

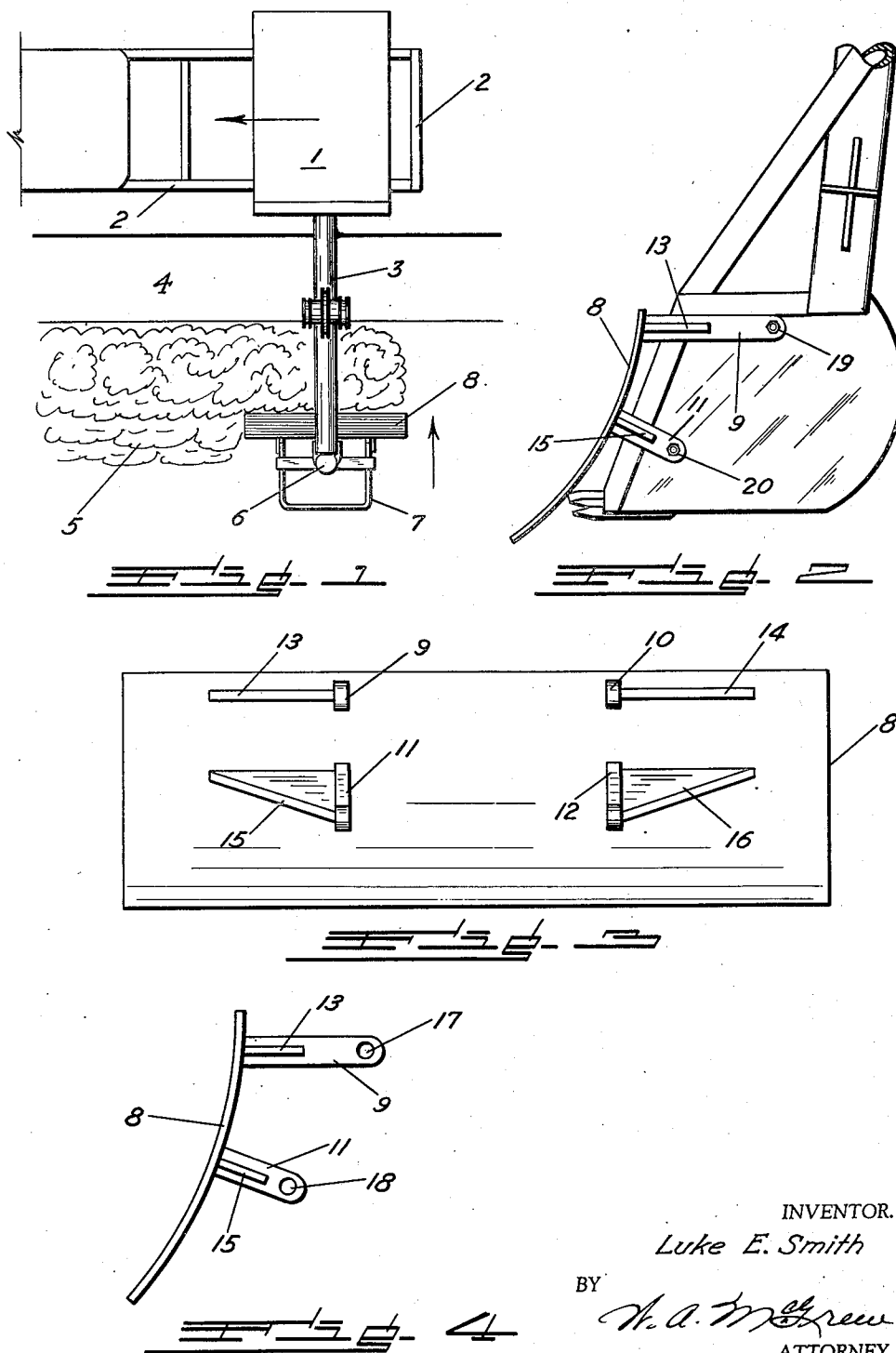
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BACK FILLING ATTACHMENT FOR POWER SHOVELS

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BACK FILLING ATTACHMENT FOR POWER SHOVELS

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1

My invention relates to trench digging apparatus and particularly to back filling attachments for power shovels and the like.

It is an object of my invention to provide a trench digging apparatus including an improved arrangement for utilizing such apparatus for refilling the trenches dug by it.

It is another object of my invention to provide an improved attachment for use with trench hoes and similar equipment for the purpose of refilling trenches and similar excavations.

Further objects and advantages of my invention reside in novel details of construction and methods of operation all of which will be set forth in the course of the following description.

For a better understanding of my invention reference may be had to the accompanying drawing in which:

Fig. 1 is a plan view looking down on a trench hoe embodying my invention and being employed for refilling a trench;

Fig. 2 is an enlarged side elevation view of the back-filling scraper attachment shown in Fig. 1;

Fig. 3 is a rear elevation view of the attachment of Fig. 2; and

Fig. 4 is a side elevation view of the scraper attachment removed from the trench hoe.

