

June 24, 1930.

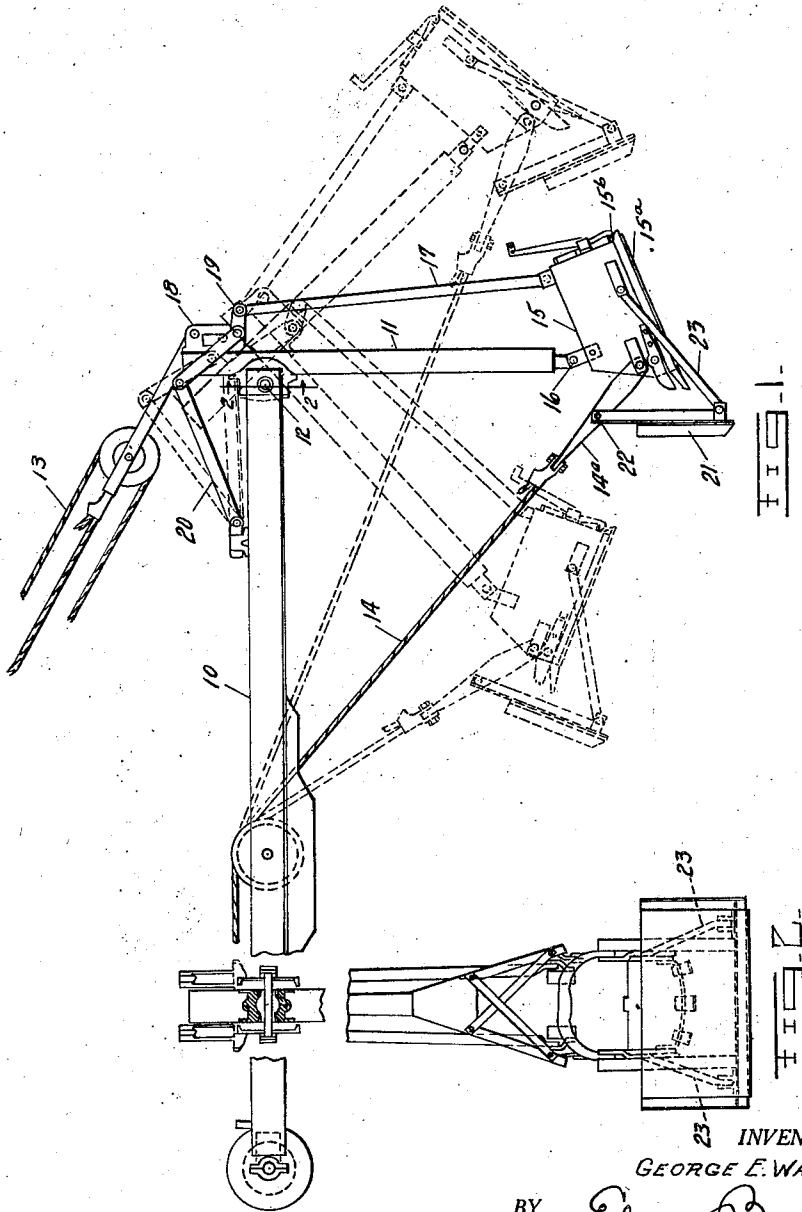
G. E. WAGNER

1,765,892

BACK FILLING ATTACHMENT FOR EXCAVATORS

Filed Oct. 28, 1927

2 Sheets-Sheet 1



INVENTOR.
GEORGE E. WAGNER.
BY *Ely & Barrow*
ATTORNEYS.

June 24, 1930.

