Oct. 7, 1930. H. LAMONT 1,777,439

TRENCHING MACHINE

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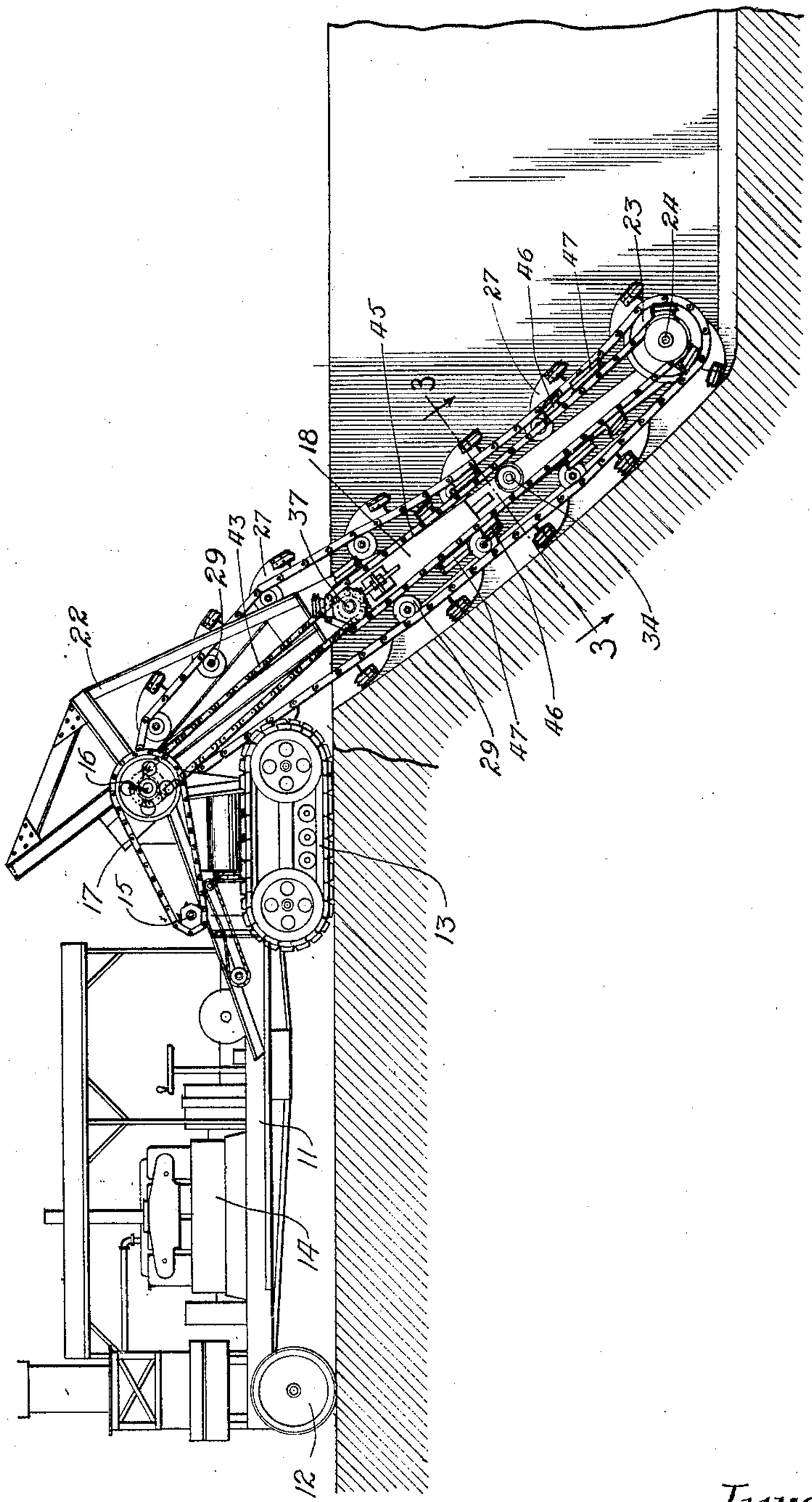