Referring now to the drawing, the apparatus shown in Fig. 1 comprises a trench hoe 1 mounted upon a support, such as a truck 2 and rotatable in the usual manner about a vertical axis on the truck so that a boom 3 may be swung for operation on either side of the truck. The truck has been located near a trench 4 on one side thereof, the material removed from the trench lying along the other side, as indicated at 5. The trench hoe is provided with an arm 6 pivoted at the outer end of the boom 3 and swingable in a vertical plane so that a shovel bucket or dipper 7 may be swung toward and away from the truck. The mouth of the bucket opens toward the truck, and in the operation of the trench hoe the boom 3 is adjusted to the desired angle and the bucket is then swung out and drawn toward the truck by cables which pull it through the earth or other material to be removed. The cables and other parts of the driving mechanism have been omitted from the drawing as they are not necessary to an understanding of the invention, and would merely complicate the drawing. In digging the trench 4 the truck 2 would be centered over the line of the trench and the boom 3 swung directly to the rear, the trench being formed by moving

2

the truck forward after each completed digging operation of the bucket 7. The removed material is deposited along one side of the trench by swinging the full bucket laterally and emptying the material along that side of the trench.

In the drawing the trench 4 has been completed and is ready to be refilled, the truck 2 has been driven along the side of the trench opposite that on which the material 5 has been piled. In order to move the material back into the trench, a detachable scraper blade 8 is secured to the bucket across the mouth thereof with the lower edge of the blade near and preferably below the bottom of the bucket. Thus, when the bucket is swung into the position shown in Fig. 1, and is drawn back toward the truck, the scraper 8 pushes the material 5 in its path back into the trench 4. The operation is repeated and the truck moved forward along the trench until the trench has been filled.

The scraper blade 8 is constructed so that it may be attached and detached quickly, and can be carried on the truck or trench hoe where it is readily available whenever filling is to be done. As shown in Figs. 2 and 3 the blade 8 is in the form of an elongated rectangle and is of arcuate cross section. This is merely by way of example, however, since the blade may be straight or angular, if desirable. Two pairs of attaching arms are secured to the back or convex face of the blade; one pair comprising arms 9 and 10 is arranged near the top edge of the blade and the other comprising two shorter arms 11 and 12 is secured to the blade along its center line. The arms of each pair are spaced apart to accommodate the shovel bucket 7 therebetween. The arms 9 and 10 are preferably reinforced by gussets 13 and 14 extending longitudinally of the blade 8 and welded both to the blade and to the arms to provide lateral strength. The arms 11 and 12 are provided with similar reinforcing gussets 15 and 16, respectively. Each of the arms is provided with a bolt hole at its end so that it may be secured to the bucket by bolts which are readily detachable. The holes in the arms 9 and 11 are indicated at 17 and 18, respectively, in Fig. 4, and the bolts at 19 and 20 in Fig. 2. Various other means may be employed for removably attaching or connecting the scraper or connecting the scraper blade 8 to the bucket or dipper. Or, the arms may be spot-welded or otherwise connected to the walls of said bucket.

It is to be understood that the repeated use of the term "truck" in the foregoing description

3

is not intended to limit the manner of or means for supporting or mounting the trench hoe structure embodying the present invention. The said structure may be mounted upon any suitable or desirable support or supporting means. Said support may be of the self-propelled type, if desirable, or it may be in the form of a platform or trailer structure which has to be moved or drawn from place to place by means of a truck or other power-operated or propelled means.

While the apparatus described above has been referred to particularly for use in connection with the digging of trenches and the back filling thereof, it is to be understood that it is capable of use in performing other operations such as, for example, the digging and removing of earth from a given area of operation and depositing said earth at another given area, from which latter area it may be removed later by a scraping operation into other areas.

From the foregoing it is readily apparent that I have provided a simple and easily portable attachment for power shovels, trench hoes and the like whereby the shovel or hoe may be employed for effective back filling thereby making it unnecessary to provide additional power machinery for refilling the trenches or other excavations.

What I claim and desire to secure by Letters Patent is:

1. A back filling attachment for application to the toothed bucket of a power shovel to cover the open mouth of said bucket, comprising an elongated metal plate curved in its shortest dimension, means for removably mounting the plate directly upon the bucket and including spaced pairs of rigid arms extending from the convex face of said metal plate, each of said pairs of arms being spaced longitudinally of the plate for positioning outside but adjacent to the sides of said bucket to embrace the forward portions of said sides, and gusset-like members attached to each of the arms and to said metal plate to hold the arms rigidly upon the plate and to stiffen the structure, said arms maintaining the plate rigidly in position upon the bucket in close proximity to the forward ends of the teeth thereof and against movement relative thereto.

2. A back filling attachment for application to the toothed bucket of a power shovel to cover the open mouth of said bucket, comprising an

4

elongated metal plate, means for removably mounting the plate directly upon the bucket and including spaced pairs of upper and lower arms extending from one face of said metal plate in which the arms of the upper pair are longer than the arms of the lower pair, each of said pairs of arms being spaced longitudinally of the plate for positioning outside but adjacent to the sides of said bucket, and means for attaching the arms to the bucket whereby said plate will be held rigidly in position upon the bucket against movement relative to the bucket and in close proximity to the mouth and teeth thereof to cover the same.

3. A scraper attachment for the toothed bucket of a power shovel, comprising an elongated metal sheet curved in its shortest dimension and adapted to be mounted directly upon the bucket to cover the open mouth thereof, a pair of upper arms secured to and extending outwardly from the inner convex face of said sheet and spaced longitudinally of the sheet for location adjacent the two sides of the shovel bucket to embrace the sides thereof, a second pair of lower arms shorter than the upper arms and similarly spaced and secured to said sheet on said side in spaced relation to said first pair to also embrace the forward portion of the sides of the bucket, said arms including reinforcing gussets extending longitudinally of said sheet and welded to the sheet to form an integral part thereof for reinforcing said sheet and arms, and means for removably attaching said arms to the sides of the bucket to hold said sheet rigidly in position thereupon and against movement relative to the bucket.

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