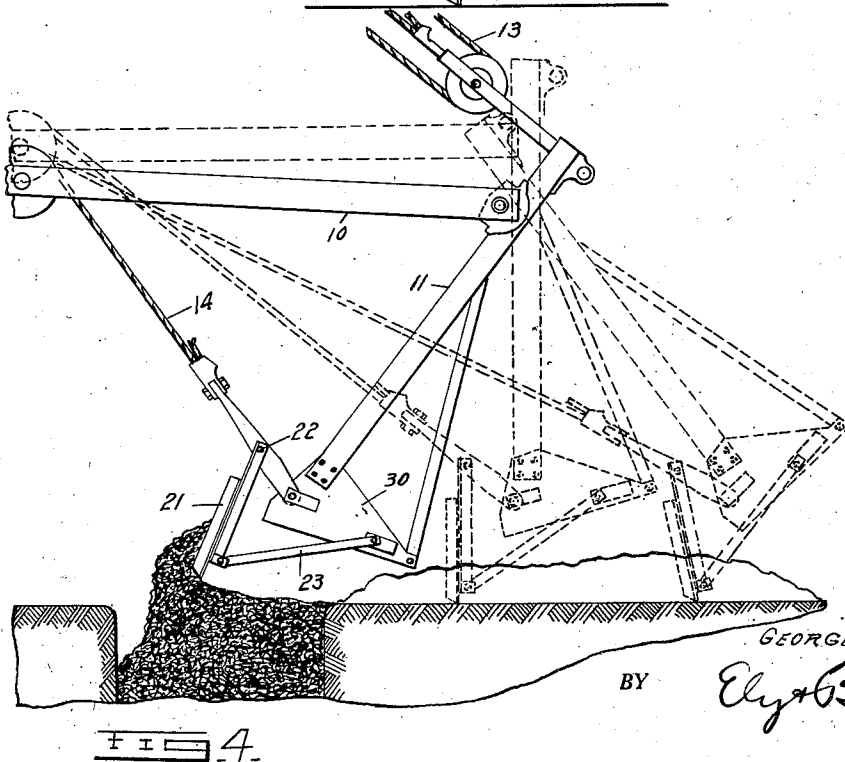
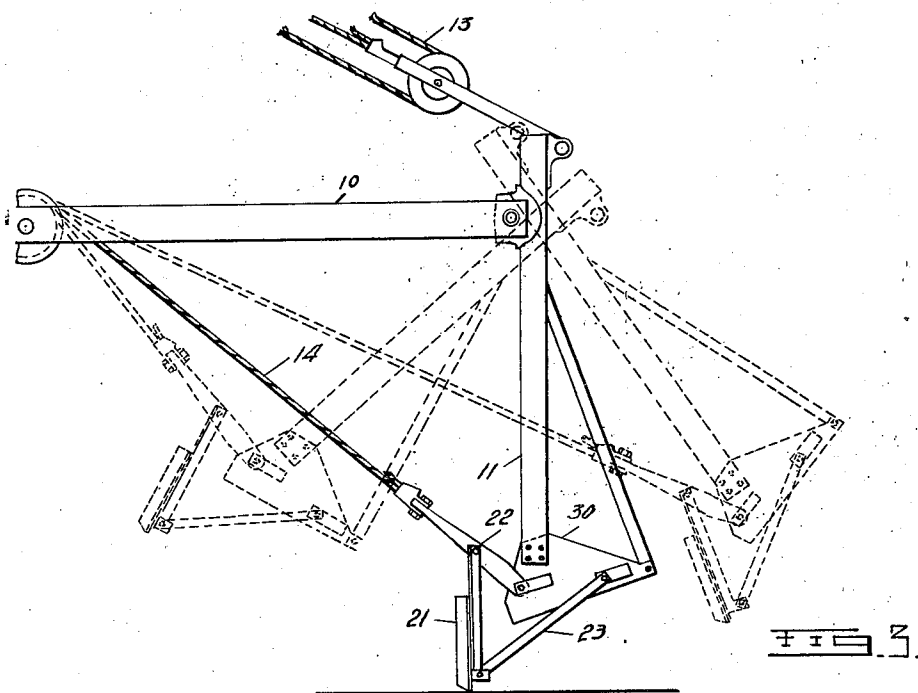
G. E. WAGNER

1,765,892

BACK FILLING ATTACHMENT FOR EXCAVATORS

Filed Oct. 28, 1927

2 Sheets-Sheet 2



INVENTOR.
GEORGE E. WAGNER.

BY

Ely & Barrow

ATTORNEYS.