Fig-1

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Fig-2

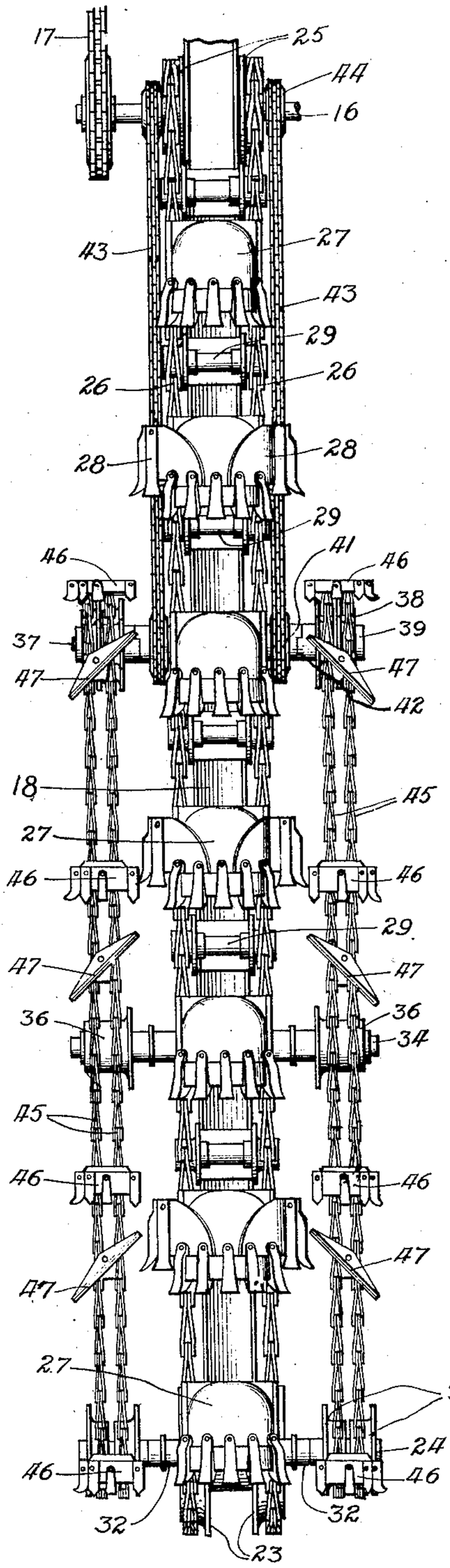
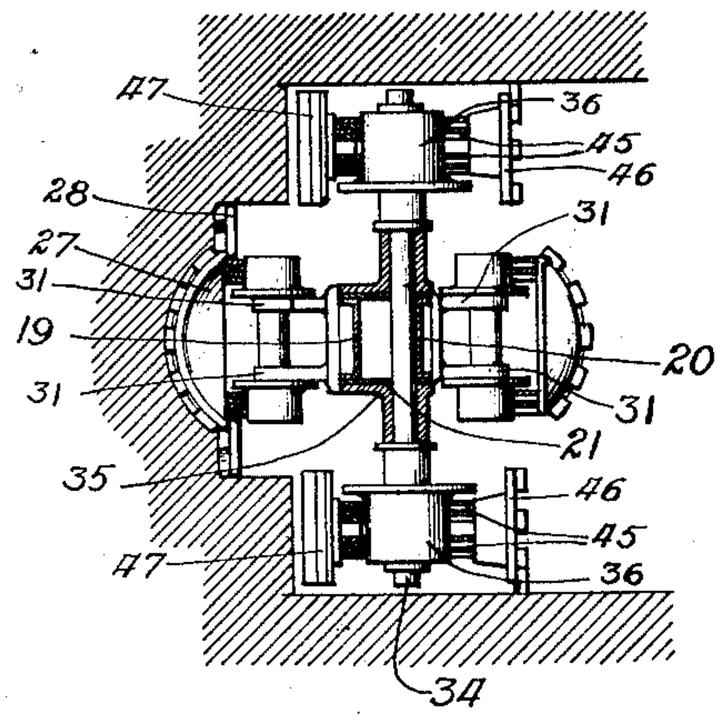


Fig-3



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UNITED STATES PATENT OFFICE

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TRENCHING MACHINE

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This invention relates in general to trenching machines and has for its object the provision for cutting a wider trench in proportion to size of trenching machine than has heretofore been practicable. In the past it has been generally the custom to provide trenching machines larger in all respects for the cutting of a wider trench than for the cutting of a narrower one.

This invention contemplates the provision of side cutting mechanism which may be positioned at the side of a main cutting and dirt conveying mechanism to cut a wide trench, or which may be left off or removed for the cutting of a narrower one, the parts being so constructed and arranged that no additional strength of frame and weight of apparatus (except for the side cutters themselves) are required.

A further important object of the invention is the provision of a trenching machine adapted to cut a wide trench and at the same time be light in weight and require relatively little material in its manufacture.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description which taken in connection with the accompanying drawings illustrates a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a side elevation of a trenching machine embodying my present invention.

Fig. 2 is a rear elevation of the digging parts; and

Fig. 3 is a section taken substantially on the line 3—3 of Figure 1.

For the purpose of illustrating my invention I have shown upon the drawing a trenching machine body 11 mounted upon front wheels 12, and rear belt traction means 13. These and other parts of the body and running gear are shown merely schematically since they form no new elements or parts of my present invention.

Reference character 14 indicates a suitable source of power, as a gas engine or the like, which through suitable gearing (not shown) drives a shaft 15. This shaft in turn drives a power shaft 16 through a sprocket chain 17. A bucket boom 18 is pivoted about the shaft 16 in any usual or preferred manner and may have any usual or preferred construction, except that when my invention is incorporated in the boom and bucket type of trench digger certain features of construction to be herein later described, I believe desirable to its best operation. As shown on the drawing the boom is of fabricated metal, made up of channels 19 and 20 and side plates 21, a truss structure 22 being provided at the top. At the lower end the boom carries idler pulleys 23 upon a bottom cross shaft 24. Over these idler pulleys and extending about sprockets 25 at the top on power shaft 16, are two conveyor chains 26 which constitute the conveyor chains of the main driving mechanism. These chains carry digging buckets 27 of any usual or preferred construction and in the present instance a number of these digging buckets are provided with side extensions 28. Additional idlers 29 are mounted in brackets 31 above and below the boom to receive the conveyor chains 26.

