top of a stake relative to a reference point with a target rod, said target rod having a flange adjacent to and spaced from one end thereof, a target adjustably mounted on the other end of said rod with two horizontal lines vertically spaced a distance greater than the distance between the bottom of said flange and said one end of the rod, and a tubular body slidably disposed over said rod between the target and the top of the flange, the steps comprising, partially driving said stake into the ground, positioning said one end of the target rod on said reference point, adjusting the elevation of the lower horizontal line of said target with a transit, placing said one end of the rod within a bore in the top of the stake so that the bottom of said flange rests on the top of the stake, and driving said stake into the ground by hammering on the top of the flange with said tubular body until the upper horizontal

line on the target is at the elevation of said transit, whereby an article having a height equal to the distance between said horizontal lines minus the distance between the bottom of said flange and said one end of the rod may be mounted on top of said stake so that the top of the article will be at the same elevation as said reference point.

6. In a method for erecting a screed along a predetermined line of a concrete floor to be poured, using a target rod, said target rod having a flange adjacent to and spaced from one end thereof, a target adjustably mounted on the other end of said rod with two horizontal lines vertically spaced a distance greater than the distance between the bottom of said flange and said one end of the rod, and a tubular body slidably disposed over said rod between the target and the top of the flange, the steps comprising, partially driving a plurality of stakes into the ground along said line, setting up a transit, positioning said one end of the target rod on a bench mark having an elevation the same as that desired for the surface of the concrete floor to be poured, adjusting the elevation of the lower horizontal line of said target with said transit, placing said one end of the rod within a bore in the top of one of the stakes so that the bottom of said flange rests on the top of the stake, driving said

stake into the ground by hammering on the top of the flange with said tubular body until the upper horizontal line of said target is at the elevation of said transit, repeating the same procedure with each of said stakes, mounting a removable saddle on top of each of said stakes with a portion thereof disposed within the bore in said stakes, and positioning a long length of pipe so as to be supported by said saddles, the top of said pipe being supported above the top of each of said stakes a distance equal to the distance between the horizontal lines minus the distance between the bottom of said flange and said one end of the target rod, whereby the top of said pipe is at the elevation of said bench mark.

References Cited in the file of this patent

UNITED STATES PATENTS

341,690	Reichenbach	May 10, 1886
1,449,136	Yates	Mar. 20, 1923
2,224,273	Neptune	Dec. 10, 1940
2,319,526	Wearn	May 18, 1943
2,331,949	Whiteman	Oct. 19, 1943
2,347,126	Rohrer	Apr. 18, 1944
2,711,097	Miller	June 21, 1955