UNITED STATES PATENT OFFICE

GEORGE E. WAGNER, OF AKRON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
CLUTTER-WAGNER, INC., A CORPORATION OF OHIO

BACK-FILLING ATTACHMENT FOR EXCAVATORS

Application filed October 28, 1927. Serial No. 229,442.

This invention relates to back-filling attachments for excavators, particularly of that type such as the ditcher which employs a dipper stick swinging on a boom and when used for excavating, carrying a scoop on its lower end.

There has heretofore been employed in the art a back-filling blade adapted to be attached to the dipper stick, but, due to the arcuate movement of the stick, the blade assumes such angles toward the extremes of the arcuate movement which are not effective for the purpose desired.

The general purpose of the present invention is to provide an improved back-filling attachment in which the back-filling implement is maintained at an effective angle over a wide range of movement of the stick.

The foregoing and other purposes of the invention are attained by the devices illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific forms thereof shown and described.

Of the accompanying drawings,

Figure 1 illustrates, in part, a side elevation of a known type of ditching excavator having a back-filling blade in combination therewith, and so constructed that movements of the ditcher parts and also of the parts of the back-filling attachment cooperate to maintain the back-filling blade at an effective angle over a wide range;

Figure 2 is an outer end elevation thereof, partly in section;

Figure 3 is a side elevation similar to Figure 1 of a modified form of back-filling apparatus embodying the invention and constructed to maintain the back-filling blade at an effective angle over a comparatively wide range, somewhat less than that of the preferred apparatus shown in Figure 1; and

Figure 4 is a similar view illustrating the manner of using the back filling attachment.

Referring to the drawings which illustrate an "in-stroke" type of ditcher, the numeral 10 designates the boom and the numeral 11 the dipper stick pivoted thereon at 12, the boom being pivoted on any suit-

able excavator apparatus (not shown) and the boom and stick being actuated by the hoisting line 13 and the hauling or drag line 14.

In Figures 1 and 2, the ditcher shown is provided with a scoop 15, the effective cutting angle of which is maintained throughout movement of the boom and stick by pivoting the front end of the scoop as indicated at 16 on the lower end of the stick and by connecting the rear end of the scoop by a link or links indicated at 17 to bell-crank levers 18 pivoted on the stick at 19 and, in turn, connected by links 20 to boom 10, the linkage between the scoop, the stick and the boom being such that the scoop is maintained at effective excavating angles when moved toward the extremes of its arcuate movement about the pivot of the stick on the boom. This type of ditcher is already known and further description thereof, accordingly, will not be necessary. The scoop 15 may be of the drop bottom type, the bottom 15^a being latched at the heel of the scoop by latch 15^b controlled by the usual trip line (not shown).

The hauling or drag line 14 is connected to the scoop 15 by a bridle or bail 14^a and in order to secure the desired movement of the back-filling attachment indicated at 21, it is pivotally attached at the top as shown at 22 to the opposite arms of the bridle 14^a and it is also attached to the scoop 15 by links 23, 23 hingedly connected to the bottom of the back-filler and to the sides of the scoop. The linkage is such that when the stick is vertical, the back-filler will be parallel thereto. By this construction, the angular shifting of the scoop on the stick during its movement and also the relative angular shifting of the hauling line 14 and the scoop are utilized to maintain the back-filling blade at an effective angle which is comparatively steep with respect to the horizontal over a wide range of movement of the blade by the boom and stick.

In Figures 3 and 4, a modified form of construction is illustrated in which the scoop controlling parts 17, 18 and 20 are omitted, a scoop or a supporting structure

for a simple back-filling attachment being rigidly secured on the lower end of stick 11, the top of the back-filling attachment 21 being pivoted at 22 to the bridle as before, and the bottom of the attachment being linked by the members 23 to the rigid scoop or supporting structure 30. In this form of the device relative angular movement of the hauling line and stick alone is utilized to maintain the back-filler 21 at an effective angle over a comparatively wide range, somewhat less, however, than when used with the ditcher illustrated in Figures 1 and 2.