At each side of the digging and conveying mechanism just described I provide auxiliary side diggers. The shaft 24 has bearings at the bottom of the boom at 32 and extends out beyond said bearings, carrying upon each end a pair of idler pulleys 33 suitably secured thereon as by a pin passing through the shaft. A shaft 34 like the shaft 24 is similarly mounted in bearings 35 provided upon side plates 21 and this shaft carries an idler 36 secured at each end by a pin passing therethrough. A shaft 37 is provided like shafts 24 and 34, through the boom at about the normal ground level in digging, and this shaft carries two pairs of sprocket wheels 38, having a central hub or sleeve 39 embracing said

shaft 37 and secured thereon by pins. A sprocket wheel 41 is mounted upon the shaft 37 at each side and is adapted for interlocking relation at 42 with the hub 39 associated with it on the shaft end. Each sprocket wheel 41 is connected by a sprocket chain 43 with a sprocket 44 on the shaft 16 so that the shaft 16 constitutes a source of power for independently driving the side diggers. A pair of chains 45 take over sprocket 38 and idlers 36 and 33 and these chains carry auxiliary digging buckets 46 arranged at intervals.

The action of the various cutters in cutting the trench may be observed from Figure 3. The auxiliary digging mechanisms are not intended in the present instance to convey any dirt cut, merely cutting the side of the trench and permitting the earth removed to be carried upwardly by the main digging and conveying mechanism. To insure this scrapers or deflectors 47 are provided at intervals in the chains 45 and between the auxiliary buckets 46, to deflect the dirt removed in toward the central conveyor.

Wide or narrow trenches may be cut with the same apparatus depending upon whether or not the side digging mechanisms are included in the apparatus; they may be readily removed by merely taking off the idlers and the chains, removing the shafts 24, 34 and 37 and replacing said shafts with shorter ones. In this action the sprocket wheels 41 may or may not be removed as desired. It may be noted in the present instance these sprockets are well within the cutting zone of the main digging mechanism.

It will be manifest that trenching machines of any usual kind can be equipped with these side cutting mechanisms with relatively few changes and additions of parts.

It is believed that the invention and many of its attendant advantages will be understood from the foregoing without further description and it will be obvious that various changes can be made in the type of apparatus, form, construction, and arrangement of parts, without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, a pair of chains arranged side by side at each side of said main mechanism, and laterally extended diggers mounted on and carried by said pair of chains.

2. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, a plurality of chains arranged side by side at a side of said main mechanism, and laterally extended diggers mounted on and carried by said plurality of chains.

3. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, a plurality of chains arranged side by side at a side of said mechanism, and laterally extended diggers mounted on and carried by said plurality of chains, and inclined means on said chains for throwing material inwards within the scope of said main mechanism.

4. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, a chain arranged at each side of said main mechanism, scarifiers mounted on each said chain arranged at the sides of said main mechanism, and inclined means on said chains for throwing material inwards within the scope of said main mechanism.

5. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, and auxiliary digging means attachable to and removable from both sides of said main mechanism, and having a plurality of teeth arranged side by side and giving relatively wide lateral extension to said auxiliary digging means.

6. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, and auxiliary digging means attachable to and removable from a side of said main mechanism, having a plurality of teeth arranged side by side and giving relatively wide lateral extension to said auxiliary digging means.

7. In a trenching machine, the combination of a continuously moving main digging and conveying mechanism, a chain arranged at a side of said main mechanism, scarifiers mounted on said chain, and inclined means on said chain for throwing material inwards within the scope of said main mechanism.

8. In a machine of the class described, the combination of a main central digging and conveyor mechanism, a portable frame upon which said digging and conveyor mechanism is mounted, side digging chain mechanism located on opposite sides of the main central digging and conveyor mechanism, edged scarifiers located on opposite sides of said main central digging and conveyor mechanism and supported by said side digging chain mechanism, and deflector scrapers mounted between said scarifiers and adapted to deflect the material loosened by the scarifiers toward and into the path of movement of said main central digging and conveyor mechanism.

9. In a machine of the class described, the combination of a main central digging and conveyor mechanism, a portable frame upon which said digging and conveyor mechanism is mounted, side digging chains located

on opposite sides of the main central digging and conveyor mechanism, edged scarifiers located on opposite sides of said main central digging and conveyor mechanism and operated by said side digging chains, deflector scrapers mounted between said side scarifiers and adapted to deflect material loosened by the scarifiers toward and into the path of movement of said main central digging and conveyor mechanism, and means for operating said main central digging and conveyor mechanism and said side digging chains.

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