In the use of this attachment as distinguished from prior back-filling attachments, instead of the back-filling blade assuming an extremely acute angle when it is reached outwardly to start a back-filling operation, it is held at an acute angle greater than forty-five degrees (see Figure 4 dotted line position on the right thereof), and instead of moving to an extremely acute angle when swung inwardly, whereby considerable of the material rests upon and is carried back with the back filler upon its outward movement, the back filler is held at a steep, obtuse angle, at which angle the dirt freely slides from the back filler into the fill.

It will appear from the foregoing that a simple, inexpensive, but highly effective, attachment has been provided for the purpose set forth. It will also be apparent that modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims. For example, in either form of the apparatus, so far as the action of the back-filler is concerned, either a scoop or any suitable element taking its place in the support of the back-filler blade, may perform the desired function in the use of the device as a back-filler.

What is claimed is:—

1. In combination, an excavator including a pivoted boom, a stick pivoted on the boom, a scoop carried by the stick, a hoisting line for operating the stick and boom, a hauling line connected by a bridle to the scoop for operating the stick, means actuated by relative movement of the stick and boom for shifting the scoop angularly with respect to the stick to maintain the scoop at an effective cutting angle throughout its crowding movement, and a back-filler hingedly supported from above by the bridle and its rear by linkage connected to the scoop so as to be substantially vertical when the stick is vertical, whereby relative movement of the hauling line and the scoop will maintain the back-filler at an effective operating angle with respect to the horizontal over a wide range of movement of the stick.

2. In combination, an excavator including a pivoted boom, a stick pivoted on the boom,

a scoop carried by the stick, a hoisting line for operating the stick and boom, a hauling line connected to the scoop for operating the stick, means actuated by relative movement of the stick and boom for shifting the scoop angularly with respect to the stick to maintain the scoop at an effective cutting angle throughout its crowding movement, and a back-filler hingedly supported from above by the hauling line and at its rear by linkage connected to the scoop so as to be substantially vertical when the stick is vertical, whereby relative movement of the hauling line and the scoop will maintain the back-filler at an effective operating angle with respect to the horizontal over a wide range of movement of the stick.

3. In an excavator, a boom, a stick pivotally suspended therefrom, a member pivotally supported on the stick, a hauling line connected to the member, means for angularly shifting the member relative to the stick, said means being actuated by relative movement of the stick and boom, and a back-filler supported by the hauling line and by links connected to said member to maintain the back-filler at a steep angle with respect to the horizontal over a wide range of movement of the stick.

4. In an excavator, a pivoted stick, means for operating the stick, a back-filler carried by the stick, and means connected to the back-filler and actuated during operation of the stick to shift the back-filler relative to the stick so as to maintain the back-filler at a steep inclination to the horizontal over a wide range of movement of the stick.

5. In combination, an excavator including a pivoted boom, a stick pivoted on the boom, a hoisting line for operating the stick and boom, a hauling line for operating the stick, said hauling line including a bridle, a back-filler hingedly supported from above by the bridle and at its rear by linkage so as to be substantially vertical when the stick is vertical, and means connecting the linkage to the stick whereby relative movement of the hauling line and stick will maintain the back-filler at an effective operating angle with respect to the horizontal over a wide range of movement of the stick.

6. In combination, an excavator, including a pivoted boom, a stick pivoted on the boom, a hoisting line for operating the stick and boom, a hauling line for operating the stick, a back filler hingedly supported from above by the hauling line and at its rear by linkage so as to be substantially vertical when the stick is vertical, and means connecting the linkage to the stick whereby relative movement of the hauling line and stick will maintain the back-filler at an effective operating angle with respect to the horizontal over a wide range of movement of the stick.

7. In an excavator, a boom, a stick pivot-

ally suspended therefrom, a hauling line for
operating the stick, a back-filler supported
by the hauling line and by links, and means
connecting the links to the stick whereby the
back-filler is shifted angularly relative to
5 the stick by relative angular movement of
the hauling line and stick to maintain the
back-filler at a steep angle with respect to
the horizontal over a wide range of move-
ment of the stick.

10 GEORGE E. WAGNER.

15

20

25

30

35

40

45

50

55

